Serap Kurbanoğlu   Sonja Špiranec
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Information Literacy

Lifelong Learning and Digital Citizenship in the 21st Century

Second European Conference, ECIL 2014
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Preface

The Second European Conference on Information Literacy (ECIL) was co-organized by the Department of Information and Communication Sciences of Zagreb University, Croatia and the Department of Information Management of Hacettepe University, Turkey. Information literacy, media literacy, and lifelong learning being the main theme, ECIL aimed to bring together researchers, information professionals, media specialists, educators, policymakers, and all related parties from around the world to exchange knowledge and experience and discuss current issues and recent developments.

In all, 283 proposals were submitted to the conference. All submissions were subjected to a double-blind review process and 93 were accepted as full papers. This book consists of 80 contributions (2 keynotes, 1 invited paper, 70 papers, 7 doctoral papers). Contributions came from 50 different countries (Albania, Austria, Belgium, Botswana, Brazil, Bulgaria, Canada, China, Croatia, Czech Republic, Estonia, Finland, France, Germany, Hungary, Iceland, Iran, Ireland, Israel, Italy, Jamaica, Latvia, Mexico, Moldova, Montenegro, The Netherlands, Norway, Oman, Pakistan, Peru, Poland, Portugal, Puerto Rico, Romania, Russia, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, Turkey, UK, Ukraine, United Arab Emirates, USA) and addressed a number of issues.

Starting with our own organizations, Hacettepe University and the University of Zagreb, we are grateful to many organizations for their support. Our special thanks go to UNESCO and IFLA, two major organizations that have contributed tremendously to the development of information literacy, for generously providing their patronage.

We would like to take this opportunity to thank the conference keynote speakers David Bawden and Michael B. Eisenberg; invited speakers (Bill Johnston, Louise Limberg, Tefko Saracevic, Ross J. Todd, Maria Carme Torras-Calve, Andrew Whitworth, and Sheila Webber); workshop presenters; authors and presenters of papers, best practices, PechaKuchas, posters; and session chairs. We would like to thank and acknowledge the hard work of the members of the Standing and Program Committees, who invested their time generously to make this event happen.

Our editorial team should also be acknowledged here. Special thanks to Esther Grassian, Diane Mizrachi, and Ralph Catts for their hard work and valuable editorial contributions.

Last but not least, we would like to thank the local Organizing Committee.

November 2014

Serap Kurbanoğlu
Sonja Špiranec

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The European Conference on Information Literacy (ECIL) was co-organized by the Department of Information and Communication Sciences of Zagreb University and the Department of Information Management of Hacettepe University.

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Lessons Learned from a Lifetime of Work
in Information Literacy[*]

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Abstract. This paper is the full keynote address written for the 2014 ECIL Conference by Michael Eisenberg. Key information literacy milestones in his career that are representative of significant developments in information literacy, as well as education, information and library science, and information technology are presented in the paper.

Keywords: Information literacy, information skills, Big6, critical thinking, Michael Eisenberg.

1 Introduction

I am honored to be here giving the keynote address at the ECIL 2014 Conference. Thank you for inviting me and including me among this group of outstanding scholars and practitioners.

I am retiring this coming January, and this is likely to be my very last major keynote speech on information literacy. Therefore, I hope you will indulge me as I take the time to look back over my years as a teacher, researcher, and administrator whose consistent and continuing focus has been information literacy. My intent is to select several key information literacy milestones in my career that are representative of significant developments in information literacy, as well as education, information and library science, and information technology. I will share personal recollections, but focus more on the lessons learned, implications, and looming challenges and opportunities.

2 Milestone: Relevance, 1984

Although it's out of chronological order, the first milestone to share involves our next, distinguished speaker, Professor Tefko Saracevic. I met Professor Saracevic the very

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[*] This paper is the full keynote address written for the 2014 ECIL Conference. The actual delivered keynote speech will be abridged due to time constraints. The writing style is speech-appropriate, i.e., less formal than a scholarly research paper.

[**] Dean Emeritus and Professor.

first time in May 1984 at an ASIST (then called ASIS) mid-winter conference in Bloomington at Indiana University. I had recently decided to do my doctoral thesis on the topic of relevance, and Tefko Saracevic was the number one relevance expert in the world. Truly—he was, and remains, a giant. I had emailed him before the conference asking to meet. I was hoping for his blessing on my research, as I would be building upon his work. If he wasn't supportive, I would be in big trouble. When we finally connected, I was very nervous and completely star-struck. But, he was incredibly gracious and wonderfully encouraging. That meant the world to me, and I've remembered that meeting over the years when I have been contacted by young researchers. I always try to find time to respond and assist.

Meeting Tefko was a seminal event for me, and I went on to complete an award-winning dissertation on the nature and measurement of relevance. In terms of lessons learned, the first was on the personal side—that more senior faculty can make a huge impact and help to nurture young researchers. From a research and conceptual perspective the lesson was hugely important and set me on my intellectual career path: Professor Saracevic affirmed my own conclusion that relevance was still highly "relevant" and at the center of all aspects of the information field and that in spite of comments by some that the excellent work in the late 1960s and 1970s by Rees and Schultz, 1967 [1], Cuadra and Katter, 1967 [2], and of course, Tefko Saracevic, 1975 [3] had exhausted the relevance topic, there was still very important work to do. Relevance, a multi-dimensional concept, is a foundational concept of information science and information literacy (Schamber, Eisenberg, and Nilan, 1990 [4]).

The implications carry over to today: information literacy includes understanding relevance and being able to use and apply relevance in terms of relevance criteria (e.g., topicality, usefulness, completeness, precision, authority, novelty, currency, etc.). This is more true than ever in a networked, online, information world. We know a lot more about relevance today than we did in the early 1980s; however, where we previously lived and worked in an information scarce world in which information was hard and sometimes expensive to find (remember when librarians conducted the online search for end-users after a reference interview?), the challenge today is one of coping with abundance or even overload. Yes, relevance is still "relevant," but the dimensions concerned with credibility are even more important than ever. Thus, there are still needs and opportunities for information literacy researchers to learn more about information relevance—and particularly those dimensions related to credibility—in various contexts. Relevance and credibility are important issues for systems designers to address (especially web and app designers), and educators can help students and general users to understand relevance and credibility and apply those understandings as part of their information literacy skills set.

Meeting Tefko was a major milestone, but, chronologically comes a bit later. So, let me go back–to my earliest days as a professional when I was learning to be a teacher.

3   Milestone: Student Teaching, 1971

In 1971, I did a semester-long student teaching internship as part of completing my undergraduate degree in history and education. I was fortunate to have a creative supervising teacher who took an innovative, "inquiry" approach to teaching social studies. We used a special social studies through inquiry textbook that included a number of primary sources, and we closely collaborated with an English teacher as our classes were scheduled back-to-back so we had the same 60 students for a 90-minute block of time. This back-to-back blocking was repeated for three sets of students each day. The inquiry approach and block scheduling were very different from my background and training, and it forced me to think beyond narrow subject area content (social studies) to more underlying, fundamental skills and understandings that make up inquiry. I learned about framing questions to go beyond recall of facts, the use of primary sources and how to extract meaning from them, and options for class interaction, presenting, and assessment. We also used the cutting edge technologies of the day–closed circuit television throughout the school in particular–to create a massive simulation game about World War I and its causes.

Thus, at the beginning of my teaching career, I was influenced by innovative pedagogy, alternative structures, and technology. I now realize just how profound these experiences were in shaping my core values and approaches to teaching and learning. And, I am certain that my student teaching experience sowed the seeds of a lifelong professional commitment to underlying processes as well as content and to helping students to gain baseline understandings and inquiry skills. I learned that inquiry is a process and that helping students gain and master inquiry skills is even more important than transferring content. Looking back, I can see that the inquiry skills we emphasized and sought to help students gain are part of the scope of information literacy learning, no matter how it is defined: asking meaningful questions, planning a path of study, finding and using quality sources (primary as well as secondary), and communicating in a variety of forms including writing, speech, and media assisted.

The implications from this experience are as relevant today as they were then: inquiry is not just a means to learning content, inquiry itself is an essential and important goal of education. Inquiry is a process comprised of actions and skills. Technology can be used to create rich learning opportunities and experiences that are often not possible without it. I also learned to think beyond the textbook—there's a rich world of resources out there, and we need to bring students into contact with them.

The opportunities are obvious, but the challenges that existed then still remain today. My innovative teaching internship experience was an exception, not the norm. While we see signs of renewed interest in inquiry learning, critical thinking, and our own passion, information literacy, a content learning focus is still the norm. So are traditional teaching methods (e.g., sage on the stage) rather than innovative, student-centered, or technology-enhanced (e.g., guide on the side) methods. So, my challenge to you is to seize the opportunities created by our information and technology-focused world to envision, design, and implement innovative learning opportunities focused

on inquiry and information literacy that are comprehensive—reaching every student in every classroom and setting.

4   Milestone: Library Science, 1973

I landed a high school social studies teaching job in southern California in 1971 after working as a substitute teacher for 3 months. If you really want to learn how to teach —try subbing, but that's a story for another time. My wife Carol and I returned to upstate New York in fall of 1972. The school year had already started, and teaching jobs were scarce. To pay the bills, I took a job at a gas station on Central Avenue in Albany, New York. I actually enjoyed the job—in those days we actually "pumped" gas for customers and did a little maintenance and troubleshooting—checking the oil, tires, and antifreeze levels. But, when it started to get cold in late November— including an early snow—I knew it was time for a change. We needed to stay in Albany for family reasons, and since Carol had a good job, we thought it would be a good time for me to go back to school. But in what field? For what career? I liked teaching and I was pretty good, but I wasn't fully passionate about it. I looked down the list of possible master's programs at the University at Albany: business, education, social work, public affairs, … library science. LIBRARY SCIENCE? Wow! I never thought of that as a career, but I immediately knew. It's as if the skies opened with a crescendo of music and there was a great beam of sunshine on me and the words: "library science." This was it! This was my calling. Library science. I was destined to be a librarian. Why hadn't I realized this years before?

Reflecting back now, there were a number of influences that led me to librarianship: I read every sports book and biography in my junior high school library, and in college I often camped out in the library—often working there but also catching a nap from time to time as I lived downtown and the campus was uptown and I could not go home between classes. There was an amazing library in my student teaching experience noted above; for example, the television studio was attached to the library. And there were two amazing librarians at the school in my first teaching position in California. I had my social studies classes spend hours in the library doing projects, more than any other class or teacher.

The most significant lesson learned in library school was that there is an important teaching and education role for libraries and librarians. In my very first class, Professor Bill Katz, who wrote the definitive textbook on reference services, posed a seminal question: "do we aim for full- or self- service?" That is, are librarians in the business of providing information services or teaching patrons how to find information for themselves? Katz made a strong case for full-service: librarians were reference experts and could provide a much richer set of resources for patrons than they could find on their own. Yes, this would require many more librarians, but we were supposed to be meeting people's needs, not trying to teach everyone to be a librarian. Remember, this was before the Internet, the Web, and Google. It was really before computer use was commonplace. I must admit that I was swayed by Katz's argument, although I came to realize that he wasn't against an educational role, he

just wanted us to think carefully about what and how we would teach while recognizing that services need to be fully developed beyond simply providing collections, facilities, and answering a few questions now and then.

The implications of this dichotomy—service vs. instruction—are equally relevant today. Information systems of all kinds—the Web, Google, libraries, Craigslist, help lines, digital reference—must focus on people, their differing needs, behaviors, styles, and degrees of expertise in seeking to better meet their needs. In terms of instruction, we must focus on the same variables. That's the basis of information literacy and why we are here at this conference. We've come a long way since 1973 in understanding information literacy and human information behavior. We have definitions and conceptualizations, mission statements, curricula and standards. We seek to better understand people's needs, behaviors, styles, and degrees of expertise. We have studies of pedagogy and impact. And, we have information literacy programs at every level and in every type of educational setting, and increasingly, in social services settings as well. While we must continue to explore the nature and scope of information literacy, changing needs of different populations, and effective and efficient ways of helping people to become information literate, it's also time to shift some of our energy and focus from conceptualizing to acting. In too many settings, information literacy learning is still optional or marginal. Even where successful meaningful programs exist, they are often optional and don't reach every student in a consistent, comprehensive manner. I will speak in more detail about this in a moment, but if we truly believe, as I do, and have research evidence that being information literate is essential for human success across fields, domains, and endeavors, then we have a responsibility to see that every human being has the opportunity to learn to be information literate.

5   Milestone: Technology – 1978 (as well as 1984, 1994, 1999, 2009, Present)

In the mid-1970s I took a course at Syracuse University about computers in libraries. This was the heyday of the mini-computers, well before the microcomputer revolutions. The course was exhilarating, but also a bit intimidating. We learned about databases, systems for circulation, MARC records and standards, and Dialog and information retrieval systems. I saw potential, but it seemed out of grasp. And then in 1978, I met the Apple II. Here was a machine that gave instant feedback on a screen, rather than having to use a teletype terminal and trek over to Machinery Hall to pick up the results in a printout—every time. Not only could I learn to program on the Apple II using a relatively simple language (BASIC), but there were programs that allowed us to do and save things—with words (word processing) and numbers (the visual calculator, VisiCalc). Reflecting back, my life has never been the same. It may be hard for those of you who are digital natives and have never known a world without computers, applications such as word processing, graphical user interfaces and the mouse, and later the World Wide Web and Google, to fully appreciate just how amazing, magical, liberating, and powerful this was. I could have my very own

"personal computer" for fun (yes, I played many early microcomputer games) as well as for work.

With the help of a 15-year-old high school student, we set up an automated circulation system for my high school library. I created spreadsheets to control budgets and manage student flow and access. And, I switched my approach to writing from my beloved IBM Selectric to Apple Writer and Scripsit for the TRS-80. I also began to provide computer access to students and to teach them how to use the technology for their own work and play.

New hardware and software applications developed rapidly. In the early 1980s, the IBM PC invaded businesses of every kind, and then in 1984 Steve Jobs presented us with Macintosh—the machine that moved us from line prompts and esoteric codes to "what you see is what you get" (WYSIWYG), graphical interfaces, and mouse-control rather than just the keyboard. These were also pioneering days of connecting and networking—first through dial-up bulletin board systems, defense and research networks (ARPANET), and early proprietary commercial systems such as Compuserve and Prodigy. I was director of the ERIC Clearinghouse on Information & Technology and with the development of a more open Internet in the early 1990s we made large online collections of bibliographic records and full-text content available free of charge through Gopher, FTP, and Archie.

But, the world shifted on its technological axis yet again in 1994. I will never forget the day when Dave Lankes, then a doctoral student and now a full professor at the School of Information Studies at Syracuse, burst into my office to show me the most amazing information system ever-Tim Berners-Lee's World Wide Web accessible by a graphic tool called Mosaic. In looking back on all the computer and information technology breakthroughs that I've experienced to date, there is no question in my mind that the World Wide Web (with browser interface) is the most profound technological invention in the past 50 years.

As we all know, technology continues to develop at a breathtaking pace. For example, in the past 20 years we've seen Google, wireless access and devices, smartphones, apps and tablets, 3D interactive games, Facebook and social media, The explosion of innovation and invention continues—wearable, embedded, virtual, intelligent, nano, ubiquitous. I have given entire speeches on the impact and consequence of each of these technologies, but what are the collective lessons learned and implications? I see three:

1. First and foremost, don't get comfortable—it's going to continually change, often in ways that we can't predict. Right now, it's the time of the smartphone, but will we still be tied to handheld devices in 10 or 20 years? Twenty-five years ago, there was no World Wide Web, Google, smartphones, or apps. What might we expect in the next twenty-five years? The implications for information work and education are profound. We are responsible for educating students to cope in a continually volatile technological environment. The focus cannot be on the technology itself; it must be on gaining skills and understanding that will help individuals and groups to thrive.

2. A second lesson is that technology matters—it does change things fundamentally. For most of human history, including almost all of the 20th Century, the information challenge was to overcome scarcity—to identify and gain access to relevant sources and information to meet needs and solve problems. The Web and search engines have changed all that. The challenge now is to be able to cope with an abundance of information riches that affects how we live, work, learn, and play. Information literacy is more essential than ever, but the fundamental problem has shifted from "find" to "use," and credibility is key.

3. Lesson three—remember context and integration. Technologies and technology skills are powerful when they are integrated into the information problem-solving process as well as a specific subjects or areas of need. Technologies should not be approached as a laundry list of items to be understood or mastered. Technologies are powerful, many are tools that boost human capacity to think, do, and remember. But, it's not simply about being proficient in word processing, creating graphics, using search terms, or video communication. It's about using a technology to more effectively and efficiently accomplish requisite actions in the information problem-solving process, such as word processing for note-taking (use of information) or presenting (synthesis), search terms for identifying and finding sources (location and access), video communication to conduct interviews (use of information) or to share information (synthesis), and so on.

6 Milestone: Information Literacy – 1981 - Present

The last milestone to share centers on information literacy itself. As a high school teacher and library media specialist, I had taught students about selecting quality resources, using search tools, applying criteria, and creating bibliographies. However, I had not formally studied, analyzed, or developed curriculum or programs related to library, research, or information skills.

That changed in 1980, when I was asked to work on implementation of the recently developed New York State elementary level library skills curriculum, and a few years later, when I was asked to serve on the statewide committee charged with creating a new secondary-level library skills curriculum. I remember a series of tedious meetings where we sought to reach agreement on a scope and sequence of library and research skills for secondary school students. I recall feeling discouraged as we spent most of the time identifying and making long lists of resources that students should know about. Finally, I had had enough and voiced my frustrations, "This isn't really helping our students. Research isn't just about finding and it's certainly not about a laundry list of resources. Research is a process and we should be focusing much more on what makes up the research process." While taken aback, many on the committee were willing to listen as I went on to explain what I meant by process. "Our students need to be able to figure out what they are being asked to do and what types of resources might help them in that. Then they need to select resources, and find them. They also need help in using the sources—reading, skimming and scanning, and recognizing what's valuable in order to take notes."

I'd been thinking along these lines for a while, but this was the first time I publicly articulated and advocated for a process approach to library and information skills instruction.[1]

Shortly after the curriculum committee's last meeting, I met Bob Berkowitz for the first time at a professional conference. We connected immediately, sharing ideas and finding much commonality of thought and approach. At one point I explained about the work of the secondary level library skills curriculum committee, my concerns, and my description of the process: Task Definition, Information Seeking Strategies, Location & Access, Use of Information, Synthesis. Bob enthusiastically agreed—except he noted I was missing something important: a crucial step in the process–Evaluation. Bob explained that students must be able to evaluate the final result of their work as well as how well they've done and areas for improvement. This was incredibly insightful, and we added Evaluation as step 6 of the process that we called, the Big Six (later changed to the Big6). Bob and I started to work together and published our first book in 1987, *Curriculum Initiative* [5], which offered a full treatment of the Big Six skills and process as part of a systematic approach to developing instruction-focused library media programs. The book was very well received and is still in print. Later, we became familiar with similar efforts by Joyce Kirk and others in Australia [6], and Ann Irving in the UK [7]. We also became aware of the significant work of Carol Kuhlthau and other scholars and practitioners.

Today, the Big6 is one of the most widely adopted and used approaches to information literacy worldwide—used in thousands of educational settings from kindergarten through higher education. Over the years, we refined the Big6 model and approach, adding more depth conceptually and a wide range of practical tools, lessons, units, examples, strategies and tactics for implementation. In our first book, *Curriculum Initiative* [5], Bob and I offered a framework of the Big6 focused on higher-level thinking based on Bloom's Taxonomy. Unfortunately, some educators found this approach difficult to implement. In workshops and conversations, we found that they vastly preferred treating the Big6 as a set of stages and skills within a process framework. A process explanation and framework resonated with the students, was consistent with other curriculum approaches, and was flexible for implementation in different educational contexts. In our next book, *Information Problem-Solving* [8] and in all subsequent work, we frame the Big6 in terms of process and skills.

In terms of lessons learned and implications, my experiences confirm that a behavioral, process-skills approach to information literacy to be meaningful and helpful both conceptually and in practice. Teachers, administrators, parents, and others unfamiliar with information literacy "get it" when you explain information literacy in terms of the skills that make up the information problem-solving process. A process-skills approach is also consistent with a cognitive psychology view of

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[1] In the end, the committee didn't quite know quite what to do with me or my points, so they did what most curriculum or standards committees do—they compromised. They retained a resources-focus for the curriculum, and the final document was dominated by lists of resources. But, they also included a section on the research process—adopting my approach and terminology.

problem solving. For example, in the *Handbook of Child Psychology*, DeLoache and colleagues [9], define problem-solving as having four basic elements: a goal, obstacles preventing one from achieving the goal, strategies for overcoming the obstacles, and an evaluation of the process. A skills-process perspective is also compatible with processes of other fields, for example, science (the scientific method), language arts (the writing process), and engineering (design methods).

I am well aware that there are alternative viewpoints of information literacy (SCONUL Working Group on Information Literacy [10]) as well as criticisms of the process-skills approach (Bruce [11], Association of College and Research Libraries [12]). Some of you may be among those in the field who support broadening the conceptualization of information literacy as relational and subject-focused and involving more than a process with associated skills. For discourse and conceptual underpinnings, I am comfortable with discussions of broader, more encompassing definitions that speak to broader issues and conceptualizations of learning, teaching, and education. My concerns, however, are two-fold: losing a focus on "information" in information literacy and difficulties in implementing and using more complex and intricate articulations, for example, the revised AASL standards (2009) [13] and the current effort to revise the ACRL standards (2014) [12].

I am an educator. I have taught information literacy at every level—kindergarten, elementary, secondary, undergraduate, graduate, and in the workforce. I am most concerned with helping students to learn and to fulfill their dreams. I am convinced—from research and 44 years of teaching experience—that students who are information literate are better able to learn, to do, and to succeed. As an information educator, I fully embrace the mission statement of the American Association of School Librarians: that my job is to ensure that students are effective users and producers of ideas and information (paraphrased from AASL 1998 [14]). I often tell audiences that I have a dream—that every student in every educational setting, formal or informal, who is given any task, assignment or test, will "be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information." [15].

7   Closing

Information literacy—defined as a process and skills, relationally, or otherwise—is essential for every human being on the planet. Regardless of where you live, society is increasingly information-intensive, interconnected, and quickly changing. And, changes in the information landscape are finally starting to affect education in terms of modes of learning, teaching, and schooling. While education is still dominated by a mass-production, factory model that began in the industrial age, I have no doubt its days are numbered due in large degree to a rapidly-developing digital information and technology infrastructure with wide-ranging but flexible capabilities. In such a world, being information literate is not an option—it's a necessity.

That's why I am "insanely optimistic" about the future of Information literacy in education and society. We have made great progress since Paul Zurkowski first

coined the term in 1974 [16]. Information literacy is part of the conversation at every level of education, in business and government, and across society. In 2009, US President Barack Obama declared the month of October National Information Literacy Awareness Month stating, "Rather than merely possessing data, we must also learn the skills necessary to acquire, collate, and evaluate information for any situation." [17]. We've come a long, long way and those of us who work in this field should celebrate even as we push to the next level.

In terms of scholarship, there are more research efforts and publications about information literacy than ever. We see conferences and proceedings such as ECIL, journal papers, presentations, and sharing of ideas and examples using the communication and social networking tools of the Internet and Web. A search of all databases at the University of Washington Libraries found 1,746 articles and books about information literacy published in 2013 alone [18]. Dr. Alison Head's work, Project Information Literacy (PIL), an effort that I've been fortunate to have a hand in, is an impressive example of rigorous and multi-faceted investigation of the nature and scope of information literacy and the habits and behaviors of students and early adults in school and work settings.

This is our time! We live in an INFORMATION SOCIETY in which people are increasingly recognizing that information matters. Information understandings, systems, management, organization, tools, processes, policies, and services are central to every aspect of human existence. That's why schools such as mine, the Information School of the University of Washington, are booming. In 1998, we were a library school with only 5 faculty and 150 students in a single master's degree program. Today, we have 57 core faculty and 948 students spread across 5 degrees (from undergraduate to doctorate). iSchools are popping up everywhere across the globe— in 2001 there were 5 of us, 10 in 2003; at the iConference last year in Berlin, there were over 30 iSchools represented, and the current (2014) directory of the iSchools Caucus shows 59 members [19]. Information schools are built on an information literacy foundation, and their success and bright future are testament to the centrality and importance of information literacy in our world.

Information literacy is fundamental and essential. There is *nothing* more important or basic to learning and living than information literacy. This is the overwhelming lesson learned from my entire career, and the implications and opportunities are profound. We have a crucial role to play in education and society as champions of information literacy, as scholars adding to what we know about information literacy, and as practitioners providing a wide range of opportunities for people to become information literate.

However, as already expressed, I am concerned that we are getting too far removed from the essence of information literacy. I worry about losing focus and having our core message become diffused. While we are broadening the scope of information literacy intellectually, we aren't expanding in practice. I work regularly with educators at all levels—elementary through graduate school—and there are still very few information literacy programs that systematically and comprehensively reach every student. Far too often, information literacy educational programs can be characterized as irregular, partial, incomplete, or arbitrary. Some students receive

excellent information literacy instruction, but most receive little or none. Many classroom teachers, librarians, and technology teachers offer excellent lessons on specific skills, tools, or techniques, but very few schools on any level offer a complete program—with clearly-defined goals and objectives, planned and coordinated instruction, regular and objective assessment of learning, and formal reporting of results.

The reasons for this situation are varied and understandable. In some situations there are insufficient staff or limited resources for developing and delivering programs. Lack of space, facilities, and access to technology may be problems. And, information literacy doesn't fit nicely into the current curricular structure of most schools. Most telling, the main reason for irregular or incomplete programs is that the information literacy program is not viewed as a vital part of the school's curriculum program; information literacy is not treated as essential for every student in the same way as reading, writing, science, math, or social studies.

This non-essential status must end! In the 21st Century, reading and writing are no longer sufficient for success in school and work. To succeed in our global information society, students must be able to determine information needs, to find and use information in any form, and to produce and present information for a range of audiences. To me, this is the heart of information literacy, and any student who graduates without these skills is at a serious disadvantage.

It's time to turn this around—and this is my final message to you: accept the challenge of ensuring that every student is information literate. Let's focus our efforts on developing and implementing comprehensive information literacy programs that address the needs of every student. Let's clearly define the specific learning outcomes for each and every student and develop predictable plans for ensuring that each and every student gains those outcomes. Let's also determine and put in place effective and efficient ways of measuring student information literacy competence and report the results throughout our institutions and communities.

I hope that each and every one of you accepts the challenge. How can we best prepare people—individually and collectively—to not only cope but to thrive and to make the world a better place? We all know the answer: help them to become more information literate.

Thank you for listening!

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Being Fluent and Keeping Looking

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Abstract. The complexities of the many concepts and models around information literacy are considered, and some personal views given as to how they may best be clarified, both theoretically and practically. A slightly adapted idea of the concept of information fluency can serve as a main general purpose for the promotion of information literacy, expressed as a more specific meta-model for the prevailing technological environment, and as still more specific components for a particular context. The focus of this relatively stable general formulation is on understanding, rather than skills or competences. It can incorporate the need for education, advice and counseling, as well as information provision, and with domain-specific literacies, as well as supporting personal information literacy.

Keywords: Information literacy models, digital literacy, information fluency, domains.

1   Introduction

This paper considers some conceptual issues in understanding the literacies of information, in a sense building on some of my earlier thoughts on these topics [1-2]. It is a personal viewpoint, rather than an empirically supported case. The background, as I see it, is an increasing interest in, and recognition of the importance of, information literacy in its various guises, but at the same time a increasing uncertainty as to what information literacy *is*, how its aspects fit together, and how theory and practice can best interact; for recent examples, see [3-5]. Appropriately, I hope, for a keynote presentation, I will for the most part pose questions, rather than answering them.

2   To Rule Them All?

We are all aware of the proliferation of concepts in this area: information literacy, computer literacy, media literacy, digital literacy, transliteracy and all the rest. There have from time to time been attempts to produce over-arching models or frameworks to encompass these, usually of ever-increasing scope and range. J.R.R Tolkien in *Lord of the Rings* [6, p. 272] tells us that on the One Ring was written, in the language of Mordor, "One ring to rule them all". These have sometimes seemed to add to,

rather than reduce, confusion in the area, and in a quizzical look at such frameworks, William Martin [7] asked if we really needed "one literacy to rule them all".

One simple answer would be to declare that we have enough conceptual clarity, and to cease looking for new literacies, and multi-literacies. But that is not likely to happen. Nor should it, as this proliferation of concepts implies that there is a genuinely complex and changing set of issues and contexts to be mapped.

So, it would be preferable try to bring some clarity to a confused picture, accepting that this will involve trying to evolve a helpful framework rather than to propound any 'right answer'. To do so, I suggest that we may think of the concepts of the area at different levels of specificity and abstraction. We might take as an analogy the idea, familiar in the business studies context, that we have a general 'purpose' or 'mission', and somewhat more specific 'vision' of how the purpose is accomplished, and the quite specific 'objectives' which make the vision realizable. Those more familiar with resource description prefer to think of the various levels of FRBR [8]. The point is that the ideas become at each stage becoming less abstract and general, and more concrete and specific. They would also change, and require updating, at different rates: the most general remaining largely static, the intermediate changing slowly with a changing environment, and the most specific changing rapidly according to immediate and local circumstances.

In terms of information literacy, the specific 'objectives; would be the local and detailed components of particular models of information literacy: pillars, competences, lenses, threshold concepts and so on. These would be expected to change quite rapidly with changing contexts, and to be customizable to particular environments, regions, technologies, etc.

The intermediate 'vision' would be an encompassing model or framework: well-known examples are Gilster's digital literacy [9], Annemarie Lloyd's meta-competence [10], and Mackey and Jacobsen's metaliteracy [4]. These can be clearly seen to be adapted for the prevailing information environment and context of the time: digital literacy for the internet, meta-competence for the knowledge economy, metaliteracy for interactive social media, etc. Necessarily, they change as the technological environment develops; perhaps the next requirement will to deal with immersive information environments and documents [11], and the new forms of information behaviour which they will bring [12], by developing the idea of 'immersive literacy'.

The most general 'purpose' is still rather debatable, and increasingly widely debated. I tentatively suggest that 'information fluency' would be a helpful concept here, though in a rather different sense to that in which the term is generally understood. It was initially taken to mean "a conceptual understanding of, and ability to adapt to, changing information technologies" [13]. I feel this is rather too narrowly technology-focused to be useful today, and would prefer, following Dame Lynne Brindley, the former director of the British Library, in relating it more to issue of the broader information world. Regarded as "a conceptual understanding of, and ability to adapt to, changing information environments/ecologies/contexts" (the last word being very much a matter of personal preference), this has the promise of remaining stable

and sensible over time. It also has the benefit of emphasising understanding, rather than skills or competencies, which seems appropriate for this highest level.

This brings, at least to my mind, some stability to our idea of the literacies of information: the information fluency idea gives a (relatively) permanent account of the basic nature of the topic, to be expressed for a particular information environment by a meta-model such as metaliteracy or Gilster's digital literacy, this in turn to instantiated in a way useful for practice by the more context-specific components.

But three important issues remain unaddressed by this idea.

3   Is Information Enough?

The original propounders of information literacy believed that the provision of good quality information was sufficient in itself, and this is still an attractive idea, particularly in the library/information disciplines and professions. However, numerous studies have shown that this is not the case: information provision on its own is insufficient, and may actually cause confusion. In addition to information provision, therefore, there may be a need for education, advice, counseling, and so on. Recent examples of studies illustrating this point relate to information provision for chronically sick people [14], and information on good nutrition for the general public [15].

How are we to fit these considerations into our ideas of information literacy? If we accept the idea of information fluency as the highest level, with understanding at its core, then they fit well, since they are, in all cases, additional mechanisms for enhancing understanding. At the lower level, whether it is sensible to include them will depend on the context.

This does raise in a very clear way the question of who is responsible for taking the lead in promoting the area, reflecting the question of whether librarians should take such a leading role as in the past; for a recent discussion, see [16]. It is unlikely that there is a single satisfactory answer to this question for all contexts. It is likely that the information disciplines will be the natural leaders at the more specific levels, where definitively information matters are dealt with, but it is not obviously clear that this is so at the broadest, fluency, level.

4   Disciplines and Domains

The debate as to whether there can be such a thing as a generic information literacy, or whether each discipline or domain must have its own variant, has been on-going ever since the information literacy concept was originated. It is argued that information literacy can take on a different personality in different domains, with different concepts and relationships; see, for example, [10], [17-18]. It seems to me that the evidence is clear that domain-specific literacies (which are not necessarily aligned with traditional disciplinary or demographic boundaries) are needed, although the general fluency idea is certainly applicable universally, as, for the most part at least, are the intermediate meta-models. The specific components level gives the

opportunity for expression of domain-specific issues. This again raises the issue of who should take the lead in promotion of subject–specific information literacy; to my mind this reinforces the necessity for subject knowledge among library and information specialists working in such contexts.

5   Individual and Social

Any consideration of information literacy encounters a paradox implicit in all human information behaviour; the tension between the individual and the social group [19]. Theoretically, a persuasive case can be made that information literacy is a socially constructed concept [20-22], while in practice information literacy promotion and training is generally planned for, and delivered to, groups. Yet we know that individual personal differences are significant in all information behaviour [23], and fundamental to the increasingly important topic of personal information management [24], for which information literacy, or fluency, is of evident importance. This may remind us of Christine Bruce's early suggestion that one of the characteristics of an information literate person is that they have a personal information style [25].

There are no simple answers here, but it worth noting that some form of explicitly personal information literacy is likely to be increasing needed. This in turn feeds into the understanding of one's personal information world implied by information fluency, as understood here.

6   Conclusions

I suggest that the idea of influency fluency, understood as "a conceptual understanding of, and ability to adapt to, changing information environments". Grounded in a meta-model appropriate to the information environment, able to be encapsulated in specific and concrete components, gives a way of making sense of the complexities of the literacies of information. It foregrounds understanding: of the information environment, and of one's own personal information style. It recognises that information provision must meld into education and advice, that domains (social and disciplinary) have a great influence, but that individual factors cannot be ignored. I do not think it very much matters whether it is the library profession, or others, who take the lead, as long as someone does. I do, however, think that the conceptual advancement of the area is an important component of library and information science as a discipline.

I do not suggest this viewpoint as a panacea, but I think it might provide a way of moving forward effectively.

Let us leave the last word to another of Tolkien's creations. Thorin Oakenshield remarks that "There is nothing like looking, if you want to find something. You certainly usually find something, if you look, but it is not always quite the something you were after" [26, p. 53]. If we wish to improve the theory and practice of information literacy, we must never stop looking.

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Information Literacy in the United States: Contemporary Transformations and Controversies[*]

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Abstract. While acknowledging that efforts in information literacy are a global, the paper concentrates on information literacy efforts in the USA. The American Library Association (ALA) issued in year 2000 a set of standards that provided a framework for assessing the information literate individual. By 2013 it was realized that many changes require an update and even new approaches to information literacy. At the start of 2014 ALA proposed an initial draft of a new framework for information literacy for higher education. A new definition of information literacy was offered, together with a new framework based on threshold concepts– critically reviewed in the paper. During 2014 several public debates were conducted; the new framework is scheduled to be finalized in 2015. The paper summarizes these debates, with particular emphasis of description and critiques of threshold concept, which is at the core of the new framework.

Keywords: Information literacy, United States, standards, framework, controversy.

1 Introduction

Information literacy in the United States of America has a long history. It started with library instruction, also referred to as bibliographic instruction, at the end of 19th and beginning of 20th century. It transformed into information literacy by the end of 1980s [1]. This article concentrates on information literacy developments in the United States; however, it is fully acknowledged that efforts in information literacy are global, involving many institutions all over the world, many national and international organizations, great many international conferences and meetings, and many international declarations [2]. Information literacy is a global concept and effort, way above any one nation or country.

While recognizing this global component, the aim of this article is narrower: to provide an overview of library efforts toward information literacy in the United States

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[*] A much shorter version of this paper was presented at the 11th International Scientific Conference "Western Balkan Information Literacy," Bihac, Bosnia and Herzegovina, June 2014.

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with a concentration on evaluation of the 2014 official suggestion by the American Library Association (ALA) for a new framework for information literacy for higher education.

1.1   Back to the United States

Fueled by emerging challenges resulting from great changes in information technology and rapid increase in available information, the Association of College and Research Libraries (ACRL) (a division of the American Library Association - ALA) issued in 1989 a landmark report about information literacy considering it *" ... a survival skill in the Information Age"* [3]

The report also defined information literacy in personal and behavior terms: "To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information." [3]

This (and similar) definitions emphasizing personal orientation were widely used ever since. A variety of educational efforts aimed at creating and enhancing information literacy skills followed.

A decade later, in 2000, a set of information literacy standards were established to be used as a "... a framework for assessing the information literate individual. ... Information literacy forms the basis for lifelong learning." [4]

Five standards and twenty-two performance indicators were included, focusing upon the needs of students in higher education and a range of outcomes for assessing student progress toward information literacy.

To cover schools (kindergarten to grade 12) the American Association of School Librarians (AASL) (also a division of ALA) issued its own standards that: "... offer vision for teaching and learning to both guide and beckon our profession as education leaders. They will both shape the library program and serve as a tool for school librarians to use to shape the learning of students in the school." [5]

2   Practice, Issues, Impact

In practice, efforts in information literacy are rapidly evolving and shifting, due to rapid changes in information technology and users' expectations and growing needs. It is not surprising then that information literacy currently also subsumes digital literacy, computer literacy, and even skills needed to use the Internet effectively. This also involves showing the users how to navigate the information jungle. Libraries in academic institutions and schools provide regular, updated courses or lectures related to information literacy. In other words, the very pragmatic content of information literacy is in constant flux – a problem that must be reckoned with from the start.

Many academic and school libraries offered programs, courses, guides, tutorials and the like for information literacy, based on mentioned 2000 Standards, even though these Standards were rarely, if ever, cited. Three examples are given, each representative of different kinds of efforts and approaches to information literacy.

University of Central Florida, Infolit program currently lists 14 modules (topics) "... [that provide] short, to-the-point, tutorials to help you learn how to find, evaluate and use information." [6]

A different approach is from San Jose University, Dr. Martin Luther King Jr. Library, bundling information literacy tutorials with all kinds of help guides, offering "online tools plus videos on how to research, write, find articles, find books and use the library databases." [7]

A still different approach is illustrated by Iowa State University, e-Library; they provide guides geared toward development of facilities for critical thinking: "... how can you easily know the differences between a **scholarly journal** and a **popular magazine**? This sort of basic evaluation is a necessary part of the research process, and a means for you to sharpen your critical thinking skills. Listed below are some of the ways that a scholarly research journal typically differs from a popular magazine[1]" [8]

Other countries used or adapted the Standards – impact was global, as already recounted in the introduction.

Here are a few key issues that emerged as critical in most if not all efforts to build a practical information literacy project:

- Creation of information literacy skills often involves instruction. A major problem is that librarians feel inadequately prepared for an instructional role [9]. They lack formal training in educational theory and methods to start with.
- Furthermore, trainers need to be trained. Rapid changes in information systems and digital resources place librarians in a position of hard to keep up by themselves – their own information literacy competencies have to be constantly updated.
- Finally and most importantly, information literacy efforts require all kinds of resources – human, technical, facilities, and the like. All this is costly and requires money; financial difficulties are a major hindrance. In practice information literacy is not cheap.

3   After a Decade of Standards

By the end of their first decade the world around these Standards changed dramatically. Among others, technical innovations provided many new capabilities; these resulted in new social interactions and cultural disruptions; information resources became increasingly digital; and the gap between digitally haves and have-nots is widening; as is the gap between those that are digitally knowledgeable and those that are not. All these factors forced a redefinition of what is meant by an information literate person and even a redefinition of mission and services in all kinds of libraries.

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[1] Emphasis in the original.

A special issue of the open access journal Communications in Information Literacy, entitled "Reflecting on the Standards," has 15 articles analyzing various aspects connected with 2000 Standards and suggesting approaches for revision [10]. Two articles from that issue are chosen here to illustrate concerns and reactions.

Hofer et al. first provide a summary of critiques of existing Standards: "...a key problem with the current document [i.e. ACRL, 2000 Standards] ...: it does not fulfill the basic function of providing guidance to instructors in prioritizing what to teach." [11, p. 110]

In that they offer an example of a glaring misunderstanding, shared by many, of what standards are all about and what they stand for in general. Standards present a required or agreed upon level of measuring, quality or attainment; they are a norm summarizing principles of performance. By themselves, standards do **not** offer guidelines on how to achieve them. No standard includes a how-to on implementation. Implementing standards is a very different issue.

In their conclusion, Hofer et al provide a support for threshold concepts (the base of proposed new framework, discussed in the next section) as an approach that will "... help by providing a logical rationale for avoiding content not clearly connected to our disciplinary expertise." [11, p.111]

However, no suggestion is made about how this may help. On the one hand the authors chastise existing Standards for lacking guidelines for achievement, and on the other hand, they consider a suggested basic concept for framework as helpful, but do not indicate at all in what way – they offer no guidelines.

In the same issue, Kuhlthau takes a very different approach – not even mentioning threshold concepts: "I propose three "rethinks" to consider in recasting the ACRL Standards for information literacy for the coming decades. First, rethink the concept of information need. Second, rethink the notion that information literacy is composed of a set of abilities for "extracting information." Third, rethink the holistic process of learning from a variety of sources of information that is central to information literacy. The necessity for these "rethinks" are grounded in my extensive studies of students' experience in the information search process that reveal an evolving, dynamic, holistic process incorporating a series of feelings (affective), thoughts (cognitive) and actions (physical)." [12, p. 92]

In other words, Kuhlthau makes a series of proposals grounded in experiments and observations. These are evidence-based proposals worth considering as a base for rethinking new information literacy standards. This is entirely different than what is suggested in the proposed framework discussed next.

4   Proposed New Framework for Information Literacy

In June 2012, the ACRL Board approved a recommendation that the 2000 Standards be significantly revised. As a result, in February 2014 an initial (first) draft proposed a new framework (which became Framework – capitalized) for information literacy for higher education [13]. The idea was to invite comments and stimulate discussion on proposed changes. A second draft followed in June 2014 [14]. Fundamentally, the

second draft is basically the same as the first draft - there were some terminological changes and further additions. After hearings and further comments a third draft is expected in November 2014. A final vote by the ACRL Board is expected at the ALA Midwinter meeting in January 2015 [15]. All this is in preparation for replacement and sunset of 2000 Standards. An article by Oakleaf provides a summary of the whole process, with a reflection on threshold concepts at the base of the Framework, and then in the longest section of the paper makes elaborate suggestions – 10 steps – as to what to consider in revisions [16]. Needless to say, they are not followed.

The two drafts, [13] and [14], are not a final product. They only propose. Thus, any discussion so far, including this one, is only a comment on the drafts of the proposal and **not** on the final adopted document – not available at the time of this writing.

In general, the proposed Framework represents a significant change from previous Standards. The 2000 Standards outline competencies, skills, and outcomes that students need to achieve in order to become information literate. In contrast, the Task Force organized the new 2014 Framework around six sections, called Frames, each centered on a "threshold concept" (discussed in detail in the next section) that is determined to be an integral component of information literacy [14].

A justification is offered: "The rapidly changing higher education environment, along with the dynamic and often uncertain information ecosystem in which all of us work and live, require new attention to foundational ideas about that ecosystem." [14]

A broader agenda is sought: "The *Framework* offered here is called a "framework" intentionally—because it is based on a cluster of interconnected core concepts, with flexible options for implementation, rather than a set of standards or learning outcomes, or any prescriptive enumeration of skills. The *Framework* is based upon *threshold concepts*, which are those ideas in any discipline that are passageways or portals to enlarged understanding or ways of thinking and practicing within that discipline[2]." [14]

Even a new definition is offered using a notion of information ecosystem rather than just information: "Information literacy combines a **repertoire** of abilities, practices, and dispositions focused on expanding one's understanding of the information ecosystem, with the **proficiencies** of finding, using and analyzing information, scholarship, and data to answer questions, develop new ones, and create new knowledge, through **ethical participation** in communities of learning and scholarship[3]." [14]

But there is already a problem with that definition. "Information ecosystem" is not defined. Elsewhere in the document other undefined terms are also used such as "metacognition" and "metaliteracy." What is encompassed? They are not primitive terms universally understood. They are jargon.

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[2] Italics in the original.

[3] Emphasis in the original.

5   Threshold Concept

In both, first and second drafts [13-14], it is suggested that the expanded conception of information literacy also calls for a creation of a more open framework. An approach called "threshold concepts" is used as the basis for the 2014 Framework.

Threshold concepts have grown out of pedagogical consideration for education in economics in the United Kingdom; original authors are Jan Mayer and Ray Land [17]. The authors suggest that threshold concepts are intended to be used "in the design of effective learning environments within disciplines and to indicate the linkages to ways of thinking and practising within these disciplines." [17]

In that report they did not define the concept, but offered the following comparison and description instead of a definition: "A threshold concept can be considered as akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress." [17]

Threshold concepts are considered as having five characteristics:

> "[Threshold concepts are]:
>
> a. *Transformative...* in that, once understood, its potential effect on student learning and behaviour is to occasion a significant shift in the perception of a subject, or part thereof...
> b. Probably *irreversible* in that the change of perspective occasioned by acquisition of a threshold concept is unlikely to be forgotten, or will be unlearned only by considerable effort...
> c. *Integrative* ... that is, it exposes the previously hidden interrelatedness of something...
> d. Possibly often (though not necessarily always) *bounded* in that any conceptual space will have terminal frontiers, bordering with thresholds into new conceptual areas...
> e. Potentially (and possibly inherently) *troublesome...* such concepts often prove problematic or 'troublesome' for learners....[4]" [17]

A blog by Rice further discusses these characteristics and provides a short history on the emergence of the concept – the idea came about at a "coffee break conversation" [18].

Over the years a literature about threshold concepts has emerged. A bibliography of this literature, including videos, podcasts, and PowerPoint presentations, is listed in [19]. Furthermore, these ideas have been explored in a few disciplinary contexts [20].

Several articles and blogs also expressed critiques of threshold concept. Main points in these critiques are included here as a quote from an article by Barradell: "However, this ready acceptance of something that still is emerging [meaning threshold concepts as formulated in 17] has meant that aspects of the discussion

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[4] Italics in the original.

around threshold concepts have not necessarily been undertaken with the rigour they perhaps should, and that a number of important questions remain unanswered. For example, how many of the five characteristics should a concept possess to be regarded as a threshold concept? Are some characteristics more important than others? If a concept is troublesome and integrative but not transformative, is it still a threshold concept?" [20]

Development of threshold concepts requires a lot of work. Specific threshold concepts can be specified for each discipline, each topic within a discipline, each curriculum, each course, and even could be specific for each lecture. As will be seen in the next section, six threshold concepts, called Frames, are proposed for information literacy.

6   Proposed Framework and Threshold Concepts

As mentioned, threshold concepts are central to the proposed 2014 Framework. Descriptions and characteristics of threshold concepts have been incorporated almost verbatim as presented (and quoted in the preceding section) in the original paper by Meyer and Land [17]. Interpretations and quotes below are taken from the second draft of the proposal [14]:

> The Framework is organized into six Frames, each consisting of a threshold concept that is central to information literacy; a set of knowledge practices; and a set of dispositions. The six threshold concepts that anchor the frames are:
>
> 1. Scholarship is a Conversation
> 2. Research as Inquiry
> 3. Authority is Contextual and Constructed
> 4. Format as a Process
> 5. Searching as Exploration
> 6. Information has Value. [14]

Each of the six Frames is followed by detailed explanation and a list of Knowledge Practices (Abilities) and Dispositions. Here is an example of what is meant by a Frame, in this case Frame 2. Research as Inquiry:

> **Research as Inquiry refers to an understanding that research is iterative and depends upon asking increasingly complex questions whose answers develop new** questions **or lines of inquiry in any field.** Experts see inquiry as a process that focuses on problems or questions in a discipline or between disciplines that are open or unresolved. Experts recognize the collaborative effort within a discipline to extend the knowledge in that field by developing a knowledge base of lines of inquiry, research methodologies, and best practices for conducting

research. Many times, this process includes points of disagreement where debate and dialog work to deepen the conversations around knowledge.   ...

Knowledge Practices (Abilities)
Learners who are developing their information literate abilities:
• Conduct research through the lens of inquiry in order to enhance the impact of their work.
• Provide evidence of understanding that methods of research leading to new knowledge creation vary by need, circumstance, and type of inquiry.
• Formulate questions for research based on gaps in information or data available. ...

Dispositions
Learners who are developing their information literate abilities:
• Value persistence, adaptability, and flexibility, and recognize that ambiguity can be beneficial.
• Seek opportunities to transform current research-related practices in order to conduct more authentic research.
• Practice thinking critically when confronting new learning, where lack of familiarity with new methods and approaches requires additional effort. ...[5]" [14]

Interestingly enough, Knowledge Practices and Abilities in 2014 Frames [14] seem familiar – upon some comparison they look similar to Performance Indicators and Outcomes listed for each of five standards in 2000 Standards [4].

The proposal also suggests use of the Frames in specific work applications:

The Frames can guide the redesign of information literacy programs for general education courses, for upper level courses in students' major department, and for graduate student education. The Frames are intended to demonstrate the movement of thinking from novice to expert in a specific area; this movement may take place over the course of a student's academic career. Mapping out in what way specific concepts will be integrated into specific levels of the curriculum is one of the challenges of implementing the *Framework*. The Task Force encourages librarians to work with faculty, departmental or college curriculum committees, instructional designers, staff from centers for teaching and learning, and others, to design information literacy programs in a holistic way[6]." [14]

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[5] Bold in the original.
[6] Italics in the original.

As yet, no comments on the proposed Framework appeared in the literature or on the Internet. Wilkinson's blog is an exception: it summarized the basic aspects of threshold concepts as adopted in the Framework, lists close to 20 short emails by librarians as part of invitation to respond, and provides own critique of the threshold concepts [21]. Here is an informal, even funny, comparison between 2000 Standards and 2014 Framework, but with a ring of truth: "I suppose the simplest way to understand the change is to think of the previous standards as the authoritarian gym coach yelling "here are the five things you need to be information literate–learn them" the new standards are more like the hippie English teacher saying, "hey guys, here's some stuff to think about, but interpret it whatever way works best for you." [21]

After surveying the literature Wilkinson concludes that critical analysis of threshold concepts is rare. (This is my own conclusion as well). After examining authors that analyze threshold concepts (abbreviated as TC) Wilkinson observes:

> Each of these authors admits that the threshold concepts hypothesis has some kernel of truth, but that there are serious difficulties plaguing how TCs are formulated. We can break the criticisms down the following way:
>
> **1. How can probable characteristics be defining characteristics?**
> ... Meyer and Land tell us that threshold concepts are "likely to be…probably irreversible…possibly often (though not necessarily) bounded…potentially (and possibly inherently) troublesome" and so on. These hedges are concerning because they force the question of whether a putative threshold concept is actually a threshold concept. ...
> **2. Concepts do not imply abilities**
> ... the definition of threshold concepts equivocates over the term 'concept'. ... First, a concept is sometimes defined as a mental representation of something, i.e., a mental model in our language of thought. ... Second, some define a concept as an ability to think of, classify, or recognize something. ... example [of difference] of *knowing how* to play tennis versus *being able* to play tennis. ... The basic point I'm trying to make is that the connection between having a particular threshold concept and having certain abilities is nebulous at best, nonexistent at worst. ...
> **3. Being troublesome or transformative are agent-relative properties**
> ... a core problem for threshold concepts is that they are agent-relative: what is transformative for me might not be transformative for you. What is troublesome for you might not be troublesome for me. ...
> **4. Do disciplines really have a unified body of knowledge?**
> O'Donnell (2010) [one of the authors surveyed in the blog] raises what I feel is the most damning criticism: that the threshold concept hypothesis requires us to reduce disciplines down to core sets of unchanging

> beliefs. The push to have students "think like an *x*" (a doctor, an
> engineer, an economist, a librarian, etc.) has negative impacts on critical
> thinking, O'Donnell argues, because "if we want creative thinkers and
> innovators, we need graduates capable of moving *outside* the *x*
> framework and operating within multiple frameworks" ...
> Actually, it's worse than that. Even within a single discipline, there are
> often radically incompatible views held among practitioners. For
> example, I actually *disagree* that scholarship is a conversation[7] ... [21].

Disciplines are not monolithic. In addition scholarship is in constant flux – it changes dynamically. Paradigms shift. Knowledge is updated, sometimes even overturned. Whose threshold concepts define a discipline? A topic? A frame? In general, I agree with Wilkinson's critiques. Actually, they are a repudiation of threshold concepts.

7   Conclusions

As mentioned in the Introduction, the aim of this article is to provide an overview of library efforts toward information literacy in the United States with a concentration on evaluation of the 2014 official suggestion by the American Library Association (ALA) for a new framework for information literacy for higher education. In the next year or two, new standards and then guidelines may emerge. They are needed.

Unfortunately, the proposed 2014 Framework for information literacy standards in the US is not based on any evidence, observation or experience at all. The Framework is based on threshold concepts which are **not** an appropriate and fruitful approach for using a pragmatic framework for information literacy. Even if the idea of threshold concepts is considered as a theory, it is not a testable theory at all; thus it is not a scholarly theory. Even though some articles about threshold concept argued as to being appropriate or adaptable to several disciplines, the concept was never been tested experimentally. Even though it was applied in several disciplines, the applications were a variation on the theme of subjectively interpreting a variety of responses by students or others to various broad questions or experiences and not any practical applications at all. There is no evidence-based practice of threshold concepts in any discipline. Thus, it is highly unlikely that the proposed framework for information literacy can be fruitfully developed for empirical application based on threshold concepts.

This has implications not only for the United States, but for the library community globally. And there is plenty of need and room for discussion.

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[7] Emphasis in the original.

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The Personal Knowledge Base Conception
of Information Literacy

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Abstract. Although most authors on Information Literacy do not really differ in their definitions of the information literacy concept, phenomenographic research makes clear that in the context of education at least two different conceptions can be distinguished: an "Information Problem Solving" conception and a "Personal Knowledge Base" conception [1]. The conception of "Information Problem Solving" has been elaborated on in various models by many researchers but the operationalization of the "Personal Knowledge Base conception" has, until now, been ignored in LIS research.Based on educational literature a model for the content of a "Personal Knowledge Base" will be proposed. Two kinds of internalized knowledge are distinguished: the body of knowledge of the discipline and metacognitive knowledge. Both of these elements display sub content. This conception of information literacy as a "Personal Knowledge Base" is consistent with the idea that "learning to learn" is one of the main goals of Higher Education.

Keywords: Information literacy, information problem solving, personal knowledge base, metacognitive knowledge.

1   Introduction

Most of the researchers who study the phenomenon of Information Literacy agree that IL refers to a person's broad ability to use information from various sources, which includes a set of six or seven sub-skills [1]. This ability is also referred to as 'Information Problem Solving' skills [2-3]. However, also mentioned is at least one other conception of IL that is distinguished in phenomenographic research, the so called ability to build or to extend someone's Personal Knowledge Base. This conception of IL as building a knowledge base was introduced by Bruce in her 'Seven Faces of Information Literacy' [4]. Since this publication, the conception of IL as a PKB is often confirmed in the literature, but contrary to the Information Problem Solving-process, it has so far not been made operational in concrete sub-skills or actions. In this paper I will make suggestions to clarify the more abstract concept of a PKB.

2   Study Design

The research question was: which knowledge types can be distinguished in someone's Personal Knowledge Base? Because IL is considered a learning issue [5], the answers to this question were searched in the educational literature, more specifically those on design of instruction for vocational education and the literature on metacognitive knowledge. The main keyword that was used in Google Scholar to retrieve the information, was "personal knowledge" combined with a Boolean AND with "knowledge types" and / or "knowledge structures".

The purpose of the research was the construction of an IL model which integrates Information Problem Solving with the concept of the Personal Knowledge Base.

3   Findings

The Instructional Design Theory by Van Merriënboer and others describes how complex skills such as searching for research literature can be learned and can be transferred to other situations. The key component in their model is the skills hierarchy [6].

Figure 1 gives an example of such a skills hierachy. In this case it was preferred not to use Van Merriënboers own hierarchy for searching for research literature but to use an example from some of his colleagues which refers to the complete skill of Information Problem Solving [3].
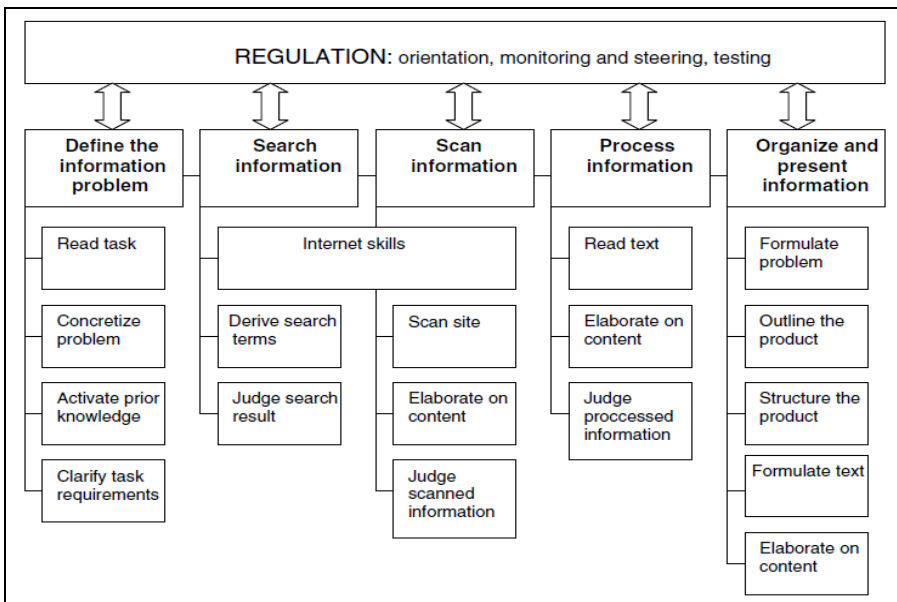
Fig. 1. Skills hierarchy for the "information problem solving skill" from Brand-Gruwel, Wopereis and Vermetten [3]

Execution of complex learning tasks as expressed in figure 1 helps, according to Van Merriënboer, the construction of cognitive schemata [6]. The schemata themselves can have two forms: mental models (declarative knowledge; knowing what, why) and cognitive strategies (knowing how something should be done). Both of these two types of knowledge refer to professional knowledge from the discipline in which the task is executed.

Schaap and others, whose backgrounds are that of vocational education, confirm the construction of mental models and cognitive strategies during their work on study tasks but they distinguish a third type of personal knowledge: the norms, beliefs and values of the discipline [7]. According to them, mental models and cognitive strategies can often be learned from instructions and books or other types of codified knowledge (and can therefore also be learned during the execution of information problem tasks). For the acquisition of norms, values and beliefs, the interaction with professionals is necessary. They can be codified in books and documents but they are best acquired during learning in workplaces, for instance during an internship. Nevertheless, according to them, the norms, values and beliefs of a person are a part of his or her "Personal Professional Theories", which in our research is recorded as his or her PKB.

All the mental models, cognitive strategies, values, norms and beliefs that belong to a specific discipline, are also called the Professional Body of Knowledge (BoK) [8]. Researchers in Information Literacy, however, distinguish an alternative type of knowledge that is not related to a specific domain but can be characterised as knowledge about the cognitive process of learning itself, also referred to as "metacognition" [9]. This metacognitive knowledge is a result of the learning-to- learn process, the role of which is becoming more and more important in education [10].

The main resource to make the concept of metacognition more concrete was a paper by Pintrich [11]. He describes three types of metacognitive knowledge:

- General strategies for learning, thinking and problem solving. These include general knowledge about how to attack cognitive tasks or intellectual problems.
- Knowledge about different cognitive tasks, which includes knowledge about the strategies that can be applied to a particular task. Knowledge about cognitive tasks is therefore not only about 'what' the task is but also about 'how' and 'when' it can be performed.
- Self-knowledge about one's strengths and weaknesses.

Alexander, Schallert and Hare mention the distinction of these three types of metacognitive knowledge as well, but they also distinguish a fourth component of metacognition, that is someone's plans and goals [12]. They emphasise that these plans and goals are often influenced by the affective relations that people have with the task and the task environment. The difference with 'self-knowledge' is that someone's plans and goals are often more influenced by motivational factors than by someone's self-experienced strengths and weaknesses. Kuhlthau's work [13] is a thorough description of the importance of this affective facet of someone's ability to solve information problems and a study by Walraven more recently confirmed it [14].

4   Conclusions

Combining the "Information Problem Solving skills hierarchy" from figure 1 with the findings from the literature about the Professional Body of Knowledge and Metacognitive Knowledge results in an Integrated Model for Information Literacy (figure 2). It expresses all the activities that are carried out in the context of information problem solving and the (new) personal knowledge that is created with it.
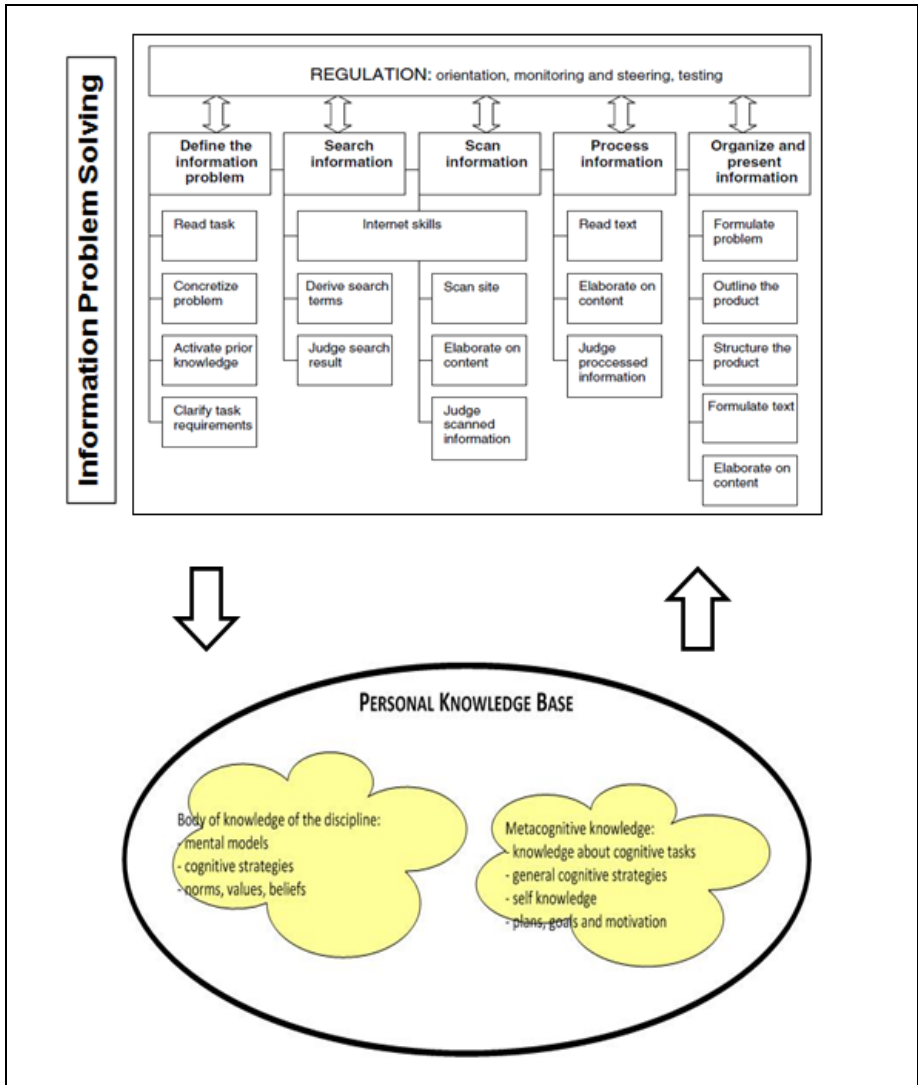
Fig. 2. Integrated model for information literacy

The two components of the model are connected with arrows that point in two different directions which indicates that they have influence on each other. During the solving of information problems, the existing knowledge from the Personal Knowledge Base is called up and used but during the same Information Problem Solving processes, new knowledge is created which leads to a modification of the Personal Knowledge Base [see also 7].

5   Discussion

This exploration of the concept of a "Personal Knowledge Base" is part of a more extensive research project on assessment of information literacy. In the larger project a scoring rubric was developed [15]. The scoring rubric of information literacy emphasised the activities and products of students who are actually solving information problems (the upper part of figure 2). The "Personal Knowledge Base conception" of information literacy that is presented in the lower part of figure 2, suggests a new research question, namely the question of how this personal knowledge of students can be measured or assessed. Related to this is the question of how Information Problem Solving and the construction of personal knowledge do exactly interact. However, these questions seem to belong more to the field of learning sciences than to the discipline of information sciences. It is nevertheless the intention of the researcher that the integrated model for Information Literacy which is proposed in this paper, contributes to a bridge which closes the gap between those two fields of science.

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Emerging New Information Literacies – A Conceptual Outlook*

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Abstract. Instead of making the post-literacy discourse more sophisticated, we approach the changing nature and complexity of information literacy from transforming social practice, elaborating the characteristics of three new "clusters" of information literacies. The main reason to define and discuss newborn literacies, transforming literacies and "hyperpeople literacies" is the emerging world of "Internet of Everything", as a complex symbolic and transactional environment. In planning for this era we have to use "human technology", social innovation and design thinking aspects.

Keywords: New information literacies, post-literacy, metaliteracy, assessability, Internet of Everything, receptive/productive user, newborn literacies, transforming literacies, hyperpeople literacies.

1   Introduction

Our overall goal is to define and discuss three new "clusters" of information literacies: newborn literacies, transforming literacies and 'hyperpeople literacies. Nevertheless, before the introduction of these categories we have to look around at the unstoppably and uncontrollably expanding conceptual universe of information literacy.

Envisioning the future, Ridley [1] defines post-literacy "*as the state in which reading and writing are no longer a dominant means of communication*", while Kress [2] talks about visual objects instead of letters, and screens instead of books. We have also had a colorful transliteracy approach since 2005 (which was originally coined to support the cross-sectional approach of communication platforms and later developed into the "3 T"-paradigm: teaching, technology and transliteracy). A**s** a *"unified construct that supports the acquisition, production, and sharing of knowledge in collaborative online communities*", metaliteracy was born to promote *"critical thinking and collaboration in a digital age, providing a comprehensive framework to effectively participate in social media and online communities"*[1].

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[1] The source of the definition is a dedicated site [3].

It is also very common to identify "*new information literacies*" in various contexts, like writing and Writing Studies [4], critical media literacy/critical thinking [5] library environment [6], digital games [7] or participation [8]. In the last few years it became extremely popular to talk about *"emerging information literacies"*, too. By way of example, Lee Rainie, the director of Pew Internet Project described six new types in a lecture [9]:

- *Graphic literacy* (Thinking visually and mastering the "language of the screen" and visual representation of information)
- *Navigation literacy* (Learning to maneuver through a non-linear, hypertext environment that can be disorganized)
- *Context literacy* (Seeing the connections among pieces of data and information in a hypermedia environment)
- *Focus literacy* (Practicing reflection and deep thinking – and enjoying leisure and daydreaming)
- *Skepticism literacy* (Learning to evaluate information and how to assess its accuracy and sourcing)
- *Personal literacy* (Understanding your digital identity and digital footprints; managing your privacy and self presentation)

The readers of information literacy literature can easily identify the overlapping nature of vocabularies: the authors try to combine the traditional skills-based approaches to information literacy with new technology improvements, challenges and possibilities. For instance, Rainie's graphic literacy and navigation literacy are willingly discussed 'brand-old' forms of information literacy as *graphicacy* and *navigacy*: the context, focus and scepticism literacies are variations of critical thinking and critical media literacy skills, very close to the 'really-new' *assessability* [8]. Personal literacy as a term truly reflects a very important new field of digital existence, but successfully makes a muddle of the conceptual substructure, since "personal literacies" were used in a totally different meaning, as natural counterparts of "professional literacies" so far.

1.1   A Way Ahead: Alterations in the Cultural Forge

However, the common nature of every information activity is invariant: visual representation as information input, processing in the brain, and objectivation (exformation) as information output. Therefore, we do not have to seek the changing nature and complexity of information literacy around a cognitive relief or the technology horizon, but on the field of transforming social practice, embedded into the digitally mediated cultural environment. It simultaneously means that the architectures, services, solutions, tools and gadgets of the universe of future information and communication technology are important aspects, but the crucial moments are the changing patterns and structure of everyday life. Putting it the other way around: new literacies are "*required for successful participation in an increasingly technologically mediated society*" [8]. That's why the term

"transformational literacies" was born: preparing users for life [10], or "*to help (students) see the connections between their hard work as readers and writers and their futures as contributors to stronger communities and a better world* [11].

Andrea Forte proposed a new framework recently. It highlights the "critical dimensions" of information literacy, while simultaneously indicates the main directions of change.

Table 1. Dynamics of information literacy development [8]

	Social	*Literacy skills*	*Technological*
Consumption	Educating people to find and use information well		Designing information systems that help people to find and use information well
	Approach to		*transforming practice* →
Production	Educating people to create and contribute information sources	↓	Designing information systems that help people to create and contribute information sources

1.2   Goals of the Paper

It is almost impossible to compose a full, overall, perfect classification system of every literacy form, because of the dynamic nature of the field. The emerging literacies become new, the new ones become old, while the old ones are continuously augmented with new features and relevancies.

Our aim is to *call in new sets of literacies into the discourse*, speeding and assisting understanding of the very nature of "literacy tectonics": *newborn, transforming, hybrid and hyperpeople literacies*. We hope that this enriched conceptual framework can vivify and quicken not only the literacy debates, but raise the awareness and stimulate the design of new intellectual, educative and work environments and pedagogy/training practices.

2   Literacies, Putting in Motion

There is not enough space to substantially elaborate the characteristics and core features of all the literacy forms to be discussed; our moderate aim is to create a commensurable, initial "map" of them.

2.1   Newborn Literacies

The reason behind the birth of brand new literacy types is not only the cumulative relocation of basic activity and transaction forms into the digital ecosystem, but the

overflow of closed, professional knowledge sets, creating their casual, everyday, trivial versions, generating a kind of "literacy emancipation" wave.

The pioneer field, financial literacy, evolved as the ability to make informed decisions about how to use and – later – how to manage our money and financial transactions online, including *"saving, banking, budgeting, smart shopping tips, understanding types of loans and credit and how to manage debt, investing and financial planning, choosing suitable mobile phone plans, avoiding scams and rip-offs, and explains the basics about insurance and superannuation"* [12]. Legal literacy was born as an ordinary digital literacy of lawyers and students of Law Schools [13], and psycho-literacy was introduced as the general knowledge of basic terms and concepts within the psychological community, especially to students [14]. A few years later, the concept was extended to the legally literate and the psychologically literate[15-16]) citizens, while currently it is more than important for every 'Netizen' to identify, know, and understand the legally sensitive fields of typical online activity forms, and the psychologically sensitive parts of people to people online communication.

The explosion of health information pages for patients and health practitioners, digital health tools and spawning health applications (we had more than 40 thousand mobile health apps in 2012! [17]) led to a change from health awareness to health literacy, stepping up *"from just looking at health information, and moves towards a model that involves behavior changes and digital interaction"* with and between patients [18].

The junior concept of futures literacy was coined directly for enhancing the skill-set of policymakers [19], but the anticipatory systems and models, including the methods of scenario-making can help everybody get to better decisions, and are open for civil organizations, local communities, interest groups and even individuals.

Table 2. Newborn literacies, altogether

Financial literacy
Legal literacy
Psycho-literacy
Health literacy
Futures literacy

2.2   Transforming Literacies

The second cluster of emerging literacies consists of significantly improved versions of earlier literacy forms, following the inherent changes within the given domains, while reflecting the extended playground of activity forms, as a part of the "gradation" from the receptive to a receptive/productive nature.

Data literacy as *"competency in collecting, interrelating, organizing and developing knowledge and insights from raw data"* [20] and its cousin, statistical literacy (as citizen's ability to understand and critically evaluate statistics, coming from the media environment and appreciating its relevance in all aspects of life) has

substantively changed in the last few years, thanks to Open Data, Linked Data, the birth of data journalism and data science, and, oddly, the appearance of Big Data with enormous and diverse sources behind it. *"Ensuring that big data creates big value calls for a re-skilling effort that is at least as much about fostering a data-driven mindset and analytical culture as it is about adopting new technology"* [21]. A new culture of personal data was also taking shape, since *"every facet of life from sleep to mood to pain was becoming trackable"*: the concept of "Quantified Self" was born in 2009 [22].

Similarly, visual literacy (or "visuacy"), as a conceptual approach to graphic problem solving [23] transformed into a more complex form (using comic books, graphic novels, anime, cartoons, and more, to develop comprehension and thinking skills) [24]. Following the revolution of everyday information architecture and infographics, graphicacy [25] is increasingly "infographicacy', as a part of broader design literacy [26].

Game Literacy got into the vocabulary of academics and teachers to take *"seriously the serious play of young people … analysing games and the world of games as text"* [27]. A few years later, serious games became integral parts of learning environments, while gamification (*"use of game thinking and game mechanics in non-game contexts"* by definition [28]) was raised and spread in company and big organization environments. How to create special game environments; how to combine work with games; how to adjust motivation, attention and time-management – these are the main issues of future gamification literacy, "gamificacy".

The rampant world of social media vivified a new ability in public and semi-public spaces: participatory/participation literacy. Changing their passive "lurking" position, millions became active Netizens in community forums, interests groups, social movements' sites and local democracy experiments (consensus conferences, participative budget planning, etc.). The emphasis shifted sharply from discussions to real-world interventions: as we step from interaction to decision-making competency and responsible execution, the operative part of social actions established a new literacy set: abilities for agenda setting, strategic planning, managing conflicts and sharing tasks: we willingly call it "operacy".

We see the same dislocation ahead in the field of media literacy, as an erudite manner of media consumption the moves to participation. [29]. This shift from understanding and (critically) analyzing translocated to writing on media texts and creating complex contents. This aspect was always hiding behind basic 'writing' skills (such as creative writing or creative literacy, like poetry writing) [30], but the online revolution of authorship [31] reshaped it in a more broad sense, as a part of productive literacies (using the phrase of Kurt D. Squire) or info-creation (referring to Isto Huvila) [32]. In a more general way we talk about the ability to create public content - "content creacy".

A special part of this galaxy of (multimedia) content is production of scientific materials. Scientific literacy itself has been discussed exhaustively for a long while, but in contemporary society it is more than the proper composition of scientific texts (as generations used Mary Schleppegrell's framework with description/definition,

explanation, recount/procedure, argument): sooner or later it becomes a universal literacy form in schools, as Citizen Science (People's Science) moves into public education, providing a special treat and familiarity for future generations to take part in living scientific problem solving, creating horizons for lifelong research [33].

Table 3. Renewing literacy landscape

Current forms		*Next generation variants*
Data literacy		(Big) data literacy
Visuacy		(Info)graphicacy
Game literacy	→	Gamificacy
Participacy		Operacy
Media literacy (mediacy)		Content creacy
Scientific literacy		Lifelong research

Data and game literacies can easily form hybrids with other literacies, since we can find data everywhere, and there are almost no limits to gamification in these environments. The combination of health literacy and numeracy is important *"to understand, evaluate, and use numbers … to make informed health care choices"* [34]. We have lot of good examples of how gamification could influence clinicians' practice [35] and patients' behavior [36].

Scientific data literacy is a separate field, following the recognition, that the „*fast-changing scientific research and education environment was becoming increasingly data intensive, due to the advancement and proliferation of tools and networks"* [37]. Scientific infographics has also become popular, since data visualizations can assist in understanding the conceptual and the practical [38], and communicate scientific results [39]. Furthermore, we also have a long record of combining science learning with games [40] and producing new scientific knowledge using gamification (see for example the legendary Fold It! project [41]).

3   What are the Hyperpeople Literacies?

The next epoch of culture is about a new, holistic quality of the altering digital universe, as it transubstantiates to a UCC (Universal Communication and Collaboration) environment, creating effective PANs (Personal Area Networks), originating the so-called "Industrial Internet", dissolving all these sequels into the paradigm of "Internet of Everything" (IoE), which totally re-draws the close-knitted digital world we used to live with.

When the number of active "agents" (objects) and processes spawn exponentially, the new space of people to machine (p2m), machine to people (m2p) data to data (d2d

or linked data) connections needs new, high level protocols, semantics, meta-languages, design and mission.
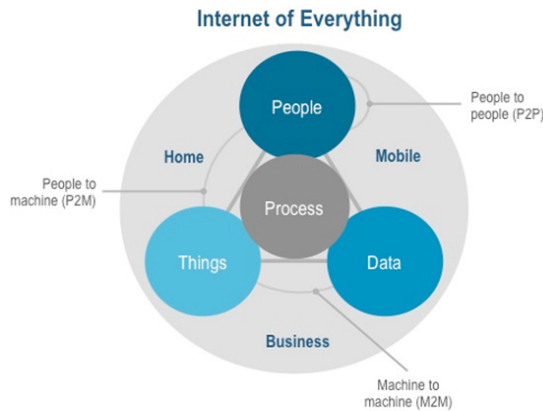
Fig. 1. The paradigmatically new world of Internet of Everything [42]

The "Internet of Everything" is a complex symbolic and transactional environment As Mark Pesce envisioned [43]: *"we are at the threshold of an entirely new era, where a new form of communication – beyond any one of us, yet embracing all of us – has transformed us into hyperpeople."* The average online citizen, the "hyperpeople" will be characterized by new interaction patterns (including special semantics on the Human part with new kinds of Personal Digital Assistants), under the shadow of re-designed interfaces, tools and background systems (including hardware, software, "orgware" elements).

Everybody will be digital immigrants again in this emerging, hyperconnected world, but it would be a dead-end to choose an old target: becoming digital natives again. Do not seek the profoundly new element around the revolutionary tools, the capacity or the topology: the real novelty is the *complexity*, which challenges every actor: individuals, communities, enterprises, organizations, nation states. This new transaction environment needs re-evaluation of progressively shrinking resources - our attention and time in an essentially changing identity and collaboration space. This space can be none, but open, since the closed terrains are hindering the flows and transformations.

It is very important to accommodate to the rules of the game of this future, process-focused hyperconnective arena prematurely, with the new forms of information literacy, with self-confident navigation and operacy in a well-designed interface culture, with semantic weapons, and new routines of man-machine communication. From this point of view – as Ellen B. Mandinach propagates it – data needs to be usable, purposeful and meaningful in order for it *to be translated to action*. Hyperpeople data literacy is about utilization.

In a p2p context, emotional literacy's role can be crucial [44], and the planetary nature of IoE needs an acceptance of a lingua franca (transforming English fluency to English as a universal second language) [45]. The new pressures on trust and liability in IoE environment highlight literacy forms, supporting educated decisions and responsible participation: context/sceptisicm literacy, assessability and critical thinking. To be able to control the m2m segments, the role of infographicacy comes to the forefront.

Paraphrasing the famous sentence of Alan Kay, the best way to be ready for the future is to build it. The "agenda of further thinking" [2], the teleology of information literacy has to include the elements of collective design. IoE is unimaginable without a strong social innovation approach, using elements of design thinking, instead of a market-driven, spontaneous, unreflected way of building. It takes *futures literacy* becoming distinctively important in the next decade.

4   Conclusion

We could successfully present a new approach that's not to be sneezed at. In planning for the hyperpeople era we must be aware of its transformative nature, integrating previous literacy forms into a unified, complex platform. And it is also obvious that the key questions do not surround the next generation of information technology innovations, solutions, tools and services. On the contrary: we must use "human technology", social innovation and design thinking aspects, when seeking literacy aspects of the Internet of Everything era.

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From Green Libraries to Green Information Literacy

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Abstract. The amount of information available on green libraries and green library practices, seems to be growing, however, very little has been written about green information literacy. The aim of this paper is to discuss how information literacy and its instruction can be transformed into green and contribute to the green library movement. With this aim, relevant recent and past publications have been analyzed. A green information literacy concept is introduced and a multi-faceted approach towards green information literacy instruction is presented. Conclusions and recommendations are drawn for practice and further studies.

Keywords: Green libraries, green information literacy, environmentalism, sustainability, sustainability literacy, sustainable thinking, green information literacy instruction.

1 Introduction

Scientists agree that our planet is in jeopardy because of the threat of environmental challenges such as air and water pollution; destruction and depletion of the ozone layer, forests, soil, oil fields, energy and water, accumulation and distribution of toxic wastes, and emission of *greenhouse gases,* which altogether can change our lifestyle drastically. Environmental changes and challenges are mainly caused by human activities, however, they impact the survival of all living species, the integrity of the earth, the security of nations, and the heritage of future generations. Consequently, there is a need for urgent action to address these problems by changing people's and institutions' behaviors to reverse the trend and repair the damage. Environmental issues have become a major area of research and also concern in the twenty-first century [1-3].

Today, as awareness and interest have increased towards environmental problems, discussion of environmental sustainability has become widespread in many governments and organizations. Organizations, including libraries [4], are taking measures to reduce their damage on the environment. As a result of libraries' involvement with environmental issues, the *Green Library Movement*, whose main concern is reducing libraries' environmental impact, emerged in the early 1990s [2].

The amount of information available on green and environmentally sustainable libraries and library practices seems to be growing. However, very little has been written about how information literacy can contribute to this greening trend. The aim of this paper is firstly to examine how environmental issues can be incorporated into libraries, secondly to make an attempt to highlight how information literacy and information literacy instruction can be transformed into green, and lastly, to discuss how information literacy instruction can embrace environmental sustainability and contribute to the green library movement. With this aim, relevant recent and past publications have been analyzed. Based on an in-depth literature review, a definition for green information literacy is proposed and a multi-faceted approach towards environmentally sustainable information literacy instruction is presented. Conclusions and recommendations are drawn for practice and further study.

2   Terminology

Sustainability is not a synonym for environmentalism. Conserving natural resources for future generations is only one of the three components of the sustainable development concept. Although the other two components, namely social equity and economic growth, are equally important [5-6], in this paper the focus will be on the environmental dimension of sustainability, in other words *environmental sustainability.*

Although often used interchangeably, as Mulford and Himmel [7] indicate, there is a difference between *green* and *sustainable*. *Environmental sustainability* means using resources and interacting with the natural world in ways that will not reduce what is available to future generations [8]. On the other hand, *going green* means to "pursue knowledge and practices that can lead to more environmentally friendly and ecologically responsible decisions and lifestyles, which can help protect the environment" [9]. Sustainability is a broader concept, and being green is an element of being sustainable. Green practices such as reducing, recycling, reusing, minimizing pollution and waste can contribute to sustainability by mitigating the use of finite resources; however they do not address their replenishment [7]. In other words, "being green is taking environmental issues into account when making choices, being sustainable is to consume resources at a rate no faster than they can renew themselves, and generate waste at a rate no faster than can be assimilated by the environment" [7].

A *green information system* is a system "designed to minimize GHG [green-house gas] emission throughout its lifecycle from content creation to distribution, access, use, and disposal" [3, p. 635].

The term *green library* refers to a library that is environmentally conscious in many ways which include a wide range of actions such as,

- using nontoxic, and therefore, environmentally friendly cleaning products instead of toxic chemical cleaners,
- reducing energy use,
- collecting and promoting materials with environmental themes,

- adopting green practices such as recycling
- developing information services that can produce fewer carbon footprints throughout the lifecycle of the generation, publication, organization, distribution, access, use and disposal of information [2], [7], [10-12].

Environmental literacy has been defined as "the degree of our capacity to perceive and interpret the relative health of environmental systems and to take appropriate action to maintain, restore, or improve the health of those systems" [13, p. 5]. Environmentally literate individuals have a basic comprehension of the environment, and the concepts of sustainability. Today, it has been designated as a core competency [4].

Carbon footprint is "the total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO2)" [14].

3   Green Libraries

Libraries practiced sustainability long before the concept of sustainability gained a wider acceptance, by maintaining knowledge and information from one generation to the next. The environment has benefited largely from libraries' lending practices which *reuse* the same materials extensively and reduce the number of trees harvested [15], [6].

The Green Library Movement, greening libraries and reducing their environmental impact emerged in the early 1990s and gained popularity in the beginning of this century [2]. The Talloires Declaration, the first official statement for a commitment to environmental sustainability in higher education - composed in 1990 and signed by over 40 countries - had an important impact on this movement. As an action plan for educating for environmentally responsible citizenship, fostering environmental literacy for all and incorporating sustainability and environmental literacy in the operations of universities [1], this Declaration forced academic libraries to start going green [5].

Greening of libraries is now pervasive, as evidenced by the many publications on the subject. Libraries of all sorts, today, are finding ways to incorporate green thinking into action [4] by working on reducing the waste -ecological/carbon footprints- resulting from library operations and adding more environmentally responsible practices in their daily operations and services [6].

Libraries today are taking a more proactive role in *green* practices [6] by helping communities they serve to become green and sustainable. They lead by setting an example of, and acting as role models for sustainability.

The green library is a multi-faceted concept with several components, such as green buildings, green operations and practices, green programs and services, green information systems and green collections.

3.1   Green Buildings

A green library building is, generally, the first thing that comes to minds when talking about green libraries. A green or sustainable building is "a structure that is designed, built, renovated, operated, or reused in an ecological and resource efficient manner" [16].

Green buildings not only help in using finite energy resources prudently, but also reduce the carbon footprints of these buildings. Buildings are known as one of the heaviest consumers of natural resources and produce a significant portion of greenhouse gas emissions. For instance, in the U.S., buildings consume about 70 percent of the electricity and produce about 40 percent of all CO_2 emissions [17].

Sustainable aspects of library buildings include features such as lighting, ventilation, heating and cooling, the interior fittings, installing solar or geothermal energy systems, use of water-harvesting systems, double-paned windows, low-flush and dual-flush, all for electricity and water efficiency. The use of sustainable materials and resources, utilizing building materials, furnishings, and fixtures with recycled content, use of refurbished materials and products, using products (building materials, furniture and consumables) made from natural materials, all help the preservation of natural resources and lessen depletion of resources that require a long time to renew themselves [7], [11].

3.2   Green Operations and Practices

Green operations and practices in libraries include but are not limited to the following [6-7], [2], [11], [15], [18-19]:

- reusing or donating the items instead of disposing of them,
- separating waste and providing onsite-recycling collection
- reducing or reusing paper
- eliminating use of plastics and instead providing and encouraging use of real plates/mugs/utensils
- using recycled, chlorine-free, FSC certified paper
- setting the copier/printer default to duplex
- minimizing printing
- routing print materials rather than making multiple copies
- using shared network and public e-mail folders as searchable repositories for information and content
- using electronically completed/submitted forms
- using electronic/digital communication
- using products/consumables with recyclable content
- procuring refurbished items when possible
- purchasing locally
- using environmentally friendly cleaning products instead of toxic chemical cleaners
- using stairs rather than elevators

- having every-other light off where possible
- re-filling toner cartridges rather than buying new
- installing energy-efficient lighting
- using motion sensors
- shutting down computers when the library is closed to the public
- using LCD monitors
- using natural lighting and ventilation
- choosing and using Energy Star compliant computer components
- consolidating servers in large institutions
- using virtualization so that multiple patrons can share a single machine's computing power
- managing equipment replacement cycles mindfully and having older computers repaired
- finding reputable recyclers of e-waste
- recycling toner cartridges and choosing "green" inks

3.3   Green Programs and Services

The green Library Movement pushed libraries to offer new services. In addition to the efforts of creating sustainable libraries, librarians have started to offer creative and unusual green programs to their communities for broadening awareness not only by providing resources and information on green living and environmental issues but also organizing educational outreach programs and workshops on adopting green practices such as recycling and food security to help others achieve greening of their own lives, facilities, and operations [15], [2], [7].

Libraries, especially public libraries, started to become known as the center for *green education* [7]. Librarians today, provide information about growing food and alternative medicines [2]. Some libraries have created community gardens to educate patrons about successful gardening practices, some even have maintained tool-lending (for gardening); some became archival depositories for genetic material like seeds and started to serve as depository for local seeds [2], [15].

Lending *watt meters* at a library is another good example for creative and unusual green services. The Pennsylvania State University Libraries provide watt meters to be checked out by users to measure at home or office how much electricity an electronic appliance consumes (in use and not in use). The main aim of this green service is to help individuals become aware of their consumption and reduce their electric footprint, as well as save money and become energy smart [20].

3.4   Green Information Systems

Information systems are important parts of libraries and library services. Information systems and services make extensive use of ICT (information and communication technologies) and increased use of ICT has a significant impact on energy consumption and greenhouse gas emission.

Current reports and publications have focused on the amount of energy consumed in ICT use and Internet searches. Figures might help to understand the environmental impact of information systems and services: It is estimated that a Google search causes between 1g-10g (gram) CO_2 emissions depending on the time involved and the equipment used as well as whether the equipment/computer is started or not [21]. Google estimates that several billions of searches (about 6 billion in 2013) are done per day [22]. Billions of searches are conducted daily to find information not only on the web, but also in library catalogs, databases, institutional repositories, and e-resources such as books and journals. As Chowdhury [24] indicates there is an information retrieval system behind every search that provides access to the information, and in return, consumes energy and generates CO_2 emission. In 2010 Google's total electricity consumption was 2.26 million MWh [23]. "It is estimated that the Internet consumes between 170 and 307 GW (Giga Watt) of electricity which is equivalent to 11-19 percent of the total energy usage of the humanity." [23, p. 614]. A typical computer running for a day (24 hours) creates 494 kg CO_2 [25]. Hosting a mere 10MB of data produces 2-1/2 kilos of CO_2 [8]. The energy consumed by servers and data centers is doubled over five year's time [15] and the infrastructure for these data centers requires electricity for power and cooling, and they "can be more than 40 times as energy intensive as conventional office buildings" [10].

Research shows that appropriate use of ICT can reduce the overall greenhouse gas emissions of these systems and services. Use of cloud computing (mainly based on reduced server energy consumption) and Green IT is one example [23]. Chowdhury [24] proposes four key enablers of green information retrieval: standardization in processes and practices, sharing resources, reusing content and tools, and green user behavior with regard to energy usage, business practices, and lifestyle.

3.5   Green Collections and Collection Development

Connell [15] presents three facets of green collection development: selection of materials whose content informs and assesses green practices, de-selection processes that emphasize reusing and recycling materials, and selection of a material format (print or electronic) which generates less CO_2 emission.

Selection. This is about building up green collections by selecting green resources on issues such as environment, green computing, organic gardening, energy conservation, etc., to add to the library's collection, including reference works, serials, books, DVDs, and websites [15]. It is all about facilitating access to green information.

De-selection. Collection development includes de-selection/weeding of outdated or worn library materials. Green de-selection is about recycling and reusing weeded materials. Instead of throwing them away, selling, giving-away or recycling weeded and unneeded printed resources became a standard green practice. While it is easy to recycle printed material, it is more difficult to recycle multi-media waste products such as CDs, DVDs, audiobooks -all come with plastic cases- [15].

Material Format. Sustainability of library collections is generally addressed with regard to environmental impact of print resources versus electronic resources.

There are numerous studies that compare the two formats by listing the benefits each type brings, along with cost, accessibility, archiving, and processing. From an environmental impact point of view, the carbon footprint of resource formats is the main focus.

"The problem of reducing a library's carbon footprints is perhaps the most complex and most contentious when it comes to the format of the collection" [15]. There are contradictory opinions about the environmental friendliness of printed resources vs electronic resources. Emphasis is generally on reducing paper use but there is little awareness of the impact of digital technologies [8]. In evaluating the environmental impacts of different formats, Connell [15] finds printed resources more earth friendly. Christinsen [8] claims that we need electricity to power eBook readers, so eBooks might in some cases kill more trees than print books. On the other hand, Chowdhury [26] indicates that the environmental costs of production and distribution of electronic resources are negligible compared to print resources, because the amount of CO_2 generated by the production and distribution of print resources is much greater than electronic resources.

The environmental impact of the publishing industry is substantial. The impact of print publishing is mostly in the production of the paper itself [8]. For instance, in the U.S., paper manufacturing consumes over 15 percent of all the energy used by all types of manufacturing processes [27]. The impact is multifaceted. Cutting and processing trees, producing paper, publishing and transporting published materials, all require energy consumption. However the largest portion of the publishing industry's carbon footprint is in harvesting trees that would otherwise serve as CO_2 storage [19]. Publishers today try to reduce the paper impact by participating in the Green Print Initiative by using recycled paper and harvesting fewer trees [15].

Electronic publishing, on the other hand, is more complicated. The impact comes from storage and distribution of data, energy consumption, e-waste disposal, and toxic clean-up. Today, we let digital copies multiply and there is an environmental cost of this uncontrolled proliferation. The environmental impact of printing, forwarding, and storing digital data should also be taken into account. "Going paperless isn't necessarily green." [8]

The carbon footprint of e-resources is generally determined by the electricity they use. It is not only the electricity used at users' sites (the use of ICT to access and use these sources) but also the electricity used by data centers and servers of commercial search engines, commercial databases and publishers due to the massive amount of data they store and the massive amount of search traffic they accommodate [15]. Based on an estimate, the world's ICT ecosystem "uses about 1,500 TWh of electricity annually, equal to all the electric generation of Japan and Germany combined.… The zettabyte era already uses about 50 percent more energy than global aviation." [28, p. 45].

The environmental impact of e-resources does not stop with electricity use. E-resources are also associated with increased paper use, as library patrons and staff print out articles for in-house use [29-30], [18], [15].

Other facets of computer use and disposal, such as recycling, reuse, and toxic e-waste (which contains lead, mercury, and cadmium) are also important in determining the environmental impacts of e-resources [15].

There has long been a debate about print versus electronic, however it still is not fully resolved in regard to their environmental impacts. The popular opinions that delivering information electronically is greener and paperless libraries are more environmentally friendly are not fully proven [31]. Print and electronic media both have positive and negative impacts on the environment [32]. There is no doubt that the amount of databases, electronic journals, eBooks, digital repositories, archives, and digitally-born collections will continue to grow. Both print and e-resources will each remain a significant portion of most libraries' collections. As Carli [32] notes, both can be sustainable, but both will need to become far more eco-efficient over the next years.

4   Green Information Literacy

Although there is a large body of literature on green libraries and the green library movement, exploration of the connection between information literacy, environmental sustainability and going green has been very limited.

Information literacy is, in fact, closely linked to environmental literacy and has a positive impact on the environment. First of all, with its meta-literacy characteristic, information literacy skills help to develop and improve environmental literacy skills. Information literacy simply facilitates accessing and selecting the most relevant, current and reliable information sources to make well informed decisions on environmental issues. Critical thinking, another important component of the information literacy skills set, helps not only to critically evaluate information available on environmental issues but also helps to perceive and understand the relative health of environmental systems. Secondly, although environmental sustainability is not the ultimate target, there is no doubt that advanced search skills – a part of information literacy skills- help to develop better search strategies, which, in turn, bring better results in a shorter time span, and leave fewer carbon footprints. Furthermore, advanced computer literacy skills, a prerequisite for information literacy, help in many ways to shorten the amount of time computers are used while searching as well as using and communicating information. Thus, carbon dioxide emission is reduced.

We can conclude that, even unintentionally, information literacy skills facilitate going green by pursuing knowledge and practices that can lead to more environmentally friendly actions. At this point, one can pose a question about whether or not information literacy is intentionally linked to environmental sustainability. This seems to be the key question which enables us to define green information literacy. Green information literacy is a set of conventional skills, as addressed in almost all information literacy definitions, which is expanded to include sustainable thinking. In other words, sustainable thinking--considering how our information behavior, information choices and information actions (search, use, and communicate

information) affect the environment--is the most important, indispensable and additional component of green information literacy.

In today's world, where our planet is under the threat of environmental problems, sustainable thinking is as important as critical thinking. Placing it among the core components of information literacy materializes transformation towards green information literacy. Once this is realized, individuals will be more aware of the impact of their information behaviors on ecological, economic, and social systems and this will lead to more ecologically responsible actions, which can help protect the environment.

The emergence of the green information literacy concept will certainly require a new approach to information literacy instruction. Information literacy instruction can be bonded with environmental sustainability and contribute to the green library movement in several ways. Greening information literacy instruction is two-fold. On one hand, instruction sessions can embrace green operations and practices. It is about using resources (materials and energy) prudently and reducing carbon footprints (the amount of greenhouse gases) produced during instructional activities. This can be realized in many ways, such as reduced distribution of printed flyers and training materials (printing on-demand), using both sides of paper, and using recycled paper. In addition to reduced paper use, the following practices would also help:

- using re-usable mugs/beverage containers rather than disposable during the breaks
- collecting and re-using training materials at the end of the sessions
- switching off lights when the instruction session ends
- switching off computers and monitors following instruction
- using natural lighting and ventilation when possible
- collecting recyclable waste which is produced during the sessions and making sure they are recycled.

On the other hand, information literacy instruction can be engaged with environmental sustainability by embedding sustainable thinking into it. It is about making users conscious about how to go green while searching, selecting, using and communicating information. According to Stark [4], information literacy instruction is a good opportunity for libraries to help users to shift their thinking towards sustainability. This can be carried out by demonstrating factual figures, and drawing their attention to the environmental impacts of their information behaviors and actions. For instance, presenting figures on CO_2 emission generated by a web search while teaching how to develop efficient search strategies might help in this direction. It will certainly help users develop sustainable thinking and sustainable attitudes in their information literacy actions if they know that the Internet's carbon footprints now exceed those of air travel [33], [28]. The environmental impact of paper vs electronic sources, the use of information and communication technologies, and information systems can be referred in information literacy instruction programs. This will, no doubt, increase the awareness and motivation of users to act responsibly in all activities where they use their information literacy skills. As Stark [4] suggests "thinking about sustainability should not be confused with thinking sustainably."

Teaching how to think sustainably while using information literacy skills (searching, accessing, using, and communicating information) should become an integral part of information literacy instruction. Link [34], also suggests using green topics and resources as the basis for information literacy instruction sessions. This will also help increasing awareness in an indirect way.

Understanding the impact of everyday information choices on the environment becomes more and more important and libraries, especially instruction librarians can play a key role here. As Miller [35] states, "libraries are challenged with the new role of connecting the public with environmental awareness and education." However, according to Stark [4] they "have not fully approached the role they could play in embedding sustainability into information literacy". It is their responsibility to foster sustainable thinking in information literacy instruction and fully engage environmental sustainability in their teaching mission. Embedding sustainable thinking can make information literacy instruction much more interesting and rich.

5   Conclusions and Recommendations

There are many opportunities for information literacy to contribute to environmental sustainability. Reducing the ecological footprint of our information behavior, choices and actions is possible by developing sustainable thinking skills as part of our information literacy skills repertoire. We need to recognize the need for more information on the concept of green information literacy, which is neglected, and requires attention, and how sustainable thinking can be embedded into information literacy instruction. Up until now, very little written has been on this issue and further research is needed to elaborate more on possible practices in this area.

It is expected that this study will be helpful to further develop the concept of green information literacy and will pave the way for further research. We would like to invite information literacy experts, instructors and researchers to think about it and discover new dimensions to its definition and practice.

Following are some recommendations for greening information literacy and information literacy instruction:

- promoting scholarly research
- developing expertise in environmental issues and green library practices
- embedding sustainable thinking into information literacy concepts and instruction
- adapting information literacy standards to embrace environmental viewpoints and sustainable thinking
- writing reports on how information literacy instruction can support environmental sustainability and sharing them with the decision makers
- embedding sustainability in information literacy policy documents as well as library policy and strategic planning
- collaborating for information literacy instruction with faculty in disciplinary areas which touch on studies of the environment and sustainability

- compiling factual information on the impact of information behaviors and actions on the environment and presenting and sharing this information widely with users
- exploring means of sharing ideas on going green in information literacy activities.

We can conclude that green information literacy and the greening of information literacy instructional initiatives can contribute, in different ways, to the creation of a greener environment, and should be seen as an important component of the Green Library Movement.

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Information Heuristics of Information Literate People

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Abstract. It is confirmed through information users' daily activities that they apply many shortcuts, ignore some information and use heuristics – particularly in electronic social networking environments. The critical analysis of the literature and research findings are used as a base to identify and create a short (preliminary) inventory of information heuristics that people use at various stages of seeking and conducting source evaluation (credibility assessment) to solve their everyday information problems. The use of heuristics (understood as sense-making activities that help information users to make a satisfying choice of the sources and distinguish the content of various quality and sufficiency) is discussed in the context of information literacy (IL) concept. The analysis of heuristics offers some additional explanation of online information behavior and personal information management strategies. The result of the research is a proposal to treat heuristics as intuitive but not accidental search tactics based on experience that should be included in IL training.

Keywords: Cognitive heuristics, information literacy, digital literacy, information credibility, information evaluation, bandwagon effect, information seeking behavior.

1 Introduction

While turning towards the electronic environment, people increasingly face a multitude and variety of information and sources to be found, evaluated, extracted, synthesized, interpreted, approved and used. Time deficit and insufficient skills make information users apply many shortcuts, ignore some information and use heuristics. The use of heuristics - understood as sense-making activities that help information users to make a satisfying choice of the sources and distinguish the content of various quality and sufficiency to reach appropriate decisions - seems to be very sensible in complicated information environments. It can be deliberate or intuitive at many stages of people's information activities - when they seek something on the Internet, use search engines, conduct source evaluation (credibility assessment) and critical reading.

What does it mean to be information literate in the contemporary world? Finding an answer to this question may be as difficult as defining the concept of IL. There are diverse scholarly traditions and approaches to the components of information (and, in a broader sense, multimedia) literacy. In her understanding of IL area the author is far - similarly to some other researchers [1-2] – from treating IL in terms of formal

educational contexts of instruction, specialized institutions (libraries) and traditional roles often based on bibliographic information systems. The practice and experience of Internet users places IL within digital and networked daily activities (the workplace, too), often emphasizing social cooperation and context as IL tools.

In the author's opinion, the process of becoming information literate requires understanding numerous possible ways of interacting with information and new media and the awareness of the implications of such behavior. Thus, in this context, the knowledge of heuristics one (can) use(s) (deliberately or intuitively) is a component of an information literate individual in an information-intensive world.

2   Objectives and Methodology

As the topic of cognitive heuristics is nearly absent in the literature of library and information science [3], this paper begins with an attempt to identify and explain heuristics that people use at different stages of locating "the best" (i.e. good enough) online sources for solving their information problems and taking decisions. Critical analysis of the literature and research findings from several different areas (e.g. psychology, cognitive science, theories from information processing, credibility studies, human-computer interactions) are used as a basis to discover the most prominent heuristics and create a short (preliminary) inventory of information heuristics – in particular turning to credibility assessment. The size limitations of this paper do not allow the author to elaborate on the topic.

The important objective of this paper is to direct the attention of IL researchers and practitioners towards the problem of cognitive heuristics and encourage researchers to incorporate cognitive heuristics practice into the IL area. Heuristics provide a significant explanation of information users' behavior in online social networking information landscapes and create, in the context of information literacy (IL), new challenges to information literacy educators.

3   Digital Information End User - Satisficer

Each day people deal with a variety of sources to be found, read, evaluated, synthesized, interpreted, transferred and communicated to others. Consciously or not, they make decisions - what to find, when and how to do it, what sources and tools should be used, when to finish the search stage, what and when decides that something is recognized to be credible. People increasingly turn to online sources for information to guide their decisions. The media world of modern youth is almost completely digital. With the arrival of personal broadcasting technologies many youngsters experience the world through their own self-expression and the expressions of their peers. Customization in the digital age enables users to serve not merely as consumers of information but also as gatekeepers of content and the sources of communication via digital media such as blogs, social networking websites, music playlists, e-commerce websites. At the same time, they are forced to evaluate the vast amount of online information on their own and individually find information they can trust.

The unprecedented amount of information available for public consumption makes the origin of information, its quality, and veracity less clear and digital information more prone to be out-of-date, incomplete or inaccurate than before [4]. Each new technology extends and deepens information offered to end users, thereby complicating the process of information seeking and knowledge discovery, particularly on the Web. In the environment of information scarcity, traditional methods reduced the uncertainty about the credibility on the basis of personal knowledge or reliance on information intermediaries such as experts, professors, opinion leaders, reviewers, librarians and other information arbiters. Not so long ago the recommended approaches to online information evaluation typically included five criteria that users should employ: checking the accuracy, authority, objectivity, currency, and coverage/scope of the information and/or its source [5]. The contemporary media landscape looks quite different now than it did even just a short time ago. Internet users rarely engage in effortful information evaluation tasks, basing their decisions on the visual design elements of websites and their navigability, preferring peripheral cues to any content or source information. They do not spend much time at any given site so they develop quick strategies for assessing credibility (as one of the criteria for relevance judgment). Findings from credibility studies [6] and theories in information processing and cognitive science [7] share the notion that people do not always invest their full mental capacities in information evaluation tasks. According to the idea of bounded rationality [8], individuals' behavior is adaptive, which means that people seek an optimal balance between cognitive effort and desired outcomes. One form of bounded rationality is satisficing, when people do not use all their cognitive resources to obtain optimal outcomes, but instead use just enough (good enough) resources to provide a sufficiently optimal outcome for the given context. Satisficing may thus be a common strategy used by Internet information seekers. It is worth noting that the success of a search is not the same as the authority of its results [9].

4   Homo Heuristicus

Judgment under uncertainty leads to the use of simplifying heuristics. People use simple rules available in their judgmental contexts to assess the validity and quality of a message without fully absorbing its semantic content. According to Gigerenzer and Todd, heuristics "employ a minimum of time, knowledge, and computation to make adaptive choices" [10, p. 14].

Cognitive heuristics (mental shortcuts) are information processing strategies that enable users to ignore part of the information to make decisions more quickly, frugally, accurately and with less effort than with more complex methods, and thus they reduce the cognitive load during information processing [11]. Making judgments more accurately by ignoring information is a new concept. The discovery of the "less-is-more effect" contradicts the most popular model of human cognition in terms of accuracy-effort trade-offs. "Less-is-more" does not mean that the less information one uses, the better the performance is. Rather, it refers to the point at which more

information or computation becomes detrimental, irrespectively of the costs. Referring to less information Gigerenzer and Brighton [12] refer to ignoring cues, weights, and dependencies among cues.

The fact that simple heuristics can be more accurate than complex procedures is one of the major discoveries of the last decades [13]. While in some approaches heuristics were thought to lead to biased or faulty information processing [14], modern research shows heuristics can serve an important function in helping people to cope effectively with the vast quantities of information they encounter every day, and frequently they result in accurate decisions [10].

The use of heuristics supports people's objective of finding information quickly and conveniently, without any substantial engagement with the information or source itself. Hilligoss and Rieh [6] revealed in their research four categories of heuristics: media- related (when people may perceive certain media or specific media formats to be more or less credible), source-related (well-known sources are more credible than the unfamiliar ones, primary sources are more credible than the secondary ones), endorsement-based (information sources and objects widely used are more likely to be credible), and aesthetics-based (if people invest a significant amount of time in the careful design of a website, they spend more time on what they want to say).

Heuristics achieve accuracy by means of a successful exploitation of evolved mental abilities and environmental structures. The classical critique of the models "more information is always better" assumes that, as in the real world the search for information costs time or money, there is a point at which the costs of further search become no longer justified. This has led to optimization-under-constraints theories in which the search in the world is terminated when the expected costs exceed the benefits [12, p. 110].   Gigerenzer and Brighton [12] in their concept of "homo heuristicus" suggested the human mind resembles an adaptive toolbox with various heuristics tailored for specific classes of problems. They presented ten well-studied heuristics for which there was evidence that they were included in the adaptive toolbox of humans.

In 2011 Gigerenzer and Gaissmaier [11] reviewed studies on decision making done by individuals and institutions, including business, medical (health care), and legal decision making, that show heuristics often to be more accurate than complex "rational" strategies. Their research indicates that (*a*) individuals and organizations tend to rely on simple heuristics in an adaptive way, and (*b*) ignoring part of the information may result in more accurate judgments than weighting and adding all information in some situations. This puts heuristics on a par with statistical methods and emphasizes a new ecological question: in what environment does a given strategy (heuristic or otherwise) succeed?

Although the study of heuristics has been typically considered as purely descriptive, less-is-more effects introduce a prescriptive role for heuristics, resulting in two research questions:

1. Description: which heuristics do people use in which situations?
2. Prescription: when should people rely on a given heuristic rather than a complex strategy to make more accurate judgments? [11, p. 453].

Sundar [4] was perhaps the first researcher who claimed that credibility evaluations performed online were guided by heuristic processes. He proposed the MAIN model to guide the examination of the credibility heuristics that stem from four technological features or ''affordances'' inherent to the Internet, including modality (i.e. whether information is presented as text, audio, or video), agency (i.e. users' perceived source of the information), interactivity (i.e. whether one can serve both as a source and a receiver of information), and navigability (i.e. the ease of locating relevant information). The MAIN model suggests several heuristics tied to each affordance that are likely to play some role in the credibility determination. Responding to Sundar's call for investigation of the heuristic processes of credibility evaluation, the researchers have begun to seek empirical evidence for heuristics used in credibility evaluation (e.g., [6], [15-16]).

5   Digital Information User - Animal Sociale

Blogs, wikis, social bookmarking, social networking sites, ratings, recommendations and other tools confirm the image of Internet use and users as a vigorously social one. Individuals do not make credibility judgments in isolation from one another, thereby ignoring social tools for credibility evaluation. On the contrary, they adopt new possibilities and realities of the Web environment, which offers new means for social- and group-based information evaluation and credibility assessment. In cyberspace the traditional notions of credibility as originating from a central authority (a teacher, expert, doctor or organization) are problematic now, and even outdated. In the Internet environment people must defer to the external sources of knowledge; they harness collective intelligence. "The result may be a shift from a model of single authority based on scarcity and hierarchy to a model of multiple distributed authorities based on information abundance and networks of peers" [15, p. 415].

Internet users genuinely care about the opinions of millions of other anonymous users. "If everyone agrees, then the message is probably true" says a bandwagon heuristic. The term "bandwagon" can be traced back to earlier studies on persuasion and propaganda, meaning to join the winning side or get associated with what is likely to be successful. The bandwagon effect therefore describes how the prevailing view of the community affects one's attitude and decisions motivated by the need for conformity. There is plenty of evidence in the literature to confirm that online users are driven by these cues. [16, p.2]. The bandwagon heuristic is of particular relevance today as it reveals the user-driven nature of the Internet.

In their study, Sundar et al. [17] explain the bandwagon heuristic using the example of Google News that automated the process of news selection. In order to help users cope with the resulting overload of information, news leads are typically accompanied by three cues: (1) the name of the primary source from which the headline and lead were borrowed, (2) the validity of posted stories - the time elapsed since the story broke, and (3) the number of related articles (NRA) written about this story by other news organizations tracked by the newsbot. The information scent

transmitted by the NRA cue may trigger the bandwagon heuristic ("if so many news organizations think this is news, then it must be news").

Sundar et al. [17] have identified a variety of heuristics associated with interface cues in online persuasive communication that may contribute to attitude formation/change and purchase decisions. When facing large amount of information (especially in the e-commerce - in the context of online shopping), individuals may choose to reduce the cost of searching by relying on the interface cues and applying cognitive heuristics [15].

6   Heuristics in the Evaluation of Credibility

Networked digital media pose new challenges to people as regards locating information the latter can trust. The results of the Metzger, Flanagin and Medders' research clearly show that "a common strategy employed by Internet information seekers is to minimize cognitive effort and mitigate time pressures through the use of heuristics" [15, p. 434]. In their study of credibility assessment they reveal several cognitive heuristics employed by the participants in their research: reputation, endorsement, consistency, self confirmation, expectancy violation and persuasive intent. They illustrate the types of cognitive heuristics that information consumers employ when determining what sources and information to trust online.

The reputation heuristic signals a reliance on the reputation or name recognition of the websites or sources of web-based information as a credibility cue, rather than close inspection of site content or source credentials. Many people trust, for instance, big companies, such as Amazon.com, CNN, as they are familiar to everyone. Information users often base their credibility assessment of such an organization's website content on the company brand name or reputation. "The reputation heuristic is likely psychologically rooted in part on a simpler heuristic principle of favoring recognized alternatives over less familiar options as a strategy for making judgments with minimal cognitive effort" [15, p. 426]. Applying this principle to the context of online credibility judgments, when choosing between sources, people are likely to believe that the source, the name of which they recognize, is more credible compared to unfamiliar sources. The reputation heuristic may also be a subset of the ''authority'' heuristic in the credibility assessment. The website or the reputation of the source serves as a heuristic credibility cue allowing users to avoid more effortful and systematic processing of the content as they evaluate online information.

"*The endorsement heuristic* suggests that people are inclined to perceive information and sources as credible if others do so also, without much scrutiny of the site content or source itself" [15, p. 427). People automatically tend to trust sites and sources that were either recommended by their acquaintances or come from aggregated testimonials, reviews, or ratings. Trust derived from acquaintances is an endorsement heuristic that is perhaps underpinned by a common form of heuristic reasoning known as the ''liking/agreement heuristic'' Trust derived from aggregated information sources stems from the presumption that the website is credible if the site or its source receives a lot of positive feedback (for example ''star ratings'').

The consistency heuristic - One of the common strategies for validating information is checking different websites to make sure that the information is consistent. This consistency heuristic can be accomplished by cross-validation – as a strategy for information evaluation. In most information-seeking situations, although requiring more cognitive effort than other heuristic strategies, the consistency heuristics function as a relatively quick means of arriving at a credibility judgment in comparison to more laborious methods of determining each source's identity and credentials, considering issues of the source potential bias or agenda, and searching when the information was last updated. Information found online can be validated with additional online and offline sources. In the situations where information is highly consequential (e.g., a large financial transaction or health situation), individuals state they cross-validate for consistency offline to a greater extent. The sources of those offline verifications are typically reported as being trusted acquaintances such as family and friends.

The self-confirmation heuristic - People tend to view information as credible if it confirms their preexisting beliefs and not credible if it negates their existing beliefs, regardless of how well-argued, duly researched, appropriately sourced, and so on, it is. With regard to processing online information (where lack of time and motivation often restrict users' ability to evaluate all information retrieved in a typical search) one can find confirmation that people tend to evaluate attitudinally-consistent information more favorably than inconsistent information [18]. In line with this principle, there is evidence that people tend to avoid information contradicting their existing beliefs, or, in other words, they employ selective filters to assist them in determining the credibility of information they find online - for example, by terminating searches when they find information that confirms their beliefs [15]. The self-confirming heuristic most probably stems from the false consensus effect - researchers in cognitive psychology find that people tend not only to believe their own opinions to be right but also to be widely shared by others [19]. Such cognitive biases serve as ego defense mechanisms, resulting in a tendency for people to evaluate ambiguous information in a way that is beneficial to their own needs or interests.

The expectancy violation heuristic - Several types of expectancy violations that have implications for credibility were observed in the research of Metzger, Flanagin and Medders [15]. People often rely on the surface characteristics of websites and sources when evaluating their credibility. Site presentation features, website appearance, layout, and functionality are most the prevalent forms of expectancy violation. If a website fails to meet users' expectations in some way, they will immediately judge it as not credible. Bad grammar and typographical errors ("amateurish" sites) are a quick and easy way to determine the site credibility without a great deal of cognitive effort and scrutiny of message arguments, source qualifications and other more involved methods of information evaluation. Information users very often do not like websites asking for more information than necessary or providing more information than requested. They do not trust sites that give them something they did not ask for or expect to receive, for instance, being redirected to another site. Many participants of Metzger, Flanagin and Medders' [15]

research expressed a tendency to view information as credible if it confirmed their pre-existing beliefs and not credible if it did not. The extent to which people feel that information confirms their own opinions or biases determines their perceived credibility of that information. The overarching logic is that people expect credible sources to present information in a clear and professional manner as a reflection of their expertise and attention to detail.

The expectancy-violation heuristic is likely underpinned in part by the ''effort heuristic'' [20], which is the human tendency to value objects based on how much effort was spent on their production.

Persuasive intent heuristic - The persuasive intent heuristic is a tendency to feel that information that may be biased is not credible. Internet users generally feel negative about the credibility of websites that present unexpected commercial content, intrusive advertising such as pop-ups or page-redirects. Many of them recognize it as a kind of red flag, perceiving it as some sort of manipulation, which elicits an immediate defense mechanism that leads people to mistrust information without further scrutiny. This phenomenon is discussed in terms of an *intrusiveness heuristic*, whereby unsolicited and unwelcome information negatively affects users' perception of website content because the annoyance generated by the information is projected on the site or source in question. In extreme situations, the suspicion of commercial intent led some users to stop using the entire top-level domain of .com websites as a source of credible information.

The list of the heuristics presented above is by no means exhaustive. Indeed, Sundar's MAIN model [7] suggests several other heuristics that may have an impact on credibility judgments, for example, ''coolness'' or ''novelty'' heuristics that could produce quick favorable credibility impressions of new websites or content, or the ''prominence'' heuristic that may lead to higher attribution of credibility to the sources that appear higher in search engine result pages prior to the inspection of the source or its content. All of this suggests that more research is needed to understand how people employ heuristics as they make judgments about credibility.

Many research results show that a common strategy employed by Internet information seekers is to minimize the cognitive effort and mitigate time pressures through the use of heuristics. It is possible to categorize the heuristics discussed into two general classes of credibility heuristics: one based on social confirmation, and the other one rooted in expectancies within the context. The idea of social confirmation seems to underpin the reputation, endorsement and consistency heuristics, all of them premised on the notion that credibility can be established from others' actions and beliefs. If a number of people use some websites or information, recommend it and agree with it, then information users assume it is credible. Although this heuristic works best in helping users find valid information, it is not perfect because it is subject to crowd behavior and may erroneously equate credibility with popularity [15, p. 435].

7   Heuristics in the Context of Information Literacy

Considering the concept of information literacy one should refer at least to three current discourses: "1) information literacy as the acquisition of "information age" skills, 2) information literacy as the cultivation of *habits of mind*, and 3) information literacy as engagement in information-rich social practices" [21].

The first definition of IL - very popular in library and information science – as a predefined set of information skills that should be achieved (still partly valuable to the educational and university context), does not befit the outside world, everyday information seeking, e-commerce and workplace practices. Pressed by lack of time and a growing number of information, media and sources, "ordinary" people use many mental shortcuts. From the point of view of the information professionals who emphasize the importance of organized processes of searching and evaluating information sources, heuristics can be perceived as unreliable tools leading to mistakes and errors.

Another interesting perspective is to consider heuristics in the light of *habits of mind* that facilitate information work, taking into account learning contexts, models of problem solving and cognitive approaches to the challenges of digital media. This perspective brings information literacy and information behavior in close alignment.

"IL as a social practice" is based on what works better rather than on what expert behavior or prescriptive models might show. "Rather than a list of discrete skills, information literacy is expressed in terms of general capabilities individuals have for living, learning, and working in an information-rich society" [21]. That means that IL is an evolving construct that encompasses the constantly changing nature of technology and the evolving expectations of people in their information and media environments. "This perspective sees participation as the key to developing information literacy" [21]. Research analysis of IL practice in digital environments, using social networking tools, confirms the high effectiveness of cognitive heuristics. The bandwagon heuristic rooted in social confirmation is one of the basic achievements in networked societies.

To sum up, the analysis of cognitive heuristics use by online information users offers some additional explanation of online information behavior and personal information management strategies – issues that are inextricably linked to information literacy. A literate person is not an isolated person, who individually acquires and uses his/her information (media) skills. Understanding the heuristic processes used in information seeking and evaluation (e.g. increasing individuals' reliance on more social means of online information processing and evaluation) should enable literacy educators and others to design better IL suggestions to increase the Internet users' information literacy and help them to assess the tangled Web while avoiding deception, manipulation, misinformation, information stress, unnecessary effort and waste of time. The result of the research is a proposal to treat heuristics as intuitive but not entirely accidental search tactics based on experience that should be included in the debate on information literacy.

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Information Horizons Mapping
for Information Literacy Development

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Abstract. This paper develops a new insight into information literacy research using the methodology of phenomenography and information horizons. The study is part of a larger project on information behavior of doctoral students. The main research question concentrates on variations in experiences of information use as a result of the analysis of 17 information horizons. Results confirm more detailed granularity of categorization with humanities and social sciences and emphasis on electronic resources with technical sciences. Three patterns of information use are derived: the interactional, the sequential, and the evolutionary patterns. Systems and services for support of variations in information literacy are proposed, e.g. better navigation for the interactional pattern, stronger categorization for the sequential pattern, and support of terminology for the evolutionary pattern. Expansion of information literacy models to broader contexts of workplace and worldview has been proposed.

Keywords: Information horizons, information literacy, information mapping, phenomenography, disciplinary differences.

1   Introduction

The purpose of this paper is to develop a new insight into the information literacy research based on a qualitative study of doctoral students. The concept of an information horizon represents a map (visual metaphor) of information resources and services based on a current information need. It can expand our understanding of methodological literacy of doctoral students regarded as information practice and experience in information problem solving.

This study is part of a larger research project on information behavior of PhD. students. We applied a qualitative methodology of semi-structured interviews with 19 doctoral students in different disciplines. Drawing the information horizons was part of these interviews. Differences in information needs and strategies in disciplines were noted. Common characteristics of information behavior of PhD. students include finding focus, expert support, networking and collaboration. In this study we ask the following research questions: What are the patterns and differences in the information horizons maps? How is information use experienced? Which metaphors hidden in information horizons are useful for information literacy research?

The paper presents sections on phenomenographic background and methodology of information horizons mapping. Further on, data collection and analyses of information horizons are summarized. The section on results includes preferences of information resources (electronic, traditional, human), metaphors, specific resources and information pathways. In conclusion, we derive three patterns of information use and recommendations for information literacy and information services.

2   Related Research: Phenomenography in Information Literacy Research

The theoretical background of our research was formed by phenomenographic tradition of information behavior and information literacy research (e.g. [1-3]). The most important phenomenographic principle focuses on different experiences of PhD. students with information resources and information use. It also connects to the Bruce´s concept of information control over the information environment [1-2] and the informed learning concept [4].

The complexity of relationships between subject and object and variations of information use with regard to experiencing information environment are the focus of our research in line with phenomenographic research [5]. Phenomenography was applied to information literacy research especially by Bruce [4] and Limberg [3]. In our previous research we applied the phenomenographic research to relevance [6], [7]. Resulting models of relevance were applied to information literacy and different ways of experiencing relevance as cognition, inference, in-built mechanism, or an intersubjective picture were determined [7]. Following this we focus on information use experience represented by the information horizons rather than on skills or attributes of information literacy. We suggest that information literacy should be part of the information culture as emphasized by Webber and Johnston [8] and information practice [9]. The contextual factors are values in personal, economic, organizational, educational and social contexts of information use.

The framework of this research connects information behavior research and information literacy. A large body of literature has been published based on research of information behavior of academics (e.g. [10-11]). In comparison to information behavior research information literacy is broader [12], includes cognitive, affective, social, educational and ethical dimensions of interactions with the information environment and personal information spaces. While information behavior research concentrates on understanding information needs, seeking, and uses in contexts, information literacy research tries to help users develop information needs in contexts, enhance knowledge, build theories and practical programs and training. These two topics overlap and in this respect we can determine information literacy as "the adoption of appropriate information behavior…to identify information well fitted to information needs leading to wise and ethical use of information in society" ([8, p. 19].

Doctoral students can experience difficulties in narrowing the research topic as noted with young students by Head [13] and in our study [14]. It has been proven by the model RISE (Research and Information Search Expertise) by Chu et al. [10].

In two longitudinal studies of post-graduate students they stressed the need for tailor-made training in knowledge of resources and search techniques. Information literacy develops in four stages from novice level through advanced beginner, to competent and proficient levels and informs design of information literacy programs.

Information resources horizons as a methodology of the empirical research of environmental activists and unemployed were applied by Savolainen [9]. Some interesting findings confirmed the drivers of information needs for everyday information use as the content, availability, accessibility and topicality.

3   Information Horizons Mapping as a Methodology of Research

Information horizons mapping means examination of the ways of experiencing preferences in information resources, services, social networks and particular contexts of information needs and uses. The qualitative methodology of information horizons mapping was established in information science by studies of information behavior of different user groups, e.g. [15-18]. Students are asked to draw pictures/maps of information spaces and resources – information horizons – as part of the interviews. Drawings represent mental models and metaphors of information use. The resources can be determined both socially and individually. The information horizons can represent their information landscapes as defined by Lloyd et al. [19].

The methodological concept of the research was part of the design of the project [14]. Deeper analysis of information horizons produced from interviews with 17 doctoral students can shed more light on information needs and information literacy. In line with previous phenomenographical research [18] the methodology of our study points to disciplinary differences in information use and literacy. Although still a part of the mainstream research on educational context, more emphasis is laid on information literacy as informed learning focusing on people´s information experiences [4], [22]. Information horizons represent the experience and subjective interpretations of information use by doctoral students contextualized in different disciplines. Information literacy is creative and subjective, sometimes collectively transformed and our focus is shifted from behavioral towards interpretive approach.

Visual analyses of 17 information horizons determine such factors of information literacy as information resources, relationships and relevance assessment. The original methodology of information horizons outlines a "big picture" of information needs in contexts, different disciplinary practices and information use patterns.

4   Sample and Data Collection

For data collection we used semi-structured interviews with 19 PhD. students as representatives of social sciences, humanities, sciences and technical sciences. However, only 17 students drew the graphical representations of their information horizons. Basic demographics data include nine males and eight females. The research domain includes nine students in social sciences and humanities, four

students in natural sciences, four students in technical sciences. As for the type of research, seven students follow theoretical research, seven empirical research, and three combined research.

The subjects were selected as representatives of main disciplines of humanities, sciences and social sciences taught in the faculties of the Comenius University, the Slovak University of Technology Bratislava, the Technical University Košice and the Economic University. The study participants were asked to describe verbally and represent graphically a situation of information seeking and use. The details of information horizons included types of information resources (people, libraries, electronic resources), relationships between resources, the order of resources, the intended use of information, procedures, metaphors, specific resources, the position of self. An example of an information horizon is represented in Figure1 illustrating the metaphor of a "tree of knowledge" (social psychology).
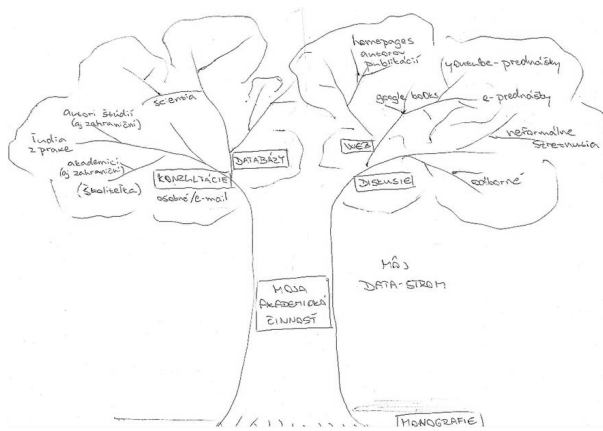
Fig. 1. Information horizon – an example (IH3)

5   Results of Analyses

Findings from the interviews suggested that the main information problems of doctoral students are finding focus, expert support, networking and collaboration. The most important strategies include browsing, filtering, citations, and monitoring of journals and authors. We also introduced a model of methodological literacy based on information interactions, use of methodologies and concept mapping [14].

The analyses of information horizons were based on the framework of types of information resources, information activities, position of self and metaphors. Most frequent and least frequent resources, priorities and order were discussed. Two groups of researchers analyzed the data and interpretations. The objects of information horizons were put into a matrix including the main demographic data – gender, year of study, research domain, type of research and predominant information resources – electronic versus traditional resources and electronic resources versus people. The general information horizons matrix - summary is illustrated in Table 1.

Table 1. Information horizons matrix - summary

	Frequency of Attributes			
Gender	F-8	M-9		
Year of Study	1-5	2-2	3-6	4-4
Research Domain	SH-9	NS-4	T-4	
Type of Research	ER-7	TR-7	C-3	
Predominant IR (E vs P)	E-11	P-3	B-3	
Predominant IR (IR vs H)	IR-10	H-4	B-3	

Gender – F/Female, M/Male; Research Domain – SH/Social Sciences and Humanities, NS/Natural Sciences, T/Technology; Type of Research – TR/Theoretical Research, ER – Empirical Research, C – Combined Research Methods; Information resources (IR) – E/Electronic IR, P/Printed IR, H/Humans, B/Balanced IR.

Based on deeper analyses of information horizons as illustrated in Tables 1 and 2 we can see that the type of research (empirical or theoretical) influences preferences of information resources. In the empirical research there is a tendency to prefer electronic resources over traditional ones. People as information resources are dominant in the theoretical research. In the experimental research the subjects claim preferences of documents (both traditional and non-traditional). More detailed granularity (i.e. detailed categorization) of information resources was identified with subjects from social sciences and humanities (*on an average 7,3 resources on one subject*). The granularity of information resources of subjects from technical sciences was lower than with social sciences and humanities (*6,3 resources on average*). The highest level of granularity of categorization was found with social sciences and humanities (*e.g. hierarchy - tree of knowledge, multiple relations – integrated circuit, filtering, networking*). An example of this type of information horizon mapping is illustrated on Figure 2 (Japanese studies).
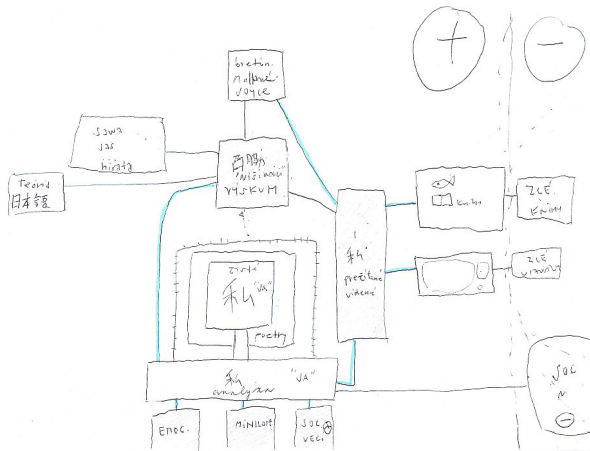
Fig. 2. Information horizon – an example (IH4)

6   Preferences of Information Resources

As for the use of types of information resources, the electronic resources are preferred mainly by technical and natural sciences (4) with the emphasis on Google as the first resource and hierarchical ordering (2). The detailed analysis of information resources is illustrated in Table 2.

The most frequently mentioned resources were books, articles, internet (Google, web) and colleagues (13 subjects). Documents (books, literature, monographs) emerged as the most important priority resource, then the advisor and colleagues from workplace. Many subjects also indicated electronic resources as the first consulted resource (7). But the strongest relationships can be seen between young scholars and their advisors (weight 1.18). As for the library, it was not indicated as the most important resource for the subjects. Friends (2) and social networks (4) are described as marginal resources. Surprisingly, almost all subjects indicated the use of other informal information resources (14), (e.g. *pub, concerts, meditation, media, meetings etc.*) which are placed as more important than traditional formal resources (*databases, PhD. colleagues, social networks*).

Table 2. Information horizons – priority of resources (**priority**/coupling)

	1	2	3	4	5	6	7	8	9	11	12	14	15	16	17	18	19	Fqn	Wgt
Library	1								3		1					2		4	**1.75**
	1								1		1					2			1.25
Books	1	2	1	2		2	1	2	1		3	2			1	2	1	13	**1.62**
	1	2	1	1		1	2	1	1		2	1			1	3	1		1.38
Journal Articles	1	2		2	1	1	2		3		2	2	2		2	2	1	13	**1.77**
	1	2		1	1	1	1		2		1	2	1		1	2	2		1.38
Electronic IR (Full-texts)	1	3	2	3		2	1		3	2	2				2			9	**2.33**
	1	1	2	2		2	1		2	1	1				1				1.56
Internet – WWW – Google	1	3	2	3		2	1	1	2		1		1		2	2	3	13	**1.85**
	1	1	2	2		2	1	1	1		1		1		1	1	5		1.54
Social Networks	3					1	3								2			4	**2.25**
	4					1	2								1				2.00
Advisor	2	1	2		2	2	2		3	1		1	1		1			11	**1.64**
	2	1	2		1	1	1		1	1		1	1		1				1.18
Colleagues (Work)	2		2		2	2	1	2	3	2	1	2	1		1	1		13	**1.69**
	3		2		1	2	1	1	1	1	1	2	1		1	2			1.46
Colleagues (PhD. Students)	2		2			2	2	2	3	3		2	1		2			10	**2.20**
	2		2			2	1	1	1	1		2	1		1				1.40
Friends	3		3															2	**3.00**
	4		3																3.50
Other		3	2	1	2	2	1	2	3	3	1	2	2		2	2		14	**2.00**
		2	3	1	1	3	1	1	2	1	1	2	1		1	3			1.64

Priority (1st row) – 1/High, 2/Middle, 3/Low; Coupling (2nd row) – from 1/Strong to 5/Weak

The analysis of information horizons was represented by many tables and interpretations and point to contexts of information use and attitudes to information resources. Some subjects noted special resources (*e.g. citations, e-lectures, technical information, court documents, mathematic exercises*) and noted the negative effects of media (e.g. *"bad books",* IH4). Some of them drew the "pirate" electronic documents indicating their awareness of electronic piracy and protection of intellectual property (IH9, IH17). It is also interesting that for several subjects an important resource is represented by their self (*me – meditation, experience, inspiration – e.g. poetry*) noted especially in social sciences and humanities.

7   Metaphors, Activities and Information Pathways

As for the metaphors embedded in information horizons, some of them represent more traditional information seeking situations (e.g. a problem solving – a process from the beginning to the end), others point to more complex ideas of networking of people and resources (multiple interactions) or filtering. The horizons represent the metaphors which connect with activities, several horizons represent the tools as part of the activity theory. The concept of a tool is interpreted broadly, often including one´s own cognitive activity (e.g. *"my academic activity" transforms data to information in a "knowledge tree", or "me" – my emotions, my experience, meditation, my personality developing from high school to PhD,*).

The analyses of metaphors confirm differences between disciplines which are driven by the type of research (theory, empirical research, design, philosophical reflections), social forces, traditions of research and communication. While in theoretical research the information use represents one´s own knowledge as a main resource (e.g. social psychology, musicology, philosophy, Japanese poetry), in technical sciences and mathematics the information horizon represents a problem-solving area (including the problem statement) or concentration on several selected known resources (monitoring in molecular biology, informatics, media, social networks). In several information horizons it was proven that workplace information and information for education and research overlap.

Three information pathways were indicated in the set of information horizons, i.e. the procedure from me to resources (man activates) (5), procedures on an abstract level of development of one´s knowledge (4), or procedures from resources (e.g. references) to me and multiple interactions (selection, filtering, fan) (4). The centric metaphors (sun, star) indicate such activities as selection and filtering. Other important activities include knowledge evolution (learning), problem solving and multiple interactions. More frequent descriptions of cognitive development and knowledge evolution were noted in social sciences and humanities (4). The analysis of metaphors and pathways helps determine patterns of information use experience.

8   Patterns of Information Use and Information Literacy

Based on the analysis of metaphors represented by information horizons we have identified three major information use patterns.

1. *The interactional pattern (seven occurrences)* is marked by multiple interactions and directed links with resources. It can be defined as finding context and making sense of information. Examples include *cyclic – multiple loops, centric principles – (e.g. sun), networking, branching* (e.g. fan, unpackaging) and *monitorin*g. This pattern was noted especially with social and natural sciences.
2. *The sequential pattern (five occurrences)* indicates the information process*, e.g. filtering and selection, chaining, problem solving, progressing from reference resources to other resources.* It can be defined as information problem solving. This pattern was noted mainly with technical and natural sciences.
3. *The evolutionary pattern* indicates the knowledge growth and learning *(five occurrences, steps, spiral).* It is defined mainly as understanding and cognitive development. This pattern was identified especially with social sciences and humanities.

The patterns represent cognitive and social relations in understanding of information and information use. Findings indicate that information strategies are cognitively driven by topics, types of sources and predictability of relevance. The context is formed by the type of research (theory, experiment, programming). The role of cognitive authorities was confirmed as part of information literacy, e.g. close relations with advisors, known sites, convenience and decision making (selection, filtering, problem solving). The core processes include finding context and cognitive development (big picture, terminology, tasks). Patterns of knowledge growth and successive revelation of resources from general references to detailed information are linked with cognitive discovery of resources.

Resources can be divided into the starting resources, reference resources and focusing resources as confirmed by the analysis of interviews [14] and previous research [9]. The common need of doctoral students to support monitoring, learning and production (syntheses) was confirmed in line with guided learning [21].

Several dimensions of information literacy were derived, i.e. awareness of information resources and strategies (monitoring), communication in communities (people – advisors, colleagues, family, friends), influences of places (school, library, pub), knowledge growth and changing information strategies, confirmation and (re-) use of successful information experiences. These findings are in line with similar studies on learning for building personal knowledge and disciplinary knowledge [20] and expanding information literacy to workplace experience and worldview [12], [4]. Differences in disciplines were also proven by the phenomenographic research by Webber et al. [11]. Research limitations follow the problems of a qualitative interpretative research (subjectivity). However, our analyses were validated by parallel analyses of two groups of researchers and analyses of interviews.

9   Conclusions

Information interactions are marked by influences of information, people and discovery of information environment. The natural pattern represents cognitive development in non-linear pathways. The information landscape of doctoral students can be divided into three abstract patterns of information use, i.e. the interactional pattern, the sequential pattern, and the evolutionary pattern. The boundaries between these patterns are loose. The interactional pattern is closer to natural and social sciences, the sequential pattern to technical and natural sciences, and the evolutionary pattern links with social sciences and humanities.

Differences in disciplines in information horizons were noted in preferences of information resources. The electronic resources were the first and most often consulted in technical sciences. The inner world of the subject occurred more often in social sciences and humanities. More detailed categorization was noted with social sciences and humanities and with students in later years of their studies. People as information resources dominated in theoretical research.

Information literacy of doctoral students is complemented with workplace information literacy and embedded in growing information culture and community. Development of an information literate person is situated in contexts of personal development and social relations, focused not only on skills.

Our findings can be applied to development of models, value-added services and training programs. The interactional pattern needs support in identification of valuable resources and navigation in the information space. The sequential pattern needs support in detailed categorization of resources. The evolutionary pattern needs support in acquisition of new knowledge and construction of meaning (e.g. terminology, focus). All patterns are marked by research interests and curiosity.

Information horizons are influenced by the type of research, experience and levels of knowledge - from novice to expert knowledge. Information literacy is not only subjective construction of meaning, but can also be socially and collectively developed. Drawing information horizons can help develop shared understandings of contexts. This qualitative methodology reveals more breadth and depth of information use than traditional methodologies.

Implications for practice of digital systems point to personal information management, filtering, monitoring, and terminological support. Interface design can facilitate multiple interactions and knowledge evolution (e.g. past and future information horizons, mapping tools). Information horizons mapping helped us understand new contexts of information literacy, namely expansion to workplaces, worldview and lifelong learning.

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Mapping Educational Standards to the Big6

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Abstract. Information literacy is arguably the *essential* 21st century skill set for all students, and as such, it is important that students have a solid grounding in information problem-solving, the application of information literacy skills. A wide variety of authorities have called for these skills to be incorporated into educational standards both in the United States and in Europe. This paper compares the American Association of School Librarians (AASL) information literacy standards to the Big6 model of information problem-solving to determine the extent that these standards engage with *all* aspects of the information problem-solving process—especially the stage of Evaluation. Findings indicate that Evaluation and Task Definition seem to be under-emphasized in the AASL standards and missing entirely from the CCSS and should be addressed in research, policy, and practice.

Keywords: Educational standards, information literacy, information problem-solving, American Association of School Librarians, Big6, learning.

1 Introduction

The importance of information literacy is well agreed upon [1-2]. It is a cliché to point out that the amount of information available to individuals has exploded. But that does not make it any less true. However, this explosion has not necessarily made the ability to find any particular piece of information easier. Much of the freely obtained information on the World Wide Web is of limited value, especially to school-aged students engaged in research. Information literacy is seen as one answer for dealing with both the quantity and the quality of that information. Thus information literacy and related skills must be explicit in education policy documents.

A variety of educational policy documents exist that include standards intended to directly or indirectly address information literacy. Our investigation focused on the standards from the American Association of School Librarians (AASL) because it is the most extensive set of information literacy standards developed for Kindergarten to Grade 12 (K-12), and the Common Core State Standards (CCSS) [3], a national effort in the United States to identify key educational standards in core subjects.

These standards were categorized and analyzed in order to determine the extent that the standards cover the full range of information problem-solving skills. For categorization, we used the Eisenberg-Berkowitz Big6 model [4], the most widely-used K-12 information problem-solving model and approach. This paper reports on

findings related to the AASL standards and the six Big6 stages, and also make comparisons between the AASL standards and standards from the CCSS, the Association of College and Research Libraries (ACRL) [5-6], and the Society of College, National, and University Libraries (SCONUL) Seven Pillars of Information Literacy [2] for insights on connections and possible further in-depth comparisons.

The AASL standards are the most detailed and extensive information literacy standards for K-12 students. The most recent version is "Standards for the 21st-Century Learner In Action" [1]. Although these standards are intended for school librarians, the AASL clearly assumes that the entire teaching staff will collaborate to help students learn these information skills.

This study sought to determine how the full scope information literacy skills are explicitly represented in the AASL standards and the CCSS. The first goal was to map the stages of the information problem-solving process, using the Big6 model, to the AASL standards; the second goal was to analyze the standards in terms of particular stages of information problem-solving. We previously reported on the CCSS and the Big6 stage of Task Definition [7]. This paper focuses on the AASL standards and the Big6 stage of Evaluation.

1.1   Describing Information Literacy Behavior and Problem-Solving

The American Library Association Presidential Committee on Information Literacy defined information Literacy from an individual perspective: "To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information"[8]. Decades of research on information literacy have contributed to better understandings of how people successfully access, evaluate, use, and share information to answer questions, complete tasks, and solve problems [9]. This study opted to use a skills based definition of information literacy because it is primarily concerned with elementary and secondary education and helping students gain essential information literacy skills. Therefore, for this study, information literacy is defined as the skills and stages of the information problem-solving process; that is, those who are successful at each stage of the information problem-solving process are information literate.

Cognitive Psychology defines problem-solving as having four basic elements: a goal, obstacles preventing one from achieving the goal, strategies for overcoming the obstacles, and an evaluation of the process [10]. This definition of problem-solving can be mapped to the information problem-solving model. Equating the goal to the recognition that information is needed, the obstacles are the need to locate, evaluate, and use information, the strategies are the acts of locating, evaluating and using information, and the final phase, evaluation, remains the same as in the Cognitive Psychology model, describing the evaluation of the process and the product.

While there are a variety of models of the information problem-solving process, this paper uses the most widely used model in K-12 education, Eisenberg & Berkowitz' Big6 information literacy process [4]. The Big6 approach [4], outlines and describes the process of successfully solving an information problem. The Big6 identifies the first stage as (1) task definition, in which the problem-solver defines the

task or problem to be solved, and then identifies the information needed to solve the problem. From there, the problem solver engages in (2) information seeking strategies; (3) location and access of information; (4) use of information; (5) synthesis; and (6) evaluation of the process and product. The process is not linear or prescriptive, and stages may be repeated throughout the process.

The Big6 was developed from practice and has been employed as a conceptual framework in several studies of information problem-solving [11]. Brand-Gruwel et al. [12] studied expert and novice higher education students in an effort to decompose the Big6 information literacy approach into cognitive components, and to determine the key components in the information problem-solving process. They conclude that the Big6 information literacy approach was an accurate description of stages in information problem-solving, and useful in the decomposition of cognitive components into related categories. Murray [13] has previously done extensive work aligning various standards and curricula to the Big6 model.

1.2   Evaluation: The Ultimate Stage in Information Problem-Solving

Prior research on information literacy investigates a range of factors, situations, settings, and stages of the information problem-solving process. However, scant attention is paid to the end stage of the entire process – Evaluation. This is a key stage in which students decide whether or not the problem has been successfully solved and how successful they were in information problem-solving as a whole as well as in accomplishing each individual stage of the process. This differs from the concept of evaluation of information. "Evaluating information" is part of *every* stage of the information problem-solving process: determining the nature and scope of information as part of task definition, assessing various sources in information seeking strategies and also in location and access, considering accuracy, credibility, usefulness, and relevance in use of information, choosing and presenting information in synthesis, and evaluating information as part of assessing both product and process.

The nature of the problem can also affect success in information problem-solving. Mayer and Wittrock [14] have identified two categories of problems. Problems can be well-defined or ill-defined. Well-defined problems have the parameters clearly stated. Ill-defined problems lack a clear goal statement and the allowable operators are not clearly defined. They note that well-defined problems are what schools tend to give children, while ill-defined problems more closely resemble the real world. This suggests a reason why evaluation appears poorly represented in the standards statements. If schools are giving students well-defined problems with known answers, the evaluation of the product is left to the teacher, as the keeper of the known answer.

1.3   Research Questions

The AASL standards offer educational policy guidelines for information and library instruction in schools in the United States. The CCSS also represents education policy guidelines as it sets learning expectations for students in elementary and secondary schools, i.e., grades Kindergarten-12. The goal of the research described in this paper

was to gather and analyze evidence on information literacy standards as reflected in these policy statements. This study first sought to identify explicit references in the AASL standards to the skills or stages of the information problem-solving process, as described by the Big6 information literacy process. We then sought to identify explicit standard statements related to the stage of Evaluation.

The following research questions guided the study:

1. Which stages of the information problem-solving process, as described by the Big6 Skills, are reflected in the AASL standard statements?
2. How are skills specific to the culminating stage of Evaluation in the information problem-solving process reflected in the AASL standard statements?
3. How do these results compare to other sets of standards specifically, the CCSS?

2   Methodology

2.1   Research Design

The AASL standard statements at grades 2, 5, and 8 were matched to their Big6 equivalent by a team of information literacy experts. Using a team of experts allowed for greater assurance that a particular standard statement was appropriately placed at a Big6 stage than if just one or two individuals had sorted the standards. Five experts in information literacy were coders. Four of the five are experienced school librarians, while the fifth is classroom teacher with National Board certification. Four team members are also doctoral students at the University of Washington the fifth is a state Director of Library and Media for the Superintendent of Learning.

The AASL standard statements are made up of standards, strands and benchmarks. The benchmarks are at grades 2, 5, 8, 10, and 12. Coders reviewed all the AASL benchmarks (313) for Grades 2, 5, and 8, and categorize them according to stages of the Big6 information literacy process. The four AASL Standards are (1) inquire, think critically, and gain knowledge; (2) draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge; (3) share knowledge and participate ethically and productively as members of our democratic society; and (4) pursue personal and aesthetic growth [1].

This study uses the term "standard statement" to describe a discrete statement of what a student should be able to do or know. This is equivalent to the AASL term "benchmark" and the CCSS use of the phrase "grade-specific standard."

2.2   Data Collection

The five coders independently reviewed 313 AASL standard statements grouped into 4 surveys. Coders sorted each of the standard statements into a stage or sub-stage of the Big6 information literacy process; coders were given the choice to identify the standard statement as "not related" to the Big6. Moreover, coders were able to evaluate standard statements as "Unable to tell" for statements that were ambiguous or poorly worded and not clearly aligned with any stage or sub-stage.

After each coder completed all surveys the researcher compiled the data using a 60% level of consensus to determine where each standard statement fit into a Big6 stage. The 60% level of consensus was chosen in order to maximize the number of standard statements included in the research project. The researcher made a decision to err on the side of including more standard statements rather than to use a higher consensus percentage resulting in fewer standard statements.

At the 60% level of consensus, 85% of the 313 AASL standard statements (266) were categorized into either a Big6 stage or into the Not Able to Tell/Not Big6 category. Coders agreed on a Big6 stage designation for 202 standard statements (65% of all 313). (see Table 1).

3 Results

The final tally of AASL standard statements categorized into Big6 stages is shown in Table 1. The number of standards in each Big6 category is shown using frequencies and percentages with the goal of detecting patterns. A Chi Squared test could indicate if there were a significant difference between the reported frequencies and an evenly distributed model of the Big6 stages. However, currently there is no reason to expect an even distribution, or any pattern, in the stages of an information problem-solving model in a set of standard statements. The intent here is to determine what is present in the AASL in terms of the information literacy skill or stage as represented by the Big6 information literacy process model. This information may then be used to spark a conversation about what is an appropriate or even ideal distribution of the stages of an information problem-solving model in a set of standards.

Table 1. Content analysis results

Big6 Stage	AASL Standard 1	AASL Standard 2	AASL Standard 3	AASL Standard 4	Totals
1	12	2	0	0	14
2	6	0	1	13	20
3	15	1	0	5	21
4	14	8	8	14	44
5	11	32	27	17	87
6	0	8	8	0	16
Big6 Total	58	51	44	49	202
Percent	19%	16%	14%	16%	65%
Not Big6	9	3	24	29	65
No Consensus	7	8	8	23	46
Totals	74	62	76	101	313

Table 1 shows that all six stages of the Big6 were reflected in the standard statements in the four AASL standards. The total of AASL standards matched to Big6 stages was 202. The range is approximately evenly spread across the four standards ranging from 14% to 19% of the total standard statements.

Table 2 displays results of the coding by Big6 stage. The AASL standards statements have an emphasis on stage 5, (Synthesis), and stage 4, (Use of Information). Of the 202 of 313 standard statements that were placed into a Big6 stage, 87 (43%) were at Big6 Stage 5, another 44 (22%) were at Stage 4. These two stages make up 65% of the all the standard statements. The remaining four stages of the Big6, Stage 1 (Task Definition), Stage 2 (Information Seeking Strategies), Stage 3 (Location and Access), and Stage 6 (Evaluation) were each detected in 10% or fewer of the standard statements. These four stages of the Big6 made up just over one third (35%) of the AASL standard statements. Task definition, the most important phase of problem solving [6], [15] and Evaluation, the final stage of problem-solving, are the two least represented. Each was detected in less than 10% of the standard statements.

Table 2. Summary of Big6 frequencies in AASL Standards

Big 6 Stage	Freq	Percent
1	14	7%
2	20	10%
3	21	10%
4	44	22%
5	87	43%
6	16	8%
Total	202	100%

4   Discussion

The standards statements of the AASL provide clear evidence of incorporating all the stages of the information problems solving method as represented by the Big6. Big6 Stage 5 (Synthesis) was the most frequently identified Big6 stage, showing up 87 times. Synthesis is where students organize and present the information they have found, in the process creating their own unique answer to the information problem. Use of Information, Big6 Stage 4, was the second most frequently identified Big6 stage with 22% of the total standard statements. In this stage, students engage with information through reading, hearing, viewing, and or touching. These steps are done as part of extracting relevant information for solving their information problem. Students consider questions concerning the information they expect to find in the source and which information in the source is useful. Synthesis and Use of Information, representing 65% of the standards go beyond rote memorization—they require applying knowledge and creating new products.

Big6 Stages 2 and 3 were also present in the CCSS, though to a lesser degree. These stages represent the "search" part of the information problem-solving process: Information Seeking Strategies dealing with identifying possible sources of information and Location & Access, locating those sources, and accessing information within sources to engage with and extract relevant information.

The stages of Task Definition and Evaluation, are present in the AASL standard statements but in a very limited manner. Task Definition was identified 14 times (7%)

and Evaluation 16 times (8%). One explanation for these results could be the types of problems assigned in schools. Problems assigned in schools tend to be well-structured problems [14]. Well-structured problems have clear parameters and often have known answers. School is a formal learning environment, and as such the problems presented to students tend to be well-structured problems with a known solution.

Schoolwork that requires information problem-solving is typically assigned by a teacher and it is the students' responsibility to find the known answer/solution. Task Definition, thus, is often not viewed as belonging to the student. In well-structured problems students are not require to define the parameters of the task.

The same is true of the Evaluation stage of information problem-solving. Well-structured problems in the formal learning environment of school have a known answer, and students are frequently not asked to make judgments about either the product of their work or the process that led to a product. Students view evaluation as teachers' work.

However, informal learning environments outside of school have ill-structured problems that often have competing answers of relatively equal value. Learning to solve these ill-structured problems that are typical of everyday-life should be a goal. Being able to define what information is needed, identifying the tasks to be done, evaluating if the problem has been successfully completed, and judging to what extent the problem-solving process functioned well or poorly, are important parts of information problem-solving, yet explicit standards for doing these steps are present to only a limited degree in the AASL standards.

Our results suggest a content analysis of the standard statements may provide information concerning the degree of differentiation between grade levels. Examples of Task Definition AASL standard statements came from the indicator, "Develop and refine a range of questions to frame the search for new understanding." The benchmark at second grade is "Ask I wonder questions about the topic, question, or problem." At fifth grade the benchmark is, "With guidance formulate questions about the topic." The eighth grade benchmark is, "Write questions independently based on key ideas or areas of focus." The benchmarks indicate a degree of increasing difficulty in the task asked, though it seems possible that both second and eighth grade tasks could be completed by the same range of questions.

Examples of AASL standard statements from the Synthesis stage, came from the indicator, "Use prior and background knowledge as context for new learning." The benchmark for second grade is, "Share what is known about a topic, problem, or question." At fifth grade the benchmark is, "Articulate what is known about a topic, problem, or question." And at eighth grade the benchmark is, "State and support what is known about a topic, problem, or question, and make connections to prior knowledge." The wording differs, but conceptually these statements are quite similar. The eighth grade standard is slightly differentiated by the phrase "and make connections to prior knowledge." It appears the AASL standard statements may lack a consistent degree of grade level differentiation. Content analysis focusing on grade level differentiation could provide valuable information about the degree to which the AASL standards implement advanced work as students advance in grades.

4.1   Comparing Other Sets of Standards to the Big6 Common Core State Standards

The CCSS Initiative in the United States is an education policy initiative seeking to establish a single set of standards for kindergarten through 12th grade [3]. The CCSS standard statements were also reviewed in depth [7]. The 377 CCSS statements at grades 2, 5, and 8 were found to have clear evidence of both Big6 Stage 4 and Stage 5. The CCSS were heavily concentrated in Big6 Stage 5, Synthesis, (86 standard statements) with a lesser emphasis on Big6 Stage 4, Use of Information (33 standard statements). Particularly noteworthy was the absence of any standards related to Task Definition or Evaluation in the CCSS. This finding points out a major deficiency in the CCSS, as these are two crucial information problem-solving skills. Defining the task and evaluation are two of the four steps in problem-solving identified from the field of Cognitive Psychology, but as they are not addressed by the CCSS, the CCSS may not be fully meeting the goal of preparing students for college or careers.

Seven Pillars of Information Literacy. SCONUL produced an information literacy framework, the Seven Pillars of Information Literacy in 1999 and revised it in 2011 [2]. The revision seeks to update the Seven Pillars of Information Literacy to remain current with the changing world of information technology. One of the changes includes more clearly including the concept of Evaluation in both the meanings noted above.

The Seven Pillars of Information Literacy offers a model for information literacy around the needs of higher education from which other models of information literacy may be developed using different lenses. Wales has mapped the Seven Pillars to two key educational frameworks, the Skills Curriculum in Wales (3-19) and the Credit and Qualifications Framework for Wales (CQFW) (14+ years) to demonstrate to teachers and learners the degree that information literacy skills are incorporated in the frameworks [16]. Unlike the CCSS of the United States, both Evaluation and Task Definition are well-represented in the Wales model. Evaluation in both of its meanings, the evaluation of information and the evaluation of the process, are present in these standards. The Wales adaptation of the Seven Pillars model appears to be well suited to preparing students with the information literacy skills they will need in the 21st century.

ACRL Standards. The ACRL standards, like SCONUL's Seven Pillars of Information Literacy are aimed at higher education. Also, like the Seven Pillars, the ACRL standards are undergoing revision. A new definition of information literacy is being offered. The new framework emphasizes the "highly relational, context-specific nature of information literacy, and the varied circumstances in which individuals and groups activate this competencies and describe them to researchers" [6]. Other changes from the Information Literacy Standards of Higher Education (ILCSHE) adopted in 2000 [17], include the shift from standards to a framework in order to make the guidelines more flexible and adaptable for different disciplines and different institutions and an emphasis on self-awareness or metacognition. This emphasis on metacognition directly relates to the importance of evaluating both the product (the outcome of the information problem solving process) and process of information problem solving.

5   Conclusion

5.1   Limitations

This research focused on AASL in grade levels 2, 5, and 8. AASL standard statements are also benchmarked at both the 10th and 12th grades. The research did not attempt to look at AASL standards in the high school years. It could be that areas of the Big6 information literacy process that are limited in grades 2, 5, and 8, such as Task Definition and Evaluation, are present to a greater extent in standard statements for grades 10 and 12. It should also be noted that this research focused on a skills approach and thus did not address certain areas of the AASL framework, such as dispositions and responsibilities that go beyond the skills approach.

5.2   Implications

The findings indicate that the AASL standards may be insufficient to fully prepare students for college and career readiness. Both of the important information problem-solving stages of identifying the task and evaluation of process and product have modest representation in the AASL standards. One recommendation is for the AASL to consider developing additional standards in these underrepresented stages.

   The AASL does address the full scope of the information problem-solving process unlike the CCSS, where two stages of the information problem-solving process seem to be missing entirely. This is an important and serious finding, and we recommend further analysis and research to confirm the finding as well as reconsideration by those responsible for the CCSS.

   New frameworks in higher education for information literacy from the ACRL and SCONUL, have added emphasis on metacognition and thus on Evaluation, making both potential models for improvements to the AASL standards and CCSS.

5.3   Future Research

As noted, an important follow-up on this study is to look further at the CCSS in terms of presence (or lack) of standards related to task or problem definition and evaluation. Corollary work should be done to determine the importance of these areas in learning and teaching and the nature and scope of what should be included.

   We also recognize the need to examine grade levels other than 2, 5, and 8 in the AASL standards. This would clarify whether or not the grade levels studied are exceptions or whether they are representative of the AASL standards as a whole. SCONUL and ACRL have released or are in the process of updating their guidelines for information literacy. Both organizations are issuing frameworks rather than lists of standards. This presents another opportunity to map frameworks to information problem-solving and to compare to existing standards in grades K-12, especially those of the AASL and the CCSS. Task definition and evaluation are key stages in information problem-solving and need emphasis in the AASL standards and both are missing from the CCSS. The findings raise concerns that should be addressed in research, policy, and practice.

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Copyright Literacy of Librarians in France

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Abstract. This paper aims to produce comprehensive knowledge in the copyright literacy of French librarians. To achieve this objective a web based survey has been conducted. Results show that French librarians have a lack of competence in copyright issues and especially at the international level. This weakness is more pronounced among librarians in public libraries and the librarians with a lowest level of education. An examination of curricula shows a lack of training about copyright in LIS Education as well as in training. The results lead to suggest the creation of the same access pattern for the state or the local authorities' librarians. It also highlights some inadequacies of LIS education, and the lack of training.

Keywords: Copyright literacy, France, public libraries, academic libraries, LIS studies, curricula, education, training.

1   Introduction

Recently, many events occurred in France regarding copyright issues in libraries that would not have been possible in the past. For example, the French government voted on 1st March 2012 the Act No. 2012-287 which created legal tools for the digital use of 20th century out-of-print books (RELIRE project). This law gave the French National Library (BnF) the right to digitize books without negotiating each publishing contract case by case [1]. Several librarians, within the context of "cities on common"[1], are organizing "copy parties" where patrons can come to the library and scan books for "private use". Noting the complexity of this topic in everyday life and the new challenges related to the digital world, this study questions the readiness of French librarians to raise copyright issues. Is their background, including training and formal education, helping them face changes affecting this topic? Are they aware of international initiatives on copyright issues, or are they focused only on the national level? In this paper, we aim to produce comprehensive knowledge of the copyright literacy of French librarians, considering that this kind of study has never been done.

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[1] Villes en biens communs [Cities on commons] is a collective of associations who supports and promote the use of commons like free culture, http://villes.bienscommuns.org/

2   The French Context Regarding Copyright

In this paper, the word copyright will be used in the French meaning of author rights. In France, copyright and author rights do not have the same connotation even they tend to converge with the economic constraints. In the French law, only an individual can be considered as a work's author. Author rights grant exclusive property and moral rights to the creators of original literary, scientific and artistic works. If the author can transfer later his/her economic and moral rights to a legal entity, this entity could not be considered, in any case, as the author but as the beneficial owner. Copyright in the common-law sense does not make such distinction. An individual as well as a moral entity like publisher or producer could be considered as author.

French literature on copyright topic is abundant. Most publications are guides and handbooks mostly oriented toward learning and practice. We can find also added reports commissioned by the Senate, the Ministry of Higher Education and Research, or the Ministry of Culture and Communication on different issues [2-4]. Since 2005, several blogs, specializing in this topic, have arisen. These electronic publications are supposed to contribute actively to build professional copyright knowledge.

In France[2], the protection of author's rights and works can be traced back to the period of the French Revolution (1789) but the copyright issue in libraries is recent. As "fair use" does not exist in French law, libraries, as public bodies under the ministries' or local authorities' supervision, have created, over the years, de facto practices which allow them freedom to give access to all of the works. The need for legal competence in librarianship started to be a sensitive subject with the Council Directive 92/100/EEC concerning rental and lending rights[3]. It was the first attempt to restrict the access to works in libraries access [5]. Libraries and librarians are now forced, at the risk of becoming marginalized, to integrate the question of copyright in their theoretical reflection, in their practice, and even in the forward planning of their missions and professions [6]. Nevertheless relations between librarians, or their representatives, and players of copyright are not like a long calm river and are interspersed over the time with exchanges that might show a perpetual conflict [7]. The latest controversial development was the law on author's rights and related rights in the information society (DADVSI) in 2006, and High Authority of Diffusion of the Art Works and Protection of the (Copy) Rights on the Internet (HADOPI) in 2009 which had a significant impact on libraries [8]. And recently, the adoption of RELIRE project which allows the French National Library to digitize out-of-print books is also very controversial.

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[2] In what follows, quotes are freely translated by the author.

[3] This directive has been repealed and replaced by Directive 2006/115/EC
http://goo.gl/9Gwurj

3   Methodology

To be able to evaluate copyright literacy, we conducted a web-based survey adapted from an international research project called "Copyright Policies of Libraries and Other Cultural Institutions" (2012-2014)[4] during January-March 2014.

A quantitative survey was created on LimeSurvey a service that allows respondents to complete a questionnaire online. The aim is:

- to comprehend the knowledge and the awareness of the librarians regarding copyright related issues,
- to gather the views of respondents regarding institutional level copyright policy,
- and to ask librarians for their opinions concerning LIS education.

A 5-point Likert Scale and few open questions has been used to get such assets. The link to the survey was emailed by the author to more than 500 head academic librarians, around 300 Facebook accounts libraries, and three professional mailing lists. Receivers were asked to complete and spread the questionnaire to their colleagues. Quantitative data were entered, coded, and analyzed using the SPSS statistical package. Descriptive statistics were used to analyze the findings and Chi-square tests of independence to compare different factors.

3.1   Respondents Profile

This approach enabled us to collect 329 completed answers, which is a small sample related to the population of librarians in France. 6 157 librarians work for national civil services (2012 estimations) and around 34 000 in local authorities (2010 estimations) [9]. A higher percentage of survey respondents were female (74.5%) compared to male (25.5%). The breakdown of respondents by age range show predominance of people aged 30 to 39 (34.3%), followed by the 40-49 (28.3%), 50-60 (17%) and younger than 30 (15.8%). Few people are in the older age range, over 60 (4.6%).

In France, most of the librarians are civil servants except those who work as contractual employees, volunteers and for private companies. Civil servants could be employed by the State (academic libraries, public libraries in Paris, classified libraries and French National Library) or by the local authorities (public libraries everywhere in France except Paris). In both structures, librarians are classified in three categories: *A* for manager, *B* for intermediate profession and *C* for employees and technicians. One hundred and eighty one (55%) of respondents were managers, 86 (26.1%) at the intermediate level and 33 (10%) employees and technicians. Just 29 (8.8%) work in a private company or as contractual librarians. Over 60% of the respondents have a

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master level diploma, 63.5 percent studied Library science, 11.9 percent History science. Archive science, Cultural Heritage science and Museology are poorly represented, respectively 4.9 percent, 4 percent and 0.6 percent. 15.1 percent of the respondents are distributed in other disciplines: Literature, Law, Geography, etc. 51.1 percent work in a university library, 24.3 percent in a public library and 6.1 percent in a company library. 18.5 percent work in different organizations. Only one person works in a museum. There is no archivist in our panel.

4   Findings

4.1   Knowledge and Awareness

On a five-point Likert scale ranging from 1 ("not at all familiar") to 5 ("extremely familiar"), the ideal scenario would be a significant number of respondents which are "extremely familiar". However, an examination of figure 1 shows that the level of familiarity of French librarians with issues regarding copyright is weak compared to the importance of the subject addressed. Sometimes the peaks of weakness reached or exceeded 50%. Values for extremely familiar are around 10% except for *licensing for information sources* (14.3%), *licensing conditions* in respondent's institution (16.7%), *Creative Commons Licenses* (17.9%), *Open access* (15.2%) and *Copyright issues regarding public domain* (16.7%). The awareness of French librarians is insufficient.

The obvious lack in awareness concerns *clearing rights* (55.9%), *licensing for on-line information via curation* (49.8%), *fair use* (35.6%), *copyright related issue at the international level* (40.4%), *copyright issues regarding virtual services* within e-learning practices (32.80%) and *licensing for cultural action* (32.2%). As fair use does not exist in French law, it is expected to have this rate of weakness, but not for the other subject. Likewise, there is a lack of knowledge in copyleft (42.6%) even it is closely linked to creative commons licenses, subject for which respondents consider that they are extremely (17.9%) and moderately (29.8%) aware. This weakness is noticed as well in questions dealing with the development of institutional repositories (30.1%).

Copy-parties, a movement started in 2012, is still a limited phenomenon. Few librarians are extremely aware (8.3%) or moderately (17%) aware of this subject.

Topic where French librarians consider that they are moderately aware are: *copyright and related law at the national level* (40.1%), questions dealing with the *public domain* (37.7%), *licensing for information source* (31%), *open access and open data* (30.1%), as well as *Licensing conditions in their institution* (29.8%) and *creative commons* (29.8%) which gathered a significant percentage (17.9%) of extremely familiar, which is the highest value in the extremely familiar range. The trend is not very pronounced with the remaining questions.
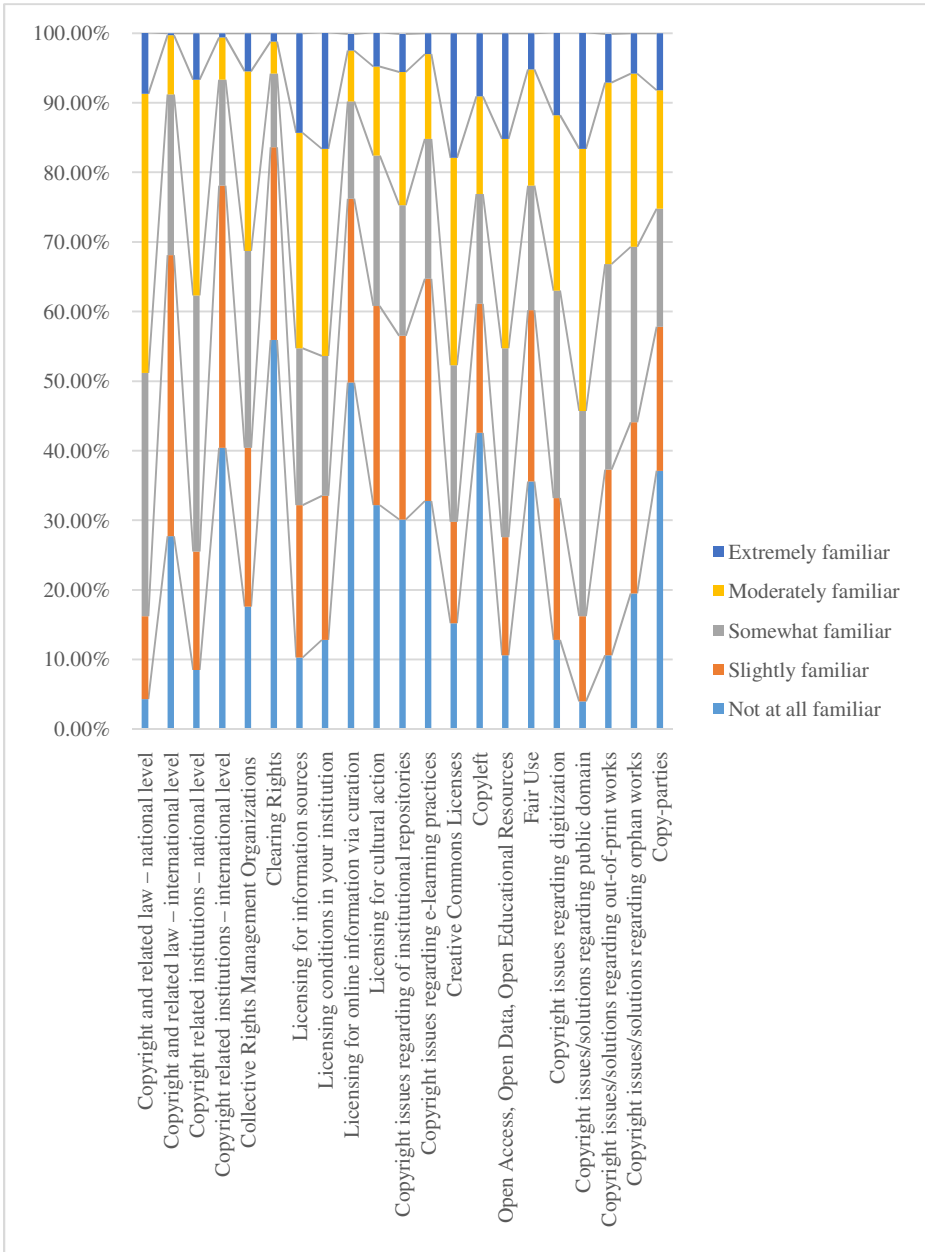
Fig. 1. Level of knowledge and awareness of French librarians

Figure 2 shows that, for librarians, web sites are the primary source of information (77.5%) followed by books and articles (72.3%), colleagues (57.8%), blogs and wikis (43.8%), professional discussion lists (42.6%), French national library (36.5%) and

experts (19.5%). Only 13.4% of librarians refer to lawyers when they need information. Some respondents dissociated lawyers from legal services, in the analysis when we combined them. International resources published by IFLA, World intellectual property organization (12.5%) and eIFL (1.5%) are less used. Respondents are not even interested (83.9%) by the initiatives of those organizations. This disinterest may explain the lack of competencies in copyright law at the international level.
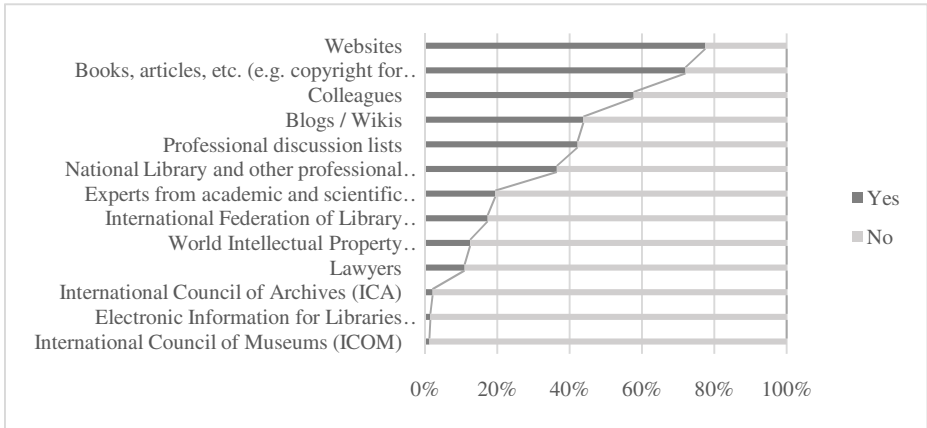
Fig. 2. Information source

A little more than half of the librarians (52.9%) were sure of the presence of a national strategy for copyright in France and more than the quarter (30.4%) was uncertain. However, this strategy does not exist. Only 16.7% of the respondents knew this fact. Is it another proof of lack of competence or is it a lack of concern for copyright issues?

Concerning the national copyright legislation, most librarians (95.7%) knew well the duration of copyright protection, exceptions for private use (78.1%), and exceptions for libraries and educational institutions (61.7%). They knew that orphan works are not included yet in the copyright legislation (72.3%). For the question related to the rights for librarians to provide modified copies of works serving the needs of visual impaired patrons, 53.8% were aware that this exception exists in the French legislation. This exception has been introduced in the French law in August 2006 and does not concern all the libraries, only the accredited ones.

4.2   Copyright Policy and Institutional Level

Most respondents (85.4%) answered that their institution has resources protected by copyright, a small percentage (12.5%) was unsure. Few libraries (2.1%) do not have this kind of collection. Over three quarters of respondents (80.9%) think that institutional copyright policy is necessary for libraries and a minority (3%) does not believe that copyright policy is important. Others (16.1%) are uncertain. Despite the importance of issues dealing with law, less than one-twentieth (18.6%) of institutions have a

person in charge of questions dealing with copyright issues and more than a quarter (34.3%) does not have a copyright policy in their institution. Only 34.7% of the institutions put this policy in place. What was surprising in these results was the fact that 31% of respondents are uncertain that their institution has its copyright policy. Is this revealing a clear lack of concern of librarians for copyright issues? The same question could be asked for personal digitization purposes. Indeed, slightly fewer than half of the respondents (41.6%) are uncertain if their institution authorizes or prohibits it. In fact, the widespread use of mobile devices makes copying documents easiest. A lot of institutions have a collection protected by copyright. Even private copy is admitted in copyright, the original must be owned by the person who is making the copy and not by the library. Almost half of the libraries (41.6%) authorizes personal digitization against 17% who prohibits it.

4.3   Education and Copyright

Almost everyone (97.9%) is in favor of including copyright issues in the curriculum of Library and Information science (LIS) education as well as in continuing education.

For the question concerning the appropriate level of education to introduce intellectual property, respondents were given the possibility to choose more than one answer. Over 70.2% of the respondents indicated undergraduate level, 37.4% master's degree, 17.6% PhD. Some of them (around 75 respondents out of 329) advised to introduce it at the beginning of LIS education.

Regarding the type of appropriate course for continuing education on intellectual property, a multiple choice question, respondents preferred thematic workshops (65%), followed by Internet sources: websites, blogs, wikis, etc. (58.7%) and then training course (54.7%). Less than half selected other options including: distance learning (40.1%), panel conference (40.1), consultation on request (37.7%) and round table discussion (24%).

5   Towards Better Curricula?

Chi-Square tests (cross-tabulation analysis) were performed on different criteria, and statistically significant relations between institution librarians work for, and their copyright awareness were found. The librarians' awareness level was clearly higher at the university library except for competence dealing with *licensing for cultural action* and *out-of-print works*. There is no difference regarding *copyright at the national level*, *collective rights management organizations in France* and *material from public domain*. The awareness level of librarians working in other type of institution was not important enough to be taken into consideration. Two hypotheses could explain these results. Most of the librarians working in a public library did not receive education in LIS and the post-recruitment training is insufficient.

To confirm the hypothesis about LIS education the same test was conducted to check if there is a relation between the type of study and copyright awareness.

Librarians who had an LIS degree were more aware than those who didn't except for these three issues: *copyright at the international level*, *collective rights management organizations in France*, and *copy parties*. These results confirm our hypothesis and lead to suggest the creation of the same access pattern for the state or the local authorities' librarians. A LIS education should be a compulsory requirement for recruiting in the local authorities libraries. The chi-test also shows a relation between the level of diploma and the level of awareness. Those who have the highest degree have a better level of competence, which is a good argument as mentioned by our respondents, for the introduction of copyright education upon the entrance of students to the university. This course should be enhanced and enriched every year to cover all the aspects of copyright.

The results show that, Librarians in France are not extremely aware about copyright and intellectual property issues. They had moderate familiarity with this subject, which is very significant progress compared to the situation in year 2000 where "librarians, in the vast majority, do not know a great deal about copyright" [4].

To understand the reasons of this weakness, we tried to find an answer from a reading of curricula in some LIS schools and training in relevant bodies. Information on curricula has been gathered from official websites of those organizations.

5.1   LIS Education

In France, several diplomas lead students to become librarians. We limited ourselves to the most representative courses, since our study is not curricula oriented.

University Diploma of Technology (DUT) is an intermediate two years diploma in *Library Science and Heritage*. Only 20 hours of a total of 1620 are dedicated to law.

Bachelor professional degree (Licence professionnelle) shows a mean hourly volume of 400. Courses dedicated to copyright do not exceed 20 hours. The same applies for master's degrees.

For a Libraries Curator Diploma (DCB) provided by the French National Library and Information Science School (Enssib), the law courses are optional with an hourly volume of 30.

This quick examination of some degrees at all levels of training demonstrates that copyright in LIS education is inadequate compared to the complexity and vast scope of the subject. There is a need to re-examine curricula to consider the complexity of subject and all the aspect of this issue especially regarding digital libraries and digital resources.

5.2   Lifelong Learning and Training

An examination of curricula in lifelong learning and conditions governing access to continue vocational training lead us to the same conclusion that we did for the LIS education.

Different organizations are qualified to deliver training to librarians. However, courses in copyright are not that many.

The National Center of Territorial Public service (CNFPT) - a joint decentralized public institution which accompany local authorities and their agents in their public service mission - offers two courses dealing with copyright. Content does not cover all the aspects of copyright and the number of sessions is not enough when we know that around 34 000 librarians work on local authorities.

Regional training centers of library careers have three missions: giving information on libraries and documentation careers, preparing for competitive exams to be librarians, and training people who are already employed [9]. There are 12 centers all over France, but not all of them offer courses on copyright. Sometimes they are organized jointly with CNFPT or URFIST (regional units for training in scientific and technical information). In general, one course on law in libraries is offered per year with a duration which varies from a minimum of three hours and a maximum of three days.

Access to vocational training is a right covered by law in France. Each civil servant has an annual credit hour of professional training equal to 20 hours for a full-time agent. Those hours can be held concurrently in the limit of six years or 120 hours. As demonstrated by the examination of curricula of training body, the offering is relatively poor in comparison with the number of librarians and limited by the duration, rarely a training exceeds 30 hours.

6   Conclusion

Even if the size of the sample is limited, the results are nevertheless very significant. They converge with what is already known by the relevant administrations. In a report commissioned by Higher Education of the Ministry for Education and Research, and Ministry for culture and communication, the *general inspectorate of libraries* wrote: "It will also be judicious for curator students to acquire or consolidate elements of basic legal and economic culture, which will be useful in their administrative as well as scientific responsibilities (public and administrative law, labor law, economic law, intellectual property, information economy)" [10]. It will be interesting to study the possibility of creating a specialized diploma in legal issues for librarianship; this diploma could be addressed to LIS background students.

Aside from the fact that this paper sheds light on the copyright literacy of French librarians, it also highlights the inadequacy of LIS education, and the lack of training. The complexity of law in general and copyright in particular demonstrates that this is not a subject that can be covered in a single course. Furthermore, this state of awareness shows the need for strong emphasis on continuing education, training and copyright law within the library profession. May these results help enhance lifelong learning in LIS education and the curricula in order to give proper answers to the needs in the field.

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Social Media Networking Literacy: Rebalancing Sharing, Privacy, and Legal Observance

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Abstract. Social media networking seems to have exploded as the next big wave after the proliferation of the World Wide Web's Internet interface. The numbers are astounding: for example, over 1 billion people are connected on Facebook, there are nearly as many Twitter accounts, WhatsApp has over half a billion users, and over 200 million people use Instagram. It is not a far-fetched statement to say that the majority of the users on these social media networks are young people, probably at the age where risk assessment is not very high on their priorities. Sharing is the norm, even of the most intimate and private details. However, some sharing can be harmful, as not only might it intrude into the privacy of the users themselves or those who are connected to them, but it may come back to haunt them later in life with devastating consequences. It is imperative that social media network users have some level of literacy, which allows them to estimate the proper balance between their sharing activities, the needs for their privacy as well as that of their contacts, and the need to respect the intellectual property of fellow netizens.

Keywords: Social media networking, information literacy, social media networking literacy, privacy, intellectual property, defamation, social media risks.

1 Introduction

Social media networking seems to have exploded as the next big wave after the proliferation of the World Wide Web's Internet interface. The numbers are astounding: for example, over 1 billion people are connected on Facebook [1], there are nearly as many Twitter accounts [2], WhatsApp has over half a billion users [3], and over 200 million people use Instagram [4]. In Sweden, for example, about 97 percent people ages 12-44 are regular Internet users [5]. It is not a far-fetched statement to say that the majority of the users on these social media networks are young people, probably at the age where risk assessment is not very high on their priorities [6]. Sharing is the norm, even of the most intimate and private details. However, some sharing can be harmful, as not only might it intrude into the privacy of the users themselves or those who are connected to them, but it may come back to haunt them later in life with devastating consequences. This has been referred to as the problem of "oversharing" [7]. It is imperative that social media network users have some level of literacy that allows them to estimate the proper balance between their sharing activities, the needs

for their privacy as well as that of their contacts, and the need to respect the intellectual property and reputation of fellow netizens [8]. Thus, we define social media literacy as the ability to appreciate the risks posed by social media and to make calculated decisions when dealing with such social media in order to make a careful balance between the needs for sharing, privacy, and legal compliance.

This paper is organized into four sections. In the first section, we briefly summarize the landscape of social media networking on the Internet, as well as selected user social media activities. The second part discusses some of the issues arising from sharing and other activity on social media networks that impact on individual and group privacy, both during and post-activity. The third part discusses some of the legal issues encountered on social media networking sites and the response of users to those issues, particularly intellectual property and defamation. Finally, part four argues that the balance between the need for sharing, privacy, and legal observance on social media networking sites needs to be revisited, with a view to re-calibrating it so that the severity of future consequences is reduced. The paper argues that the principal way of accomplishing this is to continuously encourage social media networking literacy among users from an early age.

2   Social Media Networking: An Overview

Boyd and Ellison [9] characterize social media networks as a socially-bounded system provided by a social media networking service where users create public or semi-public profiles, define others with whom they wish to interact, actuate those connections in various ways, including posting or reacting to postings by people within the specified networks, the distinguishing feature of which is the "public display of connections" [10] in a quest to build "social capital" [11]. This public display of connections makes it possible for individuals to not only track other individuals with whom they share a connection, but to track those other individuals' connections as well. Thus, one can in some cases click on the links of the friends of one's friends, as well as the friends of those friends, ad infinitum. The users' personal details are usually integrated in their profiles, thus diminishing any anonymity even further [10]. Among the motivations for social media networking are entertainment, trend tracking, sharing of information, and showing off [12]. Online, individuals are able to cultivate an image and self that they want to project to their defined "world" and engage in "profile management" and "self-promotional behavior" [13-14], but these self-representations may sometimes be misleading to others [15]. Worse, these activities may lead to serious invasions of individuals' privacy, as well as those of their friends and acquaintances.

3   Social Sharing and Privacy Implications

3.1   Individual and Group Privacy

Bohnert and Ross [16] noted that an individual posting on a social platform is likely to lose full control of the posted content and has little control of postings made by friends or acquaintances. Often, such postings may come back to haunt them in later life, especially when they are applying for a job. It is now becoming a trend for employers to examine applicants' social media networks. One survey indicated that 37 percent of employers use social media to screen applicants and 34 percent of those screening employers have found content that led them not to offer a candidate the job. Such content included evidence of drug use or drinking, or inappropriate photos or posted information [17]. This is not to say, of course, that employers do not find something positive in the content that leads them to offer the applicant a job.

In addition to putting one's privacy at risk when using social media, often the privacy of one's circle of friends is also put at risk. When private information is shared even within a circle of friends, there is often nothing to prevent a member of this circle of friends from sharing that information with others outside the circle. In fact, the wider the circle of friends, the greater the risk. Once this information breaks out of that circle, it is fair game for everyone, including future employers. Additionally, the privacy of the entire circle of friends is compromised by the sharing of private information outside the circle.

In the United States and many other countries, the controlling issue in dealing with privacy is the notion of a "reasonable expectation of privacy." Courts have been inconsistent in finding the presence or absence of a "reasonable expectation of privacy." In one case, for example, a nurse posted some allegations on her Facebook page to which she invited some people and not others. Her supervisor had the nurse's colleague, who had access to the Facebook page, review the nurse's postings while the supervisor watched. The postings (among other issues) eventually led to the nurse's firing. Because only invitees could access the page, the court found that the nurse had a reasonable expectation of privacy in her Facebook postings [18]. On the contrary, another court held that a user posting on her Facebook page has no expectation of privacy, because her intent is that the information be seen, especially where this posting is on her Facebook wall [19]. Romano v. Steelcase [20] went even further to say that users who utilize social media networks such as Facebook have no reasonable expectation of privacy in such information since they have consented that their information will be shared by others, and have knowledge that the information may become publicly available. Additionally, some social media networks, such as Myspace, clearly express the possibility of disclosure of users' information, thus reducing or eliminating a reasonable expectation of privacy in such information.

3.2   Access for Legal Purposes

In many countries, citizens are protected in the constitution against unwarranted government intrusions in their lives and possessions. In the US, for example, the

government is limited by the 4th Amendment to the Constitution in its ability to search and size personal property, including information. Here, again, the controlling issue is one of the expectation of privacy. Absent a search warrant, the degree of the reasonable expectation of privacy will determine whether or not the government violated the citizen's 4th Amendment rights. In the case of social network postings, again the jury is not clear. The court in U.S. v. Meregildo [21], for example, found that postings and information disseminated to the public enjoy no 4th Amendment protection and that the government may view a user's social media networking web site profile without probable cause. But the court also found that the use of high privacy settings might support the user's reasonable expectation of privacy. Reid v. Ingerman Smith [22], on the other hand, took a dim view of privacy settings, ruling that even where a user has set privacy settings to friends only, there is no guarantee that those friends will not share the information with others beyond the friendship circle, and therefore there is no reasonable expectation of privacy. This information can be subpoenaed for use in civil litigation, for example in personal injury cases. A cooperating witness Facebook friend, for example, can be used by the government to access a user's postings and other information without violating the user's reasonable expectation of privacy [21]. While communication such as email within a social network may be considered covered by a reasonable expectation of privacy, other forms of communication, such as twitter, may not be so covered, since a tweet may be better characterized as an email sent to a party with millions of copies sent around the world [23].

When it comes to litigation and discovery, social media information is not privileged and does not enjoy any particular privacy right; but requests for the information must be tailored in a way that is calculated to lead to discovery of evidence that can be admitted [24,25]. Such evidence may include, for example, Facebook postings that indicate recreational activities that are inconsistent with claims of workplace disability or personal injury. When a user's social media account is public, the information on that account can be freely accessed without court orders [19]. But even privacy settings that restrict access to only a few cannot protect the social media postings from discovery requests [26,27]. Courts have granted motions to compel discovery of online social media profiles, wall comments, causes joined, groups joined, postings, status updates, blog entries, photographs, or media clips on Facebook, LinkedIn, and MySpace [28]. Additionally, third party postings, such as friends, may equally be discoverable. Communications such as email through the social media networks held by electronic communications services providers (ECSPs) are protected from civil subpoena to ECSP by the Stored Communications Act (18 USCA 2702), which prohibits the production of such records.

A common misperception among young social media networkers is that they are protected if they post anonymously. Nothing could be further from the truth. While the process may sometimes be onerously lengthy for plaintiffs, courts have had little difficulty helping to unmask John Doe defendants. Additionally, people who "like" anonymous postings may themselves be identifiable.

4   Some Other Legal Issues

4.1   Defamation

Defamation generally means the publication of a defamatory statement that is false concerning an identifiable individual either negligently or with actual malice (for public figures or matters of public concern). Most of the postings on social media qualify as publication, because they are intended to reach third parties. Damage to the plaintiff is usually presumed. The issue often revolves around determining whether a statement should be considered fact or opinion. If it is merely an opinion, it is generally not actionable. Social media can sometimes encourage "venting" and the posting of quick, thoughtless statement that might cause an action for libel. Twitter, for example, has a structure (maximum 140 characters) that encourage such statements, leading to "twibel" actions. Even famous people (e.g. Courtney Love and Kim Kardashian) have been caught up in litigation arising out of social media postings. Britain seems to be particularly unforgiving on libel defendants, even in cases involving public figures. In one case, libel was found from a statement that simply asked why a certain public figure was "trending," in a context that suggested that the plaintiff had years before sexually molested children who were government wards [29]. While the social media network may escape liability for defamation on the theory that readers understand that most of what is posted on social media sites should not be believed, the individual poster may not. In the UK, for example, the Defamation Act 2013 provides additional protection to social media networks such as Facebook from defamation liability for content posted on their sites, as do many other countries. Retweets and linking to defamatory material may not always lead to liability and in the US may enjoy the immunity provided by Section 230 of the Communication Decency Act that protects providers and "users" of an interactive computer service.

4.2   Intellectual Property

By its very nature, social media networking encourages wide and frequent sharing of information. Some of this information, especially "user-found" (as opposed to "user-generated") may be copyrighted information, or protected by other aspects of intellectual property law. Although it is a common and accepted social media practice, sharing of such protected works may lead to copyright infringement liability. Furthermore, unlike in defamation that we discussed above, linking to infringing material attaches liability.

While some users may have a general idea that the content they generate may be protected by copyright, what they may not know is that they may have signed away some of the rights this copyright protection merely by clicking on the social media provider's "Terms of Use" that purports to grant a broad use license of the copyrighted material from the user to the provider.

Social media postings may be subpoenaed to prove infringement, especially willful infringement, which carries a stiffer penalty. Also, copyright owners may apply for subpoenas to look into social media accounts for the purposes of discovering the identities of infringers, where it is not prohibited by the Stored Communications Act.

5   Towards a Social Media Networking Literacy

The issues we have discussed above lead us to consider whether we should make it a priority to ensure some level of social media network literacy, especially among young users, who are perhaps the majority of users, and also likely to be the most vulnerable to legal issues. Even at universities where there is robust social media activity, social media users seem to be blissfully unaware of the pitfalls of posting online. Drawing from examples from Australia and Sweden, Woodley and Silvestri [7] noted the insufficiency of discussion about social media and professional risks in universities, and pointed out the lack of inclusion of those topics in university curricula. Hopefully this situation is changing. The University of Lancashire, for example, has a course titled "Brand You" that helps students manage their online identities [30]. There is need for additional work in this area. Social media users need to learn quite early what inappropriate online behavior is, and what the risks of "oversharing" are. Woodley and Silvestri [7] note that social media demands a different set of skills in the employability debate, and suggest that university students in particular need to understand the legal context of their online environment, and that universities must embed web 2.0 media literacy skills in their courses. Social media networking literacy is distinguishable from digital literacy, which is the ability to use online resources, particularly the ability to select task-relevant sources and to synthesize and communicate messages coherently.

6   Conclusion

The discussion above has highlighted the problem that over-sharing of information on social media poses for both the poster and her acquaintances. We have noted the permanency on the Internet of mistakes made in one's youth, that can come back to affect one's life at a later date. We have seen that insufficient attention is being given to educating users about social media perils. This article suggests that increased efforts should be made to provide social media networking literacy as a crucial aspect of individual development, and to assist citizen 2.0 in maintaining a proper balance between sharing, the need for privacy, and legal compliance. Citizen 2.0 already has digital literacy, what she needs now is social medial networking literacy.

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Linked Open Data Literacy for Librarians

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Abstract. Linked Data has become an important issue, not only for the process of building the web of data, but also for the mutual knowledge transfer between libraries and the web of data. Based on a study concerning Linked Open Data applications in libraries and the qualifications of future librarians involved in the development of such applications, we built a one day training program for academic librarians. The overall goal was to make librarians literate and heighten awareness concerning the Linked Open Data technology on a single day. With the help of that training program, the librarians should become cognitively able to reflect on the integration of Linked Data in their current working environment. We considered it therefore necessary to couple the training program with the development of cognitive strategies. In this paper we will give an in-depth description of the didactical approach, the theoretical and practical components as well as their possible combinations.

Keywords: Linked open data, data literacy, training, cognitive strategies.

1　Introduction

Since the rise of the World Wide Web, libraries have always seen themselves in need of responding adequately to the change, be it in terms of benefits, or be it in terms of challenges that the web has brought with it. They tried to connect the attitudes and technologies that were part of this change to the services that they offered, namely the supply and mediation of information. The aspect of mediation has been strengthened by the special significance that was assigned to information literacy and the role that libraries could play in this context; this aspect of information has been enhanced by the new interest in data, especially research data or in the case of this paper Linked Open Data (hereafter LOD). At the present time, quite a large number of catalogues or data bases are transformed in new interoperable data sheets based upon the Resource Description Framework (hereafter RDF). In addition to this, further library applications emerge that enrich the panoply of services offered by libraries. Thus, every library has to consider whether it shall adapt this new technology and participate in building the web of data.

As a consequence, the librarians have to ask themselves how they should become literate with this rather complex matter since it will have an impact on their future work considerably. In this context, we developed a training for Linked Data Literacy, initiated by a mandate from the Cantonal and University Library of Lausanne

(Bibliothèque cantonale et universitaire de Lausanne, hereafter BCU Lausanne) that besides being an academic library, has - as the name indicates - the role of a cantonal library for the canton of Vaud, being the third largest Swiss canton by population. Things started informally when the library directorship asked for the possibility of a one day training on LOD in libraries that would serve to all different types of librarians to raise awareness to the matter, with no further constraints or requirements given. Shortly after this, the library of the Swiss Federal Institute of Technology in Lausanne (in French: Ecole polytechnique fédérale de Lausanne, hereafter EPFL) wished to have a similar training by adding the constraints of integrating the evolution of library standards into the workshop. Finally, a third workshop was given, once more at the BCU Lausanne. During these workshops the authors gained rich experiences and precious insights concerning the teaching of Linked Open Data to librarians that will be described in the next section of this article.

In this context, our goal was not only to give an introduction to the main aspect of LOD, namely how to link data that was free of copyrights into the world of libraries [1], but also to strengthen the librarian's capacity to respond actively to the challenges mentioned above, (i.e. the development of cognitive strategies) [2]. They should thus acquire a maximal autonomy during a one day training by a) studying trustworthy sources about LOD, b) the identification of relevant websites about standards and formats, and last but not least c) the decision making process and organization of an LOD project. So beside the constraint of becoming literate to the topic of linked open data in a minimum of time and with a maximum of practical exercises. It was important for us that the participants gained the capacity to develop autonomously their own strategies and to be able to undertake first steps for the implementation of LOD-projects of any size within the institution in which they work.

2   Construction of the Training Session

Before starting with the development of the presentation content, we defined learning objectives in order to have a frame to orient our efforts. Based on these objectives we identified the best methods and structure of the training workshop with which we could best achieve the set goals. This methodology is explained in further detail in the next two paragraphs.

2.1   Learning Objectives

In order to construct the training, we defined the overall goal of the training day based on the informal directive given by the client. We considered it wise to balance between essential factual knowledge on the one hand and procedural knowledge on the other hand, with the factual knowledge more prevalent in the first half of the training and the procedural knowledge located in the center of the second half. Besides that, we determined that the training should start with a very general and invitational introduction in order to reduce objections und resistances, it should furthermore end in an open and reassuring atmosphere with all the participants having a clear idea about the next steps to be done in order to realize own projects, no matter their size and efforts.

Thanks to working in a university which trains future library and information specialists, we could derive which competencies would be present among the learners and which knowledge in regard to LOD were lacking. We concluded that the learners wouldn't be necessarily very strong in technical matters. As LOD is a very technical topic, we wanted to give a gentle introduction without alienating some of the participants. Taking into consideration the typical curriculum for the initial training librarians, their general technological knowledge and the experience gained in LOD studies, the following learning objectives were defined:

- being able to describe the concept of LOD;
- being able to name at least three examples of LOD applications in libraries;
- being able to cite at least four benefits of LOD for libraries;
- being able to find relevant information regarding vocabularies, ontologies, RDF and its serializations on the web.

2.2   Didactical Approach

In order to achieve these objectives, we chose the cognitivist approach to be most adequate for our undertaking, mainly due to two reasons. First, a purely behavioristic approach seemed to be inappropriate and a merely constructive approach seemed unreasonable. Most participants would not have any further experience which LOD so an introduction with the essential elements was necessary. We decided therefore to start with an instruction on LOD, RDF, and Turtle before opening towards more discussion and the creation of own ideas, after an intermediate sequence where the participants had the time to understand, practice and reflect upon what they had learned in the first section.

As mentioned earlier, special attention was given to the integration of cognitive strategies into the serialized training modules [2]. Since we do understand cognitivism as "mind in action", we tried to break up the usual behavioral pattern of a 'disciple' sitting still and quiet behind a table as much as possible. We thus tried to create a participative and collaborative environment from the beginning and forced participants to move, by creating and mixing groups and thus motivating participants to leave their chairs and to speak, either by inviting them to present results to the rest of the class or by inspecting the group work of the others by moving around and discussing openly the different approaches they followed from group to group.

The cognitivist approach can also be justified by the connective and collaborative nature of the web that was strengthened and completed with the rise of the social web and the web of data; we hence tried to foster an approach that focuses on collaboration and connectedness in any possible way. Our intention was that, the participants should become as autonomous as possible within minimum time and undergo a change from receptive beginners to reflective newcomers and finally to self-governed beginners who understand the matter discussed, and able to develop their own ideas and to discuss the proposals of others.

Finally, we decided to have computers in class, which were needed a) to give access to the digital course material on the web besides the paper bound material handed out at the beginning of the course, b) to follow examples being accessible on the web, and c) to use either web based or desktop based tools like an RDF syntax

validator and protégé. This does not necessarily mean that the training could not take place without the use of computers. The experience of teaching three times the training has shown us that computers might also cause distraction and that interaction between the participants and team work is much more important.

Based on successful experiences gained through other training workshops, we developed two didactical constraints: firstly that all lessons were consequently taught as an alternation between theoretical and either practical exercises or recreation breaks, and secondly that every theoretical intervention should ideally last 20 minutes but never longer than 40 minutes. This was mainly done to avoid monotony, assure hands-on experience and reduce loss of attention that is likely to happen during intensive courses [3]. No time limits were given concerning the duration of practical exercises.

These decisions led to the creation of short to middle length teaching units for the mediation of Linked Data essentials and short to long practical exercises that were performed alone or in small groups of two to four participants. These modules were then arranged in a logical sequence according to our constraints. Though theoretical and practical modules could be different in numbers, the overall duration of all theoretical and practical parts should be similar; preferably with more time spent with a practical experience of the matter taught to give hands-on experience.

3   Development of Theoretical and Practical Training Modules

The content to be taught was granulated in different modules according to the beforehand defined learning objectives and the didactical constraints. The modules' content ranged from the evolution of the web and the consequences for libraries and cataloguing over introductory units to Linked Open Data, RDF & Turtle, Linked Data Vocabularies and their added values to the understanding of ontologies and the future of cataloguing. The practical exercises started with a) the simple analysis of documents in Turtle and RDF/XML and were followed by b) designing RDF graphs and c) describing and validating them in Turtle to d) code essential elements of an ontology. The training program ended with an exercise where all participants were asked to discuss and model the integration of the learned contents into future projects. All practical exercises were designed to give concrete examples of bibliographical data represented as Linked Data.

The actual program consists of nine theoretical and six practical modules that can be combined differently with respect to the needs of the targeted audience. The teaching units and exercises tried to cover all aspects that were considered important by experts working in the domain and being involved in the development of state-of-the-art projects. For a thorough understanding of the program we will present shortly all theoretical and practical parts:

3.1   Theoretical Modules

1a. **The Evolution of the Web and Its Impact on Libraries:** This module is considered to be a general introduction to the topic. It describes the development

from the principles of the World Wide Web (web 1.0) to the Social web (web 2.0) and finally the web of data (web 3.0) with projections of the future web (web 4.0). Every stage of the web was linked to the libraries and their development with respect to the different technological peculiarities.

1b. **Evolution of Library Standards:** This module is a different starting point for the training in comparison to module 1a and oriented toward the future of cataloguing and the specific contribution of Linked Open Data. It gives general knowledge about ISBD, AACR, MARC, FRBR, BIBFRAME and RDA. The major goal of this module is to make the participants familiar with the terms and acronyms of the domain of cataloguing as well as to demonstrate the evolution taking place in cataloguing standards which may well lead to a substitution of some well-known standards.

2. **Introduction to LOD:** This is the first of four modules concerning Linked Open Data, in which the principles and consequences of linkedness and openness of data as formulated by Tim Berners-Lee [4] are presented together with a first link to the realm of open bibliographical data [5]. At the end, a first informal description of triples is given by illustrating the evolution of Wikipedia to DBpedia including a demo of the "influenced / influenced by" links between authors using the application "relfinder"[1].

3. **Introduction to RDF:** This module gives an overview of the basic elements of RDF (Resource Description Framework) [6], namely the notions of triples, subject – predicate – object, their decentralized realizations in graphs using URIs and the HTTP protocol. It ends with an example that shows the transfer of a bibliographical relational data base to a database with RDF-representation.

4. **Introduction to Turtle:** This module contains a short review of the RDF principles and a concise set of 9 principal rules that are necessary to know in order to read and write Turtle documents. At the end, participants should be able to fully interpret documents written in the syntax Turtle.

5a. **Introduction to Ontologies:** After an historical introduction to the matter of ontologies, this module summarises the main concepts (instances, (sub-) classes, properties, domain & range) of ontologies and the necessary steps to create them. This part was mainly based on Noy and McGuiness [7] which is a very helpful and essential document that helps lay people to understand this complex topic.

5b. **Introduction to Vocabularies and Ontologies:** Similar to the former module, this alternative module kept the historical introduction and the main concepts of ontologies, but neglected the steps to create them in favor of an overview and short presentation of the main vocabularies that are used for the description of bibliographical data in a Linked Data format, mainly based on Klee [8].

6. **The Added Value of LOD for Libraries:** This module summarised the findings of a study [9] whose aim was to give an overview of the applications that so far

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[1] http://www.visualdataweb.org/relfinder/relfinder.php

have been created to bring Linked Open Bibliographical Data closer to the user and to distinguish between the mere data layer and the necessary work to make them usable and re-usable in potential applications.

7. **The Future of Cataloguing:** This module presents the outcomes of a study [10] that focused on the skills that future librarians should have whenever they are involved in LOD projects. At the same time this module was used to show which of these skills were taught or mentioned during the training and to what degree these competencies were covered on that day.

3.2   Practical Modules

i. **Analysis of a Turtle Document:** In this first practical exercise one or two Turtle-Documents were given to the participants with the tasks of first reading them and then trying to detect some elements that had meaning for them. In one case this was a document describing a person with FOAF, in the other case a document describing a bibliographical record. This was done with the certitude that almost all participants had no prior knowledge of neither LOD nor RDF or Turtle and that most parts of the documents remained undecipherable for them. Nevertheless most of them were able to detect the literals and the general meaning of the document(s). At the end of the exercise that was done in small teams of neighboring participants and for which a maximum of 10-15 minutes were reserved in the schedule, the findings of all participants were collected in a plenary session.. The goal of this exercise is that even if the learners don't understand Turtle yet, they are able to recognize a bibliographical record. It serves as well as an example of the learning progress of each participant, toward being able to read the document by the end of the training day.

ii. **Comparison of RDF/XML and Turtle Documents:** In this second exercise two documents, one in RDF/XML and the other one in Turtle were handed out to the participants in order for the participants to compare them. Both documents described the same bibliographical record. Thus the participants were able to find out (still without any knowledge of RDF and Turtle) that a) in RDF there are different syntaxes to describe the same object or instance and b) that Turtle was much easier to understand. Similar to the prior exercise this exercise was done in neighboring groups with two to four members and the findings were discussed afterwards in plenary.

iii. **Designing an RDF Graph:** For this exercise, new groups were built in order to create new group dynamics. The groups were given a scientific article, paper prints of the Dublin Core specification[2] and the FaBiO vocabulary[3] and a blank A3 paper sheet. The learners were given the task of designing an RDF graph for the scientific article on the paper sheet by using predicates of the vocabularies and linking them with elements of a bibliographical nature as they would do while cataloguing. After 20 minutes, the groups were invited to hang their graphs on the

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[2] http://dublincore.org/documents/dcmi-terms/
[3] http://purl.org/spar/fabio

wall of the room for a "vernissage" enabling the learners to walk around and look at the results of the other groups. The overall duration of this exercise, being the first profound active examination of RDF, was about 40 to 50 minutes.

iv. **Writing and Validating a Document in Turtle:** This exercise with a duration of about 30 minutes was designed to make use of the computer and a web browser. Participants were asked to transform the graph designed into a Turtle document and to validate the correctness of the syntax with the help of a Turtle validator (that unfortunately is no longer active but was to be found under http://www.rdfabout.com/demo/validator/): it mainly served to make the participants use vocabularies and define triples correctly with respect to the syntax and the semantics (although the latter was validated by the trainers). Implicitly it served also to show the participants the learning progress during the first half of the workshop.

v.i **Coding Dublin Core with Protégé:** The goal of this exercise was to make people familiar with the creation of ontologies and existing tools such as Protégé. Due to the complexity of ontologies and the "heaviness" of Protégé, a tutorial similar to the well-known tutorial for the pizza ontology was handed out to all participants so that they could individually create classes, instances, relations and define the domain and range of bibliographical data. This exercise, for which a duration of between 40 and 50 minutes was reserved, was without doubt by far the one that was most behavioristic in its nature because of its step by step guide. It mainly served to give an insight into the large and complex realm of ontologies.

v.ii **LOD @ Your Institution:** In this alternative to exercise vA the participants were once more asked to find themselves together in small teams (either those built for analyzing the documents or for designing RDF graphs and writing Turtle documents) to discuss the relevancy of the lessons learned during the training day for their institution. This was intended for them to define potential projects that could be realized within the horizon of the next one or two years. Concretely this meant for them to see which a) in house databases could or should be connected to the catalogue to build a linked data environment b) how far they could or should be connected to parts of the linked data cloud, and c) to what extend copyright issues, i.e. the openness of the data could be a matter of which to take special care. The groups were also asked to break down the project in those steps that were necessary for the conversion of MARC data into Linked Open Data. All groups were asked to briefly present their results. For this exercise 50 to 60 minutes were foreseen, depending on the number of people participating in the training.

4 Compilation and Serialization

Table 1 illustrates the programs of the three training sessions given so far with the practical modules written in italics. The whole one day program finally consisted of four sessions each of about one and half hours.

Table 1. Overview of the serialized training modules

First training: BCUL I	Second Training: EPFL	Third training: BCUL II
1a. The evolution of the Web and libraries	1b. Evolution of cataloguing standards	1a. The evolution of the Web and libraries
i. Analysis of a Turtle Document		
2. Introduction to LOD		
Short Break		
ii. Comparison of RDF/XML and Turtle Documents		
3. Introduction to RDF		
iii. Designing an RDF Graph		
Long break		
4. Introduction to Turtle		
iv. Writing and Validating a Document in Turtle		
6. The added value of LOD for libraries	5a. Introduction to Ontologies	5b. Vocabularies and Ontologies
Short Break		
5a. Introduction to Ontologies	6. The Added Value of LOD for Libraries	
v.i Coding Dublin Core with Protégé	*v.ii LOD @ your institution*	
7. The Future of Cataloguing		

From a first glance at this synopsis it becomes immediately clear that only the modules of the first and of the last training session were prone to change and that all training programs consisted of a rather stable series of theoretical input with preceding or following hands-on experiences. The modular approach proved on the other hand to be flexible enough to allow changes as a reply to either requirements of the client or as a consequence of lessons learned in foregoing trainings.

All training workshops ended with an oral evaluation of the content where all participants were asked to discuss their experiences and invited to make proposals that could be helpful to improve the program. Due to the long and somewhat exhausting training day this feedback session was rather short but generally positive. The participants were also invited to give written feedbacks via mail or the e-learning platform where all the teaching materials handed out in paperbound documents were available in a digital version.

5   Conclusions

In this paper we reported on the conception and realization of a one day training program to teach librarians the essential knowledge about Linked Open Data with special regard to challenges and changes that they face in their working environment. The training was based on different serializations of basic theoretical and practical teaching modules that were consequently improved and modified after every execution. Experience has shown us that for each training session there needs to be

slight modifications according to the needs of the institution that ordered the on-the-job training, but that the core modules and practical exercises remained unchanged. After having taught three times the program described in this paper, we can rely on a consistent and stable core while being open and flexible in the arrangement of the introductory and closing sessions of the module chain. While we continue to teach (and modify) our training program, first reflections were done to integrate this training into the Bachelor studies in Library and Information Science in which the compilation or transformation of thesauri in Linked Open Data will also play an important role. The feedback of participants will help us to respond to the needs of the professionals working in academic libraries and assure the adequate preparation of future librarians.

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Transliteracy and Knowledge Formats

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Abstract. Information transliteracy in education can be observed through students' activities in project situations, which show a transformation of learning strategies and transfers between informal digital abilities and formal academic skills. A research project, "Translit", is led in France on pupils in scholar and non-scholar activities. We examine the concept of knowledge format. A format is a tangible and intangible knowledge organization model. We propose some examples of such models that seem to be efficient in our observations. These formats open to the design of information through the production of content. They can be a path to reflection on seeking procedures but also critical thinking, not just problem solving but also questions discovery. We propose some criteria in order to build a typology of these knowledge formats based on transliteracy.

Keywords: Information transliteracy, learning scenario, knowledge format.

1   Introduction

Transliteracy is at the crossroad of three main fields: information, media and computer literacies, as well as a metaliteracy. Considering the convergence of three perspectives on information as document, news and data, it invites us to analyze exchange processes between private and public life, consumption and creation, knowledge and communication [1]. Information transliteracy in education can be observed through students' activities in project situations, which point out transformations of learning strategies and transfers between informal digital abilities and formal academic skills. A research project, "Translit", is led in France on pupils in scholar and non-scholar activities. Our team has observed 16-year-old pupils in project-based activities. Our work is situated within the specific context of the French education system, where a teacher librarian is in charge of managing the resource center and information literacy.

Our scientific protocol relies on an ecological approach of capturing pupils' information retrieval and communication practices taking into consideration the social, cognitive and technological environment. We have characterized typical transliterate activities which are cognitively distributed and situated. During our research, we were able to evaluate the pupils' capability to organize their information environment, to coordinate the work among the members of the groups and to master

the communication process. There is a direct correlation between these capabilities and the success of the projects. Young people own an elaborate "art of practice" [2]; they tend to invent ways of doing things which are not orthodox according to what they are taught, but nonetheless efficient and explicable using thoughtful devices.

We propose to look at the concept of knowledge format into the paradigm of transliteracy. A format is a tangible and intangible knowledge organization model, linking "logic of knowledge and dynamic of uses" [3]. We examine some examples of these models that seem to be useful in our observations. These formats are open to the design of information through production of content. They can be a path to reflection on seeking procedures but also critical thinking, not just problem solving, but also discovery of questioning. We propose to examine some criteria in order to build a typology of these knowledge formats based on transliteracy.

2   The Context: From Cognition to Knowledge Format in Transliteracy

Transliteracy is anchored in an anthropological multicultural perspective. It is based on actual and intuitive individuals' practices, as well as on education and training. It asserts that the individual is integrated into a social process of education that is not abstract but carrying skills, if not knowledge, gained through daily searching, gaming, creating and communicating practices. Sue Thomas [4]–defines transliteracy as "the ability to read, write and interact across a range of platforms, tools and media from signing and orality through handwriting, print, TV, radio and film, to digital social networks". Henry Jenkins [5] also points out the centrality of social uses of media technologies and the "transmedia" processes within the "convergence culture". Porosity between school life and private life, personal history and social practices, is associated with porosity between areas of expertise: information, media, computer literacies mingle in practices that can be deconstructed and connected with different conceptual fields from the epistemological standpoint, and to different actors from the perspective of modes of production and dissemination of academic knowledge.

2.1   The Research Context: An Ecological Approach of Transliteracy

We are interested in situations in which the choice of sources and modalities of information search and production is free for the students, within the limits of spatial, temporal and technical constraints in each institution and teaching situation: supervised personal work and travel in England in high schools, personal projects in vocational schools. In these situations, the choices of groups, topics, issues, are not completely free, but the way to find the needed information to complete the project, as well as modes of communication for the final production, remain to be chosen by the students. Spatial and temporal constraints are more flexible than in a normal class situation, which allows a certain porosity between information systems, and the establishment of an information ecosystem with open interactions between spaces (classroom, computer room, language lab, school library, public library, home) and between individuals (teachers and students, teachers, facilitators and students, between students, students with non-adults). These ecosystems, often but not always,

integrate the use of technical networks within school -when it works-, and social networks (e-mail, Facebook, Google Drive, blogs...). Faced with these open ecosystems, practices that mix academic information (documents given by teachers, textbooks, recommended items), media information (press accessed at home or at the school library, videos found on YouTube), found and exploited via digital devices (search engines, software, word processing or presentation), can be observed.

To consider students' information practices, we have adopted a qualitative ecological approach from ethnomethodology to observe pupils' transliterate practices on one hand, and the training practices of teachers and educators on the other hand. Thus, we have used several techniques of qualitative surveys to complete our investigation. During short term and regular visits and during a school trip including the creation of a travelogue, we sat among groups of 3 to 4 pupils and made direct observation, recorded their exchanges with a digital voice recorder, took notes and memos with an observation grid and made unstructured interviews with the pupils. When we noticed some changes, important or intriguing elements in the state of action, we made the pupils explain the sense and interpretation of what they were doing: when a pupil left the group, when there was a change of activity, when a new negotiation among pupils started, when a teacher came, when they discussed their methods, practices, tools, etc. Thus, we focus on relations as Christine Bruce [6] (2013) does in her phenomenographic approach. In short, we followed four high school classes, and one vocational school class, each class being composed of about thirty students, and 10 teachers (3 teacher librarians, and 7 teachers). The set of unstructured interviews with the students and teachers, exchanges between students and between students and teachers, as well as direct observations without intervention, were recorded and transcribed. Finally, we examine the projects' production as a process, regarding the criteria of the primary information's quality, scientific content, and communication.

2.2 The Epistemic Context: Socio-semio Constructivist Approach of Information Creation in Documentation

Transliteracy implies the centrality of complex uses considering social interactions of the users, sense making in a specific social and cultural context, and the convergence of three dimensions: structure (information, document, media and communication), strategy and action (the procedures for handling content) and culture and identity (individual perceptions) [7]. Complexity in the approach of information literacy has already been underlined by authors like Louise Limberg, Olof Sundin and Sanna Talja [8], who describe the relationship between learning practices, information structures and technologies. In this paradigm, learning through forms of social organization of information requires documentation practices, even if they are non-formal or unconscious. According to Manuel Zacklad, *documentarization* is "a work consisting in providing a permanent support attributes that facilitate its movement in space, time and interpretive communities" [9, p.35]. This work is particularly relevant for documents that he calls "documents for action", text files collectively annotated, sorted mail messages, annotated images, working papers. They are "perennial, fragmented and evolving media, facilitating the development of creative transactions despite the distribution of situations of activities within a transaction flow" [9, p.45].

Documentarization allows the establishment of a common rationality in the organization of knowledge that goes beyond the individual information systems organized on personal cognitive modes, and sets stability for the action in time. Rationalization appears through the use of a lexicon and common management rules. Through the process of documentarization, a document becomes a sharing object within a community. Its use is then optimized, with individuals holding a greater empowerment. We can thus propose the idea that in a working group, information flows through voluntary exchange systems that require both the establishment of standards of behavior and trust relationships, supported by a communication architecture which is not hierarchical [10]. Knowledge formats can be considered as pillars for this architecture.

Awareness appears when students are induced to think about their own practices in the process of activity, and criticize them according to their social, academic and individual needs, constructing formal from informal knowledge on information, media and computers. It relies on conditions: the existence of intuitive but nonetheless efficient information practices, commonly acquired in social situations, the presence of a teacher (librarian) who induces awareness and control of the practices, and adequate knowledge formats.

3   Building Knowledge from Situations: The Role of Formats

The concept of knowledge format has been popularized by Laurent Thévenot [11] who considers the way people manage commitment through social conventions. Knowledge formats allow people to share information and interpretation, despite inequalities among skills, access to and knowledge of information, and finally to build a common knowledge. They enable the establishment of communicative conditions and provide a framework to facilitate the emergence of transliteracy skills. They are not a standard but a coordination frame transforming common action into cognition.

3.1   Building Knowledge from Uses in Projects

The distribution of skills and knowledge can be seen in three areas: information gathering, writing and synthesis, communication. In groups, students specialize around these three axes depending on what they are used to do, even if they run over their area of specialization. Within each axis, they develop more specialized skills. In the digital domain, areas of expertise concern data formats (text, image, sound), communication tools, the organization of knowledge. Skills are heterogeneous with attitudes ranging from total rejection of digital tools to almost professional skills, including image and sound, or the creation of websites or blogs. In creative situations, we often notice technical tutoring of students by some experts in the classroom. Concerning the media, even in socially advantaged backgrounds, homogeneous practices have not been observed: some students show a great maturity in the use of the press (choice of diverse sources, comparison of brackets ...), others are unable to locate the media discourse in the political spectrum. In the field of information, styles and reading practices condition the choice of sources. The working styles are also very heterogeneous: many students prefer paper and tend to look for books or buy

them, or reprint articles, others, rarer, more easily read on the screen with the help of images. Reading and writing processes depend on varied multi-media combinations: on-screen reading and writing (taking notes) on paper, reading and writing on the screen or on paper, paper reading and writing on the screen or on the phone. "BYOD" process may be useful to encourage the use of familiar objects and make the students analyze their own uses.

We paid attention to the info-documentary layout as a process generated by school to build a form of autonomy in information retrieval and use. Meanwhile, we have observed that teacher-librarians use the project as a significant learning device. Thus, a work schedule is distributed to students to help them plan tasks and to verbalize the progress of their work. Similarly, to support the information activity, students have instructions for bibliographic referencing. Furthermore, teachers became cognitive mediators for the young researchers: "Reflexivity in the research process is quite important for us", a teacher librarian says. Observed in one school, teacher-librarians have required that all students make a midterm record of their project. On the occasion of the project installation, trainings are performed, usually on an individual basis, using information concepts and documentation techniques: discovery of the library catalog and databases (group training, followed by individual), notion of source, bibliography, validity / reliability of a website, organizing a plan... In another school, the teacher-librarians have remained set back and let the discipline teachers organize on improvised devices, simply providing teachers and students the facilities to access the information. No forced reflection on "work in progress" was asked. In this case, knowledge and skills regarding information acquired during the project are very short-lived. In vocational schools, the organization of work was done in pairs between teachers and teacher-librarian with a very tight control on students and specific instructions for production. restitution.

Work situations and positions of teacher-librarians are variable. Generally, regardless of the environment, they take advantage of the project's arrangement to implement a policy of training students, even if it is very flexible and rather more "coaching" students. Thus, a teacher-librarian that we observed in our study, started a long discussion with students about the use of social networks to carry out education. They dealt with issues related to data protection, but also to their exchanges and communicative rules adjusted to these tools (netiquette). Projects are an opportunity for students to work on concepts that are not necessarily addressed in the daily work, to reflect on the sources of information and the need to vary them, on the complementarity of information materials, and the validation process.

3.2   Building Knowledge from Others: Logic of Representations and Logic of Common Action

Logic of representations is quite important to understand the cognitive process. We have noticed a gap between students and teachers' mutual representation. Students do not question their own ability to use various devices in order to find and manage information, while some feel completely lost and others do not easily confess that they do not have the needed connection or device at home. Teachers are often afraid of their students' supposed digital natives' abilities, which prevent them from using ICT inside the class. The result of this chain of misunderstanding is that many

students have poor technical skills from their personal experience, and do not get more skills at school because they do not have the opportunity to learn to use ICT. The projects give the opportunity to evaluate the gap between students and between representations and reality, and to let the students co-construct their abilities in real communication processes.

To include communication, the teachers rely heavily on distributed and situated cognition tools, such as the logbook, discussed as a tool to support the reflective process, reinforcing the vision of a "person-plus" [12]: "It is important to have a discussion about what we do, to try to understand why there is such a thing, how we do it, not operate haphazardly, it is a tool for structuring thought, really, and the research process therefore" says one teacher. The logbook demonstrates the students' ability to mobilize resources, tools, situations, to deal with obstacles. Mutual enrichment of their practices can then take place. Logbooks show quite a hybridization of practices between monitoring academic prescription (standardized references as prescribed by the teacher) and communicative creativity and support on its common research and communication practices. In the vocational school, this process is complicated, either because non-formal information practices are poorly developed, mainly for entertainment, or because the school format is not mastered by students: the passage from spontaneous information and communication practices to academic knowledge requires significant support from the teacher. Some mechanisms may still be unlocked when one leaves, for example, the students seek information from images, or Wikipedia, which then encourage them to link the found information with their personal observations on the professional field, or with a collective reflection involved in the group through the teachers.

4   Functions and Types of Knowledge Formats

Knowledge formats, designing information architecture through the production of content, can also make students become aware of their information seeking uses, not only procedures but also organization of collective action and critical thinking, not just problem solving but also issues of discovery and creation.

4.1   Forms of Engagement Regimes: Formats to Document Collective Action

The knowledge formats enable the set-up of communicative conditions and provide a framework to facilitate the emergence of transliterate skills and awareness. This is the case of the logbook often reduced to a formal and unnecessary requirement. Some teachers have transformed this requirement by describing it as an effective work storage and organization tool. When it exists, the logbook is strictly organized by some students with a system of color codes, and often used to store and manage references to documents and key ideas that are useful in writing. It becomes a true cognitive and didactic training tool. The logbook is a tool for storing, sharing and documentarizing information. In the case of the travelogue, students who could have chosen electronic devices to write their synopsis chose paper and pen as a more creative and communicative organization of work.

A prescriptive blog may also be used as a knowledge format, to guide students in their choice of tools and bibliographic description. Finally, a specific communication format allows students to think of alternative ways of rendering a search and reducing the contradictions they perceive between non-formal multimedia arrangement formats and school prescriptions (written paper, PowerPoint presentation). This is the case for radio and video broadcasting in some media classes' blogs, or maps produced by the class using open data.

The sharing function of some formats interests the collective and calls the use of social networks to achieve the notes rewriting and finally new document writing. Collective writing using tools like wikis or Google has been rarely observed. Sometimes contents are discussed or performed collectively; some students read together by using the cursor to over-read the text, evaluate by comparing it with other documents and classify documents by selecting multiple tags. USB keys often include a shared directory. Sharing is also held on Facebook for whole texts and references to long documents, the E-mail for messages that include only two people, and SMS. The most common combination observed in the groups is the USB-key, notebook and a Facebook group with email. Students use Facebook in a logic of short-term memory and flows, between storage location and collaborative agora or communicational forum: everyone will be filing to share in an ad hoc created group, open only to the members of the working group and some relationships: a student's sister who helped him find a document, a friend who knows a lot about the subject.

4.2   Emphasis on Criticism: Formats to Document Reflection

In the context we have observed, the reading is more or less enriched with a number of annotations: attentional annotations, associative annotations indicating links to other documents or performing clusters, contributory annotations creating new documents from the original document such as abstract rewriting. These operations can be gathered according to the functions they perform for the group's work:

- Evaluation functions to select documents: the records are arranged in groups according to their degree of reliability, a careful shared reading being postponed when doubts exist.
- Analytical function of description and indexing to process documents: translation, writing reviews, summaries, tagging, quotes, links to other documents, illustration. Text markup allows sharing reading and orientation within the document.
- Classification functions with prioritization and storage to find the documents in the context of collective management, through markup techniques and guidance: adding semantic markup (tags), using color codes, highlighting a passage, constitution of folders and subfolders.

4.3   Conditions of Emancipation: Formats to Document Creation

A teacher-librarian in our study explained to the students that the variety of different exploited materials (music, video, voice, movement in space, staging, and dialogue) is interesting and valuable. This discourse encourages students to leverage their regular practice to implement an effective information-communication approach. A discourse

that promotes non-formal practices and which, combined with the teachings of info-documentary knowledge, leads students to share the discovery of new and important information while "having fun" with the school work. The remarks of the students, combined with the observation of their final products, reflect the impact of education on information in contextualized areas identified by the teacher and by the students themselves (in their logbooks, students explain that they have worked on the concept of source, or the notion of publishing, including use of databases and open archives). Students who, having the appropriate info-documentary concepts embedded in a reasoned and conscious communication approach, are able to demonstrate a genuine informational creativity, freeing technical chains and purely reproductive methodologies.

The fundamental role of teachers is to guarantee the emancipation of the individual's awareness and knowledge, using essential educational contributions as information professionals [13]. Several studies have underlined the major part played by librarians in the development of information literacy and by the cooperation between librarians and teachers [14], especially when their action is focused on knowledge construction rather than skills. Carol Kuhlthau, Leslie Maniotes, Ann K. Caspari [15] have proposed a model of « guided inquiry » which seizes the information search process and emotional, cognitive and physical aspects of the tasks. This model is focused on information search as a continuous process, while we pay attention to social interactions, changes and transfers among different cognitive, affective and technical spheres.

The emancipatory function appeared in our study all the more essential, since the cultural and cognitive "legacy" of students are unequal, depending on the geographical location and the social composition of the school. In the vocational school, digital tools make the social and cognitive gap wider, and education is essential. It seems to us that mediation is indispensable to ensure everyone the development of information potential, that is to say the ability of individuals to increase their skills, quantitatively or qualitatively on a lifelong basis [16]. Mediation may support collaborative learning strategies through formats rather than assessments that Eero Sormunen, Tuulikki Alamettälä and Jannica Heinström [17] have studied. It is even more fundamental to build a culture of information that relies on a proactive vision of learning, determining the ability of the individual to adapt to future information and digital environments [18]. Mediation is based on the existence of devices that include minimum learning expectations: an explained project, instructions, absence of any technical obstacle, coaching by teachers who themselves are mobilized on literacy issues and not only on the content of programs. Important cognitive barriers can exist, for example, for students who are experiencing reading, concentration or understanding difficulties. Thus, mediation focuses on uncertainty and complexity, which are substances of media information, horizon to pluralism and open critical thinking. Awareness does not consist in building what is true but in negotiating rules to find and evaluate what is possible.

5   Conclusion

Transliteracy observed in educational and informational systems, features a transformation of learning strategies and porosity between academic skills and

"intuitive" competencies, formal and informal. This transformation of constitutive rules of school work and this redistribution of cognitive and social roles, skills and knowledge in building transliterate strategies, highlight the need to support formats of knowledge enhancing the students' information activities. They cannot disinhibit themselves toward technologies without support. As danah boyd has recently underlined "developing wisdom requires active learning » [19]. There may be a contradiction between various cognitive formats as well as between spheres of action and commitment. Students and teachers tend to install strong barriers between private life and cognitive process at school, which limits the range of knowledge formats that can be used at school. Three factors are associated to transliteracy scenarios: individual and collective strategies, instrumental skills with tools and devices, educational support for media and information literacy. Dynamics of technical, social and cognitive mediation remain to be built, possibly using knowledge on intertextuality, architextuality ie awareness of the fundamental semiotic structures of a single text, and hypertextuality [20]. The transliteracy approach to information activity in education allows the emergence of an information maturity associated with the construction of knowledge, according to a "grammar of usage". Awareness and rules creation from DIY crafts, supported in context by forms of pedagogical mediation, help link spontaneous informal practices with official requests and legitimate cultural constructions. In this process of appropriation, transliterate uses find their effectiveness.

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Health Information Literacy of Senior Citizens – A Review

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Abstract. The objective of this paper is to analyze the available literature on health information literacy of senior citizens from around the world and outline the major findings from this literature. A systematic review of literature from 2004 to 2014 was conducted using nine relevant databases, which yielded 42 quantitative studies, which were analyzed. The analysis revealed that information seeking behavior varied by age, gender, health status, education, socio-economic status and technology literacy. Over time, there has been a gradual increase in the use of the Internet by senior citizens seeking health information. Also, there has been a corresponding increase in a number of intervention studies in e-health literacy for senior citizens. Shortcomings in the literature include compromised methodological issues of inadequately powered sample size, absence of longitudinal and theory-based studies, and dearth of research on relevant outcomes. The article ends with a discussion of the relevance of the findings to IL researchers and practitioners, and suggestions for further research.

Keywords: Senior citizens, health information behavior, health information seeking, e-health literacy, health information literacy.

1 Introduction

Health information is very important for senior citizens because health-related issues tend to increase with age [1]. Current trends in seniors' patient care reveal that practitioners have moved away from a provider-dependent [paternalistic] model to one where patients are involved in various aspects of health decision-making [2-3]. Critical to senior citizens' effective participation in health decision-making is health information literacy (HIL). In this study we adopt Zarcadoolas, Pleasant et al.'s definition of HIL as the "wide range of skills, and competencies that people develop to seek out, comprehend, evaluate and use health information and concepts to make informed choices, reduce health risks and increase quality of life" [4, p. 196]. The goal of this review is to identify the major strands of research on HIL of senior citizens and report the important findings from this body of research. Recent findings suggest that HIL plays an important role in enabling seniors to manage their health

[5], and in making health related decisions [6]. Given the importance of HIL in health decision-making and the trend towards patient's increasing involvement in managing their health, a review of the literature on senior citizen's HIL is both important and timely.

2   Methodology

A systematic review of literature from 2004 to 2014 was conducted by combining the search term *"health information" with* "old", "older", and "senior/s" and "senior citizens" in different iterations across nine databases: *PsycINFO, Library Literature & Information Science, Web of Knowledge, Medline, CINHAL, ERIC, Mass Media Complete, Science Direct, and Scopus*, to scan the literature published in peer reviewed journals. We also included studies focusing on populations outside North America and other English speaking regions, which was a limitation in previous literature reviews [7-8]. Using Zarcadoolas, Pleasant et al.'s definition of HIL as basis we included research articles that focused on different components of health information literacy including, health information seeking, comprehension of health information, e-health, and studies that document health outcomes that can be attributed to information seeking. Our search yielded 94 articles that focused on various aspects of health information literacy among senior citizens. These included 32 qualitative and 46 quantitative articles, and 16 review and commentary pieces. For this review we included the 42 quantitative articles in the final analysis. This decision was based on the fact that though findings from qualitative articles provide very interesting insights, they are not easily generalizable, as opposed to results from quantitative studies. A coding method used in an earlier study was modified and adapted for this study [8]. The analysis revealed that broadly, three research strands currently exist within this literature. The first strand focuses on documenting how demographic factors influence health information seeking and use. The second strand focuses on comprehension of health information by senior citizens. The third strand of research focuses on the impact of e-health literacy interventions and their influence on health information seeking on the Internet.

3   Predisposing Characteristics and Health Information Seeking

Scholars pursuing this line of research conceptualize health information seeking as an active and purposeful goal-oriented activity. The basic model of health information seeking as outlined in these studies suggests that predisposing demographic characteristics of a senior citizen in turn influences that individual's engagement in health information seeking behaviors, which then predict the relevant outcomes. This model of information seeking behavior is similar to the one proposed in earlier studies [8-9]. Findings suggest that senior citizens are not one monolith group, and disparities exist in patterns of health information seeking and use. In general, research revealed that health information seekers were predominantly females [10-12]. Exceptions to this were a Taiwanese study [13] which found no differences among men and women, and an Australian study which found that women were less likely to have access to

Internet and were less willing to receive health information from the Internet. Findings from the later study may be attributed to participants being predominantly rural, and so other factors may be at play [14]. For both genders, talking to a general medical practitioner increased the odds of using Internet for health information. However, talking to a medical specialist was significantly associated with Internet use only for older women, while seeing a mental health professional only marginally increased the odds of Internet use for health information only for older men [15]. Gender-based differences were also evident in health literacy scales. Men in general scored better on both general numeracy (3-item scale) and health context numeracy scores (8-item scale), and scored lower on math anxiety score. However, there were no significant gender based differences on the combined scores of Short Test of Functional Health Literacy in Adults (STOFHLA) (numeracy+prose), or on STOFHLA prose scores, and scores from the numeracy component of STOFHLA [16].

Age was another important factor. Health information seekers were often younger senior citizens in the age range of 50-70, compared those in the higher age bracket. These findings were consistent across populations in other countries including Australia, Canada, Finland, Sweden, Taiwan, Philippines, e.g. see [10], [12], [17-19] and specific immigrant communities, ex. Korean Americans [11]. However, the studies did not find any differences between older and younger Veterans in terms of health literacy, objective numeracy and graphic literacy [20]. A Canadian study found an inverse relationship between age and STOHFLA scores for patients between 80-90 years [16] which was in conjunction with other studies [21]. It was also found that scores on STOHFLA prose decreased with increase in age, and age did not influence the numeracy scores. However, results were quite different for the other two numeracy scales administered in the study where age negatively correlated with the scores. This led the authors to conclude that the high functional literacy scores on STOFHLA may be attributed to their prose skills rather than numeracy. And the numeracy skills used in answering numeric questions in STOFHLA emphasize basic number recognition and not the utilization of strategies and skills associated with numeracy skills and strategies that are known to reduce with age [16]. Source preferences also differed by age. Results showed that older senior citizens preferred to receive their health information from human sources, primarily professional sources (doctors, nurses, pharmacists, American Indian Health Service workers, and tribal health clinic staff), interpersonal sources (friends/relatives) and television [13], [22], and ethnic language media (health segments in newspapers and television) [11] to other sources (e.g. Internet, radio) in that order. Human sources were most favored over other sources as it allowed them to communicate and clarify their doubts and ask relevant questions [17], [22-24]. Race was another important factor that influenced various aspects of HIL. Studies showed that Caucasians typically scored higher on a number of health literacy measures [20], [25-26], were more likely to look for health information online, reported better health status, expressed greater confidence in taking medicines, had better knowledge about their chronic health conditions, and were less likely to report that they would be judged negatively for asking health related questions [27]. In terms of numeracy and graph literacy, one study found that African Americans had lower levels of graph literacy than their older White counterparts. However, older African Americans and Whites did not differ in levels of

health literacy, subjective and objective numeracy [20]. A US-based study also found that preference and trust for sources also varied across races as follows: Blacks (TV), Hispanics (family members), and Whites (health care providers) [22]. Socioeconomic status and education levels were also strong predictors of health information behavior, where the more affluent and well-educated were more likely to seek health information compared to those with less education and those who belong to a lower socio-economic status [28-30].

In modeling health information behaviors, scholars have documented a number of psychosocial characteristics that influence the nuances of the search process. Studies in general have identified technology related factors (e.g. computer self-efficacy, prior experience with Internet use, behavioral intention to use, perceived ease of use) [28], [31-33], and e--health literacy [34-36] as factors influencing health information seeking. In addition, perceived usefulness, ability to enjoy Internet use, were all factors that positively correlated with health information seeking [31]. Non--technological factors such as psychological capital (e.g. anxiety, depression) were negatively associated with Internet use for health, whereas social capital (social contact, participation in social activities) was positively associated with Internet use for health [37]. Lastly, other predictors of information seeking include number of chronic conditions or serious illness, irrespective of the race and gender of the subjects [13], [18], [29], [31], [37], being married, and having private insurance, increased the likelihood of seeking information online [29].

3.1   Characteristics of Health Information Seeking Behavior

Information behaviors varied across different age groups of senior citizens. These consumers could be broadly categorized into Internet and non-Internet users. Members of both these groups were most likely to be happy with their preferred choice of information channels (Internet or other), and make decisions based on information from their preferred channels [33], [38]. Among these, one study found that those who obtain health information from non-Internet sources are more likely to make health related decisions compared to Internet information seekers [38]. Two studies found a strong association between trust in Internet health sources and frequency and confidence with Internet use [24], [33]. Senior citizens in general had poor website quality and credibility assessment skills, and often relied on previous knowledge to assess the quality of information online. They rated health websites as credible if they answered a wide range of questions or specific questions, or if the information was "concise", "clear", "organized", and was "presented in an orderly fashion" [17]. A Filipino study found that senior patients preferred full disclosure from doctors, and gravitated to doctors who were experienced and were willing to fully disclose information about the health problem and its outcomes [10].

3.2   Health Related Outcomes

There were only two studies that focused on health outcomes. These studies found that senior citizens with low numeracy skills in general scored less on risk comprehension [26], and those with low overall health literacy scores were less willing to take part in decision making about their health, and placed greater trust in their physicians for making their decisions [20].

4   Comprehension of Health Information

Comprehension of health information is a critical aspect of health information literacy and plays a key role in health decision making. Scholars pursuing this line of inquiry have documented reading skills, numeracy and graphic literacy skills of senior citizens in health context. Donelle, et al. measured numeracy skills in a population of Canadian senior citizens using three different scales: The STOFHLA, a-three item General Context Numeracy Assessment Scale (GCNAS) [39], and an 8-item Health Context Numeracy Scale [39]. Results showed that subjects' numeracy scores were contingent upon the numeracy instruments used. Respondents scored lowest in the GCNA scale, followed by the health context numeracy scale, and STOFHLA, in which they scored the highest [16]. This gradient reflects a range of numeracy skill levels as described in previous research [40-41]. These differences in numeracy scores led the authors to conclude that the independent use of these three measures may not accurately represent the numeracy scores of Canadian senior citizens [16]. The results from this study also shed light on the relationship between age and functional health context numeracy in Canadian seniors. Results showed that a significant number of Canadian senior citizens scored well on STOFHLA (n=127, 91% gained adequate health literacy scores). Additionally, most participants (n=110/140, 78.6%) achieved perfect scores on STOFHLA's numeracy component. However this study suffered from an important limitation. Subjects in this study were highly functional individuals, which may have reduced representation of individuals with a wide range of numeracy and prose skills. This may in turn portray senior Canadians as having disproportionately higher health literacy skills as measured by STOFHLA.

Donelle, Hoffman-Goetz, Gatobu, et al. found that the format of presenting health risk information (text only, graphics only, and a combination of text and graphics) did not have an impact on risk information cognition. Their study also showed that older adults had a tendency to overestimate their numeracy skills when in fact they scored significantly less on numeracy assessment scales in both the health and non-health contexts.[1] Though this study had subjects with a wide range of education and numeracy skill levels, it suffered from a small sample size and therefore its findings may only be generalizable to a limited extent [16]. There are two other studies that merit an in-depth look, each of which have focused on senior citizens belonging to two distinct minority groups: American Veterans, and American Indian and Alaskan Natives. Rodriguez et al. investigated the levels of numeracy and graphic literacy and its influence on various health behaviors in 502 American war Veterans. The study found that older Veterans had inadequate health literacy, scored low on subjective and objective numeracy scales, had higher body mass indexes, took more medications and had more co-morbidities and mental disorders compared to their younger cohorts. Compared to younger veterans, older veterans demonstrated higher subjective numeracy [20]. The second study by LaVallie and Wolf et al. investigated the relationship between health numeracy and risk comprehension in 90 Senior American Indians and Alaska Natives. Numeracy was measured by testing participants' ability

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[1] Participants were tested for general context numeracy (3-item scale) general context numeracy (8-item scale), and prose and numeric ability in health context.

to answer three math questions with various levels of difficulty: assessing basic probability, converting a percentage to a proportion, and converting a proportion to a percentage. Risk comprehension was measured by the participants' ability to perceive the level of risk from each of the treatments described in vignettes that were framed in three different formats: relative risk, absolute risk, and number needed to treat. The study found that in general, the numeracy skills of this group of seniors were relatively low. Of the respondents, 25% of them were able to answer basic probability question, 23% converted a percentage to proportion and only 7% correctly converted a proportion to percentage. In terms of presentation format, information that was framed as a relative risk elicited the highest percentage of correct answers (74%), compared to questions framed as absolute risk (60%), and the actual number needed to treat the condition (58%) [26].

The influence of health literacy on various health behaviors and outcomes is another line of research pursued by scholars. For example a study by Ussher, Ibrahim, Reid et al. found that adequate to high Health Literacy scores as measured by Rapid Estimate of Adult literacy in Medicine (REALM) [42] in coronary heart disease patients, positively correlated with adherence to exercise regimes, receiving social support, confidence in interacting with medical professionals, taking part in discussions with doctors and nurses, ability to read and understand medical literature, and understanding heart problems [27].

5   Intervention Studies in E-health Literacy

Studies in this line of research measured the influence of e-health literacy interventions on health information seeking online. These interventions often imparted basic computer and Internet browsing skills, and skills for evaluating the quality and accuracy of health information websites and content to the participants. Post intervention data was collected immediately after the intervention in some instances [6], [43] or was collected several weeks after the intervention [44]. In one instance data was collected after six months [45], and after a year after the intervention in another instance [46], in order to understand the long-term impact of such educational programs. However, this particular study suffered from a high attrition rate, which limited the generalizability of its findings. These studies in general found that e-health literacy interventions increased senior citizens' use of online health resources, self-reported e-health self-efficacy, actual e-health literacy skills, and perceived usefulness of e-health literacy skills [6], [43-45], [47-51]. Along similar lines, other studies found that e-health literacy interventions increased subjects' perceived locus of control of health outcomes, desire for health information, value they attributed to their health and well-being, and desire to take part in health decisions [45-46]. In three studies, pre-and post-intervention measures showed that participants experienced reduced computer anxiety, developed positive attitudes towards computer use and online health information seeking, and increased computer self-efficacy [6], [43], [47-48], [51]. Xie's (2011) study also found that learning methods (collaborative, individualistic) and presentation mode of intervention (visual only, visual plus audio) did not have any influence on e-health literacy gains and other learning outcomes. Leung, Ko et. al. (2007) report that an e-health literacy

intervention informed by principals of geragogy, and which incorporated Chinese culture specific dietary, and disease attributes to educate Hong Kong Chinese senior citizens, improved their e-health literacy skills. Data collected one month after the intervention also showed that 82.1% (n=54, N=88) of participants reported independently browsing the Internet for health information following the intervention Furthermore, 75.9% (n=60) reported browsing the Internet for health information more than once. Participants also reported using other sources of health information including books, seminars and specific health education workshops that are regularly conducted in retirement homes across Hong Kong.

6   Implications for Health Literacy Scholars

The rigor of our sampling method leads us to assert with a certain level of confidence that it is representative of the research that has been published in this area. Our analysis reveals that research until now has provided very important initial insights into various aspects of health information literacy among senior citizens. However, several shortcomings remain. First, is that the current literature is very fragmented, with very few studies published on different aspects (e.g. health information seeking, cognition of health information, e-health) of HIL. This limits our ability to confidently draw empirically grounded conclusions that can be generalizable to the entire demographic segment. Second, several studies in the sample suffered from inadequately powered sample size, or relied on convenience samples, and opt-in panels of online-participants, which further limits the generalizability of their findings. Third, many of these studies are not theoretically grounded, which limits our ability to explain causality among the different correlating variables. Fourth, a significant number of articles have studied the influence of psychosocial factors that may influence engagement in health information behavior, and types of information sought and channels used, with very little focus on understanding the relevant outcomes associated with the search process, or factors that can influence the translation/non-translation of the information retrieved into meaningful health decisions or actions. Fifth, there has been no effort to understand how ongoing disease or chronic conditions influences different aspects of HIL and how this changes with the disease trajectory. Sixth, research has shown that social support has a significant impact on health outcomes [53-54]. This is more relevant in senior citizens' context because their diminishing cognitive capacities can have an impact on their health literacy [55] and increase their dependency on caregivers for receiving different forms of health-related assistance [56]. It follows that in theory social support received by senior citizens from their caregivers, and care giver's health information literacy can have important outcomes for their health**.** Though there is some research that has explored the relationship between health literacy of caregivers and its impact on caregiving and health outcomes [56], there is very little research that has examined the relationship between different forms of social support, health information literacy and health outcomes. This is an important gap that future research must address. Last, there is a need for more naturalistic interventions/observational or longitudinal methods in studying health information literacy, which, while they face challenges such as high attrition rates or difficulty in accessing such senior citizen populations, may also dramatically improve the ecological validity and generalizability of these studies.

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A Multinational Study on Copyright Literacy Competencies of LIS Professionals

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Abstract. This paper presents findings from a multinational study on copyright literacy competencies of LIS (Library and Information Science) professionals. An online survey instrument was developed by the authors in order to collect data from professionals who work in cultural institutions such as libraries, archives and museums regarding their familiarity, knowledge, awareness, and opinions on copyright related issues. The survey garnered a total of 622 complete responses (148 from Bulgaria, 82 from Croatia, 311 from France and 81 from Turkey). Copyright competencies are getting more crucial for information professionals because managing and meeting copyright related challenges and trends will play a key role in shaping the future of the profession. The findings and conclusions are expected to help the LIS education community, experts of professional associations, managers and other specialists from cultural heritage institutions to discover gaps in copyright competencies of information professionals and take measures to fill those gaps.

Keywords: LIS education, information literacy, copyright literacy, Bulgaria, Croatia, France, Turkey.

1 Introduction

As a result of recent developments in technological and communication devices; changes in information formats; and trends such as consortial collection development, open access and digitization, today's information professionals face more and more complicated intellectual property and copyright issues than in the past. Therefore, developing high level copyright competencies (knowledge and skills) and the ability to implement the institutional copyright policy becomes essential for LIS professionals.

Today, as awareness and interest have increased towards copyright issues, discussion of library copyright problems and policies has become widespread and the amount of information available on the subject is growing. There is a large body of literature on copyright issues in general as well as regarding libraries.

For this study, relevant recent and past publications have been reviewed. Library copyright guidebooks and handbooks prepared/written by some organizations and individuals such as eIFL (Electronic Information for Libraries) [1-3], an international not-for-profit organisation which works with libraries to enable affordable access to digital information, Crews [4], Jones [5], and Russell [6] are some important publications to mention. These publications aim to provide a basis for understanding and working with copyright issues in libraries, including how to develop library copyright policy as a tool to provide clarity on copyright issues that arise during the provision of library services, and how to manage and avoid risk for the library. Additionally, there are numerous initiatives which raise awareness regarding copyright issues in the library and university environment. The University of Connecticut Libraries Copyright Initiative [7] is an example of institutional-level initiatives.

Consequently, on one hand the importance of copyright issues for libraries has long been debated, accepted and well addressed in the literature. On the other hand, copyright the competency of information professionals is a serious issue which was neglected; however, it requires attention.

Having known the necessity of *copyright competencies* for information professionals, one can pose a question of whether or not LIS professionals are equipped with these essential competencies. The aim of this paper is to present results of a multinational survey on copyright competencies of LIS professional and address the gap in the literature.

2   The Aim, Background and Methodology

2.1   The Aim

The main goal of the survey *"Copyright Literacy of Specialists from Libraries and Other Cultural Institutions"* is to investigate actual copyright competency levels of LIS professional in different countries.

In this paper, the following research questions are explored:

• to what extent LIS professionals are familiar with copyright related issues;
• to what extent they are aware of copyright policies and practices within their country and institutions they work for;
• what their opinions are in regard to the inclusion of copyright-related issues in LIS education and training;
• to what extent there are differences among countries.

Findings of this study are expected to highlight gaps in copyright literacy competencies of LIS professionals.

2.2   Background

This study is carried out as part of a scientific project with international participation *Copyright Policy of Libraries and Other Cultural Institutions*, funded by the National Science Fund of the Bulgarian Ministry of Education and Science.

During the first phase of the project, an extensive literature search and review was carried out. As a result, a thematic bibliography which includes about 3200 records, titled as *Copyright Publications,* was prepared and published [8]. This bibliography covers scientific publications, such as monographs and articles, on copyright-related issues within the cultural institution context. A search in library catalogs, publishers' catalogs, scientific databases and open repositories was carried out to locate and access related publications for the period of 2003-2013 [9].

During the second phase of the project, based on the literature review, a survey instrument was developed and a multi-national survey was conducted. Bulgaria, Croatia and Turkey were involved in the project at the beginning and surveys were conducted in these countries during July-October 2013. In 2014 France joined in the project and the same survey was conducted in France during January-March 2014. Detailed information about the survey is presented under Methodology.

2.3   Methodology

An online survey instrument was developed by the authors in order to collect data from professionals who work in cultural institutions such as libraries, archives and museums, regarding their familiarity, knowledge, awareness and opinions on copyright-related issues. Because of the multi-national scope, during the development of the questionnaire, eIFL, IFLA (International Federation of Library Associations and Institutions) and WIPO guidelines were primarily used, however specific conditions of participant countries and their national copyright legislations were not taken into account.

The questionnaire consists of four main parts and includes mainly closed (some based on 5-point Likert Scale) and a few open questions. The first part of the questionnaire aims to find out about the knowledge and awareness of the respondents regarding copyright-related issues in an LIS context. The second part covers questions regarding the opinions of the respondents towards institutional level copyright policy. The third part is about LIS education (tertiary education and in-service training). The last part aims to gather demographic information including age, gender, educational background and the professional experience of the respondents.

As mentioned earlier, the survey was conducted in four countries, namely Bulgaria, Croatia, France and Turkey. Each author translated the original survey (which was prepared in English, the common language among researchers) into their own languages with an effort to keep the meaning and the intent of the original survey. Methods of sampling varied in each country. Convenient sampling is mostly used. Researchers tried to reach as many LIS professionals from different cultural institutions as possible, through professional discussion lists and personal contacts, to be able to draw meaningful conclusions out of the data collected.

LimeSurvey was used for on-line data collection. Survey data was processed by the statistical package SPSS (Statistical Package for the Social Sciences) for Windows 21.0. Descriptive statistics were mainly used for data analysis. Chi-square test was run to test correlations between certain variables.

3   Findings

The survey garnered 622 totally complete responses: Bulgaria - 148 (24%); Croatia - 82 (13%); France - 311 (50%); Turkey - 81 (13%).

3.1   Demographics

Out of 622 respondents, 76% are female and 24% are male. The majority of the respondents from Bulgaria, Croatia and France are female (94%, 82% and 73% respectively), while Turkey has almost equal rates by gender (47% female and 53% male).

   The majority of the participants are ages 30-49 (61%). This is followed by those in the age range of 50-60 (24%). 11% of respondents are younger than 30 and 4% are over 60 years old. Age difference by country is found statistically significant ($\chi^2_{(12)}$ = 87.179, p = 0.000). 76% of Bulgarian respondents and 59% of Croatian respondents are ages 40-60, while 64% of Turkish and 66% of French respondents are ages 30-49 (see Figure 1).

   The difference by country is statistically significant ($\chi^2_{(9)}$ = 102.590, p = 0.000). The Masters degree is common, over 50%, in all countries, except Turkey (35%).

   The majority of respondents (72%) specialized in Library Science while the rest specialized in History (9%), Archive Science (6%), Cultural Heritage (4%), Museology (0.5%) and other disciplines (9%).

   As for institutional affiliation, the majority work in libraries (78%). The rest work in archives (2%), museums (1%), and other cultural institutions (19%). While almost half of the respondents from Turkey and France work in university libraries, the majority of respondents from Bulgaria and Croatia (over 35%) are from public libraries.

   More than half of the respondents (57%) hold a Masters degree. This is followed by the Bachelors degree (27%), and PhD (8%). Only 8% indicated "other" option.
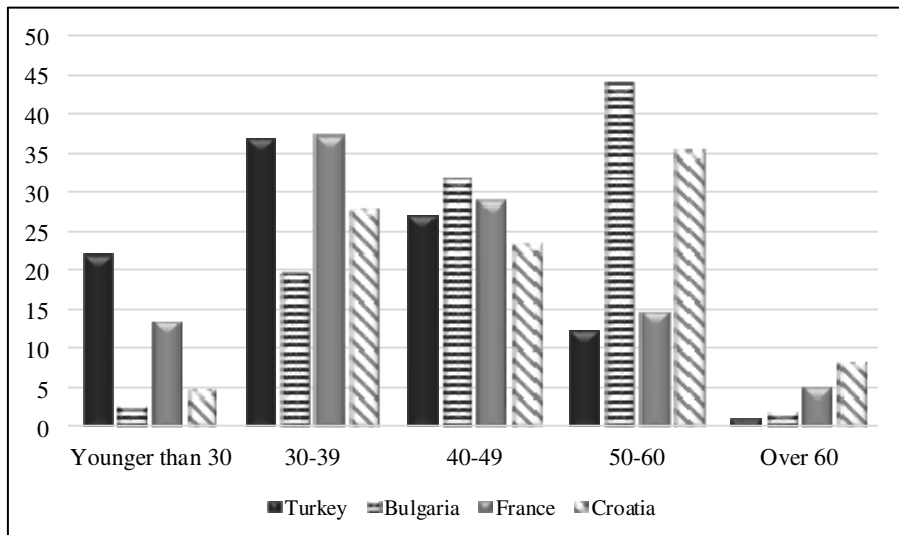
Fig. 1. Age distribution by country

Work experience of the respondents are as follows: less than five years (30%); 5-9 years (23%); 10-14 years (13%); 15-19 years (12%); 20 and more years (23%). The length of work experience is significantly different by country ($\chi^2_{(12)}$ = 119.742, p = 0.000). 65% of respondents from Turkey and 66% of respondents from France have 0-9 years of work experience. Almost half of the respondents from Bulgaria and Croatia are more experienced, with over 14 and over 19 years respectively.

3.2   General Knowledge and Awareness Regarding Copyright Issues

The first part of the survey is designed to collect data about the knowledge and awareness of respondents on issues related to copyright. The first 18 questions are on various aspects of copyright, analyzed together, such as national copyright legislation (Q1); international copyright legislation (Q2); national copyright institutions (Q3); international copyright institutions (Q4); collective rights management organizations in the country (Q5); clearing rights (Q6); licensing for information sources (Q7); licensing conditions in respondent's institutions (Q8); copyright issues regarding the development of institutional repositories (Q9); copyright issues regarding virtual services within e-learning practices (Q10); Creative Commons Licences (Q11); copyleft (Q12); open access, open data, open educational resources (Q13); fair use (Q14); copyright issues regarding digitization (Q15); copyright issues regarding materials from public domain (Q16); copyright issues regarding out-of-print works (Q17); copyright issues regarding orphan works (Q18).

Responses to these questions required responses on a 5-point Likert scale, in which 1 corresponds to *not at all familiar* and 5 corresponds to *extremely familiar*.

Figure 2 presents the results according to country: Bulgaria (BG), Croatia (HR), France (FR) and Turkey (TR). Because LIS specialists who work in cultural institutions are heavily involved in dissemination of information, they are expected to have high level competencies regarding copyright issues. Therefore on a 5-point Likert scale the *ideal zone* is determined between point 4 (*moderately familiar*) and point 5 (*extremely familiar*). However, results of the survey indicate a level far from the desired *ideal zone*; in other words, the findings indicate a level far from being satisfactory.

As the findings clearly show, respondents' answers hardly reach and pass the point 3 (somewhat familiar) level. Among four countries, the familiarity leader is France. In terms of knowledge of national copyright legislation (Q1); national copyright institutions (Q3); licensing for information sources (Q7); licensing conditions in respondents' institutions (Q8); Creative Commons Licenses (Q11); open access, open data, open educational resources (Q13); copyright issues regarding digitization (Q15); copyright issues/solutions regarding materials from public domain (Q16); copyright issues/solutions regarding out-of-print works (Q17), the respondents' familiarity level indicates point 3 or above (see Figure 2).

For the rest of the questions, familiarity levels of respondents are below point 3 (somewhat familiar), which indicates a weaker level of knowledge and awareness compare to the importance of the subject addressed. Familiarity- and awareness-wise, France is followed by Turkey. The lowest familiarity level belongs to respondents from Bulgaria and Croatia. Findings indicate that, in general, knowledge and awareness levels of respondents are hardly at the desired level.
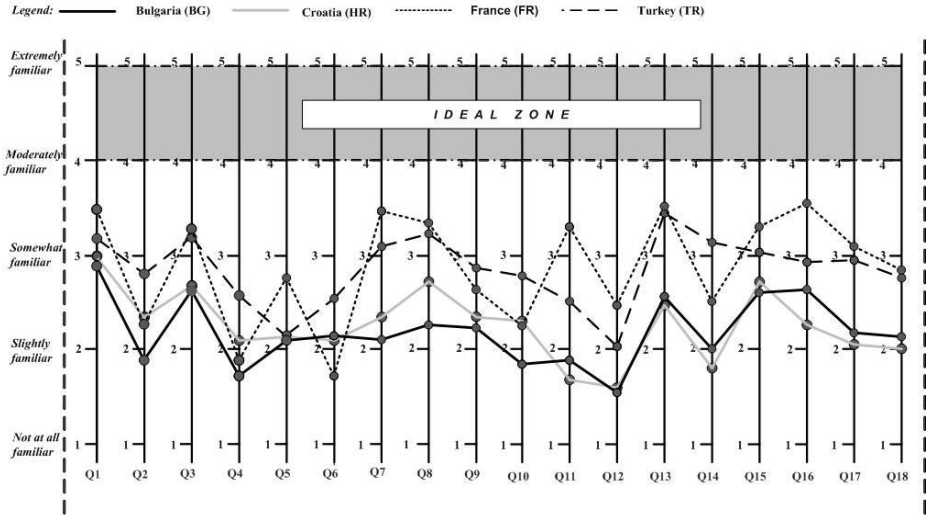
Fig. 2. Familiarity/awareness level of respondents regarding copyright issues by country

Copyright-related international institutions (Q4), clearing rights (Q6), copyleft (Q12) and fair use (Q14) are among the issues with which respondents are least familiar. Respondents are slightly more knowledgeable and aware of licensing issues. This could be possibly because they deal with licencing issues in their work practices.

Respondents were required to answer several additional questions. When they are asked to rate their level of awareness regarding intellectual property and copyright issues, only 6% indicated the *extremely aware* level. 26% rated their level as *moderately aware*, 28% *somewhat aware*, 28% *slightly aware* and 8% *not at all aware*. Difference by country on self-rated awareness levels of respondents is found statistically significant ($\chi^2_{(12)} = 101.409$, $p = 0.000$). The self-evaluated awareness level is lowest for Croatian and Bulgarian respondents, and highest for French respondents. Turkish respondents have a moderate awareness level (see Figure 2).

Findings indicate that self-rated awareness levels of respondents differs by gender ($\chi^2_{(4)} = 37.804$, $p = 0.000$). Male respondents seem to be more confident than female. Statistically significant correlation is also found between awareness level and the degree respondents hold - awareness level increases when the degree increases - ($\chi^2_{(12)} = 101.298$, $p = 0.000$); awareness level and the subject studied in favor of Library Science ($\chi^2_{(4)} = 9.164$, $p = 0.057$); and awareness level and length of work experience - awareness decreases with the increased length of work experience - ($\chi^2_{(16)} = 30.003$, $p = 0.018$). On the other hand, data indicates no statistically significant correlation between self-rated awareness level and age ($\chi^2_{(16)} = 18.125$, $p = 0.317$). There is a moderate awareness level for all age groups.

Although, relatively lower familiarity level and self-evaluated awareness level of Bulgarian and Croatian participants pose a question regarding whether or not their affiliation (predominantly public libraries) is an important factor - since public librarians generally are not as heavily involved in copyright issues as academic librarians - on this difference, results indicate moderate awareness level for librarians from both public and university libraries.
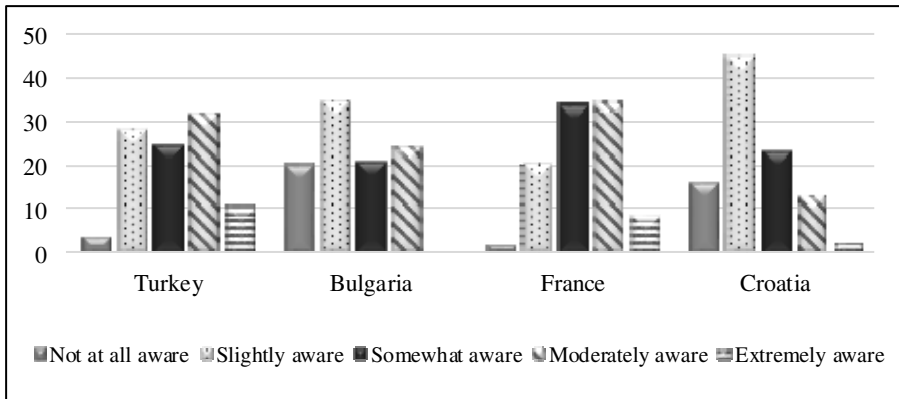
Fig. 3. Self-rated awareness level of respondents on issues related to intellectual property/copyright

Successful strategic management in digitization - one of the tasks of contemporary cultural institutions - combines the realization of three main stages: digital conversion; management of digital information sources and offering services based on digital collections. The survey recorded that about 40% of respondents are either moderately or well familiar with copyright issues regarding digitization including digitization of materials from public domain. They are least familiar (below 30% are either moderately or well familiar) with copyright issues regarding orphan and out-of-print works. When the number of materials with orphan and out-of-print works status is considered, increasing the existing level of respondents' competence regarding these types of materials seems critical.

When respondents asked about their preferred sources when they search for information regarding intellectual property and copyright, books and articles are indicated as the most preferred and referred information sources (73%). This is an indicator that shows the need for literature on the subject from national authors and translations of materials of recognized foreign experts and organizations (if not already available). Internet sources such as specialized websites (71%), colleagues (56%), professional discussion lists (40%), experts from the academic and scientific community (33%), Blogs/Wikis (31%), lawyers (26%) and WIPO (17%) are also among the sources they consult when they need information. Quite a number of respondents prefer professional associations, such as the national library and other professional associations (43%), IFLA (24%) and the Electronic Information for Libraries Network (12%), as a source of information and consultation. This data demonstrate the important role of professional associations to provide information on copyright-related issues.

About half of the respondents (59%) claimed either moderate or extreme level of interest (38% and 21% respectively) in copyright-related initiatives of professional organizations. Country differences are statistically significant ($\chi^2_{(12)}$ = 94.735, p = 0.000). Respondents from Croatia are the most interested group. They are followed by their colleagues from France, Bulgaria and Turkey (with rates of 73%, 66%, 57% and 25%, respectively).

A statistically significant correlation is found between respondents' interest in the initiatives of international and national associations and the degree they hold ($\chi^2_{(12)}$ = 75.337, p = 0.000). Respondents who have Masters and PhD degrees are more concerned with these initiatives. On the other hand, no correlation is found between respondents' interest towards the initiatives of international and national associations and gender ($\chi^2_{(4)}$ = 7.661, p = 0.105), age ($\chi^2_{(16)}$ = 14.278, p = 0.578) and work experience ($\chi^2_{(16)}$ = 16.188, p = 0.440).

Awareness of the IFLA and eIFL initiatives regarding copyright exceptions and limitations for cultural institutions is, in general, low (lower than 30%). This differs by country and the difference is statistically significant ($\chi^2_{(3)}$ = 43.128, p = 0.000). The percentage of Bulgarian and Croatian respondents who are aware of the above-mentioned initiatives are similar (about 30%). The French respondents' percentage is lower (18%), while the Turkish respondents' percentage is higher (over 50%).

As for the existence of a national copyright strategy, while 46% of respondents' answers are positive, 22% are negative and 32% are unsure. Data analysis by country indicates contradictory answers from the same country. For instance, although there is a national copyright strategy in Croatia, only 34% of respondents gave a positive answer to this question; 28% of answers were negative and the rest were unsure.

The same applies for the following questions regarding knowledge of limitations and exceptions in national copyright laws (duration of copyright protection; exceptions for private use, educational, scientific and research purposes and exceptions for libraries, educational institutions, museums, archives). Contradictory answers for such kinds of straightforward questions, no doubt, indicate an unsatisfactory level of knowledge and awareness of copyright law and the policies of implementation.

Respondents also were asked to indicate their opinions regarding certain copyright-related statements. 81% of respondents agree that services offered by libraries and other cultural heritage institutions should comply with copyright legislation; 74% agree that worldwide harmonization of copyright exceptions and limitations for memory institutions is necessary; 75% agree that WIPO should better define copyright exceptions and limitations regarding digital content; 82% agree that WIPO's *Treaty to Facilitate Access to Published Works for Persons Who are Blind, Visually Impaired, or Otherwise Print Disabled* is an important achievement. Although, there is a positive attitude in general (at least 75%), the percentage of negative and neutral answers (lower than 5% and about 20% respectively) should not be underestimated. Especially concerning is an almost 20% non-positive (either negative or neutral) answer rate for a statement on the necessity of copyright compliance of services offered by cultural institutions.

3.3 Knowledge and Opinions on Institutional Copyright Policy

The majority of respondents (84%) declared the need for an institutional copyright policy for libraries, archives and other cultural institutions. About three fourths (76%) indicated that their institutions possess resources protected by copyright and related rights. While 13% were uncertain, 11% think that their institutions do not possess resources under copyright protection. This is an indicator, no matter how they

evaluate their awareness level, which proves that at least about one-fourth of respondents (24%) are not aware of the scope of copyright issues with which cultural institutions are dealing. The percentage (24%) of those who are uncertain about whether their institution has an institutional copyright policy also verifies this finding. Only 34% of respondents claim that their institution has a copyright policy; the rest (42%) claim the opposite.

71% of respondents claim that in their institutions there are no personnel specifically appointed to be in charge of copyright issues, while 14% are unsure and 15% claim the existence of such personnel. It is important to find out the actual reason for the low number of employees in charge of copyright issues despite its increasing importance. If it is because of the lack of knowledge and expertise, an active collaboration with LIS schools and professional associations for training could be suggested. However, if it is because institutions find it unnecessary, this could be an important indicator for the lack of awareness at the institutional level.

3.4   Opinions on Inclusion of Copyright as a Subject in LIS Education

A high majority of respondents (97%) agree that intellectual property and copyright subjects should be included in the curriculum of Library and Information Science and Cultural Heritage Science Education, as well as in the continuing education programs. Intellectual property and copyright subjects are included in LIS curricula in surveyed countries, however in every school they are on a different depth and level (a more general level in undergraduate programs and more in-depth in graduate programs).

As Joint [10] indicates, knowledge-based economies require experts such as librarians and information specialists who can interpret issues related to intellectual property. They are the specialists who are responsible for creating a policy of promoting understanding and resolving legal disputes and conflicts that are unique to this aspect of the Information Society. One way to achieve this is to include the topic of intellectual property in the LIS curricula. In this respect, it is a positive finding that the vast majority of respondents believe that intellectual property and copyright subjects should be a part of LIS education. Since it is to some extent already included in the curricula, further investigation is needed to elaborate in what ways it can be improved.

As for the appropriate level for including copyright issues in the curricula of LIS education, most of the respondents agree that it should be included in more than one level of the 3-cycles in higher education (undergraduate, Masters and PhD). While more than three fourths (71%) of respondents claim that undergraduate curricula should cover copyright issues, the percentage of respondents who think the Masters and PhD curricula should cover the subject is relatively smaller (54% and 22% respectively).

The preferred forms - preferred by more than half of the respondents - for continuing education on intellectual property and copyright are as follows: thematic workshops (69%), training courses (56%), websites, blogs and wikis (54%), and distance learning, including online courses, videos, etc. (51%).

4   Conclusions

The main findings of this multi-national survey conducted in Bulgaria, Croatia, France and Turkey can be summarized as follows: the level of knowledge and the awareness of respondents (managers and specialists responsible for information services in cultural institutions) regarding copyright issues are far from being satisfactory. Their knowledge regarding national copyright strategy and policy are contradictory. Although it is a small percentage, 16% of respondents are either unsure or do not find it necessary for cultural institutions to have an institutional copyright policy. One-fourth of respondents (25%) are either unsure or do not think that their institutions possess resources under copyright protection. The same number of respondents (almost one-fourth) are uncertain of whether there is a copyright policy in their institution. The vast majority of respondents are in favor of including copyright-related issues in LIS education as well as in continuing education programs. The findings highlight some commonalities as well as differences among countries.

The findings indicate a need for improvement. Measures should be taken to increase both awareness and the knowledge level of information professionals regarding on copyright issues. Both the LIS curricula and continuing education programs should be revised to include intellectual property learning content which that provides in- depth information along with case studies. Issues which indicate the lowest awareness level, such as knowledge of the limitations and exceptions in the national copyright laws, solutions about digitization of orphan and out-of-print works, international copyright institutions, clearing rights, and concepts of copyleft and fair use should be included in these programs. Development and actualization of training programs in different forms, including face-to-face and distance learning are needed. Training programs, conferences, and workshops can be organized in collaboration with LIS schools and professional associations. Distance education and on-line consultations could be a good option since they are easier to attend and therefore generally the most preferred by those professionals who are working full-time.

The findings indicate a high degree of interest in the initiatives of the international and national professional associations on copyright- related issues. This interest could be a good basis for planning future initiatives by professional associations. We should also keep in mind that a lot of good practices and initiatives already exist, which aim to raise awareness of copyright issues in the memory institutions - these models could be popularized and implemented.

The findings of this study indicate a need for further research and can be used to strengthen the relationship between education/training and practice by addressing the gaps in copyright competencies of LIS professionals.

5   Future Plans

Researchers from other countries continue to be interested in the survey. In the period of June - September 2014, the same survey will be conducted in Finland, Hungary, Italy, Lithuania, Mexico, Norway, Portugal, Romania and the USA. These will give authors a chance to make comparisons more widely. The development of the project can be followed on its website: http://copyrightlib.unibit.bg/en.

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Archival Literacy:
Different Users, Different Information Needs, Behaviour and Skills

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Abstract. A pilot study of Slovenian and Bosnian archivists was conducted regarding their opinions and perceptions of archival users, because this area is still neglected in the two countries. Most participants thought of researchers and lay users coming to the archives or sending requests as the biggest user groups. They did not consider creators or themselves as users. They thought the knowledge of the history, creators, languages and scripts as some of the specific skills. They have not heard of archival literacy but thought that the definition of information literacy may be applied to archives as well. Most of them had received no education in this area and thought there is no particular need for it. Interviewing proved to be an appropriate data gathering method. We need to improve terminology, establish better rapport with clearer introductions and develop more specific questions particularly in information literacy area.

Keywords: Archives, archivists, users, competences, information literacy, archival literacy, Slovenia, Bosnia and Herzegovina, BIH.

1   Introduction

Archivists in Slovenia and Bosnia and Herzegovina (BIH) have only recently started to think about digitalization and online availability of their collections. However, in this process it is not clear how much have they thought about users who are likely to use these collections and about demands for changes of archival practice. We present a study – in the context of two countries, Slovenia and BIH – dealing with the perception of the archivists about the users of traditional and digital archives, the differences between skills of different types of archival users, the perception of the concept of information literacy and archival literacy, and of the future demands on archives posed by the online presence of their collections. We see this study as a first step in raising awareness of the attention which Slovenian and Bosnian archives dedicate to their users, an issue which has long been known in library and information science (LIS) area, but is only slowly finding its way into the archival area.

2   Literature Review

In an archival context, user studies are not a very common area. Zajšek [1-2] warns that in Slovenia no such studies have been made so far, and there is very little thought given to who archival users are, and what are their characteristics, skills, behaviour. A similar situation can be found in BIH.

Johnson [3] is one of the first authors to draw attention to the different types of archival users. Šauperl et al. [4] have extended this debate by presenting two hypothetical types: a lay user and an expert user. In this approach they follow the line of thought also found in some other fields, such as health information [5], medical devices [6] or design [7], and implicitly also in many LIS works. We have adopted a practical definition of user types [7] which, although coming from the field of design, presents a good distinction between user types. The authors define two user types: lay and professional. A lay user is a person who has not gone through the training or socialization into the particular profession, and a professional user is someone who is acting within the formal part of a profession. The lay users are further divided into experienced and novice users. Professional users have good knowledge of the task they perform; they are trained and thus usually have experience with the task, accompanied with deep understanding of its context. Likewise, experienced lay users may have previous experience with the task, but their background knowledge is much more limited. Novice lay users, as the name implies, are new to the task and lack the knowledge and training to perform it well. This view can be easily applied to both library and archival contexts, and in this perspective the two user types, introduced by Šauperl et al. [4], would represent the two subtypes of the 'lay' category. What still needs to be theoretically developed is the professional type, i.e. the archivist.

In this paper we try to extend this approach by dealing with the differences between information behaviour and skills of the basic two user types (lay/professional), sometimes called "archival literacy". We employ Blundell's [8] tentative definition of archival literacy: "a combination of the basic "find, use, incorporate" approach and the navigation and specialized instruction typically experienced in an archive". If adapted from an LIS context, it could be assumed that professionals, i.e. archivists, possess and express the information skills pertaining to the so-called "ideal/perfectionist approach". This means that they use well targeted and more sophisticated search techniques, as well as employ higher-order skills when using information, which all stems from in-depth knowledge of the area, materials, collections, information organization, etc. Lay users of both types use the "common-sense/survival approach" – meaning that they do the best they can in a given circumstance while lacking professional knowledge. In the context of archives, Jeo [9] has produced a similar discourse, speaking of two user types in connection with their information skills and behaviour: experienced users browse the archival collections due to their extensive knowledge of the materials and their organization; while inexperienced users use keyword searching (similarly to what they do in searching in other databases and tools) because they do not know exactly what they are looking for. Schaffner [10] also states that users of digital archives are using the same searching techniques as in other search tools, especially keyword searching; Anderson's findings are similar [11]. On the basis of this, Zajšek [1] concludes that it is not realistic to expect from lay users to employ in their searching the knowledge of

the archival structure (tectonics), since this knowledge is specific to archival professionals. Instead, users will search using search terms, keywords, etc., which means that they are likely to miss the context (provenance) of a document, which they would get if they went to a physical archive and contacted an archivist.

Blundell [8] also discusses what archival literacy means in a digital context. Archives have for some time been trying to enhance their accessibility and usefulness by going digital, thus no longer being directly used only by archivists. It has become evident that this will require better archival information skills of lay users [12], and perhaps better teaching skills of archivists. Online availability will affect the need for the mediation between users and collections even more, and emphasize the need for user training. In order to do this, archival practitioners will need to understand the users, their needs, behaviour and skills. In one part, the problem of accessibility may be solved with archival metadata, which would make archival collections more usable, as has been indicated by Šauperl et al. [4]. To some extent this also tackles database design; in this context we need to acknowledge the findings which indicate that users of digital archival collections do not differ from users of other digital libraries (e.g. [12]); which raises some doubts regarding the specificity of digital archival collections. But, on the other hand, this also tackles the reference skills of archivists – this issue has been, for example, brought up by Duff [13-14], and, implicitly, also by Zajšek [1-2].

To further understand the problem of archivists' view of the users, or better, the lack of such perspectives, we need to look at the education of archivists and make comparisons with education in LIS, where user-related content plays a very important role. In Slovenia and BIH there is no established formal education at a university level (one started in 2013 in Slovenia, but without any user-related content). Archivists receive education and training at work, and mainly in the areas of archival records management and description. Not enough attention is dedicated to their knowledge of the users, let alone their reference and teaching skills.

3   Research

3.1   Research Problem and Research Questions

The study tackled four interrelated topics: 1) Which types of users are currently using the physical archives, how aware are Slovenian and Bosnian archivists of the users who are likely to use their (online) publicly accessible collections, and how much thought has been dedicated to the information needs, behaviour and skills of the expected users. 2) The archivists' opinion of the differences between the skills of professional archivists and lay users. 3) The opinion and knowledge of the archivists about information literacy and archival literacy. 4) The archivists' understanding of the users which would guide the planning of collections and of the work with the current and future users. Our research questions (RQ) were:

> RQ1: How do experts see the differences between the users of current paper-based archives in regard to their behaviour, knowledge and skills?

RQ2: In what ways do experts expect that the growing online availability of the digitized archival collections will affect the user types and the use of these collections?

RQ3: What opinion do experts have on the differences between the skills of different users of traditional archives compared to the users of digital archives?

RQ4: What is the opinion of the experts about the information literacy and its usefulness in archival context?

RQ5: How well are the experts acquainted with the concept of archival literacy?

RQ6: What educational opportunities do archivists have to increase their own knowledge of the users?

RQ7: How do archives currently deal with user education and how will this be affected by online availability of collections?

3.2   Methodology and Sample

These questions were the content of an interview with a purposive sample of experts from the areas of archives and LIS, coming from both fields: practice and teaching. There were 15 questions (samples in Appendix). Before the interviews the questions were assessed by a professional archivist who advised on terminology, order and content.

In this paper we report the findings of a pilot study done in preparation for a wider study in the two countries in question: Slovenia, BIH. The pilot study included six participants, divided into three groups: two archivists from Slovenia, two archivists from BIH, and two university teachers from Slovenia and Bosnia, both having at least basic knowledge of LIS and archival theory[1]. Two were male, four female. The interviews were done in April and May 2014, and lasted between 30 and 45 minutes. The answers were transcribed and content-analyzed.

4   Results and Discussion

Firstly, we give some general observations, which are, as all results, limited by the number of participants, and cannot be generalized. We noticed differences between the answers of LIS professors and of archival professionals. These are probably due to their background knowledge of the areas of user studies and digital libraries which have a long history in LIS. The second general observation is that there were no major differences between archival professionals coming from different countries. What follows are four sections which correspond to the four topics of the research problem. In each we also indicate to which research question(s) they relate.

4.1   The Types of Users and Their Needs

We first asked about the users of current physical archives (Table 1) and their needs (RQ1, 2). Archivists gave between 3 and 4 groups while LIS professors gave 4 and 5.

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[1] We need to note that we aimed at a larger number of participants, however, the gathering of the data has been delayed due to the major floods in BIH in May 2014. In order to keep the balance between Slovenian and Bosnian archivists, we present only the results of the pilot study.

All participants mentioned researchers and lay users; students were mentioned by 5 participants. Researchers were mentioned as the smallest but most demanding group and sometimes very independent, while students and lay users were mentioned as the largest groups. All archivists and one professor also mentioned experienced lay users in various contexts.

In connection with user types the archivists also spoke about their information needs which can be roughly divided into two groups: research-related, and needs related to users' civil rights. The former were mainly related to the user groups of researchers and students, the latter to the lay users.

Both professors of LIS also counted professional archivists as users of archive while no archivist did. This is interesting, since two archivists, when speaking about different users, directly mentioned that there is a group of lay users (sometimes organizations) who often even do not come to the archive, but send a written request for certain documents which are then found, prepared and sent to them. However, this notion is actually not very different from librarians, who also usually do not consider themselves to be the users of the library catalogues or libraries, yet they are likely their most frequent users.

One of the archivists mentioned creators, but explicitly said that they are not considered as users. Yet archivists work extensively with the creators.

What is also interesting, is that only one archivist mentioned pupils (and school groups) as users, while all of them spoke about them later on when asked with which user groups they work. The reason for such a viewpoint may be in the purpose of the visit. Pupils from elementary schools do not come to the archives for research or to ask for a copy of an official document. They come to learn what archives are and what do they do. Archivists select attractive documents to tell interesting stories as a way of teaching this particular user group.

Table 1. Types of users in physical archives and frequency of their visits

Type of user	Frequency
researchers	6
lay users	6
students	5
official users	2
archivists	2
creators	1
cultural tourists	1
retired users	1

Interesting is also archivists' view of the amount of work that they do for end-users. Three of four archivists said that in the majority of occasions the archivists use the archival materials on behalf of an end-user. One archivist disagreed, saying that this has not happened yet, and another added that the lay users are the group demanding archivist's interventions while researchers are more independent.

When asked about the influence of increasing online availability of archives, all but one participant agree that it will cause a growth in number of users. One participant was skeptical, and one expected more online users and fewer physical users. But, they see very different implications of online access. Both LIS professors think that it will enable easier access and work for experienced users and more problems for inexperienced ones, while one archivist expects that it will also cause less work for the archivists. Two participants (one professor and one archivist) also expect that different types of users will appear, but are unable to predict which. One archivist, partially already speaking from experience, says that online materials in some cases have a "marketing" effect, attracting users to physical archives.

4.2   The Differences between the Knowledge of Archival Professionals and Lay Users in the Context of Classical and Digital Archives

This was the content of RQ3. All participants agree, sometimes very passionately, that professionals possess very different skills than lay users and that these skills in fact define them as professionals. However, their perceptions as to what actually constitutes this knowledge needed to work effectively in the traditional archive, differ to some extent. Therefore, in this segment they didn't actually speak about the differences between the skills of professionals and lay users, but tried to define what professional knowledge means. Only one archivist mentioned that these skills can be taught to users to become more independent.

As table 2 shows, all archivists and one professor mentioned the organization of materials in the archive, four times they mentioned knowledge of processing of materials, knowledge of materials and provenance (necessary for understanding both the archive and its materials) was mentioned three times (by one professor and two archivists), while two (one professor and one archivist) think that knowledge of language and script is important. Other options were mentioned only once. To some extent different skills mentioned may be due to the differences in archival material (and thus to experience). Some archives may hold material in different languages and scripts, while others don't. None of the archivists mentioned any user-related skills; these were mentioned by one of the professors.

Table 2. Types of knowledge needed to archivists in traditional archives

Type of knowledge	Frequency
organization of materials	5
organization, structure of archive	4
processing of materials	4
understanding of materials and provenance	3
language and script	2
history	1
content	1
legal issues and data security	1
understanding of how archive works	1

When asked about competences needed for digital archives, five (both professors and three archivists) said that the already mentioned skills need to be accompanied by competences for searching and ICT, and one archivist also mentioned the aspect of content and context (understanding) accompanied by legal issues, such as data security.

4.3   The Opinion and Knowledge about Information Literacy and Archival Literacy

The findings in the previous section are also relevant in this one, and are also related to RQ's 4 and 5. Participants were first asked to comment on a recent definition of information literacy, formed by the ACRL Task Force for the revision of the Information Literacy Competency Standards for Higher Education of 2000, which can be found in the draft Framework for Information Literacy for Higher Education [15]. The participants expressed their opinion on the appropriateness of this definition for the area of archives. Their second task was to comment on the term "archival literacy", whether they had heard of it previously, and to freely interpret its meaning.

Unsurprisingly, all of them found the definition of information literacy (IL) appropriate and useful also for the archives. But, they also thought that it was too general to be applied directly, and was as such more appropriate to the area of education. The definition is very general and one of the archivists applied it to literacy in general. This archivist thought a person, including an archive user, climbs up the ladder of education, gradually acquiring each of the skills, searching and finding, use, analysis, knowledge. Two of them liked the second part of the definition giving elements such as answering questions, forming new questions, creating new knowledge, ethics, and said that very similar processes are present in archival context.

When asked about archival literacy, we found that both LIS professors knew the term while none of the archivists did. When asked to offer their interpretation of its meaning, three of them simply said that it's about the same skills as were mentioned in the previous part, while one tried to apply some elements from the IL definition she had just read: "It means to know how to get around an archive, find documents, read them and use them properly." Thus we can see that archival literacy is interpreted as a set of competences needed for work in the archive, as well as for understanding of the organization of archives, of the materials provenance, all of which underline the ability for work with the materials. We see that this very close to the Blundell's [8] definition.

4.4   Knowledge about the Users

RQ's 6 and 7 asked about these issues. In the light of the absence of user studies, at least in Slovenian and Bosnian archives, our fourth set of questions tackled the knowledge that the archivists have about their users and the knowledge of the users they think is necessary for successful work. Here we found noticeable differences between professors and practitioners.

First we asked how the issue of archival users is theoretically covered. Both professors mentioned that very little can be found in the literature and one also mentioned that user-related content is absent from the education of archivists, adding

that this may soon become very problematic. This was confirmed by the archivists: two said that their permanent education included some, but very limited, user-related content, one explicitly said that he knows about users only from work. When asked if they feel this as a lack of knowledge, and if they, in the course of their work, had ever felt that they should know more, only one archivist said that she could benefit from having more knowledge about the users. We found this somewhat surprising, due to the fact that they all work with school groups and many also with other users (although some of them not on a daily basis).

Here, too, there was no consensus between the respondents, as to which types of knowledge are needed to an archivist for quality work with the users. Again, we observe the differences between LIS professors and practitioners. One professor mentioned contextual knowledge, e.g. history. The other added pedagogical knowledge, knowledge of user characteristics. No archivist mentioned lack of pedagogical knowledge, while lack of knowledge of user characteristics was mentioned once. Three archivists thought that they get enough information about the pupils from their teacher, but did speak about contextual knowledge; one added knowledge of ICT which could help him shape a more interesting presentation.

When asked if they can lean on any sources for the needed information about the users, all archivists and one professor believe that on this point archives could lean on their statistical data. This is true to some extent, but does not solve teaching-related or need-related problems. Since we see that user characteristics do not play an important role in archival services, this basically means that the users are more or less left to themselves. What is interesting is that archivists did mention that sometimes they need a thorough interview with the user to understand exactly his need, but at the same time didn't feel that their work could benefit from any systematic or pre-prepared information regarding the users. One archivist thought that the number of users in their archive is too low for understanding user needs and behaviour in general. They may only know the specific needs and behaviour of the specific users visiting their archives.

Two final questions asked if online access would change attitude of archives towards user-related issues and toward work with users and user education. Both professors and two archivists think that user-related issues, in both areas, will become more important, because they will be directly connected with the quality of work, but were unable to offer any more detailed thoughts. Two archivists disagree, and believe that online access will not bring any major changes to archival work.

4.5   Methodological Issues

Besides the first content-related results, as limited as they are, we also gathered valuable information on the appropriateness of methodology. The interview, which was prepared with the help of a professional archivist, proved to be a useful technique to gather archivists' opinions and perceptions. We still found that some questions either need rephrasing or are redundant. One of those is a question about the competences of professional archivists which caused discomfort of some respondents who for some reason felt that their expertise was being questioned.

We concluded that we should pay more attention to the questions about the user-related issues (the fourth set of questions), by asking more precise questions and not

allowing the respondents to divert to more general areas. Since this is not a well-known area to the archivists, some of the questions in fact remained unanswered.

5   Conclusions

As we already mentioned in the theoretical section, user studies and other user-related issues are neglected in the archival field. With this paper we are trying to open a new debate in Slovenia and BIH and to enhance it with the findings in LIS area where user-related issues have been present for a long time. We feel that this is needed, especially in the light of increasing online presence of archives. This concerns two areas, studies of user characteristics, behaviour and needs, as well as the debate about their competences and teaching of these competences.

The respondents were eager to cooperate. However there was some discomfort because the interviewers were not archivists (maybe it should be emphasized to them that an archivist helped in its preparation). Since the interviewers were considered "outsiders", that acted as a kind of barrier on one hand and stimulated archivists to explain more on the other. Some archivists felt that they needed to explain the basics. At other times the interviewers felt that the questions were not "good" either because: 1) those issues were taken for granted among archivists and were thus difficult to explain, or 2) because in the respondents' view they were not relevant for archives. This was particularly felt in discussing the definition of IL, and when discussing user-related theory and education. The interviewers (the two authors) are in fact from the LIS area, they are not outsiders to archival science. In the future we should prepare a better introduction to establish a clear rapport with the interviewees. This bias may also be neutralized by adding some archivists as interviewers.

This study was intended to look at the needs, skills and behaviour of users of digital archives, but couldn't avoid traditional ones. Very few Slovenian and Bosnian archives have digitalized their collections. Slovenian archives only recently made available their archival records online (SiraNet database). Therefore archivists and users mostly work with traditional archival material. Digitally born archival material has not reached the age for transferring to the archives yet. Therefore most archivists do not have to consider this issue at present.

Archivists see some problems regarding users, but are as yet unable to clearly define them, and they end up solving them on a daily basis. Interestingly, some of them seem to think that since there are not many users, they would not benefit from generalizing the understanding of user needs and behaviour; instead they recommend individualized approach. It is also clear that user-related topics have not yet found their way into archival theory, which we see as a good starting point to find relations between the areas of archives and LIS.

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Appendix: Sample Interview Questions

1. Who are currently the main users of the archives? How would you describe them? Can you distribute them in any groups according to what they search, how they ask questions, how much they know about the archive, its arrangement, organization, etc.?
2. How do you expect that online presence will affect the users who will want to use the archives? Do you expect different numbers of users or some user-types who were until now not present, or not common? If yes, which users are these and how will they differ from the usual users?
3. Do you believe that there is a difference between professional archivists and lay users regarding the skills, knowledge about the archive, the materials, etc.
4. Please comment on the definition of IL, as given by ALA, in the light of archival area: Is it appropriate to be used in archival area? Would you change/add/remove anything?
5. Have you heard the term "archival literacy"? Even if not, please, tell us how you understand it.
6. How is the question of users (e.g. their characteristics, types, behaviour, knowledge, competences) theoretically covered/dealt with in the archival area? Have you, in the course of your own education, encountered these topics?
7. Which types of education or work with users do you perform at your archive? For which users do you perform them and how? What are your goals? How satisfied are you with user education performed at/by your archive?
8. What knowledge (or information) about the users is needed to an archivist to be able to efficiently plan and execute user education – if needed at all?
9. Do you think that web access to archives will in any way change the attitude of archival discipline to the user-related questions? If yes, how?

Digital Literacy as a Prerequisite for Achieving Good Academic Performance

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Abstract. The paper presents results from the research of students at the Faculty of Humanities and Social Science in Zagreb, Croatia about their perceptions and views on digital literacy. The results indicate that students recognize and relate the concept of digital literacy with a number of ICT supported activities in which they are involved on a daily basis at the university. Furthermore, the research showed that there is a connection between use of ICT and academic performance of the students in research. The students also exhibited a need for expansion of their current knowledge in a number of ICT related areas among which are many related to the content creation for the internet and multimedia. The research results will serve as an important component in the development of new or expanded university courses that include the use of ICT in any form.

Keywords: Digital literacy, digital technology, academic community, Croatia.

1 Introduction

Modern networked participatory society presents many challenges for its citizens demanding from them a good command of digital literacy related skills and the knowledge necessary for solving problems in their professional and private life. This society is "characterized by the extreme ease of access to information thanks to sophisticated discovery tools, and the abundance of digital content increasingly available online. Oftentimes content is produced by not just a single author but by many collaborating authors, with often open and free access to all types of information in the form of publications, institutional repositories, museums, archives, and art galleries." [1]. In order to avoid exclusion from the networked participatory society, citizens have to start with the acquisition of digital literacy related skills and knowledge very early in their lives and continue their education throughout their life. This is not an easy task because of the inaccessibility of ICT and the internet which is necessary for education in digital literacy. According to the International Telecommunication Union – ITU, only 40% of the global population is online [2] and digital natives make only 5% of the world population and 30% of young people (15-24 years old) [3]. These data evidence the existence of the digital divide that makes

many digital literacy related educational efforts very difficult. In spite of these unfavorable numbers, educational institutions around the world continue providing education in digital literacy especially in primary and secondary education institutions. Higher education institutions are no exception, as they prepare adult students for the labor market which demands highly skilled and well educated professionals, proficient in the use of ICT and able to manage information and knowledge [1]. Croatia is no exception as its higher education institutions offer digital technology oriented study programs which include mastering digital literacy related skills and knowledge. Many students who come to universities are already technology savvy, they "… chat about burning CDs, downloading MP3s, and writing in HTML" [4, p. 207]. These skills are further expanded during their education at universities by the participation of students "in new media environments and digital modes of learning" [5, p 248]. Having in mind these conditions, this paper focuses upon students at the Faculty of Humanities and Social Sciences in Zagreb (FHSS), Croatia, and their perceptions and views of selected aspects of digital literacy as they represent a prospective workforce that will shape the future society.

2   Digital Literacy

Digital literacy is generally defined as the ability to use ICT to find, evaluate, create, and communicate information, requiring both cognitive and technical skills [6]. This definition assumes possession of a wide range of technological, cognitive and social competences including "the ability to operate computers and navigate the net effectively, to cope with large volumes of information, to evaluate the reliability of information, and to critically assess what seem to be natural (and not ideologically biased) technological tools" [7, p 1]. Bawden [8] sees digital literacy as an ability to read and understand hypertextual and multimedia texts. According to Špiranec [9] digital literacy is "…the ability to read and understand hypertext or multimedia texts and includes understanding of images, sounds and text of the dynamic non-sequential hypertext". In some countries, the word ICT is added to the concept of digital literacy resulting in digital ICT literacy: it is "the ability of individuals to use ICT appropriately to access, manage, integrate and evaluate information, develop new understandings, and communicate with others in order to participate effectively in society" [10. p. xiii]. Digital literacy definitions are not always explicitly related to ICT. One such definition is proposed by Littlejohn, Beetham and McGill who suggest that digital literacy [11, p. 547] "…means the capabilities required to thrive in and beyond education, in an age when digital forms of information and communication predominate". In addition to the possession of the wide range of technological, cognitive and social competences, digital literacy also assumes a wide range of communication forms, "from relatively simple communication via email or instant messaging to more complex forms of scholarship that involve sourcing using, evaluating, analysing, aggregating, recombining, creating and releasing knowledge online"[11, p. 547]. Digital literacy includes a number of skills attributed both to teachers and students including the ability to:

1. carry out basic computer-based operations and access resources for everyday use,
2. connect together a functional computer system,

3. read manuals to conduct basic technical activities or for troubleshooting,
4. use search engines to retrieve responses in the form of text, images and videos that will assist with solving the problem,
5. regularly update of anti-virus software,
6. use educational software [12, pp. 26-27].

Ng suggested the existence of a basic level of skills related to digital literacy [12] which would also presume the existence of the advanced level of such skills, which is researched less frequently. The same author [13, p. 1068] offered another view of digital literacy as a three dimensional model:

1. "Technical dimension: possessing the technical and operational skills to use ICT for learning and in everyday activities;
2. Cognitive dimension: the ability to think critically in the search, evaluate and create cycle of handling digital information, and
3. Social-economic dimension: being able to use the Internet responsibly for communicating, socializing and learning".

In the center of the model where all three dimensions intersect, Ng puts digital literacy and summarizes it as carrying out basic computer-based operations to access resources for everyday use; searching, identifying and assessing information effectively for the purposes of research and content learning; and solving problems or creating products that best demonstrate new understandings.

All these approaches to digital literacy focus on the most commonly recognized aspects of the use of digital technology necessary for inclusion of citizens in the networked participatory society and confirm that digital literacy has become "a keystone for civic engagement, educational success, and economic growth and innovation" [14, p. 38].

3   Research

The focus of this research is on students as they represent a specific group of citizens exposed intensively and frequently to ICT in their daily activities. Previous researches showed that students at the FHSS use ICT (and digital scientific information resources) on a daily basis in their learning process [15-16]. However, there is no recent research about digital literacy as a separate topic and that was the motive for initiation of this research. The purpose of the research was to get an insight into selected aspects of the digital literacy of students at the FHSS. The objective of this study was to collect data about their understanding of the term of digital literacy and its application and influence in important segments of the students everyday ICT related activities. An online (Web) survey with 15 closed questions was chosen as the research method. While this method has its shortcomings, it is a legitimate and practical method for collecting data from a large number of research participants. The research was initiated on June 9th 2014 by sending an e-mail invitation to the students' mailing list and by sending an e-mail invitation to the freshmen enrolled in the ICT course in the first year of the undergraduate study. Since membership in the mailing

list is no longer mandatory for all students at the FHSS, the total number of respondents was limited. The online survey was closed on June 23rd 2014 with the total of 112 students who participated in the research. Because of the space restrictions, only partial results will be presented in the next part of the paper.

4   Results and Discussion

In **Question 1**, students were asked to indicate their year and type of the study. The total of 112 respondents participated in the research: 19 (19.96%) from the first year of the undergraduate study, 2 (1.78%) from the second year of the undergraduate study, 12 (10.71%) from the third year of the undergraduate study, 2 (1.78%) from the fourth year of the undergraduate study, 29 (25.1%) from the first year of the graduate study and 48 (42.85%) from the second year of the graduate study. The distribution of students in this survey was determined by their membership in the students' mailing list. On the list, there are (generally speaking) more students of the graduate study than students of the undergraduate study.

Question 2. Which of the following activities do you relate to the concept of digital literacy? (N=111)

Table 1. Activities student relate to the concept of digital literacy

Activities	*N*
Editing photos	92
Editing audio files	82
Editing video files	78
Writing text (by using (citing) other information resources)	71
Creating computer animations	66
Broadcasting of video over computer network	66
Broadcasting of audio over computer network	64
Creating computer illustrations	62
Creating computer simulations	56
Creating technical plans	45
Writing text (without using other information resources)	36

The results in this question suggest that students connect the concept of digital literacy most frequently with creation of multimedia and editing of different types of digital content as well as with writing text by including (citing / using) other information resources. These activities might be more interesting to them (as part of their curricular requirements) as they pursue them more often (as part of their curricular and extracurricular requirements) than less frequently chosen activities by the same group of students in this research.

Question 3. Please, rate your knowledge in doing the following activities (1=without knowledge, 5=excellent knowledge)

This question offered a large number of options related to the possession of knowledge necessary for participation in ICT related activities. The best rated ICT related activities are: managing e-mail and SMS, searching the internet, file download and watching video on the internet. All these activities are related to the frequent use of the internet (and smartphones). Most poorly rated knowledge areas are use of online simulations, creating Web pages, creating quizzes, creating online surveys etc. Some of these activities in the group with the lower ratings might be very important for students and their learning process and they should be given more attention because they provide direct support to education.
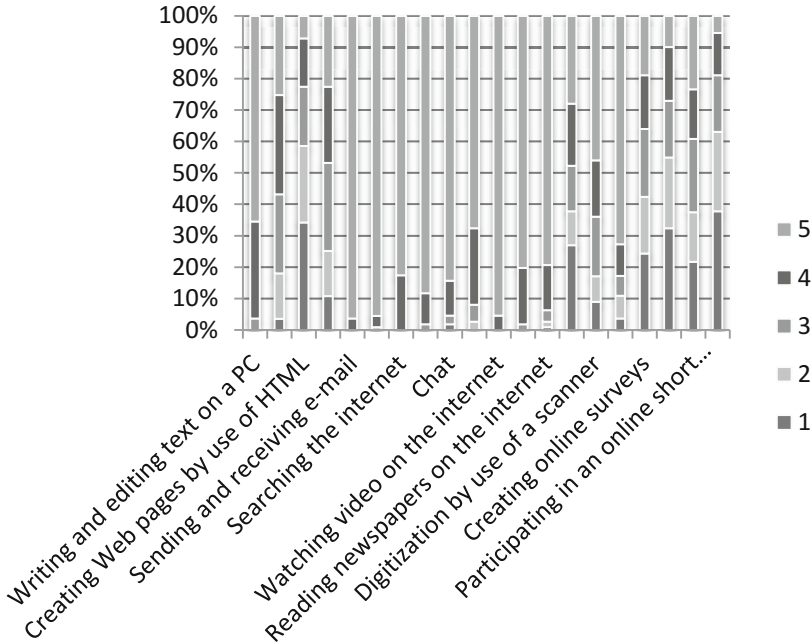
Fig. 1. Knowledge of students about selected activities

Question 4. Which of the following areas of knowledge would you like to expand? (multiple answers) (N=111).

For this question the list of answers was further expanded to include even more ICT related activities students would like to master. On the basis of students' preferences, the best rated areas of knowledge were: Web development and multimedia. Traditional computer related activities such as advanced text editing and use of spreadsheet software were positioned much lower on the list of the preferred knowledge areas for expansion. These results suggest a distinct orientation by students towards the more efficient use of the Web and towards creation or development of multimedia content while other areas with lower rank could be considered as mastered (use of e-mail, use of online social networks, file sharing on the internet, creating presentations, use of spreadsheet etc.).

Table 2. Areas of knowledge students would like to expand

Areas of knowledge for expansion	N
Creating Web pages	86
Digital photography editing	68
Creating animation for Web pages	66
Video editing	65
Simple Web applications development	61
Development and management of databases	60
Digital photography	54
Audio editing	52
Advanced text editing	48
Complex Web applications development	44
Preparation of digital content for publishing (on the internet or in print)	43
Use of spreadsheet	40
ICT supported foreign language learning	38
Online survey development	31
Online courses development	29
Mind map development	25
Use of videoconference systems	20
Files sharing on the internet	19
Creating presentations	16
Use of online social networks	11
Use of teleconferencing systems	10
Use of e-mail	7

Question 5. What type of education for use of ICT have you had so far? (multiple answers)(N=111)

Table 3. Types of education for use of ICT students have had so far

Types of ICT education	N
Self learning	100
University course	84
Short course taken before university enrollment	16
Short course outside the university	12
Some other form of education	10
Workshop organized by the university	9
Workshop organized outside the university	4
Short course organized by the university	2

According to the results in the table 3, students learned how to use ICT mostly by themselves and by attending the university courses. Other types of education are less present in the results. Self-learning is a popular type of education because students can determine their own learning pace, the quantity of learning material and the overall investment of time and effort in this type of learning. In Croatia, almost all universities offer courses that include topics related to ICT. In addition, organizations such as the University Computing Center (http://www.srce.hr) offer short courses to

members of the Croatian academic community. The number of self-learning students in this research implies that students evidently have a need for acquisition of new knowledge and that there are either some problems related to availability of other types of education to students, or problems with the quality of the existing education – which as a consequence, lead the students to decide to learn how to use ICT on their own. Self-learning enables students to set the learning pace, to pause or stop learning or to speed it up when necessary. The internet also helped in the distribution of educational material thus facilitating its use.

Question 6. Please, rate the influence of ICT on the following segments of your life (1=without influence, 5=very strong influence).
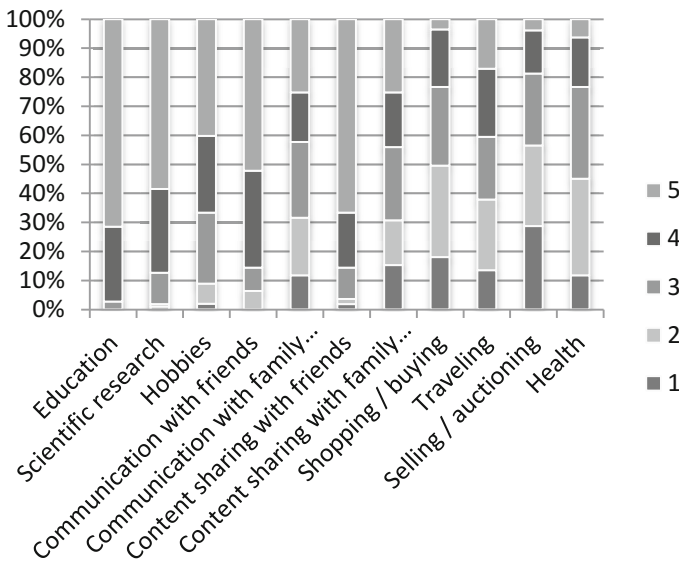
Fig. 2. The influence of ICT on the following segments of student's life

The results indicate that ICT has the strongest influence on those activities that are related to the respondents' daily activities namely education at the university. Other popular activities were scientific research, content sharing and communication with friends, while segments such as health and buying and selling are least influenced. These results were expected since students are occupied mostly with their daily educational routine while internet commerce is still not frequently used by students.

Question 7. Please, rate the influence of ICT on your academic performance (1= without influence, 5=very strong influence).
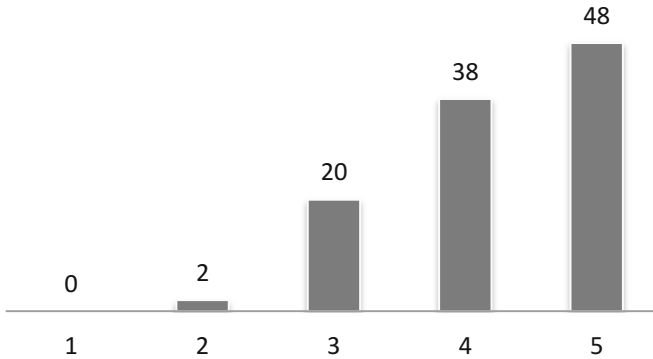
Fig. 3. Influence of ICT on students' academic performance

In this question the respondents were given an opportunity to rate the influence of ICT on their academic performance. The ratings suggest that the students who participated in this research are aware of the increasing influence of ICT on their academic performance. Since ICT is playing a more important role in the lives of the students, it was expected that the students will in the future continue to grade highly this type of influence on their most important activity – education.

Question 8. In your opinion, who is responsible for the development of digital literacy of an individual? (multiple answers).

The respondents gave the following answers (number of the respondents is given in the parentheses): individual himself / herself (96), high school (95), university (83), elementary school (81), Croatian academic and research network (39), family (35), professional societies offering short courses (33) and nonprofit organizations (33). That individuals consider the development of digital literacy as their own responsibility might indicate that the respondents are not satisfied with the current educational programs available to them, or that they can't find adequate existing educational activities that would help them improve their digital literacy related skills. While self-learning is widely present in the internet era, this result might also indicate that the educational institutions are no longer central to education in digital literacy skills for these students. It is also interesting to see that the elementary school is rated lower than the high school and the university for education in digital literacy, because it is often said that ICT skills should be taught as early as possible to prepare individuals for further education and later on for the labor market. Other options are given less priority in the results.

Questions 8. and 9. In your opinion, what influence will digital literacy have on quality of life (in general) and quality of education of an individual (in general)? (1=without influence, 5=very strong influence).

■ Quality of life   ■ Quality of education
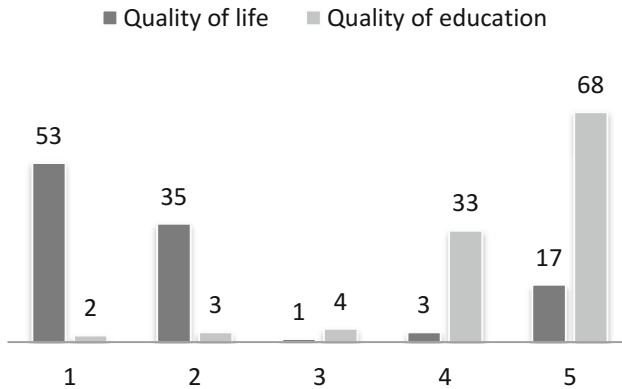
Fig. 4. Influence of digital literacy on quality of life and quality of education (in general)

The results in these two questions indicate existence of a contrast in opinions among the students about the influence of digital literacy on quality of life and quality of education (in general). It is possible that students haven't perceived the importance of digital literacy on one's life as strongly as on the quality of their education. Results like these are possible because the respondents personally experienced the influence of digital literacy on their own education and have first-hand experience at the university and most of them still haven't experienced such an influence in their lives outside the university so they don't yet attribute such an importance to digital literacy.

5   Conclusion

Digital literacy has become very important for the development of different segments of the networked society especially for the inclusion of citizens into the social and cultural activities supported by digital technology. This inclusion helps citizens to become co-creators of their new participatory culture and not just passive consumers of culture created by others. This is especially true for younger generations who are intensively involved in the use of digital technology. One such group of citizens is the student population which is deeply involved in the use of digital technology. In the research conducted at the FHSS students demonstrated their deep understanding of the importance of digital literacy which influences their lives, education, research, communication with friends considerably. They were also very confident about their knowledge of the use of ICT. The results indicate their orientation towards self-learning as an addition to the university courses they attend during the academic year. They selected areas of knowledge that (in their opinion) require further expansion, and by doing this they demonstrated maturity in thinking about their future and have reacted faster than the official bodies at the university in charge of development of study programs. Finally, they were very certain about the importance and influence of ICT on their academic performance. All these results are good indicators of the current state of perception of digital literacy in education and thus serve as inputs for the development of new university courses. As these students will be entering the labor market, their skills and knowledge will become more important for them in order to avoid exclusion from the networked participatory society.

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Qualitative Research in the Field of Information Literacy in the Second Decade of the XXI Century

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Abstract. The paper discusses some current methodological issues related to the field of Information Literacy (IL). It aims firstly at discovering what qualitative procedures have actually been employed in the empirical investigations into various aspects of information literacy in years 2011-2014. Secondly, it seeks to categorize them into research methods, data collection techniques/data sources, analytical frameworks, etc. The paper is descriptive and exploratory in nature. A critical literature review has been the leading method. The EBSCO's specialized database LISTA was searched to find articles reporting empirical research on different dimensions of information literacy. The main observation is that in years 2011-2014, as in the previous periods, the three methodologies (qualitative, quantitative and mixed methods) have been used in the IL research. The preferred qualitative data sources were the focus group and individual interviews. As for conceptual frameworks, the information practice or people-in-practice as well as socio-cultural perspectives seem to be growing in importance.

Keywords: Information literacy, methodology, qualitative research, XXI century.

1   Introduction

This paper discusses some current methodological issues related to the field of Information Literacy (IL). The main goal is to identify qualitative approaches, methods and techniques actually used in empirical research on information literacy in years 2011-2014.

The research question focuses on what qualitative research perspectives and procedures have really been employed in the IL domain in the second decade of XXI century, not how frequently they were utilized. In other words, this is a methodological study, not a bibliometric one. Searching Google Scholar and appropriate databases (LISTA, SSCI) reveals that up to the moment only few publications *fully* and *specifically* devoted to the *methodology* (regardless whether qualitative or quantitative) of IL research have yet been published. One of them is "Exploring methods in information literacy research" [1], a book issued in 2007. Of course, methodological reflection is present to a lesser or larger extent in many various IL works, e.g. accompanying reports from empirical investigations, and also as a part of the broader discussion on theoretical aspects of the Information Literacy domain [2].

At the beginning, the key concepts have to be clarified, that is the notions of information literacy and qualitative methodology. The ideas of research methods, techniques, and conceptual/theoretical frameworks or perspectives are shortly discussed in the appropriate units below (see the Findings section).

Today, the study and promotion of *information literacy* is central to the field of Library and Information Science (LIS) as well as library practice. But, despite its widespread use among librarians, information professionals and LIS scholars, the term "information literacy" lacks a single, universally accepted definition. On the other hand, there undoubtedly exist commonly shared feelings and understandings of IL, even if they are not always explicit and easily verbalized. A popular approach appears, inter alia, in the "Alexandria Proclamation on Information Literacy and Lifelong Learning", where we read: "Information literacy comprises the competencies to recognize information needs and to locate, evaluate, apply and create information within cultural and social contexts" [3]. But in the last years various researchers, in particular, but not only, Basili [4], have shown that there are also other, of course interrelated, meanings of IL. Thus, the expression "information literacy" denotes not merely a feature of an individual, a form of personal knowledge and skills, but also a social phenomenon, a desirable goal of national educational policies, as well as a socially enacted practice [5], and a research area, the sub-discipline of LIS or even an "independent", multidisciplinary field of study. In the present paper all the above listed understandings are accepted.

Further, moving to the *qualitative methodology* issues, there are two main factors influencing any reflection on the research methodology, not only within the Information Literacy field. Firstly, the terminology is not stable, for example some authors differentiate methods from techniques, other use both concepts interchangeably. Also, such terms as "conceptual framework", "methodological approach", "methodologies" (in plural), "paradigm", "research frame", or even "epistemology/philosophy" may or may not mean the same. Secondly, the research guidelines and procedures are dynamic, they evolve over time and are usually adjusted to the particular problems being investigated. As a result, and this has already been noted in the IL literature, it is not easy "to categorize them in a clearly defined ways" [6].

Also, all methodologies, approaches, research procedures etc., used in Information Literacy, LIS, and any other scholarly disciplines, are embedded in and influenced by the different philosophical assumptions of epistemological, ontological and axiological nature. This aspect, although both interesting and important, is not a matter of reflection in this paper. Those interested in that kind of problems may consult existing publications, e.g. [6-7].

Today there is an extensive general literature on qualitative methodology as such, including, inter alia, a specialized encyclopedia [8], and internationally recognized and frequently re-published books by Creswell [7], Denzim and Lincoln [9], Flick [10] or Silverman [11]. Also within the LIS area one can find a substantial set of methodological publications dealing with various aspects of qualitative research. Due to limited space in this paper only examples can be named, among them a series of articles by Shenton [12], an encyclopedia entry [13], and a handbook [14].

Detailed characteristics of qualitative research can be found in the above mentioned and many other publications, so only selected aspects of this methodology are signaled here and in the Findings section. Generally speaking, in qualitative research

human beings and how they create and interpret the world are in focus. It involves collecting and working with words, images, sounds and their in-depth, thematic analysis, not counting. Qualitative methodology comprises inductive, iterative and interpretive thinking. The research findings may often not be generalizable to the broader population or general theory, on the contrary, the focus is on in-depth understanding of cases, individuals and local settings.

The terms "qualitative design", "qualitative methodology", "qualitative research" are used interchangeably in the present paper.

2   Methodology

This paper is descriptive and exploratory in nature. The critical literature review with elements of qualitative content analysis has been the leading method [15]. The time period 2011-2014 was chosen to capture the most contemporary methodological attitudes and trends in the IL research.

EBSCO's specialized database LISTA (Library, Information Science and Technology Abstracts) was searched to find articles reporting empirical research on different dimensions of information literacy. The query "DE INFORMATION literacy – Research", with limiters (publication dates 2011-2014 and peer-reviewed journals only), retrieved 102 works (in June 2014). Only articles were included, editorials, letters, news items, and resource reviews were a priori excluded from the inquiry. The works fully and only partly devoted to information literacy have both been taken into account.

All of the 102 retrieved texts were looked through in order to select those utilizing the qualitative research design. Abstracts and, where necessary, full papers were reviewed to confirm or deny relevance.

Out of 102 articles examined only about one fourth (27, some might be considered borderline) occurred to be relevant for the present study. These have been publications utilizing qualitative or "at least" mixed methods research design and reporting actually carried out empirical studies. The excluded rest were papers:

• in fact not about information literacy, despite being indexed in the LISTA database with the descriptor "Information Literacy – Research",
• based on quantitative research approach (mainly using questionnaire surveys and also school tests),
• or fully theoretical, discussing concepts and models.

Next, the 27 relevant articles were read in depth to identify main methodological approaches, as well as qualitative research methods, data sources, data analysis techniques and conceptual frameworks – declared and *actually* used. These analytic categories had been created a priori, basing on general qualitative-oriented literature (see the Introduction section above). Only those methodological perspectives and procedures that were explicitly and "consciously" stated in the examined 27 publications have been taken into account. Explicit naming of someone's own methodological stance is in fact one of the basic signs of research being academic/scholarly. And only such a research is of interest in this paper.

An interesting spin-off of the present endeavor has also been a tentative identification of selected relations between some areas of IL research and preferred methodological approaches (see sections 3.1 and 4 below).

3   Findings

Findings are divided into five parts. Each part starts with the short characteristics of a given research problem/procedure. Then there are lists of identified – in the analyzed set of 27 articles – research approaches, methods, techniques and conceptual frames.

3.1   Methodological Approaches Identified in the Selected Set of the IL Articles

The first observation is that in years 2011-2014, as in the previous periods, the three methodologies (paradigms, research designs), namely the qualitative (interpretative), quantitative (positivist), and mixed methods (MMR) have been used in the information literacy research.

In the present paper, as already stated, the qualitative research design is in focus. But, as it occurred, only few – from the analyzed group of articles – have been "purely" qualitative. These are the works of Eckerdal [16], Papen [17] and Lloyd et al. [18].

The rest of the selected IL-related publications employed mixed methods research and triangulation of data, using both quantitative and qualitative procedures to answer their research questions. Whether or not this is a justified way of scholarly investigation is a matter of debate [19], but outside the scope of this paper. Interestingly, the mixed methodology appears mainly in the research on information literacy in the context of academic libraries, higher education or schools. Typically, such projects consist of a questionnaire survey to elicit quantitative data from the representative sample of pupils or students, and of a qualitative interview or focus group to get opinion from faculty, librarians or teachers. That type of attitude can be seen e.g. in [20-27].

3.2   Qualitative Research Design in the IL Domain – General Features (Iterativity and Intersubjective Verifiability)

Usually scholarly investigative process is broken down into a few major, linearly ordered stages: problem statement, literature review, choice of the method and studied objects (sampling), empirical data collection, analysis and interpretation of those data, and finally concluding and generalization (creating/discovering categories, concepts, descriptions, laws, models, typologies or theories).

In qualitative research separating these stages is "artificial"; in fact they are only abstract differentiations for the purpose of the methodological reflexion. In reality they are just functions of a broader task. The qualitative design is essentially *iterative*, the research phases do not make a linear sequence in time, on the contrary, all they co-exist from the beginning of any qualitative project, are intertwined and constantly re-shape each other. Inter alia, the "openness" of qualitative approach may imply far-reaching changes of the initially formulated research problem under the influence of collected and analyzed empirical material. Also stages of data collection and data

analysis "start" together, in other words – constant, iterative analysis takes place from the very beginning of empirical material gathering [11-12], [28].

Some Information Literacy authors, in particular Lloyd et al. [18] and Papen [17] are fully and explicitly aware of that. For example, Papen writes, reporting her research: "Initial data analysis, which identified salient themes, took place very shortly after each interview was conducted. In that way, the preliminary analysis informed the ongoing process of data collection. Once data collection was accomplished and all interviews transcribed, all transcripts were read and re-read repeatedly to identify salient themes and issues. Four key themes were identified. Data analysis followed an iterative approach, whereby themes which were identified in one interview were then looked for in others".

Qualitative research, exactly as any other research, to be considered scholarly has to possess so-called *intersubjective verifiability*, meaning that any member of the academic community is able to check where the ways of collecting and analyzing data and reasoning have been proper and follow the scholarly rules. Because in qualitative design the investigative procedures are usually unrepeatable (for example, one cannot repeat exactly in the same way a longitudinal ethnographic observation or a narrative interview), the preferred tactic is to left so-called "audit trial", that is to describe in detail the research process, its assumptions, conceptual frameworks, limitations, methods and techniques used, theoretical constructs, and – last but not least – the researcher's own constrains and personal features influencing a given study [8], [29]. Among the analyzed publications only few have respected these methodological requirements, the examples are [17-18].

3.3   Research Methods

Roughly speaking, a research/scholarly method is a series of steps undertaken to acquire justified, reliable and valid knowledge. Research methods follow the agreed-upon rules, have their structure, and are used consciously with the aim to acquire new knowledge. Within a given method different data collection techniques can be used [28].

Examples of qualitative research methods are: action research, biography, case study, comparative methods, critical incident technique (called "technique", but in fact being a method), critical literature review, delphi studies, grounded theory method, ethnography (traditional and online – netnography), historical research, life-history method, Sense-Making method [7], [9], [28-31].

In the analyzed set of the IL papers the following *research methods* have been named:

1. Action Research [32],
2. Autoethnography [17],
3. Case study [22], [33],
4. Critical literature review [34-35] (where this method was a leading one, not assistant, like in most works),
5. Ethnography [36],
6. Longitudinal studies [17],
7. Qualitative meta-synthesis [37].

3.4   Data Gathering Techniques, Data Sources, Sampling

In general, the following data gathering techniques (data sources) are accepted in the qualitative research:

1. Documents, occurring in various forms – written (texts), audial (recordings), multimedial (films, webpages), visual (graphics, photos); already existing, i.e. so-called natural data (blogs, users' questions at reference desk) or contrived, i.e. intentionally created for the purpose of a project (interview transcripts, users' diaries); official (legal regulations, library statutes) or not (advertisements, tweets),
2. Focus groups, group discussions, group interviews,
3. Individual interviews, of various kinds (in-depth, narrative, open, semi-structured, Sense-Making, unstructured)
4. Observation, in different variants (ethnographic, naturalistic, participant, semi-participant and non-participant, shadowing) [10-11], [38].

In the analyzed 27 articles the following *qualitative data sources* have been identified:

1. Conversations (recorded) [16],
2. Documents, texts (assessment tests, booklets, books, brochures, leaflets), graphics/pictures, and video-recordings [17], [36],
3. Focus group [18], [24], [39-41],
4. Interviews [16], [25-27], In-depth interviews [17], [23], Semi-structured face-to-face interviews [18], [32], [40], [42-43],
5. Reflective journals [22],
6. Research diary [17],
7. Think-aloud technique [44].

And as for *sampling* we have:

1. purposeful sampling, criterion sampling [17],
2. snowball sampling [17].

3.5   Data Analysis, Its Techniques and Conceptual Frameworks

Qualitative data analysis (QDA) makes the most significant phase, because the way of analyzing the gathered empirical material determines not only the research outcomes and their content, but also its credibility and validity.

QDA is a range of iterative processes and techniques employed to move from the qualitative (i.e. multidimensional, poorly structured, rich) empirical material into some categories, explanations, generalizations, interpretations, rules, typologies, and gain deeper understanding of the investigated people, phenomena and situations.

At the moment there is not one, commonly agreed standard for the qualitative data analysis. On the contrary, different approaches can easily be noticed. In addition, the ways of qualitative data analysis, categorization, interpretation, drawing conclusions, etc. rely heavily on the adopted conceptual or theoretical frameworks (sometimes

even called "paradigms"). Those frames provide analytical perspectives to working with the collected data [6], [12], [28].

Conceptual frameworks are the sets of assumptions (often of epistemological and ontological nature), worldviews, and/or models/theories that guide any qualitative research. However, the IL authors perceive those frameworks differently and to varying degrees of generality. Some refer to broad philosophical concepts like hermeneutics, other to methodological approaches, i.e. phenomenography [45], or to "concrete" theories, i.e. Bystrom's theory of information activity [22].

In addition, within the conceptual frameworks/analytical perspectives there exist different *QDA techniques*, e.g. concept mapping, content analysis, constant comparative analysis, thematic analysis and other. Only a few authors reported these aspects of their IL research, among them Eckerdal [16], Lloyd et al. [18] and Papen [17], who applied "thematic analysis", and van der Vaart et al. [44], who mentioned "inductive analysis".

In the analyzed set of IL-related articles the following *conceptual/theoretical frameworks* or *analytical perspectives* have been explicitly named:

1. Bystrom's theory of information activity [22],
2. The constructionist framework and positioning theory [16],
3. The Dunning-Kruger effect [40],
4. Ethnography [36],
5. The imposed-query model [40]
6. The information practice concept, the people-in-practice perspective [17-18],
7. Kuhlthau's Information Search Process (ISP) model [22],
8. Phenomenography [43] [45],
9. The qualitative constructivist grounded theory approach of Charmaz [18],
10. Socio-cultural theories [18].

Some authors have also reported the joint usage of a few theoretical frameworks in their information literacy research [18], [40]. Others refer to the existing IL perspectives, e.g. Eckerdal [16], citing Limberg, Sundin and Talja [46], who had distinguished three theoretical approaches to information literacy: discourse analytical, phenomenographic and sociocultural.

4   Closing Remarks

The "pure" qualitative research in the IL domain in years 2011-2014 has usually been connected with *everyday life* information literacy, in particular with the health-related issues. On the contrary, the mixed methodology, more frequently used, has mainly been applied to information literacy in the context of *formal* education, from primary schools to doctorate courses, trainings offered by academic libraries, information skills instructions, etc.

In the studied period no research method may be distinguished as the most popular or leading one. The preferred qualitative data sources have been the focus group and individual interviews. As for conceptual frameworks, the information practice or people-in-practice as well as socio-cultural perspectives seem to be catching the attention of the IL researchers.

Based on a limited sample, this study undoubtedly has its constraints. It has been based on the content of only one source. The LISTA database, although comprehensive, indexing more than 750 LIS journals, plus books, research reports, proceedings, etc., does not, of course, cover the all IL-related publications. It would be interesting to check in the future projects where the same trends can be detected employing some other resources, e.g. Google Scholar or Social Science Citation Index (the category Information Science and Library Science).

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Lessons on Information Literacy Research:
A Portuguese Experience

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Abstract. From 2007 to 2010 we conducted a project titled Information Literacy in the European Higher Education Area: Study of Information Skills in Portugal (eLit.pt) that was funded by the Portuguese Science and Technology Foundation and coordinated by the University of Porto. The aim of the project was to understand how the university students face the information competences required by the European Higher Education Area (EHEA). Another aim was to understand the connection between information literacy and information behavior. Thus, we designed a theoretical model (e-lit model) which was the base for planning a survey. The study was performed on a national scale, allowing to compare regions with different levels of development. The sample, approximately 2000 students from high school and university, allowed comparing their informational competences. Both qualitative and quantitative methods were used. In this paper we present our experience emphasizing the importance of developing effective methods for IL research.

Keywords: Information skills, Portugal, university, high school, survey.

1 Introduction

The eLit.pt is a research project developed in Portugal that has correlated two key factors that define the current European educational system: the European Higher Education Area (EHEA) and Information Literacy (IL). We can also see these aspects in projects such as Tuning, IL which is wholly part of the EHEA, nevertheless it is not entirely a result of the Information Era requirements. What it actually expresses is a reform process that encompasses educational structures and content, agents, roles, profiles and skills, in a dynamic context that combines knowledge, understanding, skills and abilities.

The project Information Literacy in the European Higher Education Area: Study of the Situation of Information Skills in Portugal (eLit.pt) was developed in Portugal between June 2007 and May 2010. The eLit.pt project was funded by the Science and Technology Foundation (Ministry of Science, Technology and Higher Education) with the coordination of Professor Armando Malheiro da Silva from the University of

Porto, Information Science area. The multidisciplinary project team included five researchers from Information Science, Cognitive Psychology, Sociology and Linguistics.

The major purpose of this research was to study the information competences levels in Portuguese university students. Our main intention was to find out how university students face the EHEA information skills requirements. We consider education as a system. Consequently, we decided to analyze also what happens in High Schools, the preceding educational level. Our understanding is that the information competences acquired at this level determine informational behavior of the university students. Some ideas, as follows, were in connection with our aims, namely:

a. The importance of developing a specific study in Portugal in order to determine if several information literacy standards exist;
b. The need of assessing higher education information literacy levels in order to determine the aptitude and attitude of the university students;
c. The potential differences in the information background in distinct geographic areas of Portugal;
d. The assumption that informational behavior is connected to expectations, needs and lifestyle;
e. The importance of creating a strategic information literacy program that would allow Portugal to adapt to the EHEA and to the Information Era.

The purpose of this paper is to present our methodological experience when addressing the study of information literacy. Even though our research was conducted in Portugal it is possible to draw some lessons about the difficulties when developing a research of this nature where in fact you are evaluating people's cognitive, attitudinal and motivational aspects.

2   Theoretical Point of View

Our first step in developing the project was to base our research on theory. We rejected the idea of focusing our study only in practical research. These discussions allowed us to set up our point of view about concepts including information, information behavior and information literacy. As a result the project was based on a theoretical corpus from which we can point out some statements:

a. information and explicit knowledge are synonyms, and both differ from cognition;
b. information and communication are complementary and related concepts;
c. information (or explicit knowledge) comes from a binomial, which we can characterize referring to Reuven Feuerstein, a Piagetian psychologist [1] to whom biological ontogeny continuously interacts with socio-cultural ontogeny;
d. information substantially differs from documentation, although a document cannot exist without it;
e. from the perspective of Information Science, information literacy means specifically the acquisition process of competences and skills of critical ability directly connected

with the creation, search, organization, storage, diffusion, transmission and transformation of information or knowledge. On the other hand, other expressions like digital inclusion refer to the fundamental learning process of a written and spoken language and to arithmetic principles as well as to the efficient use of electronic gadgets and digital platforms surfed through the info sphere;

f. the Information Science approach to information literacy presupposes a natural and fertile interdisciplinary intersection with Education Sciences, Cognitive Psychology and Neurosciences.

These assumptions allowed us exploring the way the approach to information literacy is built in two complementary levels: (1) internal or inherent to Information Science; and (2) external to Information Science or interactive with other approaches. It is important to understand what can be considered to be specific to Information Science. "In Information Science it is convenient to work with the concept of information literacy referring to the competences and the selective and synthetic abilities to search and to use information. […] to determine the category of learning skills, as well as the spontaneous or induced needs, during the learning process, in what concerns the search, reproduction/reference (citation), internalization and communication of information" [2]. It is also important to remember that a key mission of Information Science is the study of individuals in their various contexts, and also their need for information, their performance in terms of use and communication of information and also in terms of generating new information and creating new information needs. It is also important to understand their efficiency in considering the implications of their actions and of the knowledge generated, concerning ethical, political, social and economic aspects, when performing intelligent interventions [3]. Information Science must as well be concerned with people's ability to autonomously learn throughout their lives ensuring the continuity of competences and skills that interact with social, professional and personal demands.

Research about the above mentioned aspects entails a dialogue between Information Science and other scientific disciplines. Among these scientific disciplines, Psychology and Pedagogy have a greater role, but Sociology of Education and Culture must also be considered.

In the information behavior area of knowledge, the contribution of Tom Wilson [4] is with no doubt very important. Nevertheless a new approach is required where the evaluation and communication of information should be integrated. This new approach should have a transversal dimension embracing every aspect and situation of social life and not only aspects where the subject/person interaction occurs, namely in conventional services and/or technological information systems.

One of the contributions of our project is that we have developed a model to represent information literacy – the elit model [5]. The main idea pr is that IL comes from and connects with information behavior. We think that information skills are co-determined, at first, by environmental conditions and by human action, focused on context and situation. This environment includes political, economic, legal, social and cultural factors. This situation cannot be changed by students but does influence them. For example, the creation of the EHEA has brought about changes in the lives of university students to which they must adapt.

In the model we distinguish environment from context. Environment refers to a generic framework within the reality of a country, broader international community or even a diffuse geographic and civilization sphere (such as the Western World), where human and social life is contextually and structurally being developed, including the even more intense and extensive activity carried out in cyberspace, or "space of flows" (using the very suggestive expression of Castells). On the other hand, the context is more personal, not only in terms of family, but also in academic, psychological, and educational terms. In general, it refers to all matters directly related with students. Environment determines the context, and the context is the way to understand the extension and characteristics of the environment, as well as of its specificities.

We also believe that motivation defines information needs. Motivation is determined by lifestyle, aspirations, familiar influence and other aspects that shape a student's context. In other words, students' context influences their information needs. This aspect was particularly important in our study. An IL program will never change the information behavior of students if they do not have an internal mechanism that facilitates behavior change.

Thus, information needs determine how students access information. If students have low aspirations the information resources used to satisfy their information needs will also be low as well as the access, the use and creation of information. We also consider that in the Information Era students can satisfy their information needs in different ways: not only in a formal way (using library and/or educational resources), but also in an informal way, using different media, undoubtedly the Internet, but also radio, television, videogames and people (teachers, friends, family), among others.

When students access information, a process of assessment and selection is automatically activated. Obviously this process is influenced by the situation, the context and the environment. If a student uses a restricted number of poor quality information resources, his/her perception about the need to evaluate information will be low. We can postulate that if the risk of the use of information is high, the need to evaluate either information or the diversity and quantity of indicators is also high.

This process results in either satisfaction or dissatisfaction with information by the student. When satisfied, the information will be used and communicated in any format and for any purpose. Hence, the use of information leads to a new reality and, thus, to new expectations and new questions, allowing new information needs to appear. In this process, the usual situation is that students use a formal channel to interpret and access information. This formal channel is represented by the education system, including teachers, and public, academic and school libraries. However when students are not satisfied with information they may not use it and the information cycle is subverted. A process of frustration leads to a weak perceived information need. In this case, students reject the formal channels and begin to use informal methods, such as Google.

3   Methods to Study Information Literacy

The eLit.pt project was developed in four phases: 1) theory discussion and interchange of ideas including the definition of our theoretical corpus; 2) design and plan of the experimental research; 3) conduct of experimental research, data collection

and results; and 4) analysis and discussion of results. It was intended to define a strategic plan to develop students' information skills so that Portuguese Universities could easily adapt to the EHEA Information Era, and to foster an increasing the awareness among political and academic authorities of IL.

In this section we describe the second phase and in the next one we will discuss some of the results. Sample, segments and stratification were established according to criteria. The final sample comprised: (1) 9 cities from the north to the south of the country (continental); it doesn't include the islands; (2) 11 secondary schools; (3) the areas of Sciences and Technologies, Socio-Economic Sciences, Social and Human Sciences and Visual Arts in the scope of the Secondary education; (4) the 8 public Universities of the country; 5 Polytechnic Institutes from north to south; (5) degrees in Architecture, Biochemistry, Civil Engineering, Management, Languages and Literatures and Psychology in the scope of the Universities; and the degrees of Civil Engineering, Management and Nursing in the scope of the Polytechnic Institutes.

The sample was composed of a total of 3,226 students. The mean age and standard deviation of students is summarized according to the educational institution (Secondary School, University and Polytechnic) in Table 1.

Table 1. Number, age and sex of students

Educational Institution	N	Age	Sex (female)
Secondary School	955	17.26 ± 0.70	542 (56.8%)
University	1379	20.26 ± 1.85	880 (63.9%)
Polytechnic	892	20.50 ± 1.97	567 (63.6%)

The method used involved two types of approaches: a qualitative and a quantitative approach. The qualitative approach consisted of interviews and focus groups. It provided us with valuable information about information behaviors, expectations, needs and uses of information. Indicators derived from the qualitative approach were later used to construct the questionnaires. During the first phase, interviews were administered to a small number of students from Secondary Schools and from the University of Porto. It consisted of 41 questions, divided into four main groups: Needs; Research (and research assessment); Use (including assessment of findings and respective application) and Ethics. Three focus groups with a total of 30 students were interviewed: two in the 12th year (from two Secondary Schools of Porto) and one with students from the Faculty of Arts of the University of Porto. The aim of the interviews was to capture the influence of (1) the different contexts (from school to Internet, group of friends, family, study centers or tutorial services), (2) their learned information seeking skills, (3) their ability to relate information from various contexts and typologies, (4) the influence of the Internet on the informational literacy of secondary school and university students, and (5) the active or passive role of the students in the learning context.

Results from this qualitative phase were used to prepare a preliminary questionnaire (corresponding to the quantitative phase) to be administered to 28 students from 12th year of a Secondary School and to 19 students in the 2nd year of a course at the Faculty of Arts of the University of Porto. The responses were processed using the SPSS 15.0 software. Based on these results, the final version of the questionnaire was prepared, which included 54 questions in four main groups:

a. Basic Group: contained the school and family contexts. These are the places where students develop their information behavior structure, conveying a way of dealing with IL. Material, technological and symbolic elements were assessed. School context also included aspects of the school/university and of the roles and social status of the respective players.
b. Functional Group: contained the mediating role of institutions such as the library and the school.
c. Transversal Group: contained all the issues on how students correlate and use different information. For instance, the access to information and its use.
d. Introspective Group: contained aspects of internal mechanisms (motivation) related to information requirements.

This questionnaire was administered to the selected cohort and results were processed using the SPSS 15.0 software. They were handed to all the students, in all segments, to obtain at least a minimum number of 50 respondents by situation.

As it was an Information Science project it should also include the traditional focus on the conventional information services – public libraries, university libraries and school libraries – an aspect integrated in the functional or mediation group of questions. These kind of questions that were applied to the university students included aspects like (i) if there was a school library in their secondary school and a public library in their residence area, (ii) what was their frequency of use, (iii) since when and under what circumstances they used it and (iv) what kind of sources/information they used (paper or digital); (v) and whether on their own initiative or according to teachers' requests. Since the daily use of technology resources has increased significantly, especially among children and youngsters, it was important to understand the impact of the growth of the Internet and of Google's popularity in almost every search performed and in the type of information used and stored.

These clues were followed and explored in the survey with the following objectives: (1) to find out if all or some scientific disciplines include the development of methodological competences, such as whether citation norms were taught and students required to make bibliographic references; (2) to determine the level of critical or reflexive exercise when reading texts; and (3) to describe the awareness students had about the criminal nature of plagiarism, from literature to art in general in the last year of the secondary school.

In the university context it was essential to study the frequency and the circumstances of use of the Library for accessing digital databases and to consider whether intensive access to the Internet coexists, and if so whether it is an advantage or substitutes for the traditional information sources, considering different scientific areas. The mentioned "clues" were also analyzed: (1) to know in which scientific disciplines the methodological fundaments are being taught, and if so how they are being learned and put into practice (2) to determine the level of critical thinking exercises, in contrast to the memorization of notes and texts, and (3) to know if the consciousness acquired about plagiarism in the university is a relevant aspect.

4   Results

Several trends can be drawn from the general information on the social background of the respondents. The first category of question was related to the socioeconomic background of students. In our research it was not possible to conclude that the educational level of parents has a direct influence on the information skills of students. If we look at the general information provided about the existence of computers and Internet access, we see that about 99% of the respondents have a computer at home (61.3 % of Secondary Education (SecEdu) students and 62.8% of the Superior level (HiEdu) students have between 2 and 3 computers). The number of computers existent at home is greater for University than for Polytechnic students (33.4% in University have more than 2 computers, against 25.2% in Polytechnic Institutions). This suggests that university students use the computer more often.

When we compared in global terms, HiEdu shows a more frequent access to computers compared to secondary students (75.5% for high education students and 69.3% for secondary ones). In both cases, the first option is accessing the Internet at home (over 90%), whereas in the educational context 57.4% of HiEdu students say that they do so at the Faculty and only 20.1% of SecEdu students do it at their respective schools, although they know schools have the necessary resources.

Generally speaking and despite the good technological equipment, social asymmetries accessing the Internet, using information and communication technologies, as well as using information resources, shows an "information division" together with the already identified "digital division". If we are to use the IL concept, these data suggest that something more substantial must be done within the school context with regard to cognitive skills, so that such a "division" decreases or even disappears. Nonetheless, the socioeconomic and family contexts are not enough to bear special relevance for informational behavior. Results show that variables from the school context have also great influence on it. Although schools offer SecEdu students the possibility of computer training and the access to services and resources, it is not their favorite place to use them. SecEdu students have chosen their home to do homework (96.6%), whether HiEdu students even preferring their home (81.1%), reveal an intensive use of both the Faculty space/resources (64.6%) and the Faculty Library (42.1%) It seems that HiEdu students have to prepare assignments for the various subjects in their course and therefore need to access the Internet. Faculty resources offered were seen as very important as they are normally more specific, either in quantity or quality.

With regard to choosing the Public Library, we realize that students from both groups hardly use it. We cannot disregard the investment made in the Public Reading Network since the second half of the 1980s, and the expected role of these libraries in terms of their relation with School Libraries. Furthermore, and contrary to HiEdu data, only 19.9% of SecEdu students mentioned the School Library as the place where they do their work. The percentage drops to 7.8% when we addressed Public Libraries. If it is true that Portugal is equipped with a good public library network, as well as with school and university libraries, results of this study show that the real situation does not meet the expectations for their intended use.

In terms of the regular use of the Library, only a few of those students who admitted having visited a library do it on a regular basis, and there is a clear

difference between the SecEdu student (47.7% hardly uses it) and the HiEdu student (26.7% admit visiting it several times a week). As to the use of available resources at the SL/FL one can see that reality in SecEdu, and with the exception of open access 25.3% have never used it. The percentage of non-use of available resources reached 50% and in SecEdu their use is minimal. Paradoxically, 90.2% of SecEdu students and 85% of HiEdu students mentioned they had no problems in using these resources. This perhaps means that students are not aware that these resources exist, and that they choose an easier and apparently friendlier way out with poor critical power. This behavior may be linked to undeveloped IL skills.

When we analyzed the use of search engines and Internet resources, Google is clearly the favorite search engine, with nearly 100% of respondents using it frequently or very frequently. As to the use of Internet resources, YouTube, Hi5 and Messenger dominate, as well as information downloads, so in short, the so called "leisure Internet" is widely used. The information resource Wikipedia is clearly preferred to library websites, to B-on (Online Reference Library) and to digital libraries which have had the lowest percentage of responses in the total group analyzed.

This draws our attention to the role of libraries and to the quality of resources and information retrieved by students. ICT training offered to SecEdu students did not cause a major impact, as only 25% were aware that user training was offered in both School and Faculty Libraries. Based on our study it seems that the role of libraries in the teaching/learning process is not significant in terms of IL.

5   Strengths and Limitations of the Research

We conclude with some general aspects of our research and a reflection about both the positive and the more critical issues we have identified.

We have taken care with our research which is based on a theoretical perspective that aims to give a new consciousness and a new capacity of analysis within Information Science through the introduction and exploration of the binomial Digital Inclusion versus Informational Literacy.

Our study also allowed strengthening the interdisciplinary dimension of this kind of study, valorizing the relationship between the approaches coming from the field of Education with Information Science. It also allowed dialoging through a convergent project about the use of digital technologies in the info communicational process.

We can refer also as a positive aspect to the fact that it was a study that has covered all the national territory with exclusion of the islands (Madeira and Açores).

The existing tension between Digital Inclusion and Informational Literacy in the scope of the SecEns may be applied to other realities. Our results have evidenced the existence of technological structures setting aside the idea of an existing digital gap what would allow students to attain high levels of digital inclusion although that doesn't mean high levels of effective information literacy.

With our study it was also possible to build a model based on empirical and analyzed data. We were moreover sensitive to some not so positive aspects. For instance, results were overall descriptive and did not allow review of some of the assumptions. Thus it was not possible to clearly understand the influence of the socio-demographic variables, namely the geographical differences which was one of the mainstays of the research.

We also have noted that some of the survey questions were not so well designed which resulted in some less than precise results. That is the case with the responses to the use of bibliographic norms of reference.

We also know that our research has put an emphasis on quantitative research and this kind of method seems not to be the best way alone to study the real nature of information literacy.

Nevertheless the balance is still positive and at this moment our aim is to contribute to a reflection about the methodological way of studying informational literacy. This retrospective analysis is not only important for future research projects but may also be useful for those who are planning to study information skills.

6   Recommendations

Some recommendations can be outlined from our experience, as follows:

a. It is important to develop experimental research based on theoretical postulates and conceptual frameworks. This allows having a clear idea of the concepts to be used in research and is also a pillar to validate the obtained data.
b. It is useful to insist on the importance of applying qualitative methods. Information literacy involves cognitive and behaviour aspects and quantitative methods are very restricted for this purpose.
c. It is important to develop a holistic perspective about IL, considering it as a phenomenon that involves individuals but also their social and economic contexts. Research must be conducted comparing linked scenarios. In our case we have compared high school with university education.

Finally it is important to develop this kind of research on IL not only to describe a specific situation but also to obtain key information to design and plan IL strategies in order to increase people's information skills.

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Developing Information Literacy Policies within States: The Role of Communities of Practice

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Abstract. The Right Information: Information skills for a 21st century Scotland, is an online community of practice, created in 2012 to bring together information professionals and other interested parties, primarily in Scotland but also elsewhere and is open to everyone interested in information literacy and associated skills. It has the full support of the information profession in Scotland. It brings together people from different information sectors and those outside the profession to share expertise on information literacy development. Communication is primarily online but face to face meetings are held twice a year. Through contacts with other bodies it seeks to promote the information literacy agenda within Scotland and influence decision makers. A short case study is included illustrating how these aims are promoted. The Scottish Government's digital participation agenda has proved to be a significant factor in developmental activity.

Keywords: The right information, information literacy, communities of practice, Scotland.

1 Communities of Practice

Communities of practice have been defined as: "Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" [1]. A community of practice (CofP) is not just a club of friends. It has an identity defined by a shared domain of interest to which the members are committed. In pursuing their interest in their domain, members engage in joint activities and discussions and share information. They build relationships that enable them to learn from each other. It is not enough for members of a CofP to have a shared interest. They must be practitioners, that is, they develop a shared repertoire of resources: experiences, stories, tools and ways of addressing recurrent problems. Bringing together a **domain**, a **community** and a **practice** creates a CofP which typically engages in a variety of activities which include problem solving, requests for information, tapping the experience of others, sharing resources, co-ordinating and discussing developments, documenting activities and mapping knowledge and identifying gaps. Groups can be large or small and meet face to face or online. It is a concept well suited to associations and professional bodies [1].

2   The Scottish Information Literacy Project

The Scottish Information Literacy Project began in October 2004 and concluded in March 2010, following the retirement of the present writer. It was the first national information literacy (IL) project within the British Isles and its aims and objectives travelled from an initial focus on education to a much wider agenda embracing primary education, lifelong learning, employability, skills development, the workplace, health and adult literacies. The original concept, formulated in October 2004, was for a one year innovative, national pilot to develop an information literacy framework with secondary and tertiary partners which would link secondary and tertiary education and produce secondary school leavers in Scotland with a skill set which post school education could recognise and develop or which could be applied to the world of work. However such an aim takes many years to achieve and when the Project ended in the spring of 2010 much still remained to be achieved especially in lifelong learning, health literacy and the workplace.

The National Information Literacy Framework Scotland proved to be the Project's most substantial and influential product and the idea was copied and developed by the subsequent Welsh Information Literacy Project. It sought to 'peg' information skill levels to appropriate learning levels from early years to PhD level using mainly appropriate Scottish educational curriculum and qualification documents. Although the Framework is principally linked with formal education it also contains sections on definitions, information literacy and lifelong learning, information literacy education and how the Framework can be used. The resulting paper document completed in 2007-8 was after evaluation transferred to a weblog using Web 2.0 technology and was enriched with exemplars of good practice drawn from several sectors. This was a departure from other national frameworks developed in Australia, New Zealand and America. This led to thirteen separate case studies being placed on the website.

Although the Project's initial aim was to link secondary and tertiary education it soon became apparent that to be 'effective, an information literacy policy must be firmly pegged to the information, lifelong learning, inclusion and digital policies of the state', a point which has subsequently been taken up by the Welsh Information Literacy Project. The Project needed to engage with the wider world outside academia. This led to contacts with a wide range of organisations outside the information world some of which were more successful than others including with Ofcom Scotland, the Confederation of Business and Industry (CBI) in Scotland which represents employers, the Scottish Trades Union Congress which represents employees, the Glasgow Chamber of Commerce which represents local business and industry and Skills Development Scotland, the Scottish Government's skills development agency. This last agency proved to be the most successful contact as its staff recognised the importance of information literacy both as a skill for their staff, for career selection and for jobseekers. Some work was also done with adult literacies tutors and community learning and development staff to investigate the potential for developing information literacy as an employability and workplace skill in conjunction with public libraries an area which has considerable developmental potential [2].

3   Project Legacy

The legacy of the concluded Project was a substantial volume of intellectual property, considerable expertise developed by the Project director and Project officer which, in due course, was transmuted into a book [3] and a considerable resource of people. During the lifetime of the Project a substantial number of partners and collaborators had joined the Project and many of them felt that the contacts and networks which had been developed were too valuable to abandon and it soon became clear that it was possible for the Project to continue in some form thereafter. The Project partners included staff of the Scottish Government Information Service who had previous experience of operating an online community of practice and this seemed a model worth following, partly because it required few resources. An initial small group based around the former director and project officer undertook the work of negotiating co-operative intellectual property arrangements with Glasgow Caledonian University, the former host of the Project and identifying technical support options. These issues were resolved when, in 2011, the Scottish Library and Information Council (SLIC), the body responsible for library and information policy making in Scotland, recognised the value of the idea and agreed to provide a staff member to set up the website and also to provide a formal launch opportunity. This took the form of a workshop held during the annual conference of the Chartered Institute of Library and Information Professionals in Scotland (CILIPS) in June 2012. This was well attended and the attendees identified issues which the community of practice should focus upon. In general terms these were conceived as an online, cross sectoral, information literacy community of practice titled 'The Right Information: Information skills for a 21st century Scotland' open to everyone interested in information literacy and associated skills and competencies, both within and outside the information profession, primarily in Scotland but also elsewhere. The aims are:

- Developing core information literacy skills in further education
- Assessing the impact of information literacy training
- Advocacy for information literacy
- Instructing teachers in information literacy
- Information literacy as an employability skill
- Information literacy toolkits for young people
- Teaching information literacy skills in public libraries
- Links between schools and public libraries
- Use of electronic information literacy resources in public libraries
- Online training packages in higher education
- Workplace information literacy skills
- Social media
- Training materials for teachers.

These objectives were partly the outcome of the workshop and partly 'unfinished business', objectives which the Scottish Information Literacy Project had not had time to address. The community of practice aimed to encourage reporting and discussion of

new ideas and practices. The intention was to develop and update the Framework by incorporating new research, adding case studies, sharing good practice and reporting on relevant news, conferences and event [4].

4   Procedures and Activities

The CofP quickly established its method of working and core personnel. From the autumn of 2012 the members have held face to face meetings twice a year with interaction being online via the website blog and an email circulation list. Online membership has grown to 109 with about 15-20 people attending the twice yearly meetings. All library and information sectors are represented including public libraries, school libraries, further education and higher education libraries and also special libraries. The CofP has the full support of both the information organisations in Scotland, the Scottish Library and Information Council, the library and information policy making body (SLIC) and the Chartered Institute of Library and Information Professionals in Scotland (CILIPS), the professional body. Both these bodies send representatives to the twice yearly meetings and contribute to online discussions. Given that both of these bodies have a wide range of issues to address, activity and input from a group providing them with specialist expertise is welcomed. The CofP is also beginning to attract members from outside the LIS profession. Cross fertilisation of ideas and experiences across the various information sectors has become an important feature of the CofP. It is remarkable and rather disturbing that colleagues in one information sector know so little about activities in other sectors from which all could benefit. It has also become customary for one of the Group to give a presentation on their work at the twice yearly meetings to encourage discussion in depth on a particular topic.

Individual members are involved in activities which support the aims of the CofP and these are reported and discussed at meetings and online. Members present regularly at conferences. For example, there were three presenters at ECIL 2013 from the CofP, an impressive input from a small group. Presentations are also given outside the information profession, for example, a presentation to an international audience of educators at the University of Greenwich in March 2014. Article writing, related to the aims of the Group is another feature. A member of the CofP has written an article about her work as a Digital Champion (see below) in a public library service (McKrell [5] which although limited to one service gives background information about the Scottish strategy as whole. The University of Greenwich presentation has had further outcomes, a book chapter [6] and a forthcoming journal article [7].

Advocacy beyond the information world has been pursued through the Scottish Parliament's Cross Party Groups (CPGs). These are usually chaired by member of the Scottish Parliament (MSPs) but most members are not politicians but usually expert members of the public who have technical expertise to offer. Many are decision makers within their sector and it is an opportunity to make useful contacts. Membership of CPGs is non exclusive and several members of the CofP attend regularly and have also given presentations to the CPG. The CPG which is most relevant to information literacy is the CPG on digital participation. It was originally principally concerned with access and infrastructure issues and the rolling out of

Broadband to those without access to it but, under the influence of the digital participation agenda (see below) the emphasis is moving to skills development and training. This is a very welcome development as the Canadian and Australian experience is that increased connectivity generates skills development needs which public libraries are often left to deal with [8]. The CPG on digital participation offers an opportunity to promote the information literacy agenda among other professionals and third sector agencies and the role of the LIS sector in the digital participation agenda is now generally recognised and welcomed. Another CPG which has been recently recognised as a possible focus for IL advocacy is the Adult Education Group and one of the CofP members now attends this regularly.

5   Examples of Work Undertaken by Members

5.1   10 Things

10 Things is an online self-directed course developed by Scottish Government Library staff. The aim is for learners to spend a little time each week developing their social media and information searching skills. On each week of the course details about one or more of the tools from the 10 Things course are posted and learners are encouraged to try them out and reflect on them. The aim is to present a realistic challenge that learners can fit it into their schedule. 10 Things is based on the original 23 Things course created by the Public Library of Charlotte & Mecklenburg County in the USA [9] which ran in 2006.The courses start at pre-defined times of the year and places on each course are limited to fifty.

When the course starts learners receive an email welcoming them to the course and the first 'thing'. Each Monday thereafter learners receive email notification of that week's 'thing'. The course lasts ten weeks as learners receive one thing a week. Each 'thing' is published and archived on the courses 10 Things Yammer group. Only course participants can access the group. Although the course content is designed primarily for Scottish Government staff the Scottish Government library staff who have designed the course hope that learners can apply it to their own personal or professional use.

Each 'thing' includes some set activities for learners to try, and they are asked to submit their learning outcomes or any questions to the 10 Things Yammer group. It is estimated that half an hour a week is required to go through each week's 'thing'. The course programme includes RSS feeds and dashboards, blogs, Twitter, SlideShare and Prezi, secure collaborative tools such as Knowledge Hub and SharePoint, non secure collaborative tools like LinkedIn and Facebook, searching skills including Google Scholar, social bookmarking and social citation and alerts and current awareness tools [10].

5.2   Dundee College's Skills for Learning, Life and Work Course

Dundee College is a further education college in eastern Scotland whose staff have successfully launched a pilot course called Skills for Learning, Life and Work. A key

part of the College's role is to help students prepare for obtaining and retaining employment. In addition to academic qualifications, it is important to provide students with the skills required for their future careers. The aim of the course is to provide students with a certificated qualification which demonstrates to employers that the students have the essential soft skills and personal qualities required to be successful employees through a range of 'learning by doing' activities.

In addition, the course aims to help students make the connection between the knowledge, skills and experience gained at College and how they can demonstrate these when applying for jobs. For example, gaining the knowledge and understanding behind learning how to research a subject topic can be transferred into the workplace setting in key areas such as professional communication and IT skills. The course was noted as evidence in the Royal Society of Edinburgh's report *Spreading the Benefits of Digital Participation* Royal Society of Edinburgh [11].

5.3   Project Blaster

Project Blaster is an initiative launched by our national library, the National Library of Scotland. It is an online information literacy resource which is a toolkit for producing projects aimed at Primary 6/7 (10-11 year olds) to be used by the children and their teachers. It is part of the 'Learning Zone' on the National Library of Scotland's extensive website.

'Project Blaster' helps teachers to make an attractive classroom project. It guides them in identifying, collecting and selecting the right information to create imaginative projects like an art exhibition, a science experiment or even a book. Project Blaster works by guiding the teacher and pupils through six project stages. The six stages are like stepping stones in a journey of discovery and creativity. Each stage has a classroom activity for pupils to work through either online or by printing off the activity sheets. By working through each stage, pupils learn to understand how to indentify sources, then analyse and select the best ones for the project being undertaken. It helps build critical thinking skills by asking pupils to think about information in a fun and creative way [12].

5.4   SMILE, an Information Literacy Resource for the Higher Education Sector

SMILE is online information literacy and employability skills training package developed by Glasgow Caledonian University. It is freely available under a creative commons license for use and modification. It is made up of web pages and multimedia content which can be easily edited using any HTML editor. It is aimed at undergraduate students, but a lot of the content is quite generic and could be used in a school, further education or public library situation. A new edition (SMILE 3.0) has recently been made available on JORUM. The new edition has a lot of extra content which was created after talking to lecturers, to make it more relevant to students' needs [13].

6   Digital Participation

Digital participation has proved to be one of the biggest challenges for both the CofP and the wider library and information community. The digital divide (22% of the Scottish population are not internet users) is a primary motivation, linked as it is to pressure from UK Government to extend digital participation. This includes the UK Government's "Digital by Default" programme aiming to transform 25 key services and the introduction of Universal Credit, (social security) which will require claims to be made online. Libraries are already feeling increased demand from jobseekers required to use the Universal Jobmatch site. The rollout of Universal Credit will bring in a whole new range of customers to libraries who lack confidence using IT. They will have to complete lengthy benefit claim forms to access the money they are entitled to and this could be a stressful experience for staff and users alike. The Scottish Government plans to adopt a similar strategy by widening its delivery of public services by adopting a "digital first" service design which means that public sector organisations will deliver online everything that can be delivered online [14]. SLIC has responded to this challenge by appointing a digital champion in all 32 public library services to lead and co-ordinate libraries' contribution to the digital participation agenda [15]. Libraries are well placed to support the digital participation agenda. There are over 500 public library branches across Scotland as well as mobile libraries and sometimes a library is the only Council service present in a community. They are seen as safe, neutral places to go for information, leisure and learning , PC access is free and most authorities offer free wifi too. Libraries are very willing to meet demands for help, to adapt to the new pressures and work in partnership with other agencies.

In fact partnership and collaboration with other agencies has proved to be one of the key themes of the digital participation agenda and working with other local authority and third sector and voluntary bodies is seen as the way forward.

7   Case Study: The "Spreading the Benefits of Digital Participation" Report

The Royal Society of Edinburgh (RSE) is Scotland's premier scientific and technological institution and considers itself well qualified to advise the Scottish Government on science and technology policy issues. In 2013 it launched an enquiry into levels of digital participation in Scotland. It received evidence from a wide range of organisations including local authorities, voluntary bodies and universities. The interim report was published at the end of 2013. The present writer read through the interim report and found that the library and information sector had been dismissed in six lines, which although short, still managed to contain three major errors including the statement that public libraries are 'not a mandatory service' although public libraries in the UK have had a responsibility to provide a 'comprehensive and efficient library service' since 1964 [16]. Enquiries to the RSE secretariat revealed that no less than ten evidence submissions had been received from the library and information sector including SLIC, CILIPS and the CofP. All these submissions had been ignored. Having grasped the situation the present writer immediately contacted

SLIC and CILIPS staff and representatives of the CofP met SLIC staff at the end of January 2014 and agreed that SLIC and the CofP would submit further evidence. CILIPS staff also agreed to submit further evidence. Subsequently SLIC staff sought and obtained a meeting with RSE representatives and the present writer and others submitted their evidence on behalf of the CoP. As a result of this advocacy RSE secretariat staff agreed to make major alterations to the report and submit revised drafts to members of the CofP for consideration. These drafts showed considerable improvement. The interim report had been strong on access and infrastructure issues but weak on skills development and training and the introduction of lengthy sections on the LIS sector and most gratifyingly information literacy greatly strengthened the report in these respects.

The final report was published at the end of April 2014 and launched at a meeting at Edinburgh University. From being largely ignored in the interim report the library and information sector and information literacy receive serious attention. The CILIP definition of information literacy is quoted [17] and the report notes:

"In the 21ˢᵗ Century information literacy is a prerequisite... There is an established body of work on the development of information literacy skills in Scotland and further afield." [18, p. 44]

The report 'vision' states:

- "That everyone in Scotland has the information and digital skills required to participate in the digital arena and prosper from digital opportunities.
- That sustainable online and peer support for continuing learning and development of information and digital skills throughout all stages of life is in place.
- That information and digital skills are embedded across the curriculum and from pre-school to tertiary." [18, p.8]

The role of public libraries in the digital inclusion agenda is recognised: "As a valuable resource in the drive to full digital inclusion, libraries must be supported to maintain and increase their capacity to provide public access to the online world." [18, p.37]

Particularly pleasing are references to the role of information literacy in the workplace and the valuable contribution higher education librarians make: "Fewer employers recognise information literacy training needs among staff. In most cases, such skills are imparted at schools or through further or higher education. All Scottish university libraries provide information skills training that are transferable to the workplace, and colleges are also taking on this role in their programmes for students (e.g. Dundee College, pilot course "Skills for Learning, Life and Work"). Indeed, we heard that colleges 'have the infrastructure, experience, staff and remit to implement learning initiatives to support workforce and economic development'. However, many Scottish businesses continue to be impacted by gaps in good information and digital skills which are often neither identified nor addressed." [18, p.46]

The National Information Literacy Framework attracts favourable comment: "The development of a Scottish Information Literacy Framework provides a model for information literacy training extending from early-years education through all stages of education. There is currently no such resource for the teaching of digital skills" [18]

In our various evidence submissions we emphasised the need for targeted training to be delivered to clearly identified groups and that those providing support should be adequately trained and this was recognised in the report: "Public and third sector initiatives providing information literacy and digital skills training should be targeted at groups and individuals with specific needs and coordinated under an overarching strategy. The Scottish Government, local public service providers, libraries, third sector organisations and other providers of lifelong and community learning must ensure that staff and volunteers are properly resourced, equipped and skilled to provide this training." [18, p. 49]

The CofP evidence had urged that information literacy training should be provided for trainee teachers and this is recognised in the report: 'All Education Faculties within Scottish universities should include components of information literacy, digital skills and computing science in their programmes of study for all primary and secondary teachers.' [18, p. 51].

From being initially a document which ignored the library and information sector and the role of information literacy the report has evolved into a powerful advocacy tool for the sector and one which can be used in case making to government and decision making agencies. Building on this success a conference is to be held, organised by SLIC which will include speakers from the digital participation agenda and will be overtly cross sectoral. Contact is also being made with appropriate senior civil servants.

8   Conclusion

Reviewing achievements against objectives the CofP has been reasonably successful. Innovative work has been completed in further education and more recently new members have been recruited from the further education sector. Little work has been done so far on assessing the impact of IL training, but on the other hand, the *Spreading the benefits of digital participation* report has been a great success for advocacy and it includes recommendations on training teachers in IL and also draws attention to the importance of IL in the workplace. One of our corporate members, Young Scot, is developing IL training tools for young people. Links between schools and public libraries are still limited and there is a lack of IL tools in public libraries, compared with higher education. Information literacy training where it takes place in public libraries is usually part of a wider package of skills training. SMILE is a good example of an online training package in higher education and at least the workplace is recognised as an issue in the *Spreading the Benefits of Digital Participation* report.

Since the CofP was launched two new strategic issues have emerged, digital participation which has been described above and the planned National Library Strategy for Scotland which is being led by SLIC and, in which, information literacy will have a place. Extensive consultation has begun involving politicians and sectoral representative [19]. Perhaps the most serious issue for the CoP, however is the Framework which is getting outdated and needs revision. The volume of work is too great to be undertaken by voluntary effort and external funding will be needed. The question of whether the Scottish Government can be persuaded to adopt international policy documents awaits attention. The blog has not been very successful in promoting engagement and other social media need to be explored. A study of the use

of social media in public libraries in Australia reported low levels of commenting on blogs so this is not an isolated phenomenon [20]. More recently the use of Twitter has been more successful in awareness raising.

There is no activity comparable to the CofP in other parts of the British Isles and the present author is unaware of any similar activity further afield. However there seems to be no reason why information literacy communities of practice should not succeed in other countries providing a number of criteria can be met. Firstly and most obviously there has to be a group of individuals dedicated to the idea. There must be formal support within the information profession. There must be recognition and support from influential agencies outwith the information profession and there must be representative platforms where advocacy can take place. It is probably also important to operate in a relatively small country where communications are easy and where it is not difficult to access decision makers.

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Upstairs – Downstairs: Representation of Information and Media Literacy in Icelandic Educational Legislation, Policy Documents and Curricula of Upper Secondary Schools

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Abstract. The aim is to study if there is a connection between representation of media and information literacy (MIL) in educational legislation and other policy documents for upper secondary schools and its manifestation in school curricula. The study consists of content and discourse analysis and personal observation on one hand and a survey on the other. Data for the survey was gathered by sending an electronic questionnaire to the upper secondary schools. Response rate was 87.9%. Main findings are that information and media literacy are not strongly represented in the legislation and the policy papers. The survey revealed that information literacy is not very often included in the learning outcomes of course descriptions and 48.1% claim that *not at all* enough emphasis is placed on information literacy in the schools. This corresponds to its weak and unsystematic representation in the legislation and other government policy documents.

Keywords: Information literacy, media and information literacy, curriculum study, content analysis, upper secondary schools, Iceland.

1   Introduction

Information literacy (IL) and media and information literacy (MIL) skills are generally considered to be essential competencies for the individual in the information and knowledge society of today and competencies worth striving to have and hold for all walks of life, for university studies, for the working life and for leisure activities.

The importance of information literacy has been stressed in universities but not as strongly in secondary and primary schools and there is less research available. In recent years information literacy has enjoyed increased interest of researchers in the international community with the main attention on information literacy in tertiary education. But since not all primary and secondary school students attend university, it is vital that students in compulsory and secondary schools are information literate when they graduate and go on for further studies or enter the working life.

The main aim of this paper is to study the representation of media and information literacy in legislation and education policy papers for upper secondary schools in Iceland and further, to look into whether or not MIL is included in the description of

the learning outcomes in the various subject curricula. The main research question is if there is a connection between the representation of MIL in the policy documents and its manifestation in school curricula.

2   Theoretical Perspective of Information Literacy

Information literacy is a multidimensional concept embedded in social and cultural contexts. Abdallah [1] identifies five dimensions of the concept: social and organizational, cognitive, emotional, physical and dynamic. One could add the cultural, political and policymaking dimension. Social constructivism is today seen as the main theoretical base for information literacy. Todd [2, p. 168] states "that new knowledge and meaningful learning results when a person consciously and explicitly ties new knowledge to relevant concepts and propositions already possessed". Several models have been put forward on IL theories, learning and training in order to clarify the concept and its facets, for example Kulthau, Bruce, Eisenberg (Big6™) and Horton [3-6]. In this paper Klingenberg´s [7] model is introduced. There are two main approaches for MIL instruction, either as stand-alone courses or embedded in subject courses. Today IL is increasingly seen as "a social practice determined by culture and the context in which it is set" [1, p. 96] and the tendency is to integrate it into subject courses [8].

2.1   The Concept Information Literacy vs. Media and Information Literacy

The concept *information literacy* was first introduced in November 1974 by Paul Zurkowski [9], president of the United States Industry Association, in a comprehensive proposal submitted to the National Commission for Libraries and Information Science. During the last decades the concept has undergone constant development and its meaning has broadened. One of its strands goes back to its roots in library education and library skills, which got new content with the advent of information technology (IT). The main components of information literacy are to be able to *recognize* one´s *information need* and the ability to *identify* and *locate*, *evaluate*, *organize*, *create*, *use* and *communicate* information, see for example the "Prague Declaration" from 2003 [10] in an *ethical* manner.

   A few years ago, IFLA (The International Federation of Library Associations and Institutions) and UNESCO (United Nations Educational Scientific and Cultural Organization) developed the concept *media and information literacy*, but *media literacy* and *information literacy* are increasingly seen as intertwined concepts [11]. These two international institutions collaboratively promote the concept around the world [12]. In the "Moscow Declaration on Media and Information Literacy" from 2012, MIL is defined very comprehensively as:

> a combination of knowledge, attitudes, skills, and practices required to *access*, *analyse*, *evaluate*, *use*, *produce*, and *communicate* information and knowledge in creative, *legal* and *ethical* ways that *respect human rights*. Media and information literate individuals can *use* diverse media, information sources and channels in their private, professional and public lives. They know when and what information they *need* and what for, and *where* and *how* to obtain it. They understand who has

> *created* that information and why, as well as the roles, *responsibilities*
> and functions of *media*, information providers and memory institutions.
> They can *analyze* information, messages, beliefs and values conveyed
> through the mediaand any kind of content producers, and can *validate*
> information they have found and produced against a range of generic,
> personal and context - based criteria. MIL competencies thus extend
> beyond information and communication technologies to *encompass*
> *learning*, *critical thinking* and *interpretive skills*across and beyond
> professional, educational and societal boundaries. MIL addresses all
> types of media (oral, print, analogue and digital) and all forms and
> formats of resources (authors´emphasis) [13].

In the Declaration above, emphasis is placed on the fact that MIL addresses all types of media and all forms and formats of resources, and more emphasis is placed on *legal* and *ethical* issues, which *respect human rights* than in the former declarations on information literacy.

Another issue closely connected to information and media literacy is access to information as part of human rights. Already in "The Universal Declaration of Human Rights"[14] from1948 (see Article 19*)* it is stated that: "Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to *seek*, *receive*, and *impart* information and ideas through *any media* and regardless of frontiers (authors' emphasis)."

The "Moscow Declaration" is thereby in line with "The Universal Declaration" and the core values of IFLA [15], which support freedom of access to information.

Sturges and Gastinger [16] point out that the idea of information rights leads towards "a need for Information Literacy programmes, defined in the broadest sense possible" (p. 201). Furthermore, they state that "individuals need a broad and self-selected set of skills across the range of formats and media to support their human right to information" (p. 200).

To be able to take advantage of the right to access information the general public has to master information literacy and media literacy as well. Therefore it is exigent that the individual gets training in media and information literacy in the general compulsory education as well as in the secondary school.

3   Information Literacy and Education

Closer study of writings about information literacy reveals that it has been dealt with around the world. Among rich as well as poor nations, it is recognized that education and skills in information literacy is one of the basic components of education [17]. According to the "Prague Declaration," information literacy should "be an integral part of Education of All, which can contribute critically to the achievement of the United Nations Millennium Development Goals and respect for the Universal Declaration of Human Rights"[10].

Many governments have realized how important information literacy is for the individual in the knowledge and information society and have integrated information literacy into their respective national curricula. Students need to be provided with opportunities to learn how to find information, how to evaluate information for

reliability and relevance and how to use information in a respectful and ethical manner to build up new knowledge [17].

In Europe efforts have been made towards developing a policy on information issues, on the national level and on the European level as well [8], [18]. It is desirable to promote MIL policy and awareness on the continent. Klingenberg´s [7] idea of a model could possibly contribute to recommendations for MIL on the European level.

3.1   "Klingenberg´s Information Literacy Framework Model"

At the 100th German Library Congress (100. Deutscher Bibliothekartag) in Berlin, June 2011, Klingenberg [19] introduced a draft of a "Common European Framework of reference" (CEFR) for Information Literacy (Entwurf eines gemeinsamen Referenzrahmens Informationskompetenz), based on the CEFR model for languages, which the Council of Europe has recommended using in setting up validation systems of language competencies, which is increasingly used in the reform of European national curricula. The CEFR for languages provides a basis for "mutual recognition of language qualifications, thus facilitating educational and occupational mobility" [20]. Besides the impact on national curricula in Europe, it has influenced teaching of foreign languages, and furthermore, textbooks are structured according to the CEFR for languages. In language instruction there are six different progressive stages, A1-2, B1-2, C1-2 and Klingenberg transfers these stages on information literacy.

Klingenberg´s proposal [7], [19] is adapted from the CEFR for languages and the ACRL competency standards for information literacy [21] and it includes four main competences which are split up into four steps or criteria as shown in Table 1.

The framework is also aimed at the learner and can be translated into questions for the learner, see table 2, to find out how information literate he/she is.

Table 1. Klingenberg´s proposal for CEFR in information literacy

Search	Evaluate	Know	Present
Formulate need	Relevance	Phrase	Simplicity
Find sources	Factual accuracy	Compare	Semantic redundancy
Choose sources	Formal accuracy	Arrange	Cognitive structuring
Identify information	Completeness	Structure	Cognitive conflict
Steps	**Criteria**	**Steps**	**Criteria**

Table 2. Klingenberg´s proposal as a scoring rubric

Search	Evaluate	Know	Present
What do I want to know?	Does it fit into my topic?	Put it in your own words	Simple
Where can I find it?	Is it true?	Compare it with other information	Varied
Where is it in the text?	Is it written correctly?	Put it into context	Structured
What is written there?	Is this all?	Link it with other information	Surprising
Steps	**Criteria**	**Steps**	**Criteria**

The model can be used as a tool for both teachers and students; a kind of a scoring rubric, to clarify the working process of an assignment in order to support the students. Teachers can also make use of it in the evaluation of students' assignments.

The fifth main competence could be included here, which would cover ethical issues and the access to information as a human right and furthermore the model could be adapted more closely to the definition of MIL.

Klingenberg [7] also shows the model for the different levels according to the German Educational System, see figure 1.

	C2	Further Education	Sustainable
	C1	University/Job	Information Literacy
	B2	Secondary Education 2	Independent
	B1	Secondary Education 1	Information Literacy
	A2	Secondary Education 1	Basic
A1		Primary Education	Information Literacy

Fig. 1. Klingenberg´s CEFR for information literacy linked to education levels

Albeit educational systems differ somewhat from country to country, the commonalities are the subdivision between primary education, secondary education and higher education. That means that the framework could, theoretically, be adapted to the educational systems in most European countries and probably elsewhere.

To develop a Common European Framework of Reference (CEFR) for information and media literacy within Europe, with similar impact as the CEFR for teaching of foreign languages has had, might assist and support common understanding of the concept and its content, especially among teachers and librarians, and function to promote more information-and media-literate societies in Europe, and work for mutual recognition of information literacy qualifications.

4   Methods

This study consists of content and discourse analysis and personal observation on the one hand and a survey on the other. The texts of the Icelandic educational legislation and other government documents were analysed in two steps. First by studying the frequency of key themes (IL, MIL, IT), and secondly by coding them and analysing whether they are just listed, explained or silenced in the discourse [22]. The data for the survey was gathered by sending an electronic questionnaire to all Icelandic institutions (n=33) preparing students for university studies, inquiring about who is responsible for the IL instruction in the schools, how it is organized, what type of curriculum is used, if IL is part of the learning outcomes in subject courses and about the perceived emphasis placed on IL in the schools. The data was gathered during spring 2014. Response rate was 87.9%. In the survey instrument the concept of IL was used and defined for clarification since the concept MIL has not yet gained a strong foothold in Iceland.

5   Results

The chapter presents analysis of the Icelandic educational legislation and government policy documents for the upper secondary school and the results of the survey as well.

5.1   Analysis of the Legislation for the Upper Secondary School

Most students of the upper secondary level are 16-20 years of age. In recent years around 95% of the students who completed the compulsory education, have entered secondary schools directly after finishing their compulsory education [23]. The upper secondary level institutions will hereinafter be referred to as the secondary school.

In latter editions of the information policy of the Icelandic Government not much emphasis is placed on libraries and information literacy; the main emphasis is on information technology [24]. Accordingly, in the new Education Acts from 2008 for primary schools, "The Compulsory School Act" [25] and secondary schools as well, "The Upper Secondary School Act"[26], the paragraph on school libraries was omitted and consequently the section on school libraries and information services in the regulations, that accompany the law, were no longer valid.

The associations of librarians in primary schools and secondary schools as well objected to this omission and sent comments on the bill, where the importance of school libraries, information services and information literacy was brought to the attention of Alþingi (the Icelandic Parliament), but the comments were ignored [24].

In June 2010 however, amendments to the "Upper Secondary School Act" [26] were passed by Alþingi, (71/2010), where the paragraph on school libraries was reinserted. One year later, in June 2011, an amendment was passed by Alþingi to the "Compulsory School Act"[25], where the paragraph on school libraries in elementary schools was also reinserted (91/2011). This action was a considerable step forward, but in the meantime there had been cutbacks in the funding of school libraries, especially in the elementary schools.

In the current legislation for the secondary school [26] media and information literacy is not explicitly considered, but information-related competencies are outlined, such as *autonomous working methods, critical thought, to seek further knowledge, solid foundations to pursue further education*. In the new paragraph on school libraries it is stated that the main emphasis in the operation of a school library is to train the students *in autonomous searching for information and the use of databases*. One of the core components of information literacy is indeed searching. But the wording of the legislation concerning MIL is rather vague and unsystematic.

5.2   Analysis of the "National Curriculum Guidelines" (NCG) – Aðalnámskrá

Neither the general section of the NCG for primary schools from 2006 [27] nor the comparable section for secondary schools from 2004 [28], include the concept *information literacy* (upplýsingalæsi) and *school libraries and media centers* are not mentioned. *Information technology* (upplýsingatækni) however is mentioned three times in each curriculum. However in the 2007 subject curriculum for information and technological education for the primary school [29] information literacy is one of the educational goals. The subject curriculum for information and technological education for the secondary school with an identical title [30] includes one course (UTN 103) partially deals with information literacy – but it is optional, so not all students take the course.

In the new edition of the NCG for the primary school, from 2011 (general section) and 2013 (subject areas) [31] *library or information centers* are mentioned seven times and their roles discussed. *Information literacy* occurs four times, *media literacy* 18 times and *information technology* 12 times. Information and media literacy related concepts are almost exclusively dealt with in the subject areas portion (information and communication technology), where emphasis is placed on systematic training of students in information and media literacy during the school years with detailed description of learning outcomes. The definition of information literacy seems to be based on the "Prague Declaration" [10]. Further ethical use of resources is discussed.

In the general section of the new edition of the NCG for the secondary school from 2011 [32], *school library* is mentioned once as an information center for teachers and students. *Information literacy* occurs twice and is defined as involving "among other things, information technology as it is important for everyone to be able to collect data, categorize, process and communicate information in a critical and creative manner. Media literacy makes students capable of analyzing the information of different media so that they can evaluate it in a critical manner" (pp. 36-37). *Information technology* is mentioned three times. There is no mention of ethical use of resources in the curriculum. The new NCG for the secondary school does not show as much progressive thinking as in the new curriculum for the primary school. Since national curriculum will not be issued for subject areas; the different schools can create their school curriculum independently; the emphasis on MIL depends on each school.

In Iceland, contrary to many other countries, strong emphasis has not been placed on information literacy in the NCGs which corresponds to the information policy of the Icelandic Government and the information policy of The Ministry of Education, Science and Culture, where it is not emphasized [24]. More emphasis has been placed on information technology than working with the content of information which is the heart of IL. This seems to reflect the emphasis of the society on technical innovations. A positive change can be observed in the NCG [31] for primary schools. Hopefully comparable progress for the secondary school will soon be visible.

5.3   Analysis of the Survey

A total of 82% of all upper secondary schools operate a school library and information center. According to the schools' websites, 85% of the libraries are run by professional information specialists (with university degree in library and information studies). The survey reveals that in 48.4% of cases information literacy instruction is conducted partially by the library staff and partially by subject teachers. 24.1% of the participants claim that there is no systematical information literacy instruction in the school. In 17.4% of the schools information literacy is taught as a stand-alone course, and in 73.9% of the cases the instruction is in the hands of different subject teachers. 50% of the schools claim they follow the "National Curriculum Guidelines" and 46.4% use a school curriculum. The results of the question, whether or not information literacy is included in the description of learning outcomes, are shown in figure 2 (n=26).

From the figure it can be seen that *never* and *seldom* cover 53.8% of the answers and if *sometimes* is added, the total is 92.3%. The outcome of a question about perceived emphasis of information literacy in the schools is shown in figure 3 (n=27).
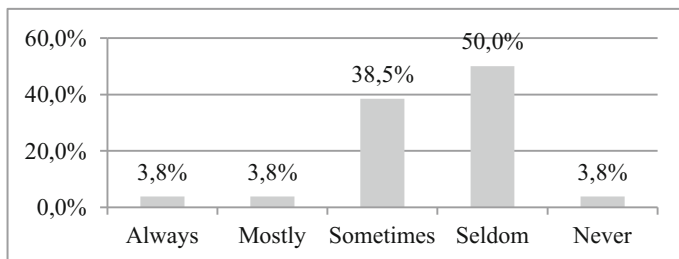
Fig. 2. Is information literacy included in the learning outcomes of the different subjects?
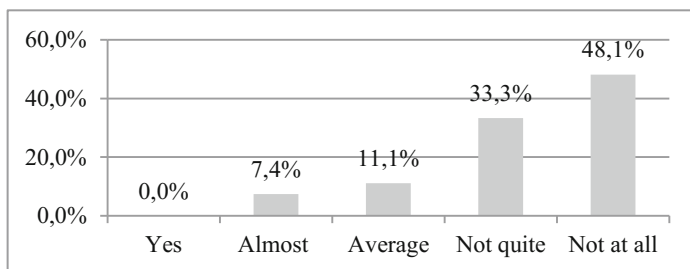
Fig. 3. Do you think enough emphasis is placed on information literacy in your school?

Figure 3 reveals that 48.1% state that *not at all* enough emphasis is placed on information literacy, and this figure totals 81.4% if *not quite* is added. According to the results it seems urgent to place more emphasis on information literacy in Icelandic secondary schools.

6   Discussion and Conclusion

Iceland does not have a formal national policy on information literacy. Until now the main focus in the discourse has been on information technology rather than information literacy [24]. In the new edition of the NCG [31] for the primary school a change can be seen where systematic training of the students in MIL is emphasized. This is very positive progress from the former edition of the curriculum and a big step forward towards building a base for an inclusive knowledge society. As far as the new edition of the NCG for the secondary school [32] is concerned, MIL it is not strongly represented; a situation that leaves a lot of room for improvement.

The main findings of this study are that MIL is not strongly represented in the legislation and governmental policy documents for the secondary school. The survey revealed that information literacy is not very often included in the learning outcomes of course descriptions (Fig. 2) and 48.1% claim that the emphasis on information literacy in the schools is *not at all* satisfactory (Fig. 3). This corresponds to the weak and unsystematic representation of IL/MIL in legislation and government policy documents for the secondary school. According to the results in Fig. 2 and 3 the NCG for the secondary school [32] does not seem to be a powerful tool for the schools to set criteria for MIL and there are a lot of opportunities for enhancements.

In Iceland, education is free on all levels. It is desirable to develop MIL recommendations across all levels of the education system, from kindergarten to the tertiary level, adjusted to the socio-cultural environment of the country. The initiative has to come from the Ministry of Education, Science and Culture; it has the authority and the responsibility for the national curricula. It would be desirable to promote MIL in the secondary school. The educational sector is now undergoing a period of changes, coinciding with the completion of the implementation of the new NCG for the secondary school in 2015. According to the results presented in Fig. 2 there is lot of room for improvement: making the learning outcomes more exact and including MIL. It is desirable that MIL be more strongly represented in the guidelines. Iceland has much potential for building up a more media- and information-literate society since 96.7% of the households have access to computers and the internet [23]. It would strengthen the society as a democratic, inclusive, participatory knowledge society.

It might contribute to improvement of MIL on the European level to develop, as Klingenberg [7], [19] suggests, a similar recommendation (CEFR) for MIL as for foreign languages, which would support the recognition and promotion of MIL on the national level as well as in Europe in general.

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Information Literacy as a Right and a Duty: The Experience of the Czech Republic

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Abstract. The aim of this paper is to briefly review the strategic steps which have been taken in the area of education for information literacy (IL) in the Czech Republic - focusing mainly on the higher education level, but with additional references and applications to lower educational levels as well. The paper also aims to look a bit deeply into the broader, fundamental "right to literacy," in relation to human rights and public duties in general, and which are very often guaranteed by national constitutions, such as the right to education, the right to access (public) information, and the (public) duty to protect weaker parties in certain kinds of legal negotiations in countries such as the Czech Republic.

Keywords: Literacy, information literacy, education, access to information, human rights, Czech Republic, public policy, rights, duties.

1   Introduction

Over the past 15 years, the Czech Republic has gone a long way to design, develop, test, implement, assess and evaluate information literacy policies and best practices, especially in the higher education environment. But, as it unfortunately now seems, we have reached an impasse in trying to implement information literacy as a concept at the primary and secondary education levels in the Czech Republic. Therefore, in order to take the next steps forward, the authors have been investigating case studies of literacy in general and financial literacy more specifically, as one of the newest kinds of literacies being actively advocated and promoted within our country. As a result, we have found some very interesting results that we want to share here, and we hope may help everyone to promote and advance the information literacy concept even further to key top level government and education policy decision makers, not only in our country but worldwide.

2   Information Literacy in the Czech Republic – A Brief Review

Information Literacy (IL) as a term has been used among Czech professionals, mostly teachers and librarians, since about 1990 - building on the long tradition of "user education" programs in libraries. But the more precise use, and the clearer understanding of the term, as well as the concept, and its practice, has differed widely among both institutions and practitioners alike.

The term was apparently first included in Czech public policy documents in 1999. That was the year when the key *National Information Policy* document [1] was published in the Czech Republic as a strategic document, and information literacy was defined therein as one of the main priorities of national policy. Simultaneously, other, somewhat related public policies were introduced, many of which used the term "information literacy" as one of the objectives, but with different meanings, implications and consequences. However, the general understanding of the term "information literacy" in all of these documents still tended to be much closer to what is defined more accurately (in our view) as computer and ICT literacy than to articulating, searching for, organizing and using information itself.

Separate efforts of academic libraries to support the introduction of information literacy led to the merging and organizing of teaching librarians in 2000 into a "working group for information literacy and information education" within the framework of the Academic Libraries Section of the Higher Education Council of the Czech Republic, which was then called the IVIG[2] working group. Also, after the establishment of the Association of Libraries of Czech Universities (ALCU)[3] in 2003, the IVIG working group became one of its most active standing committees.

Defining the information literacy concept by consensus-building was a logical and necessary first step for trying to explain and its more detailed conceptual elements, as it also was for formulating a practical scope for "information education."[4] IVIG members had to first agree on a clear definition and explanation of the details of the concept that would be acceptable and useful in further documents and activities.

IVIG's understanding of the concept of information literacy was first formulated in 2000 and re-visited and revised in 2010. The "Information Literacy Standards of a University Student" were first established in 2004 and were later refined in 2007. A pilot survey of university students' level of information literacy understanding and use was carried out in 2004 and was repeated in 2005 to verify both the method and hypothesis. Finally, the "Information Education Strategy at Universities in the Czech Republic" document was published in 2008. The IVIG experience was described in more detail at the first ECIL conference held in Istanbul Turkey [1].

IVIG is also an open platform and its members are continuously trying to introduce, assimilate and implement its experiences into other educational levels as well. Even though information literacy has been mentioned in various national

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[1] http://www.vlada.cz/cz/clenove-vlady/historie-minulych-vlad/statni-informacni-politika---cesta-k-informacni-spolecnosti---dokument-2089/

[2] http://www.ivig.cz

[3] http://www.akvs.cz/en/

[4] http://www.ivig.cz/Understanding-IL-concept.pdf

educational polices [5], no specific strategy for implementing it in primary and secondary level curricula exists in the Czech Republic, at least so far.

3   Evolution of "Literacies" as a General Concept

As mentioned, we seem to have reached an impasse in trying to implement IL as a concept in primary and secondary education in the Czech Republic. In order to make strides forward, however, it is fundamental to analyze case studies or good practices of the two types of literacies that have been successfully introduced within the primary and secondary education curricula in the Czech Republic: general literacy and financial literacy. The first case takes us back to the 18th century, the latter one introduces a type of literacy only recently being actively advocated and promoted within our country. We understand "literacy" and "information literacy" as essentially being virtually synonymous in any "information society." And in educational curricula, they are perceived as a complex set of key required competencies. However, as the two terms are defined and being used for purposes of this paper, we have simplified "literacy" as the basic ability to read and write a language correctly, and "information literacy" as a set of abilities focused mainly on how to search for, retrieve, organize, and use publicly available and accessible information for whatever kind of problem-solving and decision-making, personal, family related, job related, education related, health related, and so on.

Taking a closer look at the history of education (in the Czech Republic) we notice some milestones in implementing the various kinds of literacies. Education, and thus literacy as such, was initially available only to selected exclusive groups which were mostly connected to churches or ruling elites. It was decidedly not an inclusive policy or priority. A significant change happened within the context of the worldwide industrial revolution which took place beginning in the 18th century and which also brought a demand for educated labor resources. A government policy act was necessary in order to establish compulsory school attendance as a duty. A regulation promulgated in 1774 by Maria Theresa, the Empress of the Austro-Hungarian monarchy, was the beginning of educational reform and promoted a duty for all children, of both genders, from the ages of six to twelve, to attend school. This duty was strengthened in 1869 as a law for the first time and, as such, remained in the Czech legal system even after 1918 when an independent republic (Czechoslovakia) was established (and in 1922, when the first original Czech law in the area of the compulsory school attendance was implemented) [2-3].

Education was, on the other hand, also considered a human right since 1948, worldwide[6] and has been also recognized under Czech constitutional law since 1920 [4]. Thus, we see education (defined by curricula) as both a right and a duty – a duty of the public sector to provide its citizens with, and a right of citizens to obtain it, and to be provided with it, but also a right of the public sector to expect the exercise of that right by its private citizens which means a duty for them. In short, the government takes many actions, and spends tax resources, based on the expectation that citizens will not ignore or disobey the law. Also, special laws were enacted later

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[5] http://www.vzdelavani2020.cz/clanek/13/knihovna-koncepci.html

[6] http://www.un.org/en/documents/udhr/history.shtml

with the aim of protecting and assisting those who were disabled and handicapped, and cannot learn by conventional means.

A complete and thorough explanation of any "curriculum" is very complex for a full treatment in this brief paper, but just to simplify the matter and to summarize our main key points here:

1. a citizen has a right to be taught to read and write, and
2. has a duty to learn those things, and
3. the State has a duty to teach citizens to read and write, and
4. the State also has the right to expect its citizens to exercise that right and to learn from them, and
5. some learning-handicapped persons may need to be provided with special care and assistance if needed.

If we now shift our attention to financial literacy and education in the Czech Republic, we observe a very similar parallel development.

Financial literacy has been selected as the only recent example of successfully implemented educational strategy in the Czech Republic related to a particular type of literacy. To date, there is no other type of literacy (e.g. digital, information, media or other) that would be so complexly embedded into the curriculum within last 25 years.

Financial literacy was discussed among Czech professionals from the very beginning, which, together with general (basic) literacy emphasized the necessity for a closely coordinated kind of education which has eventually emerged, especially with the growing debt of households in the last ten years. Likewise, the situation on the financial market worldwide has raised many questions regarding the level of financial literacy of Czech citizens, especially the new generation of primary and secondary schools students. However, in 2009, there was still no existing educational strategy to improve the level of financial literacy in the Czech Republic [5]. Although the situation was very similar to the situation in other European emerging economies, approaches to the financial education development differ [6]. In the Czech Republic, libraries did not get involved predominantly in financial literacy issues and a direct route to the elementary and secondary schools have been taken.

Once again, following the multistage process outlined above, the professionals in that field first developed the main principles and the methods in the area of financial education, but a political act was then necessary to legalize and expand such education, especially in schools. Key actors succeeded in involving the Ministry of Finance, mainly due the fact that they were all able to agree on one uniform single concept for financial literacy and introduce it in a simple effective manner to decisions makers. Thus, a working group for financial education, established by the Ministry of Finance, started to operate. It is worth mentioning that the IVIG experiences in the field of information education were admirably suited to the area of financial education because, in no small measure, both groups had regular, close, effective networking professional connections with each other, and each offered practical, implementable and sustainable solutions on which all of the involved actors were willing and able to agree.[7]

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[7] http://www.mfcr.cz/cs/o-ministerstvu/vzdelavani/
financni-vzdelavani

The National Strategy on Financial Education[8], approved by the Government of the Czech Republic in 2010, was the result, soon supported by the issuance of a key additional guideline - "Standards of a Financially Literate Citizen" (as an explicit list of competencies). Those standards set a dividing line in the levels of financial education as it corresponded to compulsory school attendance (whereby any citizen may achieve and receive recognition by public education authorities without distinctions). Cooperation between the Ministry of Finance and the Ministry of Education made implementing the financial education into (primary and secondary) school curricula possible and established a basic level of financial education not only accessible to but also compulsory for every citizen. A special 2010 law on consumer protection[9] corresponds to this basic level of financial literacy – consumers have been protected as a weaker party in the negotiations with companies above the limit given by mentioned standards, although it is difficult to implement in each individual case. However, it is still an unfinished task to find the right balance between duties and rights on both sides.

In summary, three major multistage "waves" are discernible in all of the above mentioned processes. First, professionals (or key actors) bring forward an issue or a challenge as a specific topic to focus upon, and they set an agenda to accomplish that. Second, decision makers (politicians and policy makers) take actions on the political level. Finally, it becomes a part of the legal system as a right and a duty.

4   Evolution of Information Literacy

We now take a brief look at information literacy again (i.e. focused on public information – we have a right to access public information and the public sector has a duty to provide us with such information[10]) in order to assess the degree to which educational curricula officially and formally recognize, and incorporate the information literacy concept and methodologies into the curricula in the correct, prescribed manner. This subject has been discussed among professionals for a very long time now. If we use the perspective of the above mentioned government policy consensus building process (as mentioned, implemented in multistage "waves") we see that we are still at the beginning of the second wave in the Czech Republic. It shows us that we need to make headway from discussions among professionals to influencing the curricula, which means catching the attention of policymakers and politicians.

This cannot be done only by recognizing that we do not know exactly, and with precision, what information literacy means, and taking into account its many definitions, but also by giving a unified (by key actors at least a fairly unified) answer to an increasing need – while such a need may only be increased by promoting benefits of information literacy among public. The future agenda and goal must no longer be only conducting more analyses and studies, but also clearly translating

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[8] http://www.mfcr.cz/en/about-ministry/financial-education

[9] http://www.psfv.cz/cs/ochrana-spotrebitele/spotrebitel

[10] http://www.sagit.cz/pages/sbirkatxt.asp?zdroj=sb99106&
     cd=76&typ=r

agreements achieved so far into concrete actions which are required by the various parties obligated by law to implement them.

Only increasing public interest may force the necessary changes at the political level and in related laws. IVIG may play an important role in this process by creating "Standards of an Information Literate Citizen" which will correspond to the appropriate levels of education, stating what every citizen has the right to obtain and the duty to achieve, and the public sector the duty to provide citizens with, as well as the right to expect actions from them – while such is clearly and enforceably carried out by compulsory school attendance. Such standards must be an explicit list of competencies in clear relation to the national curricula. A further step may be to address the question of protecting those learning-disadvantaged persons who are not able to meet the standards. Proposed standards will also be a mean to explain the ultimate benefits of information literacy to national targets and goals, and to proactively involve decision-makers in implementing these plans and actions.

5   Conclusion

This paper described briefly the history and experience of implementing information literacy in the Czech Republic based primarily on the IVIG working group team experiences. The paper also stated the brief history of implementing literacy into educational curricula and the special case of financial education.

The three major public policymaking "waves" are apparent in this process, as described. First, key actors and professionals identify the issue and challenge, and set an agenda to accomplish it, and then, second, are followed by politicians and policymakers supporting the agenda as public interest; and finally, thirdly, the whole agenda is integrated into the legal system. The Czech experience may help to recognize the described successive, three-stage "policy making waves" as a proven process, and thereby, can better anticipate, prepare for, and cope with upcoming requirements for those who face information literacy challenges in other countries.

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IL and Information Ethics: How to Avoid Plagiarism in Scientific Papers?

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Abstract. One of the most common misconducts in science is plagiarism. It has negative consequences for authors, editors and scholarly journals, causing loss of credibility, reputation, readers and finances. Academic ethics can be assured by proper education, good codes of ethics and detailed instructions to authors of scientific papers. This paper analyses contents of author's guidelines in Croatian journals in the field of social sciences. The analysis tries to ascertain whether the journals mention and/or explain ethical issues in their instructions to authors. The paper also analyses content of codes of ethics of Croatian universities, with the accent on plagiarism. A conclusion is made about the use of proper protection mechanisms in Croatian academic community when it comes to misconducts in science, especially plagiarism. Recommendations for universities and publishers on what to include in their codes of ethics and instructions to authors are given.

Keywords: Authorship, citation styles, Croatia, ethics, plagiarism, scientific communication.

1　Introduction

Misconducts in science are usually results of inadequate awareness of ethical standards. Scientists and other academics should know that ethics is an important part of scientific communication. Not only authors, but reviewers, editors and publishers, have to be aware of all the ethical rules and practices, discouraging any attempt of misconduct. Plagiarism can cause loss of credibility and reputation of a journal, of an institution, of an author. That could lead to the loss of readers, students and, therefore, finances.

All kinds of misconducts can slow down, stop or even reverse the development of science. Information literacy in that context implies knowledge of information evaluation, as well as knowledge about proper ways of quotation and citation. When discussing information literacy and ethics in the scientific communication, the double role of scientists has to be mentioned – as　both producer (i. e. author) and user (i. e. reader) of scientific information. If he wants to produce high quality information, he has to have in mind all the principles of proper citing. And if he wants to use other scientists' information, he also has to know how to properly evaluate citations and, therefore, the information itself.

2   What is Plagiarism?

Today, it is easier than ever to produce "fake" science by stealing someone else's ideas and presenting them as one's own. On the other hand, ICT gives some solutions for detecting misconducts, e. g. by using plagiarism detecting software. Many authors offer various definitions [1-2]; and one of the simplest and the most common defines research misconduct as "…fabrication, falsification or plagiarism in proposing, performing or reviewing research, or in reporting research results" [3]. Fabrication in that context means misrepresentation of results by making up data. The opposite of scientific integrity, scientific misconduct is unethical and contradictory to main principles of scientific work [4].

The term *plagiarius* was firstly used by Marcial (A. D. 40-102), meaning theft of literary text [5]. Bilić-Zulle and co-authors [6] define plagiarism as appropriation of another person's ideas or words without giving credit or listing sources properly. When discussing plagiarism among students, Martin [7] describes it as a part of a wider, cheating problem. In short, plagiarism is using the text (or ideas) of others and it constitutes serious publication misconduct [8]. Mašić [9] states that most common reasons for scientific misconduct are the persisting "publish or perish" imperative, personal ambitions, poor education, vanity and financial pressure. One fourth of all reported misconducts in science are plagiarism [10].

Authorship is very important issue when it comes to plagiarism detection. According to the International Committee of Medical Journal Editors (ICMJE), authorship is based on the four criteria: (1) contribution to the conception of the work, (2) drafting or revising the work, (3) giving final approval and (4) taking responsibility for all aspects of the work [11]. It is unethical not to add authors that fulfill the four criteria ("ghost authors") or to add "guest" or "honorary" authors (those who did not contribute to the work).

What does information literacy have to do with plagiarism? An important component of information literacy is to know how, and to understand why, information should be used in an ethical manner [12]. Authors should use appropriate citation style proposed by publisher they write for. Citation style is a set of rules that enables authors to give all the bibliographic data on the sources they used. There are many citation styles (e. g. Chicago citation style; style of Modern Language Association Citation or MLA citation style, style of American Psychological Association or APA citation style…), and they all use one of the three methods of conjunction between citations and bibliographic references. The three methods are running notes, numeric references and author-date system [13]. In author-date system, citation in text gives creator's name and date of publication. References are arranged in a reference list at the end of text in alphabetical order of authors' surnames, followed by the publication year in parentheses and all the other bibliographic data (title, journal title, volume, number, publisher…, depending on a source type). In numeric system, citations in texts are numbers (in parentheses or superscript) referring to resources in order they are firstly cited (subsequent citations receive the same number). A reference list is arranged in numerical order – each reference is numbered to be connected with the citation(s) in text. In running notes system,

numbers in text refer to notes (footnotes or endnotes) numbered in order of their appearance in text. Multiple citation of the same source is given new number each time it is cited. By naming citation style and by explaining the rules of the chosen style, publishers give their authors tool for creating complete bibliographic references and, thus, appropriate credit to authors of used resources.

Avoiding plagiarism has its roots in higher education – students have to be educated about the proper ways of using other persons' ideas. By using modern technologies, plagiarism is easier than ever. On the other hand, education and plagiarism detection software can diminish the threat. Universities and scientific journal publishers, as important players in scientific communication, have their role in detecting plagiarism. In the first place, they have to educate their students and their authors by giving them detailed guidelines and encouraging them to respect scientific integrity. They have to have clear policies, described in codes of ethics or similar documents. Journal editors should use recommended guidelines, such as those of Committee of Publication Ethics (COPE) [14], to identify their responsibilities, to improve their relation with authors and readers and to learn about best practices. COPE flowcharts can help editors when they have to decide about cases of misconduct (e. g. what to do if they suspect redundant publication, plagiarism in a submitted manuscript, ghost authorship etc.). Another valuable source are recommendations by ICMJE [15] that give some guidelines on how to conduct, report, edit and publish scholarly work in medical journals. Some publishers publish their own instructions and guidelines. An example is Elsevier's Publishing Ethics Resource Kit (PERK) [16] that has several chapters – Authorship complaints, Plagiarism complaint, Simultaneous submission, Research standards violation etc. PERK relies on the COPE flowcharts.

3   Research Aim, Sample and Methods

The aim of this research is to find out if Croatian universities and scientific journals in the social sciences pay enough attention to ethical issues, especially plagiarism, and to conclude about the importance of information literacy for accepting ethical standards in academic community and scientific communication. This research consists of two parts. In the first part, contents of codes of ethics of Croatian universities are analysed to see if they:

- define research misconducts, especially plagiarism;
- mention intellectual property rights;
- specify consequences of plagiarism;
- mention ghost, guest and/or honorary authorship;
- point out the importance of proper citation.

It is important for universities to clearly state what is considered to be plagiarism. We assume that all the Croatian universities have documents that at least mention plagiarism. Institutional awareness of the importance of research ethics and integrity is the first step in the battle against plagiarism in academia.

In the second part of the research, instructions to authors in Croatian scientific journals in the field of social science are analysed. The main method is comparative content analysis. The analysis will show if the journals:

- mention ethics in instructions to authors;
- mention plagiarism in instructions to authors;
- specify consequences of plagiarism;
- explain authorship;
- mention prior publication;
- have a separate document (aside of instructions to authors) that regulate ethical issues (e. g. code of ethics);
- mention the importance of proper citing;
- describe in details how to cite resources (naming the citation style and/or giving examples).

In the first part of the research codes of ethics of all seven public universities in Croatia are examined (University of Zagreb, Josip Juraj Strossmayer University of Osijek, Juraj Dobrila University of Pula, University of Rijeka, University of Zadar, University of Split and University of Dubrovnik). In the sample of the second part, 112 scientific journals from the social sciences, as listed on Hrčak, portal of Croatian scientific journals are analysed. Journals that do not publish peer-reviewed papers and/or do not have at least one 2012 issue available on the portal were excluded from the sample [17]. According to Croatian classification, there are six main scientific fields – biomedicine and health; nature sciences; technical sciences; biotechnical sciences; social sciences and humanities [18]. The same classification is used on the Hrčak portal. The results will show if Croatian academics can, on their institutions' web sites and on journals' web sites, find reliable guidelines for conducting ethically correct researches and writing papers that will not contain any form of plagiarism.

4   Results

The results of this study could be used for analysis of current practice of Croatian universities and Croatian journals in the field of social sciences concerning plagiarism protection.

4.1   Codes of Ethics

All the seven Croatian universities have published their codes of ethics on their web sites. All of those codes have at least one statement concerning plagiarism and authorship and some of them define plagiarism and other transgressions (such as fabrication, falsification or ghost authorship). Here are some of the statements from the codes of ethics.

- Code of Ethics of the University of Rijeka (2006):
  - all forms of plagiarism are considered to be infringements of the Code of Ethics;
  - all the members of academic community have to guarantee authenticity of their published papers;
  - any form of falsification is unethical;
  - it is important to protect intellectual property rights of all the members of academic community;
  - only those who gave their intellectual input can be specified as authors of a scientific works.
- Code of Ethics of the Josip Juraj Strossmayer University of Osijek (2011):
  - fabrication is unacceptable;
  - plagiarism is copying other authors' words, ideas or results and presenting them as one's owns;
  - inappropriate or biased use of citations is unacceptable;
  - honorary and ghost authorship is unacceptable.
- Code of Ethics of the University of Split (2009):
  - fabrication, manipulation and plagiarism are not acceptable;
  - plagiarism means copying other authors' ideas, words or results and presenting them as one's owns;
  - honorary and ghost authorships are considered to be misconducts;
  - all the accusations of misconduct have to be proven.
- Code of Ethics of the University of Zagreb (2007):
  - any form of plagiarism is unacceptable;
  - all the members of academic community guarantee originality of their published works;
  - intellectual property of all the members of the academic community has to be protected;
  - honorary and ghost authorship is unacceptable.
- Code of Ethics for Scientists, Educators and Associates at the University of Dubrovnik (2006):
  - no author will present other people's ideas as his/her own;
  - if an author finds a significant mistake in his/hers published paper, he/she has to take all the necessary steps to announce it and then remove the mistake;
  - academics should be stated as authors of only those works they actually authored;
  - in the case of secondary publication of the same results, the original source should be cited.
- Code of Ethics for Educators, Associates, Scientists and Researchers at the University of Zadar (2003):
  - it is unacceptable to use texts or ideas of other authors (including students) without giving credits;
  - it is unacceptable not to indicate all the references.
- Code of Ethics of the Juraj Dobrila University of Pula (2008):
  - authors guarantee that they are authors of all their published papers;
  - plagiarism is unethical.

As can be seen, all Croatian universities mention research misconducs in their codes of ethics – five of them use the word "plagiarism" and two of them define the word. Two codes of ethics mention the importance of the proper use of references. Authorship is mentioned in six codes of ethics, and intellectual property rights in two codes of ethics. One university mentions that accusation of misconduct must be proven.

Each Croatian public university has many faculties or departments (the biggest one is the University of Zagreb with more than 30 faculties, covering various scientific fields). Each faculty can also have its own code of ethics that has to be in accordance with the university code of ethics (e. g. Code of Ethics of the Faculty of Kinesiology at the University of Split or Code of Ethics of the Faculty of Humanities and Social Sciences at the University of Zagreb). Some universities and faculties have codes of ethics for students (e. g. Code of Ethics for Students of the School of Medicine at the University of Rijeka).

4.2   Scientific Journals

The second part of the research analyses instructions to authors in Croatian journals in the field of social sciences, as listed in the Hrčak portal (portal of Croatian scientific journals), were analysed. There are 112 scientific journals in the sample. The aim was to find out whether the instructions to authors are available on the journals' web sites (either on the Hrčak portal, or on the publishers' web sites). The context of the web sites was analysed to see if instructions to authors are available, as well as to see if some other documents and/or links about research integrity are included (i.e. international standards). The instructions to authors are analysed to find out if:

- plagiarism is mentioned;
- ethical issues are mentioned;
- prior publication is mentioned;
- authorship is explained;
- reference systems and styles are explained (which system is used, is it explained and/or examples are given).

107 journals from the sample (95.6%) publish instructions to authors on their web sites. In addition, three journals publish codes of ethics. Thirteen (11,6%) journals mention ethics in their instructions to authors and 10 (8.9%) mention plagiarism (eight of them overlapping, so 15 journals, or 13,4%, mention either ethics or plagiarism in their instructions to authors). For example, in one journal's ethical policy, under the title *Originality and Plagiarism*, it is written: "The authors should ensure that they have written entirely original works, and if the authors have used the work and/or words of others, that this has been appropriately cited or quoted" (Business Systems Research Journal). Another journal's instructions to authors state that by sending the manuscript "…author takes full scientific and ethical responsibility…" (Holon). Another example is the journal that states: "In submitting an article… authors are thereby confirming that the work represents their own original contribution, … that it has not been copied or plagiarized in whole or in part from other works…" (Studia ethnologia Croatica). Five journals mention COPE and its

standards, giving the link to their web site, e. g. "Our ethic statements are based on COPE's Best Practice Guidelines for Journal Editors" (Zagreb International Review of Economics and Business). Two journals mention ICMJE, e.g. "Detailed instructions about how to prepare a manuscript are given in… *Writing and Editing for Biomedical Publication* issued by the International Committee of Medical Journal" (Archives of Industrial Hygiene and Toxicology). One journal mentions PERK guidelines. In total, six journals (5.3%) recommend international standards or guidelines on ethical issues.

One journal explains that authenticity of submitted papers is verified by plagiarism detection software (Društvena istraživanja). One journal states the consequences of plagiarism: "The journal nurtures a zero tolerance policy on plagiarism. The authors, who are discovered to be submitting plagiarism, will be banned from submitting an article to the journal for the next five years" (Organization, Technology & Management in Construction).

Prior publication is mentioned in 64 journals (57.2%), e.g.: "Author(s) are required to deliver statement that submitted paper in full or in-short form has not been previously published or submitted simultaneously to another journal for publication" (Informatologia). Another journal states that it "accepts for publication only scientific research papers which are original primary publication, i. e. papers that have not been previously published in any journal (previous publication in conference proceedings has to be specified)" (Croatian Journal of Education).

Proper authorship is mentioned by 12 journals (10.7%), e. g. "Each manuscript submitted for consideration for publication should be provided with… a letter in which the first author states that the paper has been approved by all co-authors" (Alcoholism). That is one way for a journal to assure that there will be no ghost or guest authorship in the papers.
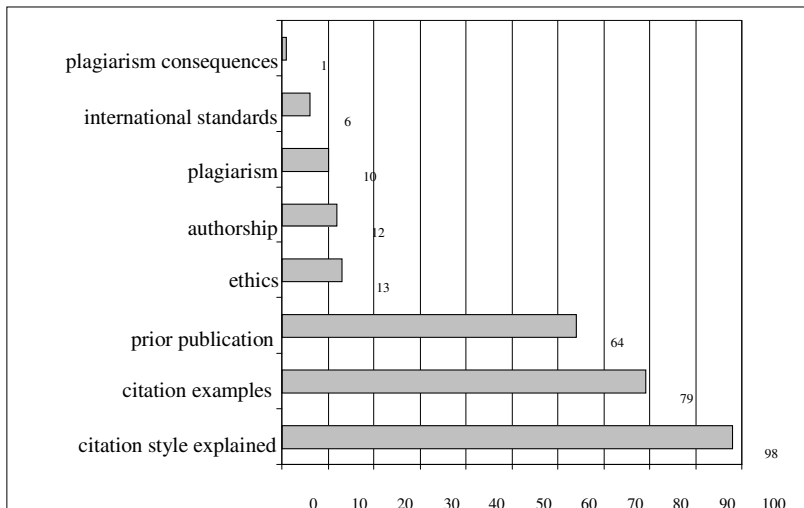
Fig. 1. What is mentioned in instructions to authors of the 112 Croatian journals from the field of social sciences (no. of journals)

Proper citing of resources is very important issue in avoiding plagiarism. Journal editors have to warn and educate their authors by giving instructions on how to cite properly. 98 journals in the sample (87.5%) publish at least some kind of explanation, examples and/or links to citation styles. Out of them, 94 journals (83.9%) give additional explanations (e. g. how to cite multiply authorship, how to arrange reference list…) and 79 journals (70.5%) give examples for citing different material types (e. g. journal article, book, book chapter, web page…). Publishers of 14 journals do not think that instructions on proper citing are important (they all use citations and references, but they do not explain citation style in their instructions to authors). Fig. 1 gives an overview of the content of instructions to authors in the analysed journals.

According to the ISO standard [13], there are three methods of making conjunction between citations (a brief form of a reference in a running text) and bibliographic references at the end of the text – running notes, numeric references and first element and date (author-date) method. In the sample, the most used method is author-date, used by 74 journals (66.1%). Running notes method is used by 28 journals (25%), and numeric references method is used by ten journals (8.9%) (Fig.2).
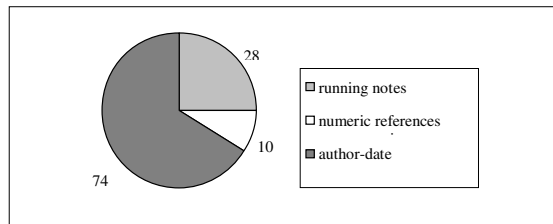
Fig. 2. Citation systems in Croatian journals in the field of social sciences

Not all the journals in the sample (i. e. their publishers and editors) are aware of the importance of proper citing. The only way to avoid plagiarism is to cite all the sources in the way that they can be undoubtedly identified. It is possible only if authors know which reference style they should use. The style should be explained and examples should be given. Instead of examples (or as addition to them), links to other sites with explanations and examples could be given, as well as sample articles that can help authors in editing their references.

5   Conclusion

Academics teach students, conduct research and publish scientific papers. They have to be aware of all the ethical rules in academia – they have to know their institution's code of ethics as well as journals' policies. Knowing how to avoid plagiarism and all the other misconducts in science is part of information literacy. Scientific work and scientific publishing have to be ethical in order to produce valid and reliable new information. Not only academics, but also students, must be aware of other peoples' intellectual property. They have to cite all the sources they consult while writing their papers. Proper citing include all the important information about a resource – its author; its title; journal, volume and issue (for journal articles); book title (for book chapters);

pages, publisher etc. Results showed that Codes of Ethics of Croatian universities include statements on plagiarism and authorship. Nevertheless, some of the codes could define plagiarism and other misconducs more precisely. They should also explain what the procedures in the case of misconduct are and what the consequences are. Codes of ethics that are analysed in this research are written for the academics (some of them stating that in the title, e. g. Code of ethics for educators, associates, scientists and researchers at the University of Zadar). Some Faculties have codes of ethics for students, but additional effort has to be done by universities and their faculties to develop guidelines for students. Students have to be educated about research integrity; they have to be aware of all the possible consequences of misconduct and other ethical issues. Students are future educators, academics, scientists. They have to be taught how to act properly when it comes to ethical issues in research. Further researches could be done to investigate Codes of Ethics on faculty level.

Analysis of Croatian journals in the field of social sciences shows that almost all of them publish instructions to authors on their web sites. Those that do not publish the instructions should do that in order to educate and to inform authors, reviewers and readers on the concept and the rules of the journal. There are also some journals that do not mention the importance of proper citing (12.5% of the journals). Maybe they believe that authors are aware of the fact, but they have to think of young authors and/or authors that submit their manuscripts for the first time to a scholarly journal. Journal publishers should educate authors about proper ways of citing.

Only a few journals mention explicitly either plagiarism or ethics, and only one journal explains retributions. That, of course, does not mean that all the other journals tolerate plagiarism – there are many other ways to control it, e. g. through peer-review process, using plagiarism detecting software, using contracts that include statements about authorship and plagiarism etc. Nevertheless, for raising awareness about plagiarism it is important to mention it in the instructions to authors. It is important especially for young authors who do not have experience and are not always aware of all the possible consequences of misconducts in scientific communication.

As the results show, some universities and some journals specify code of ethics more carefully than others. Students have to be educated constantly; all the subjects of scientific communication, as well as all the educators, have to be aware of the importance of research integrity. That is the only way to ensure proper communication and development of science.

Scientists have double role in the process of scientific communication – they are authors, but they are also users of scientific information. As authors, they should do their best to produce high quality information, and that includes avoiding plagiarism by citing used sources properly. As users, scientists have to know how to evaluate scientific information and that includes plagiarism detection.

Knowing how to avoid research misconduct is part of information literacy. Universities and scholarly journals' publishers should do their best to educate and inform their students, educators, scientists, authors. Academics should know all about the journal they want to publish in (its policy, instructions to authors, instructions to peer-reviewers, codes of ethics etc.), they have to be familiar with all the acts and rules connected with scientific communication in their field of research, they should follow instructions for citing resources and be aware that self-citations can help in avoiding self-plagiarism. They should know how to use quotations properly; they should put all the citations in the reference list, and vice versa.

Scientists as users of scientific information should be able to detect plagiarism by recognizing false bibliographic references, using plagiarism detecting software, checking authorship of cited references and by evaluating publication and its publisher. All the participants in scientific communication – authors, publishers, journal editors, librarians, peer-reviewers, users – should do their best to diminish the possibility of misconduct in scientific publishing.

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Mutual Understanding in Online News for Ethical Information

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Abstract. Nowadays mobility between goods and people is moving faster and faster. Multinationals adapt the same speech for different types of communities. Information and communication are almost immediate thanks to the development of telecommunication technology, first with satellite TV and later by the Internet. In this context Information Literacies need to become citizen-sensitive to the new rules of communication in a multilingual and multicultural world. After describing the World Wide Web as a multilingual space, we will develop our argument that journalists' awareness of multilingualism and multiculturalism can contribute to Information Literacy through an intercultural approach of the news.

Keywords: Multilingualism, multiculturalism, media, citizenship, mutual understanding, intercultural.

1 World Wide Web and Languages

In our multilingual and multicultural world, journalists have to work faster with different online resources. Nowadays a lot of news is based on second hand information - sometimes translated more than once - instead of a direct experience. But journalists do not necessarily have the opportunity to think about their metalinguistic strategies even if they work on a day-to-day written basis using original pieces of news to adapt them to new readers in a new language or culture [1]. Some news platforms use multilingual and intercultural points of view as a brand for a niche market like Arte channel does between France and Germany. Such an approach could be generalised in other countries known as being monolingual. This could bring more precision and diversity in the circulation of news, but also educate people to be informed on the Web through an active attitude with an access to a range of online newspapers from different cultures.

The World Wide Web is media network based overall on a written basis with short content and key words reference research. As the Web has been developed in the English language [2], lots of written languages, even with non-Latin alphabets, have been able to adapt their languages to this tool. The Web became a space where languages are in contact but its consummation seems still to be stuck to geopolitical borders. A geographer [3] has compared the use of Internet on the Franco-Belgium

border. She showed that both language and cultural community attachment were a criteria for the demand of information.

As we have just seen, the first paradox of the Internet is that online news gives us the opportunity to instantly follow international events adapted to a local version instead of reading them in context. The second one is the use of a monolingual speech on the Web when learning foreign languages tends to be a priority for citizens as a necessary tool to enter into labour market. But if a survey Eurobarometer about "Europeans and their languages"[1] shows that 44% of Europeans declare that they are able to read a newspaper in another language, only 36% use a foreign language on the Internet.

2   Critical Thinking in a "Global Village"

As the *Reader Digest* used to translate, or *Courier International* or *Internazionale* keeps translating, it is easier than before to compare the information in context from a plurality of linguistic and cultural points of view. Automatic translation is one of the tools that people can use to have access to content in another language. In that way, English appears as a pivotal language. However it is not enough if we take into account that lots of cultural aspects are not translatable. With multilingual key word references, Wikipedia offers an interesting model to compare the content from one language to another. It illustrates the idea that information can be adapted really differently from one culture to another more than news events, comparing those beta versions becoming a creative intercultural approach. However, such a critical attitude and constructive curiosity can be lost into the noise of a continuous flow of information.

Citizens have become used to being informed through social networks or search engines with little knowledge of how the different algorithms behind them work. Language, localisation of the URL and identification of the machine by the IP address connected to the Net are three of them. It does not mean that the information received is not relevant but it would be important to know how this information is individualised and adapted for each "circle of opinion". As sociologists note, this phenomena is natural. But the Web accentuates the creation of circles in spaces that do not connect to each other. It creates an illusion to be connected and opens the door to a lot of misunderstanding between people from different circles, even within the same community.

As McLuhan predicted with the image of a "global village', tension between the global and local world is a contemporaneous challenge, especially in the society of information. Despite the fact "foreign news"[2] [4] reaches our screens all day long, it

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[1] Survey conducted by TNS Opinion & Social at the request of the European Commission: Commission:
http://ec.europa.eu/public_opinion/archives/ebs/ebs_386_en.pdf

[2] Berger underlines "the foreign dimension of local stories, and the local dimension of foreign stories, means that both are internationalized – but they nonetheless still have different referents" [4, p.357].

seems that even online-news gives us some local versions which are tailored to our cultural, geographical and linguistic visions [5]. At each transfer from one culture or language to another, both data and reported speech lose some precision or authenticity compared with the original piece of work. Although the local reality offers a multilingual and multicultural community, information is adapted for a new reader seen as a "model reader" [6] of a "imagined community" [7] through a monolingual beta version called "domestication" [4]. Comparing those new texts in different contexts helps us to understand the "war of versions" accentuated by the information flow [8]. Internet could ease the access to a contextual article or an original text in order to develop an intercultural approach within news.

3   Journalism and Languages: Towards Creative Multilingual News?

UNESCO's Model curriculum for journalism education [9] dedicates one out of its ten syllabi to "Intercultural journalism" [9] and another one to "Global journalism" [9]. However, there is only one mention of the language of "Media in regional language" and no mention of transfer between languages [5] despite the fact UNESCO is actively engaged in multilingual education. However, multilingualism is essential for journalists. Since the MacBride report in 1980, the order of international communication is still unbalanced. Firstly, as Bourdieu [10] pointed out, multilingualism can answer to a certain "circular circulation of the information" for journalist's first hand information. Even if we can not deny an internationalisation of the economy of information, an access to local version of news all over the world is a useful tool. Secondly, as a way to inform a citizen, multilingualism within the press can empower readers to a multi-layered world and its range of culture.

In Europe even if the tradition of journalism formation is different from one culture to another, it seems that both speaking languages and living abroad for a while are criteria to recruit journalism students. However, journalists still have to speak the "good language" within a gravitational global language market [11]. At school, most journalists study English. But there is no formal space to speak about their multilingual competence in their curricula, even if "translation" is considered as one of the tasks of a journalist [12].

In literature or comics, code-switching - or heteroglossia - is common to express the alteration, or to represent a multilingual situation. In online news, some journalists use citations in another language through Twitter, or even screen prints, to illustrate their content. The translation of a full tweet, or part of it, comes before or after the post. Most of the time, journalists themselves do the translation. When the translation comes with the original text, comments can operate a kind of mediation of the translation, not only grammatically but to put in context some cultural aspect of a citation[3]. Those examples seem to confirm that access to the original text, facilitated

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[3] See for instance the discussion above the article "The fall of Newsweek", from the online version of the French daily newspaper Le Monde (06/01/2014):
http://decodeurs.blog.lemonde.fr/2014/01/06/the-fall-of-newsweek/

with the Internet, and can put more contrast within the news. Online news, like other content on the Web, could develop its intercultural potential for a better mutual understanding within the global village.

To go further than the theory, our work in progress researches approaches to understand if journalists might use intercomprehension in their work. For that purpose, we did interviews with online journalists so that they could speak about their language practices in their work. As Kramsch [13] says: "The 21st century is all about meaning, relations, creativity, subjectivity, history and trans- as in translingual and transcultural competence more appropriate to the demands of a global decentred, multilingual and multicultural world (…)". The first results of our work in progress with journalists and journalism students in Sardinia and Catalonia show that language awareness within the online news, even based only on a ten-hour experience gives journalists, or future journalists, the opportunity to think about their consummation of information.

4   Information Literacy in Online News by Journalists Themselves

The Internet is a place for written languages. We suggest that taking advantage of written languages could lead to an intercultural communication between different communities for a better mutual understanding at a local and international level. Journalists could give to their readers the access to their first-hand information. With a top-down focus, it means that Web journalists, as first readers, could participate in Information Literacy by offering the citizens, here considered as second readers, the opportunity to see different points of view through online access to a range of languages and cultures. One of the new tasks for journalists could be to help citizens find relevant information, and to compare it critically within the noise of the overabundance of information given on an immediate basis.

From this hypothesis, we suggest an innovative approach for Italian or Spanish journalists of the didactic of intercomprehension [14] between romance languages within the newsroom. Overall, this formation could be based on language awareness to be conscious of the huge possibilities within the Web to access different cultural frames. The intercomprehension approach does not give a full communicative competence, but only a partial receptive competence. It gives tools to understand languages mainly within the same language family and encourages a positive attitude of mutual understanding. Romance languages are perceived on their similarities more than on their differences. Journalists can develop strategies to research and read information in different languages. Such a metalinguistic consciousness can be empowering when sharing experience with others.

Besides the language challenge, journalists are encouraged to compare information for international events and to find local sources for international ones. It does not mean no translation, but it does mean a consciousness of the linguistic and cultural adaptation and of the possibility to read in other languages. If journalists do this selection work giving keys to citizens to see the source, it could encourage a critical

attitude and an intercultural curiosity from an active consumer of information. The advantage of inter-comprehension is to put languages on an equal level. It also develops a positive attitude towards reading short foreign texts. It takes into account that contents on the Web are shorter and that the Internet gives a huge access to the context of articles thanks to the reading of images, sounds, headlines, links and common codes like cryptograms based on symbols that we use daily. Following the model of US news channels websites, other international channels developed multilingual websites, such as Russia Today, CCTV, Al Jazeera, Euronews, etc. For a lot of websites, the English language news platform style is still taken as an example. News format can also help us to read in another language.

5   Strategies in Developing a Positive Attitude with Languages

After the workshop, journalists tried to access not only romance languages but they transferred their strategies to go further; they also use online tools to understand a range of online local newspapers. More than the linguistic competence, they develop a positive attitude when faced with an article text in a foreign language. Most of participants were surprised to understand foreign texts and were amused with that effort to read it. They knew where to look for some tools on the Web and tried to verify their information. Through languages, they could access new ideas and points of view. It is not something that they will do every day, but they recognized an interest for certain local or international events. Comparing information and trying to find a local version of an event is something quite common for football fans and sport journalists. It is important to legitimize such an approach. It is fundamental to be aware of the approximation of information, even through language transfer from an original version to a beta version.

This workshop also gives participants a consciousness of the important subjectivity of information regarding the construction of a vision through their cultures and languages. One of the factors we did not anticipate is the importance of teamwork for participants. Within a group, they could verify their hypothesis and develop more confidence. Putting their specialised competences together with a transfer of their reading abilities, they changed from a monolingual consumer attitude to a multilingual researcher attitude. It can improve their work first at individual level, and then at social level, through the information given.

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Children's Internet Competence vs. Self-confidence and Self-comfort: Case Study of Latvia

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Abstract. The objective of the paper is to compare children's internet literacy with children's self-evaluation of their internet competences in a parental mediation context. The theoretical frame includes two aspects – theoretical understanding about "generations" depending on information technology use and parental mediation. Data were collected by a survey of children and four focus groups interviews with parents (all use internet). The children's survey does not give definite answers about identification of some „generation", but parents' answers mark children as another "generation" by their internet use practice. Two high risk factors have been identified (1) children explicitly rely on peers' competencies when facing problems and (2) keeping silent altogether about the problems they have faced.

Keywords: Internet literacy, children, EU Kids Online, parents, teachers, family culture.

1   Introduction

Childhood is characterized by dynamics and various determinants, and it cannot be perceived any more as development of an individual child in isolation from processes going on in society. Children construct their social worlds as real places. And internet appears to be "their medium" [1].

Internet access and use becomes an increasingly private process by using personal portable devices and convergent mobile media [2]. Children, like adults, have gained greater freedom and opportunities to access and use media.

Analysing children's use of internet is not a simple task both because communication phenomena develop and change rapidly and also because children's experience is very mixed depending on many factors – the overall experience of media use of society and media literacy and education level, economic, political, cultural and social trends in society, educational and social background in the family, capacity of parental mediation etc.

The short history of the processes and their swift changes make it difficult to accrue and analyse knowledge about changes, to set up a frame for comprehensive understanding of children's online communication in some general context of media use habits. Many new ways of communication are full of contradictions. On the other hand, totally uncontrolled media use can possibly create risky situations for children.

The objective of the paper is to compare children's internet literacy with children's self-evaluation of their internet competences in a parental mediation context.

2   Theoretical Background

2.1   Blurred Borders: Generations and Communities

Today's 9-16 olds can be characterized in different ways – as Net Generation [3], Digital Natives [4], Next Generation users [5] etc. Both in theoretical and empirical studies one can see more and more new attempts to find ways of categorizing the features of the ongoing changes and of grouping media users.

Systematizing approaches that explain the role of technology in society, Gustavo Mesch sees two major perspectives: technological determinism and the social construction of technologies. Technological determinism identifies internet as an innovative force that has deep impact on children and technologies are the ones that "generate new patterns of expression, communication, and motivation" [6]. Since their early childhood contemporary adolescents live in an environment rich in technologies where they also communicate with their peers by using new technological devices. This approach is reflected in such concepts as "net generation", "digital natives" etc.

The social construction of technologies recognizes that technology is an inherent part of society, but its use does not homogenize young people into a single entity with unique characteristics [6]. The same technologies in different groups can have various diverse meanings and application. Mesch recognizes that technological changes are a process that does not have one definite direction.

John Palfrey and Urs Gasser developing the idea that young people are "digital natives" who differ from the previous generations characterize them as "born digital" and propose not to call them "generation" and "prefer to think of them as a population" [7]. Their arguments are associated with the fact that globally a single "digital natives" generation is inconceivable, if less than a fifth of the world's population have access to digital technologies.

William Dutton and Grant Blank have put forward a theoretical concept that media users can be grouped more thoroughly by the actual practice of media use and categorize them as first and next generation users. Distinction is based on access to internet from multiple locations and devices [5]. Based on these characteristics the authors conclude that in 2011, 44.4% of internet users in Britain were next generation users (20% in 2007, 32% in 2009). Judging by these characteristic features one may conclude that there is a mix of generations – both by age and internet use experience.

Three approaches can be identified in creating division into generations. Firstly, chronological approach (born between ..., after ..., before ...) that may also have some associations with certain events and processes. Secondly, association with some changes that have influenced possibilities for people, their experience and the like (Google generation) and thus sense of belonging to some communities is formed that have identical internet use experience (this is the way "digital natives" can be also understood). Thirdly, there are research data that give evidence of some new tendencies and changes (First and Next generation).

Generation is an essential term analysing children's and parents' media use experiences because they are different generations with different cultural and social experiences. Questions about internet and other new technologies is one of the rare cases when children could have "greater expertise than parents in skills highly valued by society" [8].

Yet it is risky to generalize these processes because the situation is different in various countries and cultures, as well as in families. The characteristics of generations, specially imagined generations are very much dependant on concrete historical, cultural, economic, political and other conditions.

2.2   Parental Mediation

All in all, research on children can be structured on the basis of two approaches that are based on two competing conceptions of childhood. Firstly – children are viewed as vulnerable individuals exposed to many and different risks from which they must be protected. Secondly – children are perceived as competent and creative agents [1]. The first approach stems from research about media effects and children's TV viewing and it is mainly associated with understanding of internet as medium. The second approach has a more explicit focus upon media literacy, education etc. Both the approaches are separate and even competing. And their historic affiliation starts becoming an obstacle for acquiring sufficiently large-scale vision at children's media use in a new situation of media convergence.

Sook-Jung Lee characterizes the study of children's media use as research of opportunities (learning, communication, creativity and expression) and risks (exposure to pornographic, violent or hateful content, invasion of privacy, cyber-bullying, inappropriate contacts etc.) [9]. This approach reduces restrictions and also offers evaluation dimension: opportunities and risks.

Lynn Clark, generalizing theoretical approaches about parental mediation, concludes that parental mediation theory explains how parents "utilize different interpersonal communication strategies in their attempts to mediate and mitigate the negative effects of the media in their children's lives" [10]. And that means a certain narrowing-down, focusing on "negative effects of media".

Studies have identified different parental mediation practices – active, restrictive, technical, instructive mediation, co-use (viewing) and others [11-12], [9].

Sook-Jung Lee, assessing analysis of parental mediation in theoretical literature, concludes that their type of systematization is based on different categories, and that there are different approaches and methods identifying these practices. Thus a common problem in research is "the lack of theoretical conceptualization of each type of parental mediation" [9].

In evaluating the results of EU Kids Online study the authors follow the division: active mediation, restrictive mediation, monitoring and technical mediation.

Several studies have quite explicitly and repeatedly systematized children's several internet use characteristics associated with demographic and gender variables, at the same time recognizing that they are changeable and cannot be referred to any situation [11-12]. It is possible that qualitative studies can give better answers to many questions in order "to gain a deeper understanding of parents as socialization agents in the digital age" [13].

3   Methodology

The study is based on quantitative and qualitative research. There are four research questions for this paper:

RQ1: What are the characteristics of children's media use in Latvia?
RQ2: What are the children's evaluations of their internet competencies?
RQ3: What are the children's evaluation of parental mediation?
RQ4: What are the parents' opinions and attitudes towards children's internet practices?

The quantitative research, which will address the first three RQs, was based on the approach of EU Kids Online survey [1]. The quantitative survey of children and teenagers was done in October and November in 2013.

The target group of the survey was children from ages 9 to 16 who use internet. All in all 1,001 respondents were surveyed in total of 133 survey selection points covering the whole territory of Latvia. Selection method was stratified random sampling, stratification indication – administratively territorial and respondent's choice was made according to the random route method.

The qualitative research, addressing RQ4, were four focus group interviews (May, 2014) with parents: two in Latvian and two in Russian, two with parents of 7–10 year olds and two with 11–16 year olds' parents. The participants were recruited by combining two approaches – quota sampling and snowball sampling.

4   Findings

4.1   Internet Access and Use Characteristics

The majority of children in Latvia use internet every day or almost every day (78%), absolute majority of children use internet no less than once a week. From the 9–10 year old group, 59% use internet every day but the proportion of frequent internet users in every subsequent internet users' age group increases by about 5% and among 15–16 olds internet is used even by 90% children. Boys are more active internet users (82% use it every day) than girls (75%). There are no essential differences in internet use depending on the place of residence.

On average a child on an ordinary day spends at least 107 minutes on internet. Boys spend significantly longer periods of time than girls – 116 and 99 minutes respectively. Children living in large cities are the most active internet users (110–123 minutes), less active are those who live in small towns (98 minutes) and rural areas (102 minutes).

Most children use internet at their home in a living-room or another common room (79%) Only 49% in their own bedroom or in other private room; privately outside their home – at their friends' (61%) or relatives' (51%) homes, in a library or some other public place (46%) and also outside buildings on a mobile, smart phone or iPad (32%).

On average, a child uses 2.3 gadgets to access internet. The older the children the more they use internet on a mobile or smart phone: among 9–10 year old children 40% use internet on a mobile phone, among 13–16 year olds the proportion of such children is more than 70%.

Eighty-eight percent children in Latvia have their own profile on social networks – for 53% of children it is fully public and for 27% – partly private. Age groups do not display a tendency of becoming more aware of the risks if their personal information is publicly available as they get older because almost an equal number of SNS profiles are public for 9–10 and 13–14 year old children (47% and 49% correspondingly) and for 11–12 and 15–16 year olds (57% and 58% correspondingly). Place of residence does not demonstrate any tendencies either, because 51% of the profiles are public for those children living in the capital or countryside.

4.2   Children's Self-evaluation of Their Internet Literacy and Safety Skills

There were eight literacy and security skills on questionnaire; on average a child uses 4.8 of them. More children within the age group 11–16 are able to block messages from those persons with whom they do not want to communicate (80%), find information on how to use internet safely (72%), change privacy settings in social networks (66%) and delete history of the web-pages browsed (64%). The older the kids the better their digital skills (11-12 year olds are able to perform on average 3 – 4 activities, but 15–16 year olds already 6 on average). In all the age groups boys assess their skills higher than girls at the same age.

To the question to what extent children agree to the statement "I know more about the internet than my parents" an absolute majority considered it as "very true" (49%) and "a bit true" (28%). Boys were more convinced than girls that they know more than their parents (82% and 73% correspondingly). Strong conviction about their competence increases among children as they get older ("very true" was chosen correspondingly by 36% 11–12 year olds, 13–14 olds – 15%, but among 15-16 olds – 61%). Children living in rural areas are manifestly convinced about their knowledge compared to their parents – "very true" was correspondingly chosen by 57% respondents (city dwellers 42–46%).

4.3   Children's Strategies to Cope with Harm on Internet

Children, after seeing sexual images and being bothered by them or after being bullied online, choose different strategies to cope with harm.

After bullying, two most typical ways of defence chosen by children are to delete any message from this person (52%) or/and block this person (45%). About 1/5 of children changed their privacy settings or contact information and/or stopped using internet for some time. And these approaches correlate with evaluation given by children to the steps they have taken, 33% consider that they "try to fix problem".

After seeing sexual images, the choice of strategy for action and behaviour is not so uniform: 35% of children stopped using internet for some time and 31% blocked the person who had sent these images. A comparatively large proportion of children (23%) reported the problem to the internet provider.

It causes great concern that after confronting contents of a sexual nature which made them upset, 61 % of respondents did not talk about it to anyone, while only one third kept silent about the bullying. Thirty-three percent of children talked about it with a friend and 32% with a parent.

Evaluating what they did after seeing sexual images online and being bullied online 41% and 17% respectively, admitted that they did not use any of the options offered in the questionnaire.

4.4   Parental Mediation: Children's Point of View

An absolute majority (80%) of children assert that their parents are taking some steps to monitor internet use. Most often (60%) parents discuss what children do on internet. About half of the parents are nearby when children use internet and 34% of the parents work on internet together with the child. Survey data show that girls' internet use is supervised more often, and the supervision is more stringent in the 9–12 age group.

Mostly parents help their children in the following ways: 64% – when children had difficulties to find something on internet; 58% – have explained why some internet sites are good or bad; 57% – have suggested the ways of treating others on internet and 50% – have suggested safe use of internet. More frequently parents have helped girls, younger children and children living in large cities.

All in all 40% of parents, according to the children's evaluation, control what children do in internet: 27% – check the sites visited by children; 25% – check their children's profiles in social networks, 22% – check who the child adds to his or her profile in social networks, and 8% check the child's e-mail. Control is more outspoken for the 9–10 age group, but diminishes as the children get older. It is interesting that control over boys is bigger in the age group 11–14 but for girls in the age group 9–10 and 15–16.

In general, 54% of children admit that their parents' supervision helps them in their internet use – 21% have evaluated that it helps a lot and 33% claim that it helps a little. Twenty-seven percent believe that it does not help at all, but 19% were unable to provide a specific evaluation. Girls' assessment of usefulness of such supervision and the evaluations by younger age groups and city dwellers are higher.

The majority of the most frequent activities on internet (uploading of photographs, music and film download, and chatting, and creating profiles in social networks) children perform independently without supervision. From the social and demographic perspective it can be observed that parents' control and restrictions are distinct for the age group 9-10 but are considerably weaker among the older age-groups, and for the group 15-16 year olds it is minimal. Forty-eight percent of children consider that monitoring by their parents' doesn't limit what they can do on the internet (34% – "a little"). But 10% of the children are convinced that their parents know nothing about what they do on internet. Girls and children of younger ages have provided positive evaluations of their parents' awareness more frequently.

All in all 54% of children consider that parents' monitoring helps them in internet use ("yes, a lot" – 21%, "yes, a bit" – 33%). Girls and younger children and children residing in rural areas are more positive. Half of children admit that they always follow parents' advice and half ignore their control ("a lot" – 9%, "a little" – 41%).

Sixty-three percent of the children consider that their parents' control is optimal, 15% would like to have less supervision, and 13% to have it more stringent. Boys expressed slightly more often a wish to have less supervision by parents. Only 13% of children claim that their parents do something new or differently because they have had negative experience using internet. Slightly more of such an assessment was given by 9–10 year olds.

4.5   Parental Mediation: Parents' Point of View

Parents consider that children perceive internet differently because they "were born with internet, we learned gradually to use it, they will certainly perceive it differently" (mother, born 1977, economist, daughter 16). Only some parents share the opinion that they "have grown up with all this technology. In that sense I am not different from my children" (father, born 1977, has been a computer skills teacher, with sons 11 and 15).

Respondents explicitly expressed the opinion that they have much less time than children to acquire internet skills, fewer options to learn new things, fewer people to give them advice.

Parents use internet very diversely: for various needs at work; to read news; use social networks; and keep in touch with friends. Several parents emphasized self-education, but entertainment, if it was mentioned at all, explicitly came as one of the last reasons for using the internet. They use internet both in their phones and computers, but typically the phone is mainly used to read e-mails. Several respondents mentioned that they feel no need to use the internet in their phone.

Characterizing the use of social networks, several parents used the expression that children "sit in "friends" ("draugiem.lv" (friends) national social network). Several parents discovered this during daytime by logging into this network themselves. Many parents were not quite certain what their children do on the net.

Characterizing their control over their children's internet use, most parents said that they "take a look" at what children do. Several parents underlined that it is important to trust children therefore they do not stringently control the activities of their children on online. One of the fathers (born 1969, works in cargo shipping, daughter 6, son 12) has bought Kaspersky internet security programme which enables him to control what his children do and also limits the use of the internet (several parents in the focus group began questioning him about his experience). The mother of a sixteen year old daughter admitted that she would not know how to use such software.

All in all, parents were evasive about their internet use principles; they often mentioned that children learn security measures and other knowledge at school.

Parents' policies towards their children's internet access and use vary but they can be structured into three groups. The first have set strict rules: how long internet can be used, what the rules for internet use are (school assignments, accomplishing different duties, and so on). Often these rules are supplemented with technical monitoring of use. The second group perceive internet as part of their children's life. Its use is not particularly controlled but typically these parents claimed that children are so busy with different activities that they have no time "only for internet", and it is used

rationally for communication, studies, finding of information, creative activities (drawing, photo design) and so on. The third group have left internet use completely unattended. Parents justified it by their lack of time (they admitted that they use computer as a "baby sitter") or by their inability to monitor scrupulously what children do.

Parents' self-assessment on how much they know what children do on internet was very varied. The majority believed that they can monitor everything children do. When asked to mention children's specific activities online parents had few examples, most just agreed to what others mentioned. They believe their children's were occupied mainly on social networks, communication with others and playing games.

When information from the children's survey was presented stating that more than 60% ignore their parents' instructions, the parents referred to the fact that children are inquisitive, and that it is natural for teenagers to disobey rules. Several parents expressed an opinion that risks exist always and everywhere, and if children's internet use at home is limited, it is accessible elsewhere. Besides, they believe that children discuss everything among themselves so information can be discovered from others as well. It is interesting that several parents doubted that so many children could disobey their parents.

Risks children might face online mentioned by parents include scenes of violence, pornography, communication with strange adults, separate games, internet addiction, and physiological risks from spending too much time by the computer (eye-sight, posture, agitation, lack of sleep and others). Risks were described by parents from other people's experience and information in media, only a few attributed them to their children. But many opinions were not voiced; the parents just showed consent to what others said.

When asked what they could advise as a good example to facilitate children's security on internet, the majority mentioned spending time together with children, conversations, their own example and the like. When asked to give more specific proposals, parents mentioned school and teachers: "The same way they are taught the Green Cross Code and what can and cannot be done in the street, they should be also told about internet" (mother, born 1982, works in IT, daughter 4, and son 7).

Parents, when asked how they talk with children about sexual images or pornography online   were evasive and expressed opinions that it is easier for teachers to talk "about that" with children than for parents.

5   Discussion

This survey of 9–16 year olds did not give a straightforward answer whether this group can be designated as a separate "generation" or "population", while their parents quite clearly expressed the opinion that children are "born digital". Characteristics of children's internet use are influenced by their age, sex and also place of residence but these characteristic features do not form stable and invariable indicators enabling an inference that certain users' groups could be singled out on the basis of specific variables. The survey data show that internet use in this age group increases as children get older, and it is intensive. But it appears that 9–16 year old

children in Latvia belong to "next generation" based on characteristics proposed by Dutton and Blank. Children's parents who use internet also correspond to "next generation" characteristics.

Children have quite a critical evaluation of the significance of internet for their peers, yet as they grow older the number of those who consider that internet has value increases. It could possibly be explained by the fact that decisions about what resources can be used for smaller children are more often taken by parents, and also because the set of resources in Latvian is fairly limited (especially for children), and choices for younger children have not yet learned other languages are very low.

Children evaluate the control by their parents as unrestrictive and parents have quite few specific approaches of monitoring children's media use. A positive trend is that some of the parents recognize opportunities for children's self-development and creativity on the net. Yet the majority tend to perceive internet use regulation like television viewing regulation, focusing on restrictions of time and contents. Parents feel insecure about their knowledge and skills of evaluating different internet use aspects. They can be called a "self-made digital generation". Children have sufficient time for the self-instruction that involves many redundant "steps", but the parents often do not. This scope of different factors is also influenced by family culture, which may impact the high self-evaluation of internet competence among children in Latvia. Communicating and getting assistance and advice more from their peers (81% of the surveyed children claim that their peers have helped them in safe internet use, 33% talked with a friend after being bullied online and 28 % – after seeing sexual images) than from adults fosters in children the perception that peer groups have high competence that is adequate for their respective situations. And it strengthens their self-confidence.

Many activities of children on internet are still "terra incognita" for researchers. If after seeing sexual images or being bullied online, 41% and 17% respectively have not used any of the options listed in the questionnaire, then the question of what they actually did is topical.

It is complicated to evaluate children's self-comfort online because it is influenced by many other factors. And from this perspective the predictable usefulness of social construction of technologies becomes valid.

6   Conclusion

Explaining the role of technologies in children's life is the perspective of social construction of technologies, because children's internet use practices and effects are influenced by very different and variable factors that are not only to do with technologies.

It is essential to apply in children's internet use studies qualitative methods because the accrued knowledge is not sufficient to forecast possible choices by children and to include them in questionnaires. An intensive study is necessary to get extensive and different data about children's media use and their reflection in peer groups, family, school, online communities etc.

Analysis of the transcripts of the parents' focus groups showed that their capacity to facilitate activities of their children online is determined by a large spectrum of factors.

Indicators such as their age and education do not always determine their abilities to manage their children's internet use issues. Parents' openness to innovations and readiness to compensate for deficiencies in their knowledge about online communication is of utmost importance. Awareness about the need to develop their internet (and in a wider sense – media) literacy is an essential prerequisite for successful communication by parents with their children about internet.

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I-LEARN: Helping Young Children
Become Information Literate

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Abstract. This study involved 49 children and four teachers in the design, development, and evaluation of a research project built around the I-LEARN model [1-2]. The objectives were to investigate the use of the model with an early-childhood population and to understand how digital and information literacy evolves in best practices for implementing problem-based learning as informed by I-LEARN. Analysis revealed that teachers adjusted their implementation of I-LEARN's steps to meet students' needs and to mesh with their own styles. Students were able to build new knowledge and enjoyed learning a variety of ways to acquire information. The model made the idea of research concrete and helped learners focus on specific tasks and accomplishments. Teachers' technological/pedagogical knowledge grew, and teachers concluded that students' projects were successful and that they overcame a lack of computer experience to focus on finding and analyzing sources and reflecting on their learning.

Keywords: I-LEARN, TPACK, technological pedagogical content knowledge, information literacy, learning.

1 Introduction

Researchers at Drexel University worked with a high poverty/low performing partner school located near the University on a project designed to introduce the teachers to the I-LEARN framework [1-2], train them to use freely available Internet tools for designing research projects, and offer in-class support as teachers and students completed these projects. Each child created a digital portfolio based on the inquiry "What Makes Philadelphia Special?" Teacher training was guided by TPACK, a survey that focuses on teachers' "technological pedagogical content knowledge" [3]. The objectives of the study were to investigate the use of I-LEARN with an early-childhood population and to understand how digital and information literacy evolves in best practices using this model. The central research questions were: How can the I-LEARN model be used to support problem-based, information-rich learning at Fairmount School (a pseudonym)? What dimensions of digital literacy are most salient for kindergarten, first, and second-grade[1] urban students and teachers? How can these dimensions be taught and evaluated?

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[1] Kindergarten is the first year of formal schooling in the United States. Children are generally five and six years old in a kindergarten class. First grade students are generally six and seven years old, while second grade students are generally seven and eight years old.

2   Information Literacy and Learning

The link between information literacy and learning has been implied at least since Jean Piaget [4] defined learning as the process of assimilating and accommodating new information. A range of other theorists have since expanded on the relationship between information and learning, and the American Library Association made the connection explicit in 1989: "Ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information, and how to use information . . . They are people prepared for lifelong learning because they can always find the information needed for any task or decision at hand" [5].

Many scholars and professional organizations have explored and defined the multiple dimensions of information literacy since 1989, and Eisenberg, Lowe, & Spitzer [6] provide a comprehensive, 400-page discussion of these efforts across the educational spectrum. Today, the relationship between information literacy and learning is firmly embedded in a number of documents that guide current instructional practices in our schools. In the United States, for example, the Common Core State Standards for English/Language Arts call for "an integrated model of literacy" that includes "research and media skills" and that emphasizes students' reading of informational text and development of the ability to use information to persuade, to explain, and to convey experience [7].

3   Digital Literacy, Media Literacy, and Learning

Today, the idea of information literacy is often embedded in discussions of media and digital literacies, which provide concepts and mechanisms for expanding "traditional" information-literacy concepts into new territory [8]. Media literacy addresses the ways in which one finds, analyzes, evaluates, and communicates information in a variety of print and non-print formats. Digital literacy is defined by Gillen and Barton [9] as "an enabling skill allowing for a broader range of learning interactions, using a greater range of tools, which then offers the possibility of a wider range of traceable meanings to be made in society." Burnett's [10] review of research suggests that digital literacy is critical "within a world in which knowledge, learning and relationships are being re-defined in digital environments."

4   The I-LEARN Model

The I-LEARN model [1, 2] is a powerful platform through which students can develop their knowledge and skills in information literacy and use digital and media literacies to come to know in more thoughtful ways and to communicate this new knowledge using the wide range of tools available in today's world. It encompasses six steps—Identify a question of interest; Locate information related to the question; Evaluate that information; Apply the information to answer the question; Reflect on the product and process of learning with information; and Instantiate the resulting kNowledge in a way that makes it usable for future learning tasks. The model

provides a scaffold through which teachers and students can explore the full range of digital and other technologies to become adept at analyzing information to assist them with research projects [11] and to "habitually perform the critical reading necessary to pick carefully through the staggering amount of information available today in print and digitally" [7] in order to learn. Drawing on research and theory from both information science and instructional systems design (ISD)—including the areas of ISD that address the learning affordances of the full range of information formats— the model provides a tool that both teachers and students can use to support learning with information.

5   The TPACK Model

The TPACK model—which addresses the technological, pedagogical, and conceptual knowledge needed to teach effectively with technology—builds on Shulman's [12] concept of Pedagogical Content Knowledge, supporting the idea that technological knowledge is not acquired through isolation. Instead, this acquisition involves a transactional fusion of three areas of knowledge: technology, pedagogy, and content. Newly acquired knowledge lies at the intersection. Through carefully constructed and tested survey models, teachers can identify areas of knowledge need, thereby designing their professional development to address their weak areas. Clearly, the model is dependent upon unique situational contexts such as teacher experience, parental-support culture, grade level, and prior experiences.

6   Conceptual Framework

The TPACK and I-LEARN models operationalize the key dimensions noted in the research literature on the various literacies discussed above and provided ideal vehicles for exploring and explaining various aspects of those literacies in this study. I-LEARN provided the learning model that the teachers and students used to engage in learning in the problem-based format used in the study, while TPACK provided a way to analyze and address the specific skills that teachers need to implement problem-based learning with digital technology. The models share important overlapping elements that supported both the conduct of the study and the data analysis.

7   Methods

7.1   Overview

The Fairmount School (a pseudonym) is located in the neighborhood adjacent to Drexel University, which has a partnership with the school. The research team recruited teachers in kindergarten and first and second grades to participate in the project; four of the six teachers at these levels participated in some way. They received computers for their classrooms and professional development regarding

technology, information and digital literacies, and the I-LEARN model. Two of the researchers also offered in-class support during the implementation of the project.

Three professional development sessions were conducted with the teachers. During the initial sessions, the I-LEARN model was introduced, and the teachers proposed "What Makes Philadelphia Special?" as the topic of the children's investigations. The research team presented the two digital portfolio platforms, Little Bird Tales (https://www.littlebirdtales.com) and Weebly (http://education.weebly.com) and shared the link for the online TPACK survey. At the final session, the results of the TPACK survey were reviewed, and the team worked to set up the chosen digital portfolio platforms. The teachers also finalized their adaptation of the existing I-LEARN assessment rubric to address the needs of early learners.

Three of the teachers introduced the I-LEARN projects in their classes in April 2013. Two of the researchers provided in-class support in the two kindergarten classrooms and the one second-grade classroom involved in the project. This support included assisting students in writing drafts and typing their work on the computers.

7.2   Participants

During the project year (2012-2013), the Fairmount School enrolled approximately 375 students taught by 17 classroom teachers. More than 90% of the students were African-American, and more than 95% were classified as economically disadvantaged. Two kindergarten teachers, one first-grade teacher, and one second-grade teacher participated in the initial professional development and in the follow-up interview. All the teachers were women: two Caucasians, one African American, and one Asian American. Both kindergarten teachers and the second-grade teacher implemented the project. The researchers collected and analyzed student data from two classes: Group A, taught by Ms. A, and Group B, taught by Ms. B. Group A included 24 five- and six-year-old kindergarteners, and Group B included 25 seven- and eight-year-old second graders. Overall, the groups included 23 males and 26 females. Ms. C and Ms. D provided interview data but did not provide student data.

7.3   Data Collection and Analysis

A TPACK survey was administered to all four teachers prior to the project. Two completed this survey, while all four participated in a focus-group interview at the end of the project. Student data were anonymized by one of the participating teachers, and the researchers reviewed 24 Little Bird Tales portfolios from Group A and 25 Weebly portfolios from Group B. The researchers also analyzed (1) data from the adapted I-LEARN rubric that the Group A teacher used to assess the children's work and (2) data from the same teacher's oral interviews with her students that provided a kind of self-assessment. In sum, the researchers analyzed portfolios from 49 students from two classes, one teacher's assessments of 25 students' projects, and the same teacher's self-assessments for 24 of these 25. These data, along with the transcript of the final focus-group interview, provided the primary data set for analysis. Data analysis was conducted as both an individual and as a group process. The research team first developed a set of closed codes that were used to analyze the focus-group

interview. Each researcher independently coded the interview transcript, then the team met and reviewed the transcript together in order to develop consensus about the codes and the process. The group sessions resulted in a second set of codes that expanded on the initial set and were also applied to analyze the interview. A review of available paper and digital documents created by students led the research team to focus the second part of the analysis on Groups A and B, as described above, and Excel spreadsheets were used to organize and display all the non-electronic student data from those groups. Data for Group A included handwritten student drafts and teacher notes on the students' self-assessments. For Group B the spreadsheet included the students' self-assessments, which aligned with each step of the I-LEARN process.

8   Findings

8.1   Group A

The analysis revealed that the each teacher who implemented an I-LEARN project (1) developed an approach to the assignment that suited her own instructional style and (2) adjusted her implementation of I-LEARN's steps to meet what she saw as her particular students' needs. Thus, the teacher who taught Group A (the kindergarteners) and the one who taught Group B (the second graders) approached the project in very different ways.

Ms. A did not begin the I-LEARN process by introducing the topic of "What Makes Philadelphia Special?" but by drawing upon students' background and understanding of the local context: "I just took as the topic, "My community is special. Philadelphia is special," and expanded out from what do I consider to be my community, my neighborhood, my home, my school." She began with whole-class discussions about people and places in the community surrounding the school in an effort to connect the concept of communities to students' prior knowledge. She introduced the concept of "sources" and a variety of "sources" they could use in order to find information. She read aloud from books and invited guest speakers who were sources of information for the students; the students also identified their family members as another important source of information.

After building her students' knowledge about communities, Philadelphia, and sources, Ms. A required each student to write a few lines about "What Makes Philadelphia Special?" She did not require them to choose from a list of possible topics, but left that decision to them. The students were asked to brainstorm ideas for three topics they wanted to explore and to identify three possible sources of information. For any student who wrote down "computer" or "website," one of the researchers helped the student search for an appropriate website, read the information, and write down three ideas about the topic based on information from the website. The final step was for each student to identify one topic to explore for the project.

Next, Ms. A had her students develop and record their digital stories about "What Makes Philadelphia Special" using Little Bird Tales. She provided a specific structure for the "tales" that made the final project easier for the students to accomplish and helped them record their digital stories. In the end, each "tale" was about 5 pages long and covered what they had learned and what sources they had used. The final part the

project was to have each student complete a self-assessment by responding to three questions: 1) What was your favorite part of the Philadelphia project? 2) What part do you think you did the best? The worst? 3) What is your favorite source that you used? Why is it a good way to learn about Philadelphia?

This overall process offered a balance of both teacher-directed and student-led learning activities. Ms. A's role was to build background knowledge that her students needed to make the project topic meaningful to them. She also had the students work independently on aspects of the project they could do successfully on their own—for example, developing a written draft about their project ideas. She introduced Little Bird Tales through creating her own tale, "Ms. A's Philadelphia Story," complete with pictures of her family, the places they had visited in Philadelphia, and the sources she used to design her tale. Using her tale as a model, she had each student develop a tale using a similar process and structure. Ms. A gave enough guidance to enable her students to understand what they needed to include in their individual tales, but she did not set any limits on whether they could use original art work or clip art, on Philadelphia topics they could cover, or on sources they could use.

8.2   Group B

Ms. B took a very different approach to the project. She started by having a whole-class discussion about the following questions: "What's so special about Philadelphia? What do you like about Philadelphia? What do we have in Philadelphia?" In the exit interview, Ms. B explained that it had become apparent to her that her students had limited background knowledge and prior experience with places in Philadelphia and so "I fed them different things." First, she gave them a choice of four topics to investigate. In addition, rather than allowing them to look up information on the computers in her classroom, she printed out information about the Philadelphia Zoo, Fairmount Park, Memorial Hall, and the Liberty Bell from an unidentified source. Analysis of the sources identified by the students in their digital portfolios suggested that no other sources were introduced. Ms. B. did not indicate that a discussion of the kinds of sources students could use was ever done in her class.

One of the researchers helped Ms. B develop a Weebly portfolio for each student with the following menu tabs: Home, I-LEARN, Pictures, and Notes. She also helped the students upload their notes taken from the information the teacher had given them and helped Ms. B. find stock photos of the places she had offered as topic choices and to help the students upload these to their individual portfolios. All the students' projects, except for the topics, looked very similar because they appeared to have come from the same source that the teacher had distributed.

Some of the students wanted to type their own notes directly into their Weebly portfolios, but Ms. B. noted that her second-grade students "don't have the typing skills necessary to put in all of the information that they would like to." A majority of the students had digital photos taken of their handwritten notes, and one of the researchers helped Ms. B upload these to the students' portfolios. In fact, it became clear that Ms. B herself was not very comfortable with the Weebly platform: she relied heavily on the researcher to help the students complete their portfolios.

The final step of the project required students to complete a series of questions related to the I-LEARN steps:

- What question do you want to answer? What do you want to know? (I-Identify a topic or question)
- Where did you find your information? How many sources did you find? (L-Locate information)
- Is the information good? How do you know? (E-Evaluate the information)
- What's the answer to your question? What information did you use to answer it? (A-Apply, use the information to answer the question)
- What worked to help you answer your question? What didn't work? (R-Reflect)
- What did you learn? (N-kNow)

It was not clear if Ms. B ever talked about a number of things with her students: the I-LEARN rubric, the questions that were presented to them on the I-LEARN reflection page, the question(s) they wanted to answer through the project, the types of sources they used or wanted to use, and how to evaluate the usefulness of information sources. Most of the students gave very similar responses to the questions about the types of sources they used and about their evaluation of the sources.

Overall, Ms. B's process and approach toward the I-LEARN project hampered the potential for learning and inquiry for her students. Her insistence upon directing all phases of the projects—including limiting the number of topics, doing the research "for" the students, and offering very little opportunity for independent work—led to repeated and predictable responses from students about their sources. Many students were unable to answer their research questions, presumably because the source Ms. B had provided did not include the information that would have enabled them to do so. In addition, it is reasonable to assume that Ms. B's own tentative relationship with the technology platform the students used had a widespread impact on the full spectrum of their work.

The comparison between the approaches taken by Ms. A and Ms. B demonstrate that each teacher's instructional approach resulted in different kinds and levels of opportunities for students—which, in turn, impacted their learning outcomes related to the project. Future efforts at professional development for teachers interested in using the I-LEARN framework to guide problem-based learning for young elementary students should involve greater attention to helping teachers use appropriate techniques for such inquiry-based projects.

9   Discussion

The four teachers who participated in the project concluded that the I-LEARN model was a valuable tool that supports problem-based, information-rich learning for young learners. They praised the concrete nature of the model and valued the easy-to-follow steps as both a helpful scaffold and a pathway to active meaning making. Ms. A explained that I-LEARN is "a model for processing information and to help guide students in the research process. Instead of doing something because they are being told to do something, they are doing something based on a process where they are making decisions." Ms. B found that the process offered students the chance to have

ownership over the research process because "they [the children] have control over what it is that they are learning. It makes it interesting. It makes it kid-friendly."

The teachers appreciated the model as a tool that enhanced their own as well as their students' understanding of the research process. Ms. D, another kindergarten teacher who participated in the project but did not provide her students' data, talked about how I-LEARN made her confident that her five- and six-year-olds could indeed use research to learn new information: "I didn't do research projects with kindergarteners before, and I thought it would be too difficult or challenging. I think if you structure it a certain way, like the I-LEARN project did, and did it step-by-step with them, and then just guide 'em through that... I just learned . . . that kindergarteners will be able to do the I-LEARN project if they are sufficiently guided."

The two classes highlighted in this paper showed how each teacher's technological pedagogical content knowledge had an impact on the degree to which the children in the study were able to engage with the steps of the I-LEARN model. This impact was most evident during the second and third steps of the model: Locate and Evaluate information. Ms. A conceptualized information sources in ways that were broad and developmentally appropriate for five- and six-year-olds. When asked what had worked well for the students using the model, she noted: "Also, I think something that worked well is they [the children] have a much better understanding of what sources are and why you need sources. Knowing that not everything just *is* because Miss A said so or because we read it in a book, but that your grandpa, who lived here or lived in North Philly and then moved here, is a source, because he may have seen that mural that we looked at on Google Images himself, and he used to live near it and have a memory about when they put it up."

Three of the teachers, including Ms. B, had a traditional view of what counted as a source of information. They talked about the challenges of finding books and websites that were at the children's independent reading levels and about how they needed to "scrounge" to find books about Philadelphia. The way that these teachers understood the idea of an information source was reflected in their pedagogical choices when implementing the second and third steps of I-LEARN. In Group A, the children identified a wide range of sources. In Group B, most of the students identified one of two sources and evaluated them based primarily on the credibility of the teacher who had located the information. Twelve of the twenty students in Group B answered the question "Is your information good? How do you know?" by referencing their teacher. In Group A none of the twenty-three students referenced their teacher when asked "What was your favorite source about Philadelphia? Why was it a good way to learn about Philadelphia?" Instead, these students talked about the sources as being "a good way to learn" because they were easy to use, addressed their needs, or reflected students' personal connections and experiences.

Before the I-LEARN project began, the Fairmount teachers did not have access to computers for instruction. The research team acquired desktops for each classroom, installed them, and connected them to the Internet. In addition, the Fairmount students did not have universal access to computers and related technologies at home. Ms. D. described how she knew which children did not have computers because "when I put them on the computer for literacy help, they're starin' at the screen doin' nothing. They're not touching the mouse, nothing." For those who had computers, she noted

that "I don't need to help them at all. They'll be on the computer going, 'Bzz, bzz, bzz.' They'll be faster than me." The reality of students' unequal access to technology impacted the way that these teachers defined digital literacy and determined the dimensions of digital literacy that were most salient for their students. Ms. C and Ms. D defined digital literacy as, "Being able to pick up any device and [u]se it properly."

In the exit interview the teachers spent considerable time discussing how they struggled to make the digital portfolio platforms work for them and their students. Ms. A described working with Little Bird Tales as "time consuming," and Ms. B found Weebly "tedious." It is likely that these comments reflected the teachers' own lack of experience with these platforms and with technology in general as well as a lack of confidence in their students' abilities to use technology. Both Ms. D and Ms. B perceived typing skills as a gateway skill to using technology, and both sought assistance for their children to address this specific challenge. Ms. D reached out to older children in the school, explaining that this approach "worked well with the third-graders, and pairing them up with the kindergarteners." Ms. B had one of the researchers type for her students because her second graders "don't type well, and that was the number-one challenge, because they don't have a command of the typing." Even though Ms. B saw students' poor typing skills as a deficit, she noted that the children themselves "still enjoy[ed] sitting there with the hunt and peck" and "loved working on the computer." Ms. A also recognized that her students needed help using the computers, but instead of focusing on typing she suggested that her five- and six-year-olds benefitted from help with the complex cognitive task of searching the web for information: "I think one of the things that worked well was …[members of the research team] coming in and helping the kids out with doing their computer research, because we really did want this to have a strong technology component. However, it was a challenge to have the kids do research independently online." Nevertheless, the Little Bird Tales created by her group were successful as vehicles for self-expression and became valued texts in the classroom. In her class "[t]he kids were very happy with the finished product, and they were, most of them, able to be pretty articulate in their self-assessment. They really enjoyed seeing each other's Little Bird Tales and kept asking to see them over and over again. We knew they were popular."

10   Conclusion

The researchers found that, through I-LEARN, even young children were able to begin to understand "how knowledge is organized [and] how to find information," which are the building blocks to becoming information literate [5]. The teachers' technological and pedagogical content knowledge also grew during the process, and all the teachers in the focus group were eager to replicate the experience in the future. They concluded that the projects overall were a success and that they and the students were able to overcome students' lack of computer experience to focus on finding and analyzing sources and reflecting on what they had learned.

Results of the study also suggest that the role of each teacher's own technological and pedagogical content knowledge was overwhelmingly significant in how the children experienced the steps in the I-LEARN model. Teachers' participation in the TPACK survey was inconsistent, so the data from that instrument could not be used

as a lens to provide a more detailed discussion of this conclusion. Future studies of I-LEARN should include a careful administration of the TPACK survey, a broader range of teachers and students in the study, and space for students' voices in the discussion of how the model works as a tool for building new information.

Overall, the study provided a mixed view of both teachers' and students' understanding and skills in information literacy, digital literacy, and technological literacy. Contextual challenges at the school— not only its status as a high poverty/low performing school but also its administrative turmoil and threat of closure at the time of the study—no doubt had an important influence on teachers, students, and the project itself. While the teachers and students provided valuable insights for the research team, the study's limitations make it useful primarily as a pilot study for future work. Students and teachers in schools like Fairmount face almost insurmountable challenges in educating students for lifelong learning in the 21st century. Further understanding of how I-LEARN and technology-based instruction can help such schools meet these challenges will continue to inform the research team's efforts.

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Information and Media Literacy in Kindergarten

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Abstract. This paper describes a methodological approach towards studying information literacy of kindergarten children (age three - six years). As information literacy gains more and more importance, its representation in young children becomes a particularly interesting aspect. Media and Information Literacy (MIL) is a subject in the educational context in early childhood. We want to define what MIL means for small children and what can be done in kindergarten to promote it. To find out what children aged from three to six years are able to do with new media and information, this paper shows a method to perform an analysis with children, their parents and their nursery nurses. This analysis is to take place across different nurseries in Düsseldorf and later in Hong Kong.

Keywords: Information literacy, media literacy, media use, children, childhood studies, kindergarten.

1   Introduction

The media consumption of children is a topic widely discussed nowadays. In Germany we find a lot of programs for children from aged older than six years. There is for example the mediapass in elementary schools, where teachers receive materials and support for media education. The aim of this program is to lead young children to the use of media. Another approach in the field of media literacy is made by public libraries. Here we find programs for children, including kindergarten children, but the focus lies on reading and books, not on digital media. Offerings include readings for almost all ages, puppet theaters and media boxes for kindergartens and schools, not much research has been conducted on the promotion of information and media literacy skills among children under six. Although media education has been added to the early childhood education and care agreement in North Rhine Westphalia, our pretest indicates that parents are cautious with regard to media education in kindergarten.

Media influence on children does not start with attending school, it starts with birth. That is why we need to start with early education in media and information literacy. We are convinced that including media education into the curriculum of German kindergartens will have a positive effect on the information behavior of small children. We plan to conduct this study to assess the level of media and information literacy among children aged three to six. Another aspect is the perception of parents

and educators. We want to know what their experiences are in this field – are they able to deal with media in general and do they know how to encourage media literacy in their children? The goal is to get a deeper understanding of what children are able to do in the field of information literacy and what media they want to and should use.

Our approach is methodological. An aspect is how to detect what media is used in early childhood and furthermore in kindergarten. We have three different approaches for learning about media and information behavior of little children. In the first step we questioned parents in an online survey. The second step is to play a game with the children. The third step is to interview their parents and their educators in kindergarten.

In this paper, first, we will explain information literacy in early childhood. For this we start with an established theory of information literacy and then adapt it to children wherever necessary. What is the difference between information literacy of adults and information literacy of young children? In chapter 3 we will communicate possible approaches to conduct research in kindergarten and talk about the state of the art in Germany, especially in North Rhine Westphalia and Düsseldorf. The composition and timeline of our study will be described in chapter 4. There we find different methods for getting information about media and information literacy of children. We chose a playful approach for working with children in this sector. At last we will summarize the main aspects of the paper and suggest what can be done in the future.

2   Information Literacy in Early Childhood

In a modern society highly influenced by media new and old, children are being confronted with media daily. As technology is advancing and existing in almost all areas of our lives, the need for information and media literacy – even at a young age – is increasingly important. Children's approach to media has to be guided and their consumption has to be moderated. To prevent risks due to excessive or otherwise improper media consumption, we have to make sure that children deal with media competently, responsibly and critically [1]. As well as there are risks when dealing with new technologies, there are also chances: Children's education can be positively impacted by media [2]. With the help of a wide variety of educational options it is possible to enhance learning processes and improve cognitive and linguistic skills [1]. New media can be a tool to support the early educational development in an interesting and interactive way. Stock and Stock [3] developed a diagram (Fig.1) dividing media and information literacy into levels, which can be altered into the levels of information literacy of early childhood. The first level includes the basic components reading, writing and arithmetic. The second level, the information and communication technology competencies, i.e. technoliteracy, and media literacy are built on those three fundamental abilities. Last but not least, the third level contains information literacy. We can see that today's information literacy is not a field that can be discussed in isolation. Necessary starting components are the ability to use ICT and media skills, e.g. the use of computers and smartphones, office software, the internet and its services – briefly, the adequate usage of media in general. With this

definition we see the difficulty in distinguishing information literacy from media literacy. The last aspect does not put emphasis on dealing with information, but on the use of media in general.

| Identification of Information needs | Searching and finding of information | Review of information | Use of information appropriately | |
| Creation of Information | | Indexing and storage of information | Acceptance of privacy | Acceptance of information law and ethics |

Information literacy

| Basic computer skills | Smartphone skills | Office Software | Internet skills | Media literacy |

ICT-Literacy – Media Literacy

| Reading | Writing | Arithmetic |

Basic literacies

Fig. 1. Levels of information literacy [3]

In the context of German schools we find that media literacy is a better known concept than information literacy. Yet often we can see that what is actually meant is information literacy, because in the school context the use of information is very important. We can thus say that media literacy is the background for information literacy.

The term "early childhood" can be defined very broadly. In our study, young children are aged from three to six years.

Small children of this age have a different starting position than adults. We know that basic skills are developed at an early age [4]. So we also need an early starting point for using media. Children between three and six years are able to deal with media, but they need to be guided while doing it.

Figure 2 shows the diagram of Stock and Stock in a modified way for small children. In particular, the basic literacies have changed: instead of reading we find observing, instead of writing small children might be able to draw and instead of calculating we choose counting. Most of the children between three and six years can fulfill these aspects. On the second and third level some aspects have been eliminated since they do not apply to young children. We no longer find office software on the second level and on the third level "review of information" and the two aspects of information privacy were removed.
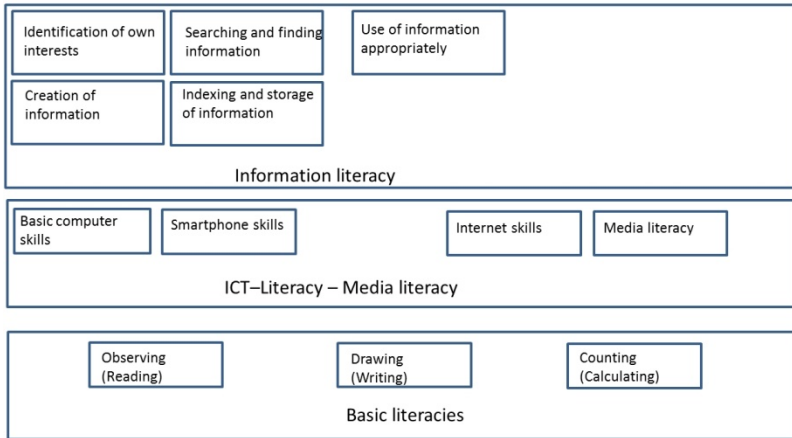
Fig. 2. Levels of information literacy in early childhood

Moreover in the childhood context it is not possible to divide media and information literacy. Information literacy itself can be found only in a very simple way. Therefore media literacy can be considered as an indicator for information literacy among young children.

Especially when it comes to digital media there are different voices that speak out either for (e.g. [5]) or strictly against dealing with it (e.g. [6]) in childhood. Because of these severely differing opinions parents and nursery nurses are often disoriented. We want to help these target groups find a way how to deal with media regarding the early education of children. We believe that a conscious use of media and information is becoming increasingly important. It is necessary that even small children are made aware of a sensible use.

3   Information Literacy in Kindergarten

Directed information literacy education in Kindergarten does not really exist at this time in Germany. There are studies in the field of media literacy, where we can find results regarding children's interaction with media. In this field the research of Marci-Boehncke et al. [7] is most important for us. Together with the German city Dortmund and IBM they investigated media literacy of children and nursery nurses for four years (2010-2014). With the help of a semi-standardized questionnaire, interviews and participant observation they received information from educators, parents and children about the use of both new (digital) and traditional media[7]. The focus in Germany still is on studies investigating the use of television (e.g. [8]). Mainly in the Anglo-Saxon, North-American countries and in the Asia-Pacific region we can find out more information on media and information literacy. In Australia, for instance, a study about the online behaviour of kindergarten children was conducted in 2010 [9]. The Australian study by Spink, Danby, Mallan and Butler [9] investigated the Internet search behaviour of young children. The scholars share the opinion that even three-year-old children already know how to use computers and the

Internet. They examine the way five- and six-year-old preschool children search using Google. The difficulty for these children is that some of them do not have any writing and reading skills yet. The online behaviour of these children was investigated at home and in their preschool class. In addition, Spink et al. are interested in the children's knowledge with regard to the Internet. Curricular models and research directions are being developed on the basis of those results. The focus is on the more general question of the search behaviour on the Web in pre-school classes [9].

Another study by Spink and Heidström [10] investigates the user behaviour of young children in libraries. Their findings indicate that young children categorize on the basis of their own life circumstances, and that they are able to create an alphabetical classification as well as arrange books on the basis of book covers [10].

For us MIL (media and information literacy) in early childhood is an important aspect. In this age children learn playfully and adults have the opportunity to introduce them to useful and careful media consumption. In general children learn with the help of trial and error. They are not afraid of making mistakes [4].

Neuss [1] emphasizes the importance of media education in early childhood and places the responsibility not only in the hands of parents. In Germany, more than 93 percent of all children ages three to five are attending kindergarten [11]. Here, an educational environment for media and information literacy can be created.

Education in kindergarten also offers the possibility to combine MIL with other aspects like health promotion, physical education and familial activity [12]. A lot of scientists argue that an adequate use of media is very important. It is a challenge for their families and also for the education in general [4]. When involved in media education, educators in kindergarten are able to support families. Theunert and Demmler [13] endorse a responsible use of media in Kindergarten. They argue that a media-hostile attitude today can only be described as pedagogically irresponsible, simply because children from low-educational backgrounds make inconsistent experiences. The kindergarten has the possibility to support socially deprived families by demonstrating an adequate use of different media [4].

The use of and education on new media is fixed in some curricula of kindergarten education in Germany – e.g. in North Rhine Westphalia [1]. But the education and care agreement of North Rhine Westphalia does not hold any clear information or instructions on how to execute it. We find the aspect of media education in the section "playing, creating and media". For this section there are no concrete proposals, because there are too few statements about the use of media by children of preschool age. Media should be included contextually according to the everyday experiences of children [14]. The work with (new) media takes place on a very different level and depends on the individual kindergarten. In the north of Düsseldorf for example, kindergartens were supported by politicians. They provided a Laptop for each Kindergarten in that area to promote media education. Now pre-schoolers are able to use those devices for educational games. In general there are some ideas for how to deal with media in nursery nurses [15], but they are not included in the curriculum. We see that scientific research for evaluating a uniform instruction suitable for the curriculum is strongly needed.

For this we plan to conduct a study on kindergarten children starting in Düsseldorf, Germany.

4   Applications of This Methodological Approach

4.1   The Study in General

Our study is focused on two research questions. The first is small children's use of media, and the second is the use of information within different media. There are three research methods for obtaining data, distributed on three different levels. The three levels are:

1. Children (aged three to six)
2. Their parents
3. Nursery nurses

On the first level, we want to know the significance of media for children, which media they use and what they do with them. To get more information, we use our own story- and game-based interview technique based on puppet interviews and participant observation. On the second and third level, we plan to execute some personal interviews with the children's parents and their nursery nurses. These two parts – adults and children – are important, because it is likely that children will say something different than their parents or their nursery nurse [16]. Even very young children already have their own life, to which their parents have no access [17]. Interviews with nursery nurses are also significant. It is important whether they are interested in working with media, or whether they have the possibility and the knowledge to execute education on media and information literacy education. Another interesting point is which role media plays in the education of nursery nurses in Germany.

Thus the first step for our project must be to contact kindergartens in Germany (Düsseldorf).

4.2   Study with Children

The main problem is how to obtain valid data from children. This is very difficult [18-20]. Children cannot express themselves very well linguistically, their gestures and motor skills are well below the levels of an adult, they have difficulties with temporal and quantitative information, they may suffer anxiety and self-consciousness problems around strangers, i.e. towards the interviewer [19], they have insufficient knowledge for judging and commenting on their own experiences, and finally, infant logic follows its own tangents, which are sometimes hard to understand [18]. These are only some reasons why childhood research is so complicated and must be conducted in a different way than research with adults. One way to get access to the child's perspective is through a special form of interview, the so-called puppet interview. Using a hand puppet, one playfully approaches the children, approximating the child's own level and thus becoming able to lead meaningful conversations. The level which we conduct the interview on is less asymmetrical [21]. The advantage of a hand puppet is that since it is a well-known toy, children can experience the interview as a kind of role-playing game [19].

For a better understanding of what the children say and do, a participant observation of the children in kindergarten could be helpful. There is no laboratory

situation, but an almost entirely natural one where the researcher takes part in the children's everyday environment [22]. There are different approaches in the context of observation: the close and the open observation [22-23]. In the open observation the interviewee knows the research interest of the researcher and is thus fully aware of their role as interviewee. We thus should follow Mey's [23] recommendations:

1. The researcher as a participant observer himself is present, he is part of the situation
2. Children know about the situation and also about the purpose of the research
3. Children are seen as partners and trust must be built up

The third point in particular is a more recent aspect in childhood research. Especially when working with very young children, it is necessary to choose a child-friendly method [24]. It can be helpful to work with children of the same age beforehand to develop guidelines for the interview. This way we make sure that the questions are not too complex [25].

   In our context of, -"information literacy in early childhood"-, we must observe which media are used by children and how children deal with different kinds of media. A big problem we might face is that in most kindergartens there is no significant media infrastructure. Thus it is likely that we cannot make observations in all of our chosen nurseries. Since we plan not only to obtain information on their media use but also on their information literacy we need more indicators than just observation. We developed a play for children, where we use a hand puppet as assistance. This "play" consists of several stations the child can reach by fulfilling tasks or just making decisions. The stations of the interview are connected by a storyline – a "problem" that needs to be solved by the interviewee in cooperation with the interviewer. This way the interview will seem like an adventure made up of little games to the child. Since we want the interview to stay as flexible as possible, there is the option to jump back and forth between stations. There are parallel routes that will eventually lead to the same ending: the solution of the problem and the completion of the interview. This is necessary to adjust to the different needs and variable capacity of each child while testing the upper limit of their ability. While some children are experienced in dealing with media devices and will solve the varied tasks effortlessly, others might be overwhelmed by some of them. With this adaptable approach we want to prevent the premature discontinuance of an interview as well as enable the use of different methods (observation, interrogation, interaction) and the distinction between several information literacy indicators (media literacy, categorization, rehearsal, etc.). To get an overall impression, we still need two more perspectives, the view of the parents and the view of the educators. To obtain information from the adults, we need a third research method.

4.3   Study with Parents and Nursery Nurses

In the context of adults, we wish to continue a qualitative approach. Here we want to conduct interviews in order to compare the statements of children to those of their parents. Since we hope to confirm the previously collected information, the interview will be structured similar to the child-level interviews. The nursery nurses are asked questions on their own relevant public establishment, e.g.: Does your kindergarten use

new media? Which are they? Do parent-teacher conferences deal with the topic of media education? And so on. This time we would like to conduct a semi-structured interview in which there is a guideline, but the interviewer does not have a strict plan for the interview. The sequence and wording of the questions are not fixed [26]. In general, the use of interviews is very popular. There are several advantages: they are authentic, comprehensible, and can be reproduced at will [22]. For our study we need a weak or neutral investigative interview. In this interview, it is important to show empathy with the interviewees. Here we have, on the one hand, open questions, and on the other hand, closed questions in which the interviewee may not give their own answers [22]. Generally, there are three different sorts of questions. At the beginning of the interview we need an introductory question for establishing contact. The second kind of question is the so-called central question. These questions ask about the main content of the interview and are the core of the whole question-and-answer session. To finish the interview, we have ad-hoc questions. Here, too, the interviewee has the option of asking questions about the topic. At that point, we normally see questions that were generated during the interview [26].

The first step has already been executed. We made a first online survey for getting information about the use of media of parents and children. We hope to see parallels in their daily routine with media. Moreover we want to gain information on media usage of small children in general. For example what media are used by little children, are children able to deal with media in an autonomous way and so on. We opened this anonymous online survey for two months (June to August 2014), and shared it through social networks. The survey included 28 questions and was completed by 231 people.

5   Conclusion

We see that research in the field of MIL in early childhood is underrepresented. We do not have many research results to rely on and are planning to conduct a first attempt in Düsseldorf, Germany. It is obvious that we need research on this topic, because media and therefore also media- and information literacy are important aspects in early education of children. A first online survey was the start of our project. We notice that little children use more and more tablet PCs for playing games. To get a deeper understanding of what children are able to do with new media we plan to conduct interviews in kindergartens. With the help of a story- and game-based interview designed to assess the level of media and information literacy we want to gather data on media and information literacy in kindergarten. For the creation of this playful interview we used some known levels of information literacy, like information need, use of information, organization of information and so on. Naturally, not all aspects of information literacy apply for children aged three to six. For a holistic view we would like to interview parents and nursery nurses of the children as well.

Future research is possible regarding the digital divide and information literacy in early childhood. The divide between families who use media in a reasonable way and

families who are not is visible [4]. A constructive use of media and information instead of passive consumption by children is desired for the future [4]. New media require an optimal use, more media skills and more knowledge-oriented conditions than traditional media [4] as for example TV. Another goal will be to conduct the study on the one hand in other German regions to make a comparison possible (e.g. rural and urban) and on the other hand in Hong Kong.

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Information and Media Literacy of Polish Children According to the Results of "Children of the Net" and "Children of the Net 2.0" Studies

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Abstract. No empirical multidimensional research investigated media and information literacy (MIL) of Polish children and youth until 2012. To fill that gap, we executed two projects: "Children of the Net: Communication Competencies of Children" (2012) and "Children of the Net 2.0: Communication Competencies of Youth" (2013). This paper presents our research findings. The studies aimed to identify the MIL level in students aged 9-13 and 13-16, respectively, and to explore competencies development contexts. We adopted a qualitative approach called a methodological bricolage

which was described by Denzin and Lincoln. Central to the studies was competence assessment based on a structured qualitative interview (group 9-13) and a survey (group 13-16). Other research tasks based on different methods referred to the common framework, i.e. our MIL model. The findings provided knowledge about actual MIL competencies in the studied groups and helped establish where particular MIL competencies develop and children's attitudes to new technology-mediated communication are shaped.

Keywords: MIL competencies, school, digital literacy, digital natives, Poland.

1   Introduction

In Poland, the notion "digital natives"[1] commonly connotes a substantial competence in using information and communication technologies. The association is rooted in the conviction that growing up in an environment suffused with digital media, in which the young communicate with others, peers in particular, chiefly via the Internet, must have fostered development of their media and information competencies.

Although the literature on Polish youngsters' skill and efficiency in using the Internet is ample, until 2012 only few sources were based on empirical research [1-3]. Consequently, we did not have any data or findings which could verify the common ideas about media and information literacy (MIL) of Polish children and youth. The studies that were carried out probed selected activities in which the young engaged on the Internet (e.g. using social-networking websites) and risks (e.g. cyberbullying) or advantages (e.g. social learning on the Internet, application of digital content). Alternately, the studies focused on selected competencies, such as information retrieval skills. Having spotted that a comprehensive approach[2] was still missing in research on MIL of youngsters, we decided to fill the gap with our two projects: „Children of the Net: communication competencies of children" (2012) [4] and „Children of the Net 2.0: communication competencies of youth" (2013) [5].

Our objective was to identify the level of MIL in Polish children from two age groups (aged 9-13 and 13-16, respectively) and to understand the contexts in which media- and information-related knowledge, competencies and attitudes are being or should be developed.

Our research was triggered by a pamphlet titled "We, the Children of the Net"[3] authored by Piotr Czerski, a poet and IT specialist [6], and first published in 2012 in *Dziennik Bałtycki*, a supplement to the nationwide daily *Polska. The Times*. Many Polish and foreign journalists celebrated the text (which was translated into thirteen languages, among others into English [7], German [8] and French [9]) as a "Generation Web Manifesto." Czerski acts as an advocate of the "Internet generation," recognizing the Internet as a legitimate communication space: "We grew up with the Internet and on the Internet. This is what makes us different; this is what

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[1] A person born in the late 1990s and having access to computer and the Internet from a very early age on.

[2] Analyses of various MIL competencies levels.

[3] Our translation of the original title "My, dzieci sieci" is "We, the Children of Net". In *The Atlantic* it was translated as "We, the Kids of Net."

makes the crucial, although surprising from your point of view, difference: we do not ' 'surf' and the Internet to us is not a 'place' or 'virtual space.' The Internet to us is not something external to reality but a part of it: an invisible yet constantly present layer intertwined with the physical environment" [7]. The communication competencies addressed in our project titles refer to his idea of the mediated communication as a relevant and genuine communication form having very real effects. We use this concept interchangeably with MIL.

2   Methodological Bricolage

Our research framework draws on an article by Livingstone [11] which reviews approaches in research on children's use of the Internet. The sheer volume of diverse perspectives outlined in the article encouraged us to try to devise a method which would facilitate competence assessment and, at the same time, facilitate an in-depth reflection on the collected data. We realized that to make sense of our findings we had to explore the complex contexts in which MIL competencies develop. Therefore, we opted for a multidimensional approach that is a methodological bricolage.

The concept of bricolage was described by Denzin and Lincoln as a methodological orientation within the interpretive framework which allows the researcher to flexibly combine available perspectives, methods and materials [19]. Such amalgamation of the research process components has practical implications. It makes it possible to construct an image of reality out of its fragments. To explain this methodological approach, Denzin and Lincoln resort to a patchwork metaphor. The bricolage method enabled us to be flexible in constructing our research framework. However, we are fully aware that the knowledge we obtained unavoidably has a different status and "is always in process, developing, culturally specific, and power-inscribed" as Kincheloe stresses, [20]. Still, we did not find its dynamic nature to be an obstacle since we apprehend the rapidity of changes in the digital environment as well as the pace at which knowledge about human activity on the Internet is becoming obsolete.

At the centre of our "patchwork" lies the query about the level of communication competencies of Polish students in education stage 2 (9-13 years of age, "Children of Net") and stage 3 (13-16 years of age, "Children of Net 2.0"). In the Polish schooling system, stage 2 corresponds to grades 4-6 of elementary school, and stage 3 to gymnasium (i.e. lower-secondary school).

We took various paths to assess "the competencies level". In "Children of the Net" study we used the structured qualitative interview, while in "Children of the Net 2.0" we opted for a survey in a large quantitative sample. Since we did not intend to compare the two kinds of findings, we were under no obligation to apply the same method (or rather methods) in the two projects. We designed also supplementary research tasks (further elements of our patchwork). In the former study, they included a structured interview with the guardians of our young respondents, participatory observation, an analysis of the Web portals most popular with the users in this particular age-group and a qualitative and quantitative analysis of school curricula. In the latter study, we undertook an analysis of Polish youth's social network profiles and a qualitative and quantitative analysis of school curricula. We worked upon the assumption that the data collected in those ways would help us understand the context better and identify the scope and extent of formal an informal MIL education.

2.1   Competence Model

We constructed[4] an expert competence model of MIL (Table 1) to serve us as a framework and point of reference for particular research tasks. The construction of the model proceeded in the following stages: first, we identified the MIL standards which are most frequently discussed in journals pertaining to Library and Information Science (LIS) (e.g. [10], [16]) and the Polish recommendations for MIL education [17]; second, we discussed the compatibility of the foreign standards with the Polish cultural context and utility of these documents as tools for investigating competencies; third, we designed a model for "Children of the Net" studies; and, fourth, we had the model assessed by external reviewers and modified it accordingly.

The model's structure is comprised of three items: area, standard and competence. It contains also examples (omitted in Table 1) which vary between the projects because of the respondents' different ages. The examples helped us understand what MIL actually was and develop particular tools (e.g. the interview questionnaire, gauges in the curriculum analysis, etc.).

In accordance with the IFLA MIL Recommendations, we treated "media literacy" and "information literacy" as a single construct which entails empowerment of individuals in navigating in the media and information systems (environments) and their capacity to effectively and efficiently use information conveyed by objects, institutions and people [18]. However, our model contains areas to which either information competencies (information behaviors, production behaviors; therein ability to use information and/or create content) or media competencies (life on the Internet; therein ability to build one's self-image and Web identity) are more pertinent.

3   Findings

As our research was multidimensional, the presentation of our findings is preceded by a short methodological introduction.

3.1   Children of the Net

Method. In the "Children of the Net" project, we applied a qualitative competence analysis. We conducted structured interviews with individuals aged 9-13 (N=30), residents of five cities: Gdańsk, Poznań, Toruń, Warszawa and Zielona Góra. The respondent groups from all cities were equipotent and non-randomly sampled. The study was overt, that is the respondents were informed about the aims of the research beforehand.

Competence Assessment: Findings. Items included in the interview were related to the standard-dimension of our model. Most of the children answered the questions pertaining to Standard 1 correctly (19 and 25, respectively). More problems surfaced in

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[4] Our interdisciplinary team included specialists in library and information studies, education, philosophy and sociology.

items designed to test the children's understanding of the Internet culture components. The item which involved finding information necessary for problem-solving revealed the children's superficial approach. In most cases (28), they relied on the data retrieved from the website on top of the browser's list and uncritically accepted the opinions they chanced upon (their decisions were not based on reliable information). The item checking their ability to distinguish fact from opinion in a provided text showed a considerable difference between younger and older respondents within the group (no nine-year-old was able to answer correctly). We attitudes to cyberbullying, very few children (4) declared taking action. However, when asked what a victim could do in such circumstances, the respondents suggested reporting to an adult (28), a parent or a teacher. When cyberbullying concerned a disliked person, theyopted to take the wrong conduct (ridiculing the person on the Internet).

Table 1. Internet competencies model for children aged 9-13 ("Children of the Net") and 13-16 ("Children of the Net 2.0") [4-5]

Area	Standard	Competence
Information behaviors	1. Skillful and effective retrieval of information	Recognizes information needs; Formulates questions based on information needs; Knows that there are multiple information sources; Finds, selects and evaluates sources of information; Archives information.
	2. Critical assessment of information	Understands the content of communication; Finds, selects and evaluates information; Distinguishes opinion from fact; Distinguishes commercial from non-commercial content.
Production behaviors	3. Creation, processing and presentation of content	Creates new content; Processes the content found on the Internet and the self-created content; Presents the new and/or processed content.
	4. Legal awareness of content production and distribution	Is aware of legal and ethical dimensions of content production; Knows what content can be legally processed; Knows his/her rights as an author of the content posted on the Internet; Recognizes ownership problems as related to the Internet activities.
Life on the Internet	5. Empathy and self-image	Knows that the Internet is a common space shared by many people; Attends to empathy in the Internet communication; Builds self-image thoughtfully and site-consciously.
	6. Security and privacy	Knows risks inherent in the Internet navigation; Is able to cope with the Internet-related threats; Controls information shared with others; Is aware of links and differences between the Internet-mediated and non-mediated communication; Observes the computer hygiene rules.
	7. Participation in the Internet communities	Recognizes elements of the Internet culture; Actively participates in the Internet communities; Initiates and develops the Internet communities based on shared tasks.

Although the findings cannot be extrapolated onto the whole population of Polish children, we obtained qualitative knowledge about differences between the declared and the actual competencies of the respondents (in a preliminary conversation the children uniformly assessed their MIL rather highly). The differences in question surfaced in all interviews.

Findings from Supplementary Research Tasks. The interviews with the guardians of children aged 9-13 (N=30) reveal that they perceive the Internet as a time-consuming medium. As regards their monitoring of the Internet use, they declare proactive parenting characterized by granting a child considerable freedom and stepping in only when something was going wrong. More than half of the guardians (n=19) stated that they talked with the children about the Internet. At the same time, it is alarming that a large group of our respondents (n=11) did not find it necessary. The guardians would be worried if they knew that the children communicated with strangers, but at the same time one in three stated they did not know with whom the child talked on the Internet. The home, a potential site of comprehensive family MIL education, apparently fails to fulfill that role.

Analysis of a sample of the students' profiles on social networks shows that they are oriented towards social interaction. Posts and commentaries serve the phatic function rather than discussion or exchange of views. The children rarely author the content posted in their profiles, tending rather to distribute the already existing content, which increases the incidence of "chain" e-mails and communications. Summing up, Facebook and other social networks are used first and foremost to find entertainment and sustain contacts.

Participatory observation in one of the Polish elementary schools (in Gdańsk) revealed a certain recurrent phenomenon. Students' school identities tend to diverge considerably from their social network profiles. The on-line identity seemed overdrawn and larger than life. Our respondents' profiles featured false claims, and their owners frequently engaged in high-risk behaviors (e.g. invited unknown people) and started multiple accounts, creating thereby alternative personalities.

The quantitative analysis of school curricula aimed to establish how far the curriculumfor education stage 2 students provides for developing the competencies included in the model by collecting data from 48 students. The analysis was based on the summary statistics technique.

The qualitative analysis of school curricula was non-structured and critically informed. It aimed to identify hidden agendas, proposed (student-teacher, student-student) communication patterns, ways of engaging students in self-guided competence development, proposed aids (ICT), and reliance on students' own experience in using information/the media. The analysis included selected curricula (which have already been quantitatively investigated) both those saturated and those not saturated with MIL education content.

The qualitative and quantitative analyses of school curricula showed that they provide for MIL formation mostly outside of the Internet environment. They prioritize information competencies, ignoring preparation for handling the Internet-mediated factors in constructing relationships with others.

3.2   Children of the Net 2.0

Method. In the "Children of the Net 2.0" project, we assessed the competencies level by means of a quantitative method. We surveyed a large sample of respondents (N=742) including lower-secondary school students in Pomerania Voivodship. We chose the schools based on random quota sampling (whereby the proportion rendered by the place-of-residence variable was taken into account), using the database of all such schools in the voivodship (N=438, as of September 30, 2012). Samples of particular classes were approximately equal.

Dependent variables correspond to the standard-dimension in the competence model. To establish the correlation between these variables and socio-demographic factors, we defined the following independent variables: (1) school grade, (2) sex, (3) type and size of the place of residence, (4) parental education, (5) assessment of the Internet skills, (6) years of Internet use, (7) frequency of Internet use, (8) the average time spent on using the Internet, (9) the number of devices and tools used (e.g. computer, smart-phone, console), and (10) the number of devices and tools used (e.g. computer, smart-phone, console) that a person owns or has exclusive use.

Competence Assessment: Findings. Below, we present selected findings which render the fullest picture of the Polish youth's MIL competencies and the context in which they appear. Most of the respondents (80.1%) use the Internet every day, but not longer than three hours a day (67.5%). This finding belies the widespread idea of teenagers constantly submerged in the net.

The Internet connection is more frequently established by a cell phone (62.7%) than by a stationary computer (56.1%) or a portable one (51.5%). Most of the respondents use more than one device.

The websites frequented by the respondents the most include social networks, chatrooms and blogs (87.5%), especially Facebook, ask.fm, youtube, and Polish kwejk.pl.

Most Polish youngsters assess their MIL competencies as good or very good (Table 2).

Because the declared self-assessment is an imperfect indicator, the questionnaire items were formulated as tasks – ones adjusted to the respondents' age – which tested the actual knowledge and skills included in the competencies model.

For the information retrieval item, only 67 respondents (9.2%) were able to understand search queries which contained logical operators. Correct answers were more frequently given by boys. The scores were also related to parental education (the higher the education level, the more likely the correct answer was).

Only (41.3%), of the respondents correctly identified the purposes of popular Internet portals with girls scoring better in such items. As regards the assessment of specialist sources' utility for scientific problem-solving ("How many Polish households have no TV set?"), the respondents most frequently selected inadequate sources, placing the recommended scientific journal at the end of their pick-list. At the same time, however, they regarded references to scientific research as a criterion of a text's reliability (57.8%).

The students were also rather seriously challenged by items which tested critical information reception. Only a small group correctly distinguished between the provided examples of facts and opinions (14.7%). The eldest respondents, big city residents and multi-device users scored better in such items.

Table 1. Self-assessed MIL competencies

	How do you assess your Internet skills	Frequency	% of valid answers
Valid	Average at best	197	28.8
	Rather good	279	40.8
	Very good	208	30.4
	Total	684	100.00
No data	Difficult to say	33	
	No data	25	
	Total	58	
	Total (valid and no data)	742	

To understand the context of productive skills development, we asked the students about their active involvement in creation of new content. Such activities were far more frequently reported by girls (65.4%) than by boys (34.3%). Also, engagement in creative practices turned out to be correlated with the Internet use frequency (the more often one uses the Internet, the more frequently one engages in production behaviors). Practical knowledge of copyright regulations is an important component of productive competencies. Merely 4.3% of the sample correctly answered the question about what is and what is not legally admissible (e.g. sharing films). Interestingly, the students who self-assessed their MIL competencies lower were more likely to give a correct answer in that item.

The students displayed ignorance of netiquette rules. As many as 64% of them identified capital letters in an Internet post as a way of underscoring its importance. Girls' knowledge of netiquette was better than boys'.

The tasks related to security on the Web showed that the students were able to handle technological risks, but were not adequately prepared for dealing with psycho-social threats. When queried about logins and passwords, they chose stronger options, yet at the same time one in four respondents declared readiness to undertake high-risk behavior to check the identity of a stranger met on the Internet.

The analysis of correlations between independent variables and the variables corresponding to the standards in the competencies model showed a strong interdependence between parental education, respondents' age, place of residence, frequency of the Internet use and the number of devices used therein on the one hand and the self-assessed and actual MIL competencies on the other. This reveals an image of social stratification with children from wealthier families (access to many devices) – equipped with better cultural capital, and students of better schools in big cities having far better opportunities to develop their MIL.

Findings from Supplementary Research Tasks. We analyzed the most frequented websites, including Facebook and themed portals, such as Demotywatory.pl and Kwejk.pl (with fun graphics).[5] The findings of the Facebook profiles analysis proved particularly useful in understanding the context of information competencies. Many profiles aim at "self-display" and use textual and pictorial elements to establish one's individuality. We were surprised to come across students' profiles which exposed and commented on sexually charged characteristics: "Is Ania [Annie] a hot chick?" or "Is Krzysiek [Chris] good at kissing?" Related group profiles of students were reputed as pretty and sexually attractive ("sweet pussies"), with their owners' approval.

The analyzed curricula for lower-secondary schools (quantitative analysis: N=73) made more room for students' involvement with the Internet, but still did not provide any learning content related to the Internet's social functions.

4   Conclusion

The methodology allowed us to view competencies as an outcome of interactions (as conceived in interactionist and not behavioral terms) among various environments: home, school, peer group, and selected Internet communities. We believe that each of these "sites" promotes the formation of different kinds of competencies. School (and school-related duties) shape content retrieval and production skills while the home and peer contacts shape children's and youth's attitudes to various activities engaged in on the Internet. The Internet communities, in turn, serve as spaces of adaptation to the Internet culture.

The fragments of reality that we obtained – [19] parts of our bricolage "patchwork" – enable us to critique the image disseminated by the Polish media of a child and a teenager as an information literate. The technical command, indeed more rapidly acquired and observable in the young, does not go hand in hand with a concomitant faster development of critical competencies. Reproduction, which our research shows to be the basis of functioning in digital culture, does not herald productive skills (the content shared with others is, for the most part, retrieved and not self-created). The superficiality of MIL competencies in Polish "digital natives" suggests two options. Either we reductively re-define MIL as simply "being at home with technology" to comply with the publically propagated opinions, or rather we negate the validity of these opinions.

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[5] Based on the ranking of Megapanel PBI/Gemius.

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Integrating Information Literacy Instruction into Iranian Primary Science Curriculum

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Abstract. This doctoral forum paper presents the methodology of the researcher's dissertation which aims to integrate IL skills instruction into the Iranian primary science curriculum. Through linking the classroom and the school library it is hoped to identify the extent that integrating IL skills instruction into primary science curriculum will improve the IL skills of students. In recent years, Iran's Ministry of Education has embarked on reforms in the education system by adopting various documents and acts, but researches show that IL skills instruction, school libraries and librarians do not yet an important role in the school's curriculum, documents and text-books. Thus, the current dissertation in broader term aims to make state education officials more aware of the importance of IL education in schools. The Big6 model of Eisenberg and Berkowitz [1] is used for integrating IL skills into the Iranian 6th grade science curriculum in this dissertation, which is being completed in 3 stages.

Keywords: Information literacy, Big6 information skills model, Iranian, primary science, Iran.

1 Introduction

Rapid developments in information technologies brought diversity in information resources and made the information systems more complex. Due to these rapid changes since the 1970s, library-based bibliographic instruction is no longer sufficient. A new concept called "*information literacy*" (IL) was formed. This term was first introduced by Zurkowski in 1974. According to him, people who can efficiently access and apply information resources in their field of work are information literate. These people are familiar with techniques of using information tools in terms of informational ways for solving the problems [2]. Bruce [3] believes that IL is critical and the most essential literacy of the twenty-first century.

According to American Library Association [4] to become information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use information effectively. Information literate people are those who "have learned how to learn". This association also focused on the gap between the need for an information literate society and the integration of IL into education.

Unlike the bibliographic instruction, which was conducted only under the supervision of the librarian, IL instruction needs the cooperation of a training team that is composed of librarians and instructors in various contexts such as universities, schools, and institutions. In other words, the nature of IL instruction requires it to be integrated into the curriculum and classroom and this gives the IL an educational aspect. In this regard Eisenberg [5] believes that education is fundamentally information–based, and every aspect of teaching and learning requires collecting, processing and exchange of information. Some researchers see the importance of IL in its potential to encourage deep learning and consider IL as one of the main aspects of lifelong learning [3], [5-8]. The importance of IL skills instruction in elementary and secondary schools and its relation to lifelong learning has led to dramatic shifts in the education systems of many countries. IL skills instruction has since been integrated into many curriculums. In recent years in Iran the development of new technologies can now be seen reflected throughout social and cultural strata, and this has led the Ministry of Education to reform the education system. This ministry started developing national programs and documents in order to place fundamental changes in the educational system on its agenda. *National Document of Educational Development in the Twenty Years Perspective, the Document of Fundamental Revolution in Education* and *the Document of National Curriculum* are some of these documents.[1]

However, despite the adoption of various recommendations for transformation of the education system, some researches show that IL skills, school libraries and librarians do not yet have an important place in the curriculums, documents, and textbooks. Nevertheless in the information age, more than ever, students need to be information literate. In order to keep pace with information and communication technologies, the education system, which starts teaching critical thinking skills, information literacy and lifelong learning skills from elementary level, can be more successful in reaching its goals. Given the above, the lack of IL skills instructions in the education system of Iran, and the importance and necessity of IL education in schools, this doctoral research seeks to integrate IL skills instruction in Primary school curriculum using the Big 6 Information Problem Solving Model to increase state education oficials awareness of the importance of IL education in schools.

1.1   Research Purpose

The main objective of this study is integrating IL instruction into Iranian primary science curriculum through linking the classroom and the school library in order to identify to what extent integrating IL skills instruction into primary science curriculum will improves the IL skills of the 6th grade students. In addition, this research evaluates the quality of the instruction by identifying actual experiences and perceptions of the students who participate in the intervention.

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[1] These documents are available from `www.medu.ir`

1.2   Hypothesis

First Hypothesis. IL skills of the 6th grade students who are instructed in science based on the Big6 model improve more than the students who have been trained with traditional methods.

Second Hypothesis. The 6th grade students who are instructed in science based on the Big6 model perform better in science than the students been trained with traditional method.

2   Theoretical Framework

In this research The Big6 information problem solving model is used as a framework to examine the effectiveness of an inquiry-based approach in teaching science to the 6th grade students through a problem solving process. We expect this will improve their IL skills. There are several information process models for teaching and reinforcing the research and problem-solving processes. Chang et al. [9] report five major models which have been developed for IL processes: Kuhlthau's information-seeking behavior model, Eisenberg/Berkowitz's The Big6 information problem-solving model; Irving's information skills model; Pitts/Stripling's research process; and New South Wales' information process.

According to Wolf [11], the Big6, which was developed by Eisenberg and Berkowitz [1] is one that is primarily aimed at K-12 students. This model is used for integrating IL skills into a curriculum in order to foster the acquisition of research, problem-solving, and metacognitive skills through the cooperation of both school library media specialists and classroom teachers. In comparison with all other models, The Big6 includes and refines the process of research into six basic steps, this way it's easier for children to understand the research process. The Big6 stages are: *Task Definition, Information Seeking Strategies, Location & Access, Use of Information, Synthesis and Evaluation*. Each main component is then subdivided into two sub-skills, the "Little12", which are questions the learner needs to answer to better engage in the process while gathering the appropriate and relevant information necessary [10].

Although Big6 is a systematic process, it does not have to be used in a linear manner so it does not require students to use a set procedure. This appeals to students' differing learning styles, and offers choices of activities. According to [10], the Big6Skills are best learned when integrated with classroom curriculum and library skills instruction because teachers can apply these skills to real-world problems along every step. Additionally, the process includes an evaluation step, which some other models omit.

3   Literature Review

The current body of literature reveals a strong use of The Big6 model in K-12 level. A short review of experimental studies related to IL [11-14], show positive results of

training in library and problem-solving skills. Students are learning IL skills with process models, such as Kuhlthau's ISPA model and Eisenberg's and Berkowitz's The Big6 model, which connect students to real-world use of information. The entire framework of IL using such process models is embedded in constructivist learning theory. Furthermore, there is a large body of studies on IL finding that IL instruction should be integrated across all content areas through inquiry-based or problem-solving learning [15-17].

In Iran, studies in the IL field began in late 1990s. However, there is large amount of research about integrating IL skills instruction into curriculum in the world but in Iran, after nearly two decades work on information literacy skills, this concept is still not found in the national documents of education and the school curriculum. Additionally there is a little research examining integration and application of IL skills in school curriculum [18-21].

4   Research Methodology

This research seeks to integrate IL skills in the Iranian primary science curriculum. For this, the Big6 skills model will integrate into selected lessons of the 6th grade science curriculum. Because IL includes inquiry, research and problem solving skills [12] and the Big6 model is the world's most widely used model of IL education at the school level [5], it was selected for teaching IL skills to students in this research.

This doctoral research consists of three parts and will be done in three stages using a multi-method approach comprised of a qualitative method for the first stage, quantitative method for the second stage, and qualitative and quantitative methods for the third stage. These stages are as follow:

- First Stage: Integrating the Big6 skills model into 6th grade primary science curriculum and preparing the instructional package.
- Second Stage: Development of IL assessment tool.
- Third Stage: Instructing the Big 6 skills model to 6th grade students and evaluating the impact of this instruction on improving their IL skills.

Table 1 shows a summary of the research process.

4.1   First Stage

In this phase, curriculum objectives, lesson plans, and the training package will be prepared. To do this, the objectives will be extracted from the national documents of education and the 6th grade science curriculum. After extraction of curriculum objectives, instructional content that used for training will be created. This content includes the lesson plans of selected lessons of the 6th grade science text-book which will be based on the Big 6 skills model.

The Big 6 skills model training package is based on *Teaching Information & Technology Skills: The Big6 in elementary schools* book [10] and the Big 6 skills model website:*www.big6.com*. This training pack includes leaflets, posters and

training assignments. Then the prepared educational content will be evaluated and confirmed by selected 6th grade science teachers in Ahwaz city by conducting short structured interviews with around 20 to 30 teachers.

Table 1. The research process

Research stages	Elements of the curriculum	Resource	Study population
Design	Purpose	National documents of education	4 National documents
		The 6th grade science curriculum	Teacher's guide for 6th grade science curriculum
	Educational content	Textbook	The 6th grade science textbook
		Training package	Big6 skills model
	Teaching strategy	A teaching method	Inquiry based method
Implementation	Learners	The 6th grade students	
	Teacher	The 6th grade teacher- School librarian	
Evaluation	Evaluation	6th grade science curriculum	

4.2   Second Stage

In this phase, a tool for evaluation and measuring IL skills of the 6th grade students will be created. This tool is a questionnaire based on the TRAILS tool. TRAILS is a tool widely used to assess IL skills of students in different grades in USA [5]. This tool can be accessed through the website:*www.trails-9.org* and includes multiple-choice questions to assess the IL of students in third, sixth, ninth and twelfth grade.

Preparation of this tool will be done by factor analysis method. The questionnaire will be based on TRAILS and the Iranian 6th grade science text-book. A sample of 6th grade students from Ahwaz city will be selected randomly for assessment and validation of the tool. The initial draft of the questionnaire will be distributed among the sample and then for finalizing the questionnaire a factor analysis will be performed. The final questionnaire will be used in the third stage as a pre and post-test. Also, to prevent errors in the intervention stage while running the pre-test and post-test, two equivalent versions of the questionnaire will be developed: A and B.

4.3   Third Stage

This stage involves implementation and evaluation and will be done using the experimental approach by pre-test and post-test design with a control group. Experimental researches are those in which the subject cannot be studied apart from its context. After preparation of educational content and tools to assess IL skills, the content will be conducted on a sample. The following steps are expected:

- Selection of the experiment and control groups: A sample of 6th grade students in Ahwaz city will selected randomly. First, one of the four areas of education in Ahwaz will be selected randomly. Then from the schools of the selected area which is equipped with a school library, two schools will be randomly selected and from each school 30 students will be selected. In each school, one group of selected 30 students will be randomly assigned to the experiment group and the second 30 students will be set in the control group. This way we will have 30 students in the test group and 30 students in the control group.
- Training of teachers and librarians: 4 sessions will be held for training the participating teachers and librarians. In these sessions teachers and librarians who participate in the experiment will be instructed according to the Big 6 skills training package and lesson plans.
- Run the pre-test: At this stage, the experiment and control group students will answer the pre-test.
- The intervention: teachers and librarians will perform the intervention according to the school schedule during the 12 weeks in the 6th grade science course. It should be noted that the control group will not receive any intervention.
- Running the post-test: finishing the intervention, the post-test will administered to the experiment and control groups. Then grading and comparing the results of the tests based on a set criteria, will done and the scores of the two groups will be compared. For data analysis, descriptive statistics (mean and standard deviation) and inferential statistical tests such Markova will be done.
- Final step: In order to have a better analysis and explanations of the results, a number of students in the experiment group will be selected for identifying actual experiences and perceptions of the instruction during the intervention through semi-structured interviews.

Data analysis use descriptive statistics like mean and standard deviation, and statistical tests such Mancova and Factor Analysis.

5 Conclusions

Given the above it can be said that in Iran integrating IL skills into K-12 curriculum looks essential. The inclusion of IL instruction in the elementary school curriculum can be a good start in this regard. The results of this research can draw officials' attention to the necessity of IL instruction in schools and this will help in the inclusion of IL skills in the next edition of the national documents of education. In addition, this research as is one the first experimental researches which tries to integrate IL skills instruction into the primary school level, will lead to the production of an indigenous scale for assessing student's IL skills level and a Big6 instructional pack based on local measures. This will help in presenting native IL models in future.

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Early Findings from a Study of Information Literacy Practices in Primary Schools of Pakistan

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Abstract. This paper is based on the researcher's pilot study results. The PhD study aims to explore information literacy practices in primary schools of Lahore, Pakistan. Lahore is a major Pakistani city and is the research site for the study. The paper discusses the study's background, methodology and the results of the pilot study. The research design of the study is multiple sequential case studies and exploratory in nature. The pilot interviews were conducted with class 1 & 2 English teachers and two focus groups with students in one of the private school of Lahore city. The findings establish limited IL practice and the inadequate role of the library in implementing IL at pilot site. Children were enthusiastic about reading, however were not allowed to read different library books. These results endorse proper and integrated use of the library by teachers and students and hiring of professional librarians for the implementation of IL instruction.

Keywords: Information literacy, school libraries, primary schools, case studies.

1 Introduction and Background

Learning information literacy skills through an effective pedagogical approach is very important in this knowledge society [1]. Authors have advocated introducing information literacy (IL) as early as possible [2-3]. Previous studies [4-6] identified that the role of IL instruction in schools positively affected students' learning and developed their literacy skills. Latham & Gross stressed investigating and ensuring that students at each school level must be prepared in terms of IL skills to move into the next level and to be lifelong learners [7].

Literature has identified the lack of information literacy skills in schools' classroom practices [8]. A review of the literature found lack of research, or even descriptive studies, at the primary school level. A previous study by Batool (of Pakistan's primary school teachers' perceptions of IL) showed that this level is vulnerable in terms of IL learning [9]. IL learning transition from pre-school to the primary level has not been given importance in the published literature.

In Pakistan this situation is more undesirable due to lack of policies, frameworks and poor infrastructure. Khan [10] established that of 454 public schools in Lahore,

Pakistan, more than 300 schools do not have functional libraries. As far as the school facilities are concerned, statistics showed that public primary schools lack basic facilities, e.g. blackboards, textbooks, desks. Private schools are better than public schools in terms of facilities and the overall situation of primary schools is much better in urban areas of Pakistan [11].

Bhatti [12] reported a complete dearth of IL literature on Pakistan. Informal IL practices are more common in the country, specifically in private institutions [9]. The studies conducted at the higher education level demanded integrated IL curriculum at all grade levels and an IL national framework [12-13], [9]. A review of the literature reveals a research gap of formal or informal IL practices in the country. The intent of this research is to explore information literacy practices in selected primary schools of Lahore, Pakistan through case study research. Lahore is one of the big cities of Pakistan and is the research site of the study. The exploratory nature of the study will allow analysis of different IL aspects within context. The study findings and the resulting IL model will help to determine major factors influencing IL and may provide wider understanding of IL at the national level. This paper reports the early findings conducted through a pilot study.

2   Study Objectives and Research Questions

To fill the literature gaps the following questions will be addressed:

1. What are the IL practices in primary schools?
2. How are teachers applying IL in classrooms?
3. To what extent are children able to apply what they have learnt in the classroom?
4. What are the possible barriers and what is needed to improve IL teaching programs in schools?

To present a holistic picture of IL in selected primary schools of Lahore, Pakistan, the following research objectives will be addressed:

• To explore IL classroom practices in the selected primary schools of Lahore, Pakistan
• To seek teachers' teaching methodology in terms of IL instruction
• To highlight the role of the library and librarian in terms of IL instruction
• To analyze the students' information behavior and IL skills
• To examine all related IL aspects within context
• To inspect problems in the implementation of the IL instruction program in the selected school
• To propose an IL model based on findings

3   Methodology

The present study will adopt the multiple nested sequential case study design. The multiple case studies approach allows researcher to reveal the situation through

different lenses. The study objectives demand in depth analysis of the situation and to examine all related facets of IL in the selected schools, i.e., teachers' classroom practices, students' IL skills and content analysis of related documents. Yin [14] claims that findings from a multiple (as opposed to single) case design are more powerful and increase the chances of generalizability. De Vaus [15] suggests using multiple case study design when no, or very weak, conceptual frameworks exist in the literature. In relation to the current study, the literature reports very few aspects of IL practice in Pakistan specifically in schools [16-17], [12], [9].

The pilot study was conducted in the first half of 2014, and a case was selected which was approachable and convenient. The primary girls school belongs to the private sector and is situated in an economically high population area. It was first decided to interview class 1 & class 2 English language teachers and to conduct focus groups with students. The researcher discussed the study aims and objectives with one of the primary school teachers and she suggested interviewing English language teachers, as there is a provision in this subject to integrate IL instruction. The researcher got permission from the person in charge of that branch to conduct a pilot. The school staff was very cooperative in this regard although cautious that children of class 1 & 2 are very young to start these kinds of skills.

The interviews and focus groups were semi-structured in nature to collect in depth contextual information. The duration of the teachers' interviews varied from 12-15 minutes. The teachers' schedule was very tight and during their free time they have to do many other activities such as checking students' notebooks. Initially 10 interview questions were planned. However during interviews additional "how" and "why" questions were asked. These teachers referred the researcher to a library teacher and the library teacher further referred her to a computer teacher. The library teacher was a lawyer by profession and her role was to organize library and conduct library hours for all grade levels. Thus, finally, four interviews with teachers and two focus groups of 6-8 girls of 5-7 years were conducted.

The focus groups also lasted 15-20 minutes including talking with children, and later they were asked to fill in some activity sheets. The activity sheets were based on "curriculum for excellence early & first level" Scotland [18] and "Information literacy toolkit: kindergarten-6" [19]. They were adapted to examine a child's ability to use information, to organize and arrange information, to recognize different parts of books, to find specific information, and whether or not the child understands that he/she can identify and consider the purpose and main ideas of a text/audio/video. The recorded interviews were transcribed and analyzed through Nvivo 10. This software enables the researcher to organize and analyze qualitative or unstructured data and its version 10 was used for the present study. Initial themes were emerged and divide data into different sections, i.e., Teaching Methods, Use of library in teaching, Information sources identified by students. The process of merging and checking duplication emerged as the final themes. The figures 1,2,3,4 presenting final themes in each category were also produced with the help of the software.

4   Interview Findings

4.1   Teachers Teaching Methodology

The teachers were interviewed to mainly talk about their teaching methodology and classroom practices. Figure 1 presents the teaching methods and classroom activities performed by participant teachers using categories that emerged from the interview data. As can be seen in figure 1, the teaching methodology was mainly based on the use of textbooks, multimedia and classroom activities including games, puzzles and activity sheets. The teachers claimed that they were practicing different learning skills, i.e., critical thinking, brainstorming, reflection, sharing information and encourage students to display their works/assignments. However, the activities and use of multimedia were mainly to reinforce the concepts given in textbooks. The researchers also discovered the IL element of sequencing information and critical thinking, as Teacher 1 reported that she asked students to write the end of the story while listening or watching the first half of the story.

In response to a question about whether children are given information finding exercises to use library material, Teacher 1 and 2 replied "they are very young to start such activities". The teachers were developing and delivering the above claimed practices on their own. There is no role for the library and library teacher in the practice of these skills. It seems that practice of such skills is integrated into the curriculum. Sometimes teachers set assignments in which learners have to use old newspapers or magazines; children complete these assignments with the help of their parents. So these practices show the context of IL in classroom activities. However, they are scheduled irregularly, which emerged in response to a question "Are you giving them some kind of information finding exercise"? Teacher 2 replied "yes sometimes, like once I asked them for a pronoun project to go home and cut out pictures, do not buy anything just cut out from old magazines and I also did this kind of project on adjectives also".

It was also observed that students do not ask to use the library and there is no such activity involving use of library material, although teachers said that sometimes they prepare their lectures with the help of relevant library books. Teachers were not familiar with the concept of IL: Teacher 1 and 3 said "I don't know," while Teacher 2 replied, "may be a computer literate person is information literate". Their teaching methodology did not involve any collaboration with a librarian or use of library materials. In response to a question that "why are you not giving them such assignments which ask for the use of library material," Teacher 1 pointed out the reason was "planned curriculum". She said "we are in a rush to complete the planned curriculum, so we don't have room for such activities". In spite of few IL instruction practices on irregular basis, the curriculum is planned and not flexible.
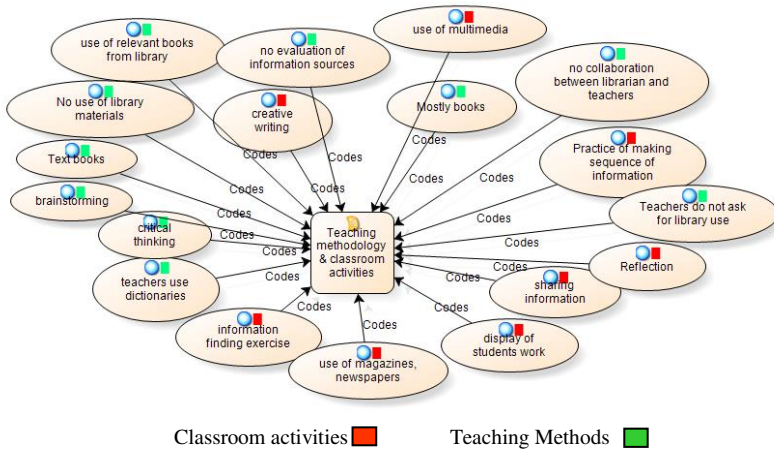
Fig. 1. Themes showing methods of teaching and classroom activities

4.2   Library Use

Figure 2 depicts the codes used to describe how the school library is organized, how it is used and the focus of the students' library hour. The interview findings revealed that in the present case, the library is a place for class reading, where students come with their assigned novel according to their grade level and read with the library teacher. Novel reading is part of their curriculum and students have to complete it during their term time. The students have their library hours once a week; in that hour they read their assigned books with the help of the library teacher and she helps them to learn new and difficult English language words. The Library teacher said that the main focus of the library hour is to improve students' English language accent.
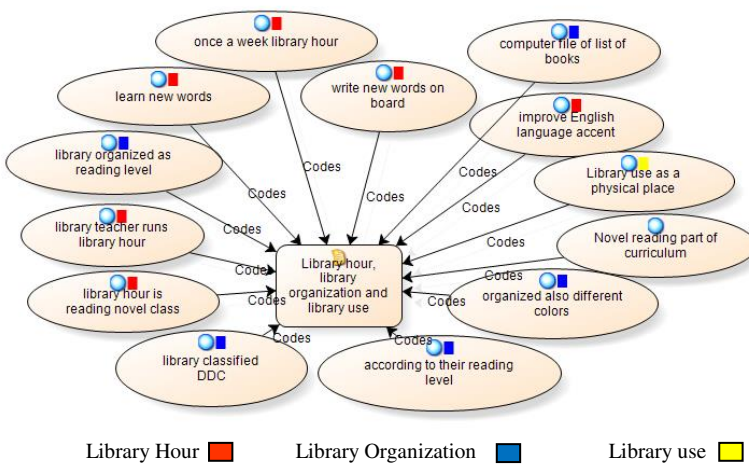
Fig. 2. Themes regarding school library & it use

The library was organized according to the Dewey Decimal Classification scheme, but this applied mainly to the reference books. Further, some books were organized according to colours for the identification of grade level. An accession register was maintained in a MS Word file. In response to a question, the Library teacher said that the library was organized like this when she joined and she did not know much about it. She further explained that "I arrange the new relevant books in the number already assigned to them". There was no catalogue and she searched for and located the books through a MS word sheet.

The library teacher reported that the library hour was difficult to schedule in the learners' timetable. The library teacher complained that she is overburdened; she described "all classes come to me and I am all alone to manage, so I do not have extra time to issue other books to the students." Indeed the researcher observed that she could only spare 10 minutes for the interview before having to run to the next class. In response to a question asking do you involve students in some information finding exercise or project, she explained that there is no collaboration between teachers and her. "I asked administration to involve children in some written work, but they said no we don't want that".

5   Focus Group Findings

The focus groups of students were conducted consisting 6-8 children each. The children were invited to talk about their information seeking behaviour, library use, and classroom activities, and later on filled out some activity sheets which focused examining their IL skills. Figure 3 represents the information sources used by class 1 & 2 students in school and at home while completing their school assignments. In response to a question asking how they found information, many girls replied "from computer". This contrasts with their teachers' views that they are too young to use the Internet. Two learners said they found information in a dictionary, and this again contrasts with teachers' statements that these students were not using dictionaries. Only one said she got information "from books" like history books. One girl said "we find information while going to places"; while explaining further, she said "we go to garden and find out information about plants". The findings show that students' first choice of an information finding source is the computer (Internet, Google). It seems that although they cannot use the Internet at school, they have computers at home and are Google users. But they were not library users, as the library's role was limited, so they put "books" as their last choice for finding information.
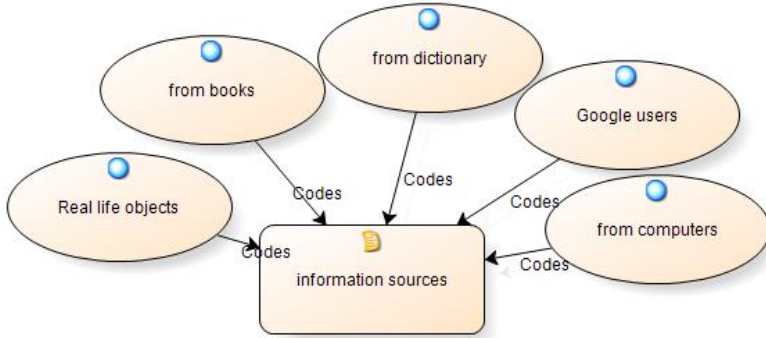
Fig. 3. Information finding sources of children of class 1 & 2

Figure 4 depicts the views of children on their library use, library hour and complaints about their school library. The results show that children were enthusiastic to read other books from the library and were quick readers; they want new books in their library. However, they were not allowed to read other library books during their library hour. Their library hour is novel reading class only and they do not have free time during school to go to the library. Children said that sometimes they borrow books from the library, mostly story books; they know how to borrow and return books from the library. They further explained that on return they have to get their library card signed by their teacher who asks questions about the book they read; only then can they get the next book from the library. This activity identified that this school practice focused on sharpening the children's reflection.
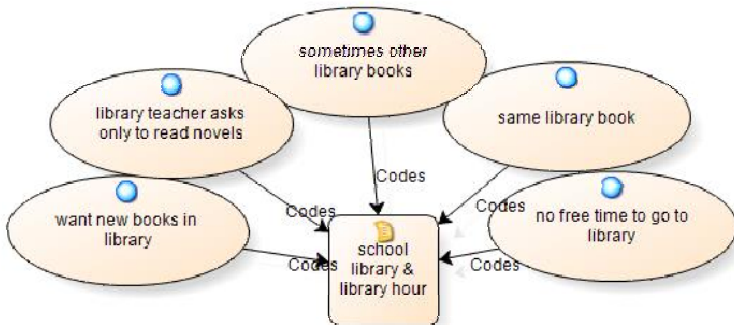
Fig. 4. Themes showing views of children about school library and library hour

6   Conclusion

This paper focused on the interview and focus group findings related to teaching methods, library, library use, students' information seeking behaviour and classroom practices. It can be concluded that limited IL context was observed in classroom and overall school practices in terms of reflection, sequencing information, sharing and displaying information, brainstorming and critical thinking. The school staff and library teacher were not familiar with the concept of information literacy (IL) but they were practicing it to some extent. It was also observed that the role of the library in promoting and practicing IL was inadequate, maybe due to a non-professional librarian. The library served as a venue for the reading class and the library teacher runs that class by reading the assigned novel herself, writing difficult words on the board and improving their accent. The description demonstrates more or less a language class. The teachers and staff were not using the library or library material for their lecture preparation and assignments because the curriculum was planned and use of library was not integrated. The teachers were not aware of the students' existing skills, as their perception about students was not based on facts.

The paper concludes with some surprising findings from the study. Firstly, the limited role of the library, library teacher and teachers in terms of information literacy was observed. Secondly, the library place was only used for language classes and the library hour was focused on improving the childrens' English language instead of reading and IL learning. Thirdly, the teachers considered class 1 and 2 students too young to learn and practice IL instruction, however students' most preferred information source was the computer (internet, Google).

The pilot results help in modifying the main study methodology. For deep understanding of the situation, more why and how questions were added to the final interview guide. For example "why do you not have an information finding exercise activity in your teaching?"; "why do you not encourage students to use the library?"; "Are there some students who engage more, why?" The focus groups should be conducted after the teachers' interviews to reconfirm the interview responses. To get a holistic picture of the IL situation, computer teachers and library teachers (Library in charge) should be worth adding as participants.

As far as the methodology of the study is concerned, it was decided to add more school cases in the final selection. During the school case selection, the researchers explored official data showing that public and private schools in Pakistan are divided into different types, i.e., registered private schools, unregistered private schools, public schools funded by the government, public schools funded by different organizations. Therefore, it was decided to add a small number of cases to the final selection based on school type to get a holistic picture of information literacy in almost all types of Pakistani primary schools.

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Emerging Technologies or Technophobia in School Libraries Survey:
Technology and Learning in School Libraries in Croatia

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Abstract. This paper describes the results of a survey entitled "Technology and Learning in School Libraries" which was conducted among three hundred and twenty school librarians in Croatian schools during April and May 2014.The aim of the research is to show the relationship between standard indicators of ICT in elementary and secondary school libraries and the information literacy practices that are being developed in the learning process. Topics discussed: Information and Communication Technology and its usage by school librarians, Involvement in the educational process: promotion of multimedia, digital and Information Literacy, and the biggest challenge for the inclusion of technology in the learning process in libraries and/or schools. The research can contribute to the increase of the involvement of ICT in the educational process within the curricula of the Librarian-information program. The conclusion offers possible strategies for collaborative learning.

Keywords: School librarian, technology, learning, information literacy (IL).

1   Purpose

This paper presents a part of the empirical research of a doctoral study. It explores libraries in primary and secondary schools in Croatia, and a pilot program, *Library-Information Program,* which partially consists of IL.

Its aim is to show the relationship between standard indicators of ICT in elementary and secondary school libraries and the information literacy practices that are being developed in the learning process. The librarian job structure is determined by the National Curriculum (2006) - direct educational work with students is determined by grade and topics to be covered [1] and by *Library-Information Program* (LIP). Educational aims are achieved through four areas: 1. Reading; 2. Information Literacy; 3. Learning; 4. Cultural and public activity [2].

Exploring the relevant literature, together with the legal provisions that determine course of activities, point to the ratio between librarians and technology in teaching. Vladilo [3] discusses the advancements in school libraries from the fight to introduce computers and the Internet in the libraries to the collaboration within the information society. Thus she expresses the attitude towards ICT which is still being referred to

as the *new* technology, whilst *new* signifies the unknown, something that evokes resistance, but mostly incompetence in using it. Furthermore, she discusses the IT application as the information technology in the school library conducted in three phases. The first phase was the automation of operations, the second was networking and cooperation, and the third one was introduced by the emergence of Web 2.0 technologies and social networks that are still considered as *new* according to Vladilo [3].

The sample of the presented research can be compared to the data from the analysis conducted by Ćelić-Tica [4], the Advisor for school libraries at the National University Library in Zagreb. She gives numerical data on PC level of equipment in school libraries in 2010/2011 – "663 primary school libraries and 313 secondary school libraries had Internet access, while 53 schools had no Internet access. The analysis showed that 259 libraries in primary schools and 173 libraries in secondary schools did not use any computer program to process library collections. The data shows the need for a change in the School Library Standards (currently underway), and for additional funds to be found for new equipment and staff training to provide automation services, etc." [4].

It can be concluded that, although a small number of schools still has no Internet access, most school librarians use technologies in teaching. The information activities that will be applied by school librarians are: education on how to use the Internet, digitization of library materials for quick and easy access to material, search, as well as research for the implementation of interdisciplinary learning in the community. The outcome of such teaching is, according to Todd, called "the development of information and critical literacy" [5] because the development of technology has dramatically changed the approach to networked information and the "development of digital libraries has created a compounded and fluid, networked interactive, diverse and unpredictable IT environment."

The important issue of this paper is how IL is implemented in the Curriculum and what the barriers are. Reflection and self-evaluation research has been created based on the need to monitor the direction and intensity of changes within the school librarian profession from the perspective of school librarians themselves. The purpose of analysis of the Survey, "Technology and learning in school libraries", is to present the current state and to stimulate the ability of librarians themselves to deal with operational problems and promote their own practice. On the other hand it can encourage financing for the needs of the modern school library: technology, membership fees for online databases, software packages for fun teaching, etc.

2   Methodology

The methodology only refers to the empirical part of the study. The conclusions are based on data, and the method used is inductive-deductive. The thesis states that school librarians on average do not feel resistance towards technology in teaching, and that it is being used in implementing IL.

In the empirical phase of the study questionnaires with a set of 6 groups of questions containing 36 different sub questions were used (yes/no questions, scaling opinions in online survey). The questionnaires were designed for school librarians in primary and secondary schools in Croatia. Therefore, the sample included all types of school libraries. Studies were conducted on a representative sample that has all the features of the group to which it belongs, and out of 320 respondents only 222 were complete. Firstly, stratification of the total population (employees of school librarians in Croatia) was performed by four characteristics:

1. type of school (primary/ secondary)
2. school location
3. working hours (full, half or less than half-time)
4. ICT knowledge

The sample size can be compared to data taken from Zovko and Celic-Tica's paper [6]. It reported that in primary schools there were 866, and in secondary schools, 398 librarians, which constituted a total of 1264 employees as school librarians in Croatia. The first research, a pilot self-evaluation (2012), which was done in collaboration with my colleague librarian as the first self-evaluation, had a response of 55%. The second research in 2014, partially presented in this paper, had a response of 30%. The research sample is representative, starting from the fact that in primary and secondary schools there is only one school librarian on average. Quantitative indicators describe the existing quality of work and define the area that will be necessary to improve. Discussion points to further opportunities for work improvement.

3   Findings

Q: Problem question that the research seeks to answer is whether there is resistance to or discomfort towards the use of technology in the educational process. The basic features of the polled group:

1. type of school – primary school 71%, secondary school 29%
2. school location - urban area 67%, rural area 22%, suburban area 12%
3. working time - full time for 83%, half time 17%
4. IT knowledge - excellent (advanced knowledge and skills of IT education) 14.98%, very good (ECDL - 7 modules) 40.82%, good (ECDL - 4 modules) 38.58%,

According to these indicators, it can be concluded that most respondents work full time in elementary schools in the cities; they have between 10 and 20 years of working experience. Their IT knowledge is considered to be very good. The data show good prospects for the development of educational programs through technology.
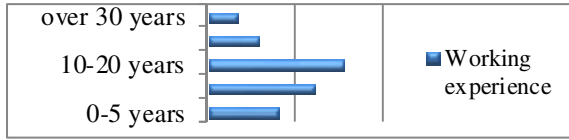
Fig. 1. Working experience

Findings also give the answer to the following research questions:

Q: Information and Communication Technology and its usage: Overall, ICT, in both elementary and secondary schools, isn't used on daily basis, except for e-mailing, and activities performed to educate students are most often periodical. This area of activity should be improved.
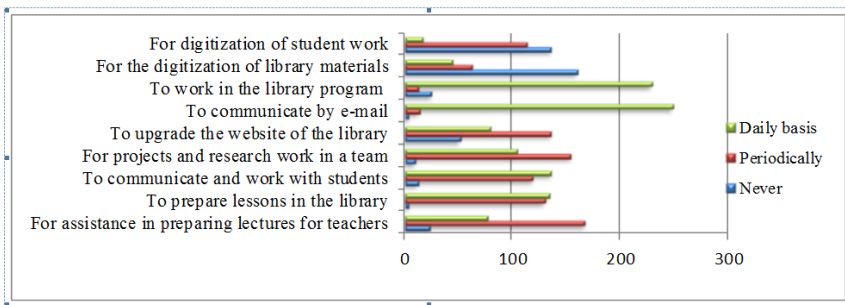
Fig. 2. Computer usage in the library

Q: The involvement of librarians in the regular teaching process, in the educational process: the promotion of multimedia, digital and the information literacy. The education of students in the school library is maintained continuously through the classes in the library - 66, 37%, periodically and individually 30.49%, only 2.24% claim the students are not interested in it. Interdisciplinary connections are between information programs used and following school subjects: Humanities (157) 70.40%, Languages 67.26%, Arts 34.53%, Informatics 31.39%, Natural sciences 26.91%, Professional courses 20.18%, Philosophy, Religion, ethics 11.21% .

Q: Tech tools that are instructed or used with students and teachers in schools. There are numerous Web tools that can be integrated into the curriculum to motivate student learning. Librarians can use these tools to collaborate with classroom teachers to create extension activities where students apply the content they have learned to develop projects that integrate technology. According to the table below it is evident that there are too many tools marked as "*plan to use*". If we take the previous findings into consideration (very good and excellent IT level of education), the results shown here are contradictory.
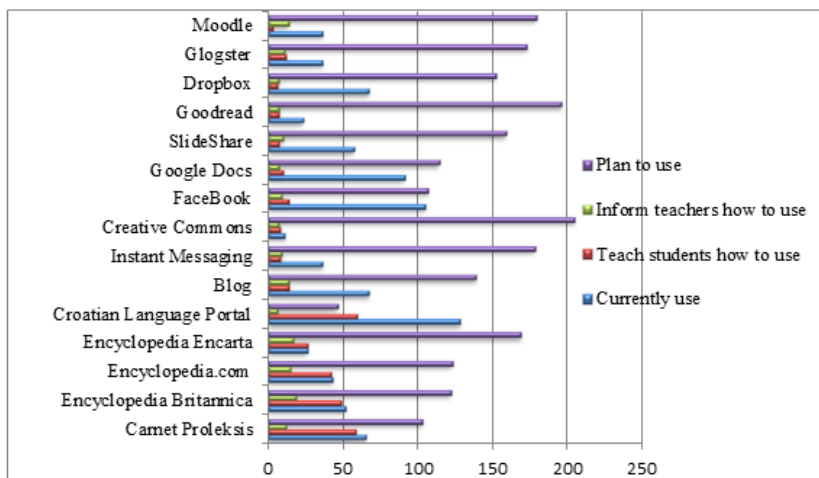
Fig. 3. How librarians use the specified electronic resources with students or teachers

Q: The biggest challenge for the inclusion of technology in the learning process in libraries and/or schools. Many librarians feel uncomfortable using the technology or do not have the possibility to use it because of low school standards. The school standards are unfortunately uneven. IT devices that are currently available to students are desktops (70.72%), desktops are on the wish list (29.28%) and 3.15% school librarians do not have a personal computer.

The biggest challenges to incorporating technology into a school or library according to the answers are: budget cuts (82.88%), rapid modifications of programs (31.98%), computers not replaced by new ones (59.01%), rule "one on one" student / teacher / PC is not introduced (56.31%). Other reasons are: no acceptance of technology by teachers (33.78%), teachers do not want to tackle anything "new" because it is, for them, redundant (27.93%) It may be concluded that pedagogical collaboration between librarians and teachers is important, as well as the existence of technological devices in libraries and in classrooms. When asked about the importance of using technology in their work, 52.63% were in favour and try to keep up with latest developments, while the rest expressed themselves as not having the need to apply it and continuing learning about the latest technologies. Considering the findings, it would be better to have an attitude which is more critical and more open to change.

4   Conclusion

It may be concluded that IL must be significantly improved. The results show a need for higher school standards and a need for continual professional development. The majority of librarians have a will and knowledge for novelties, but lack government financial support. The final purpose of the research should be to encourage professional efforts to improve the current level of education and knowledge, and help

emerging technologies become a part of the educational system as well as to emphasize the constant need for funding.

There is no evidence about similar research having been conducted in Croatia. The findings of similar studies or surveys conducted in other countries are not a part of this research, nor it has been my intention to make comparisons.

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Narratives of Information Literacy
in South African Township Schools

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Abstract. This paper explores and reports on narratives of information literacy in two high-poverty primary schools in an urban South African setting. The study forms part of an initiative by the Academic Literacy Research Unit (ALRU) at the University of South Africa that consisted of integrated longitudinal reading and literacy projects in schools in a deprived community. The authors are currently involved in a post-project phase that involves monitoring two of the school libraries (School X and School Y). Information literacy issues and the lack of school libraries remain critical issues that must be dealt with. The paper highlights the importance of delivering information literacy in innovative ways in the South African primary school system and furthermore points out features that should be included in an informal training programme for school librarians.

Keywords: Information literacy, South Africa, school libraries, school librarians, high poverty schools.

1   Introduction

South Africa is struggling with low literacy levels [1] and much of the population has no tradition of reading or a reading culture. Many homes have few or no books. Schools are now responsible for most learners' main literacy experiences, but they often do not have school libraries or school librarians. In fact, less than 8% of South African schools have functional school libraries [2].

Teachers in South Africa work against a background of continuing problems with reading and literacy levels, without the necessary resources such as books and school libraries and are at the same time expected to address the new needs of e-learning and digital education. A concomitant factor is that many teachers do not understand the importance of libraries, books and information. In her doctoral thesis of 1993, Olën warned that less than 25% of South African teachers are library users and understand the value of information literacy skills [3]. This has not changed and results in poor information literacy skills of both teachers and learners.

The Academic Literacy Research Unit (ALRU) at the University of South Africa promotes and supports the attainment of academic literacy through research and community programmes. As part of an integrated longitudinal reading and literacy

study in schools in a deprived community, ALRU set up school libraries in various primary schools in the township of Atteridgeville, Pretoria, with projects called '*Reading is FUNdamental*' (2005-2009) and '*Literacy Coaching Programme*' (2010-2011). School X participated in the first project from 2006-2009 and School Y participated in the second project from 2010-2011. The authors participated in these projects and were part of the project team. They researched various facets that affect and influence reading, literacy and information literacy, including access to books and functional school libraries [4-6, 21]. They are currently monitoring two of the school libraries (School X and School Y) in a post-project phase and this paper will focus specifically on these two schools.

The objective of this paper is threefold:

- To report on the information literacy awareness of learners, teachers and school librarians after a literacy intervention
- To discuss a manual that is being developed by the ALRU team that will support the training programme of the school librarians
- To suggest an information literacy component that should be included in the training.

2   Schooling for an Information Society: The South African Scenario

A holistic, general definition of information literacy adopted by the Alexandria Proclamation is to "empower people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals" [7]. This includes *inter alia* the goal of education and lifelong learning. Widespread interest in information literacy has snowballed since information became a recognized commodity. Furthermore, information literacy is regarded as an enabler for lifelong learning [8]. The growth in ICTs and the exponential explosion of information have had an impact on teaching, learning and information literacy. Everyone must be able to make sense of a world flooded with information by having the skills to access, evaluate and use the information effectively. Information literacy is inherent in developing a thinking school community of teachers, learners and school librarians.

It is accepted in educational circles that literate individuals, who have learned how to learn, and who become information literate and lifelong learners in the process, will ultimately succeed in the workplace [9]. Information literacy is not a new concept in South Africa and has been promoted by educators such as Bester [10] since the seventies and eighties, but the political dispensation at the time excluded most of the school and student population from these benefits.

There seems to be an awareness in South African Higher Education circles of the importance of information literacy as reflected in various projects and research reports [11]. On the other hand research into information literacy in South African schools is limited [12]. The basic literacy skills of reading and writing are insufficient in today's

world; learners also need to be able to determine when they need information, know how to find it, evaluate it and use it effectively to solve problems. The South African Department of Basic Education [13] published the *National Guidelines for School Library and Information Services* after the document existed in draft policy format for twelve years. Unfortunately these *National Guidelines* have not been published as policy. Information literacy and digital literacy are explained in this document but no suggestions are provided on how these literacies can be achieved.

Hart [14] points out that information literacy in South African schools "takes place in contexts different from those described in much of the international literature" which imply the existence and availability of well-stocked school libraries, skilled school librarians and other learning resources. Her research in primary schools shows that principals and teachers have limited frames of reference on theories of teaching and learning. They also do not understand the need to teach information literacy. This creates a vacuum in the learning process of learners. Library science and education literature suggest that information literacy should be integrated in the school curriculum. Information literacy outcomes should be part of the curriculum and must be indicated explicitly in teacher textbooks to support and guide teachers [15].

In multi-cultural South Africa, problems are not only compounded by inequalities and disparities inherited from the past, but also by current economic and educational obstacles. A main and serious problem is that the South African school system does not produce good students [16]. Unfortunately there seems to be a general belief in Government and education circles that computers and the Internet obviate the need for high level literacy skills as well as school libraries. South African students only encounter and are perhaps taught at the tertiary level, many of the information skills taken for granted in the developed world, whereas their international counterparts grow up with them. The South African Government focuses on information technology literacy and not on information literacy [17].

School libraries and school librarian posts have been phased out [18]. School Governing Bodies (SGBs) now have the authority to approve spending of school funds, but many of them do not show an understanding of the need for school libraries. The few school libraries that still flourish with trained school librarians are paid for by SGB funds and are mostly found in affluent schools. School communities who are most in need of resources may be the most affected by this situation. SGBs in disadvantaged schools may also have the least money to spend. Learners have to do research, and the overcrowded and under-funded public libraries cannot meet the demand. This is to some extent proof of the need for school libraries [19].

According to Sturges [20], librarianship in Africa is in a "permanent crisis" and part of the problem is that government officials and librarians themselves have a poor understanding of the centrality of libraries (school and public) to literacy (including information literacy). This is reflected in the South African school library scene where schools currently have to use their own initiatives to develop and run some form of school library, if any.

3   The ALRU Projects at School X and School Y

3.1   Background

Functional and successful school libraries require a qualified teacher-librarian and a library assistant to manage library activities. The reality, though, in South African schools, especially schools in deprived communities, is no or dysfunctional school libraries and no funding for teacher-librarians or school librarians. The schools are print- and information-poor with too few resources such as storybooks, reference works or access to technology.

   As part of the ALRU Projects a school library was set up and a school librarian trained at School X and School Y. The schools did not have the expertise to set up their own school libraries and no funds to pay for a trained teacher-librarian. The ALRU Projects had to follow a much more modest format in each school in setting up the school libraries. The classrooms were devoid of text; no reading books were available and there was little or no text displayed on the walls. It was decided to set up a basic central library and book corners in the classrooms in both schools.

3.2   The School Libraries

The ALRU Projects endeavored to create a physical space that would be as pleasant and stimulating as was possible with very little funds. In established schools without space to spare, the project team had little choice about the actual space for a library and had to make the best use of what was available. Given the limitations of space and budget, careful planning was necessary.

   School X had a large classroom with a smaller adjoining room and shelves available. The rooms were at the time used as storage place for broken furniture, garden implements and even an old Roneo (mimeograph) machine. However, the principal was hesitant to allow the use of these rooms for a library, since he was waiting for the Department of Basic Education to install a promised computer centre. This hope was never realized and he eventually gave the project team permission to use the space as a library. The smaller room is used as the actual library and the large room as a reading *cum* general library literacy activity room. School X has 690 learners.

   School Y had a reasonably functional computer centre with a small storeroom attached to it. The storeroom was used as a storage space for old textbooks, broken down furniture and other rubbish, but it had shelves and a good location as part of the computer centre. Since there was no empty classroom or other storeroom available, the principal agreed that the storeroom could be cleaned out and converted into a library. School Y has 748 learners.

   A modest but accessible and relevant book collection of fiction, non-fiction and reference material such as dictionaries and encyclopaedias has been built up in each school. School X now has 6050 books and School Y has 5395 books in their respective collections. Most of the books are in English, but some books are available in Sepedi and Zulu, two of South Africa's indigenous languages. The fiction

collections are used extensively, but unfortunately, the reference collections are underutilized by teachers and learners.

School X has two computers in the office dedicated to the day-to-day running of the school. The librarian has a computer for use of the library management system and the principal has a laptop computer. With the exception of one office computer, none of the computers mentioned have Internet access. The school recently received 20 laptops as a donation without any software and at the time of writing there was no clear indication what their use would be. The Internet as a channel of information is not easily accessible to teachers and not available to learners at School X.

School Y has a functional computer centre with Internet access. It is run by Gauteng Online, an initiative from the Department of Basic Education. Teachers use the centre to access official learning materials issued by the Department of Basic Education. They occasionally send the learners to the centre to practise mathematics and English with drill tutorials supplied by the Department of Basic Education. Although School Y has access to computers and the Internet, there is no information literacy teaching component linked to this availability.

A new development at both schools is the delivery by the Department of Basic Education of 40 tablets to use in teaching English and mathematics lessons. At this stage neither school has a strategic technology plan, technical support or mediators to ensure that learning will be enhanced by the new technologies. This is an opportunity for the school librarians to show their mettle and become involved in the process.

3.3   The School Librarians

In consultation with the principals, the project team made a decision to appoint part-time "school librarians" from the broader school community who were paid from project funding. The appointment of members of the community is seen as an empowering social engagement and transformation opportunity for potential candidates. It is necessary to clarify that none of the so-called school librarians who have participated in the ALRU Projects so far were trained librarians. They should perhaps be called library assistants, but for the purpose of this paper and the ALRU Projects, they are referred to as *school librarians*.

The project team drew up a profile and job specifications for suitable school librarians in consultation with the principals, interested teachers and the SGB. It was decided that successful candidates should at least have a matriculation certificate, some computer literacy skills and show an interest in reading and in young children. Duties would be diverse and included the housekeeping of the school library, computerized classification and cataloguing, and working with the project team as well as with the school community.

The selection of a "school librarian" is a bit like potluck. It seems as if a younger person from the community with some post matriculation qualification and with qualities such as an interest in reading and literacy issues, who cares about the development of his/her community and has a positive attitude can be successful.

The school librarians were given an informal crash course in librarianship and on the job training. They had to be familiarized with various aspects of running a library, such

as library procedures, systems for loans and return of stock, and cataloguing and classification. Library housekeeping was another activity that they had to be taught. They were shown how to process stock which included accessioning, barcoding and spine labeling. They were taught how to arrange the books on the shelves according to classification numbers in the case of non-fiction and alphabetically in the case of fiction.

A computerized library management system was installed and the built-in classification and cataloguing module of the system assisted the librarians. They received formal instruction from the system vendors in the use of the system. The school librarians also attended the workshops for teachers as set out under 3.4 and experienced the same problems.

A core aspect of the training was to ensure that the school librarians understood that the school library service existed for its users; the teachers and the learners. Predictably, the roles and responsibilities of these school librarians cannot necessarily be measured in the same way as trained librarians, but their contribution is measured in regard to the ALRU Projects.

The school librarians still undergo just-in-time instruction training and attend reading, and library and information conferences. They have delivered papers among other occasions at a School Library Conference in Kenya (8th Pan African Conference on Reading for All in Nairobi, Kenya, from 11 -17 August 2013) and South Africa (Presentations at the Reading Association of South Africa (RASA)). The continuation of funding the school librarians' salaries is a big concern, but falls outside the ambit of this paper. A properly trained teacher-librarian is still the ideal and will be an asset, but if a school does not have the financial resources, using a person from the community with drive can make a difference.

3.4   The Teachers

The teachers were not familiar with using libraries and lacked basic library skills. ALRU held various workshops for teachers that specifically targeted library issues. The team covered basic library skills and information literacy skills and how to incorporate the library and library resources into literacy practices at the school. The basics of how a library works, the distinction between fiction, non-fiction and reference works, the use of the Dewey Decimal Classification system in organizing collections and information, call numbers and subjects were covered. These basics had to be revisited several times. Some of the workshops concentrated on how the school library can be integrated with curriculum outcomes. The teachers struggled to understand the interrelated skills of finding, selecting, evaluating, organizing and presenting information. The teachers' prior knowledge of information and libraries was not conducive to teaching higher order information literacy skills. It is very difficult to develop information literacy skills if one does not understand the concept and value of information and knowledge. The project team had envisaged introducing them to a fuller scope of information literacy skills required for success in today's information-rich world, but this was not possible without a solid foundation of library skills. The workshops eventually focused more on these basic skills.

Wessels and Mnkeni-Saurombe [21] analyzed questionnaires completed by the teachers about their school library and related issues and came to the conclusion that even after the school libraries have been established for several years, teachers still have problems in understanding the concept of information literacy and are not able to transfer these skills to the learners.

3.5   The Learners

Learners from especially deprived township schools go through school without information literacy training and are then expected to be well-versed with these skills when they reach higher education. If learners have mastered information literacy skills at school, the move from school to higher education is less problematic.

What was attainable with the learners at School X and School Y were basic library skills (rather than information literacy skills) such as a working knowledge of the layout of the library, the range of resources and how to find them. These were skills the ALRU team expected that the teachers would be familiar with, but it became increasingly clear that many of them were out of their depth and not versed in basic library skills themselves as indicated above.

4   Methodology

The study used both qualitative and quantitative methodologies, data collection and analysis. Data collection and analysis involved a triangulation of methods that included observations at the schools, text analysis of learner book reports and librarian library reports in addition to interviews with the principals and school librarians and questionnaires completed by teachers. The literature shows that the use of different research methods enables researchers to provide a holistic picture that could not be achieved with the use of a single research method [22]. This approach has been utilized in studies investigating information literacy and school libraries in South Africa [23].

5   Reflections on Information Literacy at School X and School Y

5.1   Achievements

The ALRU Projects and school libraries at School X and School Y helped to develop a reading and information climate at the schools. When evaluating the school libraries in terms of the role of the librarian, library services, collections (range, selection procedures) and facilities, it must be kept in mind that the schools had nothing except a few old and unused books to start with. The following aspects are noteworthy in terms of the evidence of library related changes:

• A school library infrastructure has been set up
• The school libraries are functional

- Informal and temporary school librarians have been appointed and trained
- Learners and teachers have continuous access to books
- Learners regularly visit the school library and are more comfortable with a library environment
- School library committees and library monitor systems have been established
- Literacy periods have been introduced
- Reading or book corners have been established in some classrooms
- Classrooms are more print-rich with the introduction of book corners as well as with print on the walls such as charts, posters and pictures made by teachers and learners
- School library activities take place e.g. library visits and borrowing of library books
- The school libraries are visible entities of the ALRU Projects

Learners were asked to write about their library in an essay and some of the verbatim responses were:

Table 1. Comments by learners on the school libraries

Rosy Grade 6	I love library because the books that is in the library gives me more information that I never heard in my life. I love the story book that I found in the library.
Paballo Grade 6	When we read we learn some things from stories
Thabo Grade 7	We have the information near us. We help each other how to read and how to pronouns some other words. And we trust ourselves when it comes to reading
Koki Grade 7	Our library is a very big place and its full of fun and interesting books. When there is no teacher in my class I usually go there. I really love the library because it has really made a difference in my life and to other learners as well, but not all of them, there are two grade 7 boys who don't take books…
Unknown Grade 7	Now that we have a library in our school, we can go there at breaks, after school or maybe during reading periods. The books are fun and interesting
Gontse Grade 7	My life really change I have became a reader when I didn't expect to be. Reading help me to know my English better than before
Tsepo Grade 7	I love the library because we can take out books
Gontse Grade 7	Books a well arranged according to the numbers or alphabet. One side of the library there are long tables and benches where students sit there and read newspapers, journals and magazines, some take down notes. Besides this one can also got the entire atlas, encyclopedia
Tshepiso Grade 6	I am a library monitor. I like to help our library teacher to pack books on the shelves. I like to follow the library rules

Only one learner mentioned the library as a place where information can be found and only one learner referred to some reference material and the library as a place where research can be done.

In their latest library reports the school librarians said verbatim the following about the use of the school libraries:

Table 2. Comments by librarians on school libraries

School X	Learners are still reading at assembly on Fridays and Mondays they also celebrated human rights day reading books that talk about human rights and their rights.
School Y	Our learners enjoy reading a lot and they have improved their reading skills. Comparing previous years involvement with the learners it has improved a lot because at the moment every learners in the school is using the library. it can be reading for enjoyment, researches or simply playing games.

5.2   The Development of a Training Manual

A constant concern for ALRU is a plan for sustainability. One attempt to put a sustainable element into the project is the development of a manual for the school librarians. Since they do not have official qualifications and because the environment in which they work is so deprived, commercial books and manuals will not suffice. The manual is being written on an easy-to-read level with examples. The two school librarians have been invited to participate in writing the manual. An outline of issues covered is:

- Role of the school library
- Collections
    - Fiction, non-fiction, reference works
    - Cataloguing and classification
    - Layout
    - Weeding
- Support for reading and literacy
- Library skills
- Library monitors and library committee
- Technology
    - Library management system
    - Internet
- Report writing
- Activities
    - Book reports
    - Family literacy events
    - Book clubs for teachers and learners
    - Displays
    - Storytelling events
- Information literacy skills

The management and housekeeping of the school libraries are fairly straightforward and easy to cover in the manual. The question remains how to address information literacy in the manual and at the schools.

5.3   The Challenges of Information Literacy

The ideal would be to turn the school librarians into instigators of information literacy. This seems to have been too ambitious a goal to reach within the timeframe and resources of the ALRU projects. Information literacy teaching was embedded within the context of the reading and literacy programme, but it is clear that a paradigm shift is needed to produce positive results. The obstacles that hampered success and which are still being encountered are:

- Principals and teachers have very low or no initial information literacy levels
- There is no context to link information literacy to
- Teachers are not taught information literacy skills during pre-service training
- Teacher and school librarian information literacy progress is much slower than expected
- Acquisition of information literacy takes a very long time
- A more focused effort than could be afforded by the ALRU Projects is needed to teach the school librarians and teachers the central aims of information literacy

The complex issue of information literacy needs creative thinking. Features that can be included in such a programme in order to improve information literacy delivery at the schools that might find resonance in a developing community are:

- Keep the programme flexible
- Skills must be taught as they are needed (e.g. technology)
- Information literacy contexts have to be created
- Adapt the programme to fit the particular environment (e.g. School X has almost no Internet connection)
- Foster skills through informal as well as mediated means
- Expose the whole school community to the idea of information literacy using family literacy events
- Reiterate the fact that information literacy skills increase learners' prospects to succeed at school and improve their chances to move to higher education, the intended product being lifelong learning
- Substantive learning of information literacy by keeping training on topic and prompting thought
- Better qualified people benefit more significantly, thus the continuation of training of the school librarians is imperative
- Grow grounding in library skills and information literacy to enable teachers and school librarians to articulate new understandings
- Foster collaboration between Schools X and Y to provide support and exchange of ideas

6   Conclusion

This paper underlines the fact that educational changes in deprived township schools are slow and are congruent to the low and different usage of the school libraries.

It emphasizes the different approach to school libraries in an environment where school libraries and school librarians are almost non-existent, from an environment where school libraries have always played a role. A school is a microcosm of the community at large and as such poor literacy (and information literacy) practices of the community is extrapolated in the school.

The authors discussed the development of a training programme for school librarians in an information- and print-poor community, based on the findings that were obtained during the ALRU intervention. The training programme may not guarantee success on all levels, but helps to work the concept of information literacy into the consciousness of the two school communities. It increases the learners' and teachers' chances to improve their information literacy skills. Even a tiny advantage can make a difference.

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Transitions from School to Higher Education: Understanding the Needs of Undergraduates at LSE

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Abstract. This paper reports on initiatives at the London School of Economics (LSE) to better understand the needs of students entering higher education and throughout their undergraduate career. It draws on findings from the Student Ambassadors for Digital Literacy (SADL) project and also reflects on a new information literacy programme of workshops for 16 year old school students to help prepare them for higher education. The idea of student involvement in sharing their own digital literacy skills with peers though a network of student ambassadors is new to LSE and the challenges and successes will be discussed. Both initiatives provide valuable evidence to enhance the provision to all undergraduates.

Keywords: Digital literacy, information literacy, undergraduates, social sciences, peer mentoring, student support, collaboration, transition, higher education.

1   Introduction

This paper describes initiatives at the London School of Economics and Political Science (LSE) to enhance the digital and information literacies of undergraduate students. It reports on findings from the Student Ambassadors for Digital Literacy (SADL) project [1] which ran from October 2013 to July 2014. The project was led by the Learning, Technology and Innovation team (LTi) (formerly the Centre for Learning and Technology) and the LSE Library and explored the role that student ambassadors can play in developing and integrating digital and information literacy into the curriculum.

The same team has been working with a London further education college to help prepare 16 year old students (Year 12) for university. A series of information literacy workshops were developed for twenty high achieving students studying Philosophy, Politics and Economics at A-level. The interaction has proved enlightening and is informing LSE support for new undergraduates and improving the first year experience. This paper will reflect on both the SADL project and Year 12 workshop series, exploring the challenges and successes of these initiatives for students, teachers and librarians.

1.1   Undergraduate Teaching at LSE

LSE is a world class social sciences institution with approximately 9,000 students, of which around half are undergraduate students based at the central London campus. It teaches across the breadth of social sciences from economics, statistics, accounting and finance to anthropology, international relations, economic history and sociology.

Teaching at LSE is traditional and primarily delivered via lectures and small classes, with resources and support provided online in the institutional virtual learning environment (VLE), Moodle. Summative assessment is exam-based and many LSE undergraduate students are not required to write dissertations as part of their degree, which means that the opportunities to develop their research skills can be limited.

Notwithstanding the nature of the subject based teaching, LSE recognizes that both digital and information literacies are essential to success at undergraduate level. However, much of the digital and information literacy support is provided by central services, such as the Library and Teaching and Learning Centre. Meanwhile Learning, Technology and Innovation (LTi) supports staff in the use of new technologies to enhance learning, and has invested considerable effort in developing these competencies in staff and research students, but do not currently offer workshops for undergraduate or masters students.

2   Information Literacy Initiatives at LSE

The SADL project and workshop series for 16 year olds are part of ongoing initiatives aimed to enhance the skills support for students at LSE. The impetus began following research carried out by Jane Secker and Emma Coonan in 2011 and the development of A *New Curriculum for Information Literacy* (ANCIL) [2]. This new model of undergraduate support offers a holistic learner centered approach to information and related literacies (digital, academic, and media). Jane Secker, based at LSE, was keen to explore how ANCIL might be used in practice to review and inform developments in digital and information literacy. The work at LSE was also inspired by research by Katy Wrathall [3] which explored how ANCIL could be used as a tool to audit provision across either a department or an entire institution. In August 2012, a small team from the Library and LTi undertook a review of undergraduate support across LSE. The purpose was to investigate the reasons why few undergraduates engaged with the optional information literacy programmes provided and to explore where digital and information literacies might be supported in the undergraduate curriculum either by other support departments or embedded in the courses.

2.1   Review of Undergraduate Teaching at LSE

The 2012 review provided a picture of support across LSE. It did not intend to be comprehensive as it was not feasible to reach all academic staff in all departments within the timescale, but it provided evidence about whether the ten broad strands of information literacy set out in ANCIL were being supported. The review identified examples of good practice but also inconsistencies across departments and a lack of

co-ordination between central support services. It suggested that many undergraduate students had limited opportunities to develop digital and information literacies in the context of their discipline. It highlighted a number of assumptions about who should be supporting students in developing these abilities.

Additional findings that emerged from the study included:

- Information and digital literacies were rarely embedded in the subject discipline;
- There was a belief that information literacy was important, but it was defined narrowly as the ability to find, evaluate and manage information;
- A lack of time and space in the curriculum was cited as the main barrier for staff not embedding digital and information literacy in their teaching.
- There was a minority view that students "should" already have information literacy skills on arrival at LSE and that it was not the responsibility of academic staff to teach this.

The study demonstrated that students felt unprepared to find and evaluate quality information sources, and were often not required to carry out independent research until the third year of their degree.

2.2   Recommendations to LSE Teaching and Learning Committee

The report [4] of the 2012 review was presented at LSE's Teaching, Learning and Assessment Committee (TLAC) in February 2013. Eight recommendations were presented and received an endorsement by the committee including:

- LSE should develop an information and digital literacy strategy.
- A network of information and digital literacy champions across the staff and student body to be established across LSE to support the strategy.
- A study to be undertaken to understand the needs of students entering higher education.

The presentation at LSE's TLAC was an opportunity to invite staff from across the institution to participate in small-scale pilots to embed digital and information literacies into their undergraduate courses. One project with the Department of Statistics in 2013 saw information literacy workshops embedded in a course where students were required to undertake a research project. This enabled the workshops to be tested to establish what might be successful, and what resources were required.

2.3   LSE Digital and Information Literacy Framework

Following the 2012 review and its endorsement by TLAC, a framework for information and digital literacy was developed at LSE [5]. It was informed by existing strategies and frameworks, including ANCIL, the SCONUL 7 Pillars of Information Literacy [6] and the Open University Digital and Information Literacy Framework [7]. LSE's framework identifies eight facets of information and digital literacy and each includes learning objectives and sample activities to provide examples of how each high level ability can be translated into practice. The current provision of information

and digital literacy workshops by the Library and Learning, Technology and Innovation (LTi) has recently been mapped to the new framework and it is used to discuss teaching between librarians and academic staff.

2.4   Embedding Information Literacy

A literature review, *Embedding digital and information literacy into undergraduate teaching* [8] was also carried out in 2013. The literature review supports the view that an embedded approach to information literacy is the ideal and it provides an overview of digital literacy initiatives in the UK funded by the Jisc Developing Digital Literacies programme [9]. Several of these projects engaged students directly, recognising that students arrive at university with a wealth of abilities and that staff can learn about digital literacy from them. The value of employing both 'top down', but also 'bottom up' approaches to changing academic practices was highlighted.

3   Student Ambassadors for Digital Literacy (SADL) Project

In August 2013, the authors participated in a workshop, 'Changing Learning Landscapes' with other universities about developing strategies for embedding digital literacies in institutions. The concept of students as partners was a key theme during the event and subsequently funding for small-scale projects was offered to those attending by the Higher Education Academy (HEA). LSE successfully bid for a small grant for a one year project to include students in developing digital and information literacies. The project, Student Ambassadors for Digital Literacy (SADL) aimed to explore the role of students acting as ambassadors for digital literacy. The approach had been used successfully in similar UK projects on developing digital literacies, for example, the Exeter CASCADE project [10]. Central to the SADL project has been that students could support both staff and their peers. The funding allowed LSE to explore the recommendation made to LSE's TLAC, to establish a network of information and digital literacy champions across the student body.

The SADL project was launched in October 2013. It was a collaborative project involving central support services, LSE Library, Learning, Technology and Innovation, the Teaching and Learning Centre and the Students' Union. Collaboration was important for the project as it enabled the team to support digital, information and academic literacies. The project explored the role that student ambassadors could play in developing and integrating digital and information literacy into the curriculum. SADL sought to address the following questions:

- Is there a value in establishing a Student Ambassadors Network for digital literacies and is there a role for students to act as peer mentors on their courses?
- What digital literacies students already have and what do they need?
- What are the best strategies to support students in developing digital and information literacies and how and when should support be delivered?

3.1   Methodology

In order to examine the project's aims, twenty students were recruited from two academic departments, one quantitative, the Department of Statistics and one qualitative, the Department of Social Policy. The students were LSE's first digital literacy ambassadors, although a few departments already had peer mentor schemes. This meant that the role was exploratory for the project team and for the students. The project was advertised widely to undergraduate students across the two departments via email, a notice on the VLE and announcements in core lectures. The LSE Students' Union played a crucial role in recruiting students and the Education Officer provided invaluable support as a key member of the project Steering Group. Students had to submit a written application stating why they wanted to be a student ambassador for digital literacy.

The project was an opportunity to gather rich, qualitative data about a small self-selecting student cohort. Therefore, the findings are not intended to generalise about the whole student body, but to provide a snapshot of experiences. In order to understand our ambassadors further, each student was asked to complete a survey on their research practices. The survey was based on the questions used by Purdy [11]. Additional questions were included in a post-project evaluation form to evaluate the impact of our work.

The ambassadors attended four workshops which aimed to develop their digital literacies over the course of the academic year 2013/14. The original project plan had specified that focus groups would be used but changed the format to workshops during the planning process. The project team realised that focus groups may be valuable for the team, seeking insights from the students about their digital literacy needs, but recognised that students might gain little from this approach and be less motivated to attend more than one session. The use of workshops would explore student needs, gather feedback, and develop students' digital literacy skills. The workshops were designed to facilitate a dialogue between staff and students, rather than a one way conversation.

The project website was set up as a blog and was used to disseminate the project's progress with contributions from the project team and the ambassadors. Students were encouraged to blog about their experiences and to share ideas with students on their course. The blog was also used to disseminate the resources from the workshops.

3.2   Working with the SADL Ambassadors

The project spanned an entire academic year providing an opportunity for the project team to develop a relationship with the twenty ambassadors. The workshops were each 90 minutes in length and designed to enable students to reflect on what they already knew, share their practices and learn from them. The following sessions were held:

- Introduction to SADL: finding and evaluating information
- This first workshop in December 2013.was a chance to meet the team, find out about student search practices and also explore students' expectations for the project. The project blog was introduced and students learnt about writing blog posts.

- Academic Practices: Reading and Research
- In January 2014, the students reflected on differences between their disciplines as they explored how they approach assignments. They were asked to share what they had learnt with their peers following this workshop.
- Managing and sharing information
- The workshop held in March 2014 explored how students currently manage and share information for their studies and introduced them to online tools which could help. The role of the student ambassador was discussed.
- Social media, your digital footprint and project round up
- The final workshop was held in May 2014 and introduced students to the concept of digital identity and digital footprint. Students made videos reflecting on their experiences in the project. They also provided feedback on information literacy resources currently available in the VLE.

Students received Amazon vouchers for their attendance at each workshop. They were also awarded online badges for attending workshops and participating in other activities such as sharing with their peers and writing blog posts. Finally, the ambassadors received a statement on their institutional personal development record, which is a record that assists with employability. Throughout the project, the LTi Research and Evaluation Officer was the main point of contact with students, regularly emailing them to remind them of the tasks that they had been set between workshops and encouraging them to remain engaged.

3.3   Why Digital Literacy?

A key question amongst librarians might be why SADL used the term digital literacy, rather than information literacy. At LSE, staff development workshops run by the Library and LTi have been termed Digital Literacy for over five years and this is well received. Meanwhile, student workshops run by the Library are called information skills training. The project was collaborative, and had a focus on technology and the team wanted to differentiate from the regular information skills programmes offered to students. The team thought that the term 'digital literacy ambassador' might appeal to LSE students following advice from the Students' Union.

In the first workshop, the team also asked the students what they understood by the term and presented three definitions for Digital Literacy. Using personal response systems, the choices were anonymous and students were asked to select a definition of digital literacy that meant the most to them. The group overwhelmingly chose the Jisc definition, which is, "by digital literacy we mean those capabilities which fit an individual for living, learning and working in a digital society: for example, the skills to use digital tools to undertake academic research, writing and critical thinking; as part of personal development planning; and as a way of showcasing achievements." [12]

4   Working with Year 12 School Students

In a related development, the authors have also been involved in an initiative with a London further education college in 2013/14 to help prepare 16 year old (Year 12)

A-Level students for university. Three information literacy workshops were run for a group of twenty-five students studying Philosophy, Politics and Economics. The programme was designed to help students to find and evaluate information, understand plagiarism and develop their academic writing skills. The workshop series has enabled the authors to understand the way that students study before arriving at university, and how LSE might best support them in their transition to higher education. The initiative was developed in consultation with LSE's Widening Participation department which has a number of programmes aimed at school age students. Many of LSE's existing schemes for school age students include a tour of the library. The one year programme, LSE CHOICE, which attracts Year 12 students from all over London includes a short induction session where students are introduced to the VLE and the Library through a set of short learning activities. However, this initiative was the first time that the Library and LTi had planned and delivered a series of workshops for school students.

The workshop series was provided for one of London's largest sixth form colleges, City and Islington College (CandI) which is based close to LSE. The college was keen for their students to develop their independent learning skills. In addition to the three workshops which ran in January, February and March 2014, the CandI students were given access to LSE Library for six months. The three workshops were planned in conjunction with the students' tutor. The students were asked to complete a survey to provide feedback at the end of the series.

It was useful that this project ran concurrently to the SADL project, as it was decided to invite several student ambassadors to attend the final workshop for CandI students. Two student ambassadors spoke to the students about 'what they wished they knew about university study before they came to LSE' and then stayed to answer questions from the group. Feedback suggested that the presentation by the student ambassadors was one of the most valuable parts of the programme. It was also helpful to use some of the activities developed as part of the SADL project with A Level students, as these resources were pitched at a similar level. The team also found a number of open educational resources, available in Jorum, the UK teaching and learning repository, which they were able to adapt for the session. In the interests of sharing good practice LSE's resources for the A level students were also converted into open educational resources and are now available in Jorum [13].

5   Issues and Challenges

Reflecting on these initiatives in the past year, it is clear that both undergraduate and Year 12 students have varying levels of digital and information literacy and catering for a mixed ability group can be challenging. It is also evident that new students often have limited knowledge about tools and support available at LSE and this could continue if information and digital literacy is not embedded in their courses, given the low take up of the optional information literacy workshops. Many of the student ambassadors during the SADL project were enthusiastic to learn about technologies and practices to support their studies. However A-Level students were more challenging

to teach and the authors struggled with knowing at what level to pitch these sessions. Feedback from this group suggested that their abilities were also mixed with some students believing that the workshops were too basic.

The Library and LTi were interested in how students can act as peer mentors for developing digital and information literacies. Students were willing to share their knowledge with their peers, however the ambassadors commented on how this could be difficult to do in practice. It was clear that the SADL project team needed to provide the ambassadors with tools and structures to help them support their peers such as a forum within the VLE or assisting them to run workshops. Inviting student ambassadors to speak to Year 12 students was received extremely well, but in general this group was cautious about sharing their academic practices with others. For example, students were unwilling to admit in workshop 2 that they used Wikipedia.

Motivating student ambassadors to attend workshops was helped by the use of Amazon vouchers and recognition on their Higher Education Academic Record (HEAR) statement which students perceive as helping with employability. We also experimented with awarding students with online badges for attendance at workshops and additional activities such as blogging and peer support. This meant that overall attendance at the SADL workshops was very good. Meanwhile attendance at the Year 12 workshops was not compulsory, but was strongly recommended and the workshops were scheduled at the same time as their tutor group classes. Students were awarded with a certificate for attendance of at least two out of three workshops.

Disciplinary differences between students in qualitative and quantitative social sciences were very distinct, due to the different expectations of the type of work and activities that they undertake on their courses. There was merit in bringing the students together to compare their practices. It was also beneficial to have first, second and third years involved in SADL to examine how their practices evolve over three years of study. During the Year 12 workshops there were students from Politics and Philosophy and indicative reading lists were prepared for both groups. The teachers supplied essay titles that students were working on to help tailor the sessions.

6   Evaluation and Impact

In July 2014, the project team is considering how the impact of these projects is to be measured. Evaluation has been collected from students involved in both projects following their completion, and is currently being analysed. Discussions are continuing with the Students' Union about the possibilities of collecting quantitative data from LSE students about their digital and information literacy needs and abilities.

Valuable feedback was collected as part of the final workshop during the SADL project. Students were asked to record short videos in pairs to capture their experiences and eight students each recorded three videos sharing the key lessons that they learnt during the project, why they believed the role of ambassador was important and what they had learnt about their digital footprint. The videos suggest that students learnt to find, evaluate and manage information and found out about many existing resources and support for the first time. This suggests that the way that resources and

support are currently promoted to students is not effective. The students felt that there were clear benefits in establishing a peer support network, to allow them to meet others from different departments and other years. The peer support role was valued as a way of sharing their academic practices including useful tools and apps for study. The end of project questionnaire will reveal more about the value of specific workshops and any changes in academic practices since the start of the project. This will be presented at ECIL 2014.

Other issues currently being considered by the project team include:

- How is the success of embedded information and digital literacy support to be measured and demonstrated?
- Is the work of the SADL project sustainable and scalable across all undergraduates?
- Is the programme offered to Year 12 students sustainable and scalable? Is it feasible to offer this to other sixth form colleges?
- What might the staff development needs be for this programme of work? A workshop is planned for LSE academic staff in Autumn 2014 to share the project findings and discuss how to best support teaching staff to design courses with digital and information literacies embedded?

7 Conclusions

Workshops were time consuming to prepare and deliver so scalability is an issue for the project team to consider. One option might be to involve student ambassadors in running the workshops. Resources for four new 1.5 hour workshops are now available for future reuse. These will be shared widely as open educational resources in Jorum.

Disciplinary differences mean that workshops ideally need to be customized carefully for students. Workshop 2 was particularly challenging for Statistics students who are not required to read as much as social policy students.

Students were less prolific users of social media than was expected and hesitant about blogging on our public facing website. However, they wanted other students in their courses to know about their Ambassador role. Students wanted their participation and the project's progress to be more widely circulated to their departments once they had been recruited and the project was underway.

Overall the experiences of the past year have contributed to the understanding of both undergraduate students at LSE, and the needs of students before they arrive at university. The new workshops have provided rich qualitative data of the types of support that students need and demonstrated the value of peer support as a way of engaging students. Work will continue in the next academic year as the team aim to extend the SADL project to more academic departments and continue the workshops for Year 12 students. LSE is committed to sharing its ongoing teaching experiences with the wider community through conversion of the resources into open educational resources and dissemination of the outcomes of the work.

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International, Collaborative and Online Education of LIS-students – A Step to the Future?

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Abstract. In this paper, we will analyze and discuss the quality of a project course with an international, collaborative and online format, whose content touches all Swiss information literacy standards. The analysis on a micro-level shall illuminate if the course setup can be declared as a more comprehensive teaching method for LIS students, than the simple teacher- or classroom- centered education.

Keywords: Education of library and information science students, qualitative evaluation, international education, collaborative learning, project course, new learning methods.

1 Introduction

If we look at the latest pedagogical research, it says that traditionally acknowledged, teacher-centered education can no longer prepare the new generation for the exigencies of this modern society we are living in [1-2]. Movements like increasing multiculturalism, globalization and technological progress have an impact on educational methods and are transforming with high speed the already mentioned traditional education within the four walls of a classroom, which was very well-known only a couple of years ago [3]. As one example of the ongoing changes which the educational system is currently experiencing, the exponential growth of online learning programs could be mentioned [4]. In addition, it is becoming more and more important in our society, as well, to be able to work, produce and solve problems in a team [5-6].

Therefore, today's student[1] has to be taught how to interact and solve problems with others, and if possible, in a multicultural context. This includes communication in more than one language and probably at distance, by using, for example, new communication and information technologies.

Solutions to this new educational challenge can be found in cooperative and collaborative learning methods, and by applying them to an online context. As Damon and Phelps [7] described, cooperative learning methods include all forms of team-based

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[1] In this case, it refers generally to LIS-students.

learning approaches, and come from constructive learning theory. By working in teams, discussing a topic and solving tasks together, every student brings his/her own competences and can at the same time make use of those of his/her colleagues.

Studies, such as the one of Mergendoller, Bellisimo and Maxwell [8] have shown that collaboration, as well as the discussion of a problem and the proposal of solutions within a group exchange process, improves learner's performance.

In this context and with the idea of preparing their students to be more adaptable to high exigencies, such as lifelong learning, a high level of comprehensive digital media and information literacy, and all this within a multicultural context, the Stuttgart Media University and the Geneva School of Business Administration in Geneva organized for the 3rd time a joint semester course in the second year of their Bachelor curriculum in Information Science.

2   The Course Structure

The course in question was conducted from end of September 2013 until the middle of December 2013 (in total, 12 weeks) in collaboration of the two schools, HdM Stuttgart and the HEG Geneva, for the 3rd time in the second year of the Bachelor curriculum. The participating students meet first in person and form mixed virtual teams (6 teams of 3, one participant from each school). The teams then select their research topics from current issues of the library and media industries, as for example, the importance of social media for libraries, and get introduced to the use of communication and collaboration tools, as well as the platform where the final outcomes have to be synthetically presented. An additional social program with dinner and a one-day excursion eases the students, encouraging them to get in touch and overcome language barriers. An eight week intense working phase follows, in which the students choose and use the various kinds of communication and collaboration tools on their own to coordinate the project's progress from their home institutions. Eventually, the virtual teams summarize and visualize their research results on the dashboard platform introduced at the beginning. A final workshop is held at the second university where each team presents its research results and the dashboard's specific functionality in regard to their outcomes. The course's principal objective is to let students look for sources (websites, documents, feeds etc.) concerning their research topic, choose the most valuable and meaningful of them, organize, comment and publish it for third parties in an understandable manner on a collaborative dashboard, and then present and argue their choice during a final presentation.

By organizing the course in this way, a comprehensive course has been established whose content touches all Swiss information literacy standards (need, retrieval, assessment, organization, application, responsibility). After having chosen a research topic, students must analyze their information need, retrieve corresponding information, assess and organize it, or restart the cycle continuously, together with their group members. As the final product is a compilation of their encountered resources in different formats on a dashboard platform, they are driven to directly apply and synthesize their acquired knowledge. Furthermore, the international context asks every single

participant for a responsible reflection about cultural, ethical, and socioeconomic issues in regard to the analyzed, compiled and published information.

3   The Participating Schools

The Geneva School of Business Administration (HEG) offers three major study branches, one of which is Information Science. As a specification within the Information Science branch, which has been offered for more than ten years, students may take a third of their courses in German [9]. This bilingual education offers its followers the unique possibility of acquiring deeper linguistic competences and getting in contact with other German-speaking education institutions within the same branch, by doing, for example, an Erasmus semester [10]. One of these formal Erasmus partnerships was established with the HdM Stuttgart in 2006 [11].

Stuttgart Media University (HdM) covers a broad spectrum of media expertise: from printed media to electronic media, from media theory to media production, from media design to making media available. The seven-semester degree program, Library and Information Management (Bachelor), combines a long tradition of training in librarianship with the impulses from a dynamically developing world of information and media. The courses are varied; they include classical lectures, exercises and seminars, workshops and e-learning - partly in the English language [12].

4   Assessment Method

The course evaluation has been done on two levels. On one hand, interactions between instructor and students were analyzed during the entire project duration (12 weeks) using the indicators frequency, and content, as well as methodological differences between the two schools. At that time, the exchanges among students were studied by taking into account different processes, which are acknowledged to be signs for high performance teams, explicitly effective communication, positive interrelationships, self-reflection, goal setting, and commitment [13-14]. For this, students were qualitatively interviewed by mail at the end of the project about their opinion with respect to it; they encountered difficulties as well as positive outcomes [15].

5   Results

The following two tables illustrate the compiled results after qualitative data analysis.[2] The analysis was done on qualitative mail conversations. The important commentaries can be found after the bibliography. Table 1 lines up interactions between instructor and students, whereas Table 2 reviews interactions among students during the project phase.

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[2] All commentaries may be found at the end of this paper, after the bibliography.

6   Result Discussion

As it concerns Table 1, students did not mention a problem with either of the methods. As they were asked to fulfill the task as much on their own as possible, it may be assumed that in this case the method of interaction does not play a role, as long as there is any interaction. Still, due to the already mentioned curricula differences, the contributing students from Geneva enter the project with other acquaintances and problem awareness than the students from Stuttgart. During the interview, students pointed out that they could benefit from each other (see comment 9, 12). As the French-speaking colleagues, i.e., knew the dashboard platform better, they explained the different functionalities to the other participants. And they helped them in case of linguistic problems. One student would have liked to get more information about the final product (see comment 7), which shows the importance of interaction and the challenge for students to decide on their own about the next steps to be taken.

Table 1. Interaction between instructor and students

	Methodology	Content	Frequency
Stuttgart (P1)*	In person, formal	Answers to students' questions concerning problems with platform and research topic	First theoretical introduction to project and platform, then regular (once every second week)
Geneva (P2)	By mail, informal	Only answers to students' questions concerning problems with platform and research topic	First theoretical introduction to project and platform, then irregular

*Numbers in parentheses are student or professor numbers (compare to commentaries at the end of the text).

Table 2. Interaction among students

	Effective communication	Positive interrelationships	Self-reflection	Goal setting	Commitment	Quality of final Outcome*
Group1 (St 1)	Irregular	Yes	Yes	No	Intermediate	Intermediate
Group2 (St 2, St 8)	Irregular	Yes	Yes	No	Intermediate	Low
Group3 (St 3, St 8)	Regular	Yes	Yes	No	High	High
Group4 (St 4)	Irregular	Yes	Yes	No	Intermediate	Low
Group5 (St 5)	Regular	Yes	Yes	No	High	High
Group6 (St 7)	Irregular	Yes	Yes	No	High	Intermediate

*In this case, « low » means that the students still passed.

Taking a look at Table II, two things seem evident to mention: organization and effective communication, as well as the level of commitment compared to the final outcome.

As a matter of fact, communication seems to be one of the most important, yet most difficult, issues (see comment 2, 11, 14, 16). This goes along with recent findings concerning students' attitudes towards online collaborative learning, where one

of the first critical elements mentioned by participants in an online collaborative learning environment is communication [15].

Students state that the linguistic differences (French-German) are sometimes difficult to handle and imply an often more time-consuming discussion about work objectives than within a single linguistic group. Also, the distance does not always permit effective communication and organization, either because of comprehensive but also technical or simply organizational matters. As the curricula are not the same, it seemed to be difficult sometimes to find a free moment for an online discussion. Furthermore, when conducting a project at the same school, important communications often happen during other courses or "in hallways". Within an online environment, this communication is not possible, which implies that students have to organize themselves differently in order to be able to communicate in an efficient way.

Comparing these results to the quality of the final outcome, a successful method seems to be regular communication (see comment 3, 15). One group has chosen a circa 10-day interval as a communication rhythm and organizes the sessions with Skype. The other has established a regular meeting strategy on Facebook. Both of them have a high quality of their final outcome. Evidently, this may be a hazard and further tests are required in order to underline this assumption. Probably, the different teachers' communication approaches (compare to Table 1 and comment 7) may have a negative impact on the result outcome, as well.

The second most important topic regarding problems seems to be team commitment. Comments (see comment 4, 5) of students show that working rhythms do not seem to be the same. This can be interpreted as a low commitment of team members. In the current case, the quality of the final outcome in both groups with "intermediate-level"-commitment was lower than the others with higher commitment. This may be a question of different working culture or a hazard, but it goes along with Tseng, Ku, Akarasriworn [15], who say that team commitment has to be taken seriously into account, as it has an impact on participant satisfaction, and it can be assumed, therefore, on project outcome, as well.

Concerning technological communication tools, students were free to choose whatever device they thought to be useful. Results so far show that the most used devices are Mail, followed by Facebook-Chat or Facebook-Group, Dropbox, Skype, and Teamviewer (see comment 3, 10, 13, 15, 18). A student stated that their first choice, Teamviewer, did not work correctly for Swiss students. For this reason, they had to start to use Skype (see comment 13). It is interesting to see that the applied communication tools contain not only common one-to-one writing and chat tools (Mail, Facebook), but also face-to-face communication (i.e. Skype). Even in a non-classroom environment, it seems important to see each other's face from time to time.

In this case, a student also mentioned the problem of different levels of media and information technology literacy (see comment 6). In order to fulfill their task, the concerned students had to motivate and even teach their collaborators to use the concerned tool. Evidently, this means an additional responsibility of the student, but goes perfectly with the wished outcome of a cooperative learning course [5-6]. The student with a high level of computer literacy has to think about teaching methods at a distance and in another language, whereas the student with a lower level of computer

literacy gains new knowledge about online communication tools. Certainly, both of them will benefit from this experience and learn from each other.

Last but not least, students underlined the cultural and professional benefit of the program and are happy to be part of it. They even mention the importance of such an experience for future work in international environments (see comment 1, 8, 17).

7   Conclusion

This paper analyzed and discussed on a micro-level a new course format for LIS-students, which touches all Swiss information literacy standards and will reinforce students' competence development across borders and technologies. First of all, the results show that the implementation and conduct of such a comprehensive course format is possible and leads to acceptable, even good results. Furthermore, it apparently offers its participating students a more challenging experience, which is worth a high quality outcome. Apparently, this form of education really asks students to reflect on communication, collaboration and technological issues, which go along with the necessity for an education method that prepares them for multiculturalism, fast technical developments, and increasing obligations to work in teams. This can definitively be seen as a first success of the joint program formula. Still, generalizing conclusions cannot be drawn as the data is few and the course is adapted to a special education environment.

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Appendix: Comments of Students

Comment 1 (Student 1): Incidentally, the cultural experience was very enriching when we were in Stuttgart and I am looking already forward to receive the others in Switzerland !

Comment 2 (Student 2): Concerning the collaboration with Stuttgart, it works, but it is rather difficult to communicate and to understand each other on distance. Everything needs twice more time, because the assignments have to be discussed again and again. Often, we didn't unterstand the same thing. We always compromise in the end, but not immediately […]

Comment 3 (Student 3): For me, the collaboration with the two students from Stuttgart is working very well. We regularly add content to the dashboard platform and afterwards discuss on Skype (circa every 10 days).

Comment 4 (Student 1): As my dearest colleagues don't apparently like to work […], they didn't contribute anything to the platform.

Comment 5 (Student 4) : Well, the collaboration works, but nevertheless, I would like to mention that I am rather the only one who is proactive… But, ok, it works.

Comment 6 (Student 4): One rather negative point about this work, which unfortunately concerns only my two group members, is the missing knowledge about informatics. They don't know and are not willing to try out Skype (I already had to convince them to create a Facebook page […]) and they do not like the dashboard platform.

Comment 7 (Student 4): I would have liked to get more information about the final outcome of the project.

Comment 8 (Student 5): The collaboration […] mostly was positive and fun.

Comment 9 (Student 5): This way, she gave me useful hints concerning the design of our dashboard, and I helped her correcting the final presentation.

Comment 10 (Student 5): The communication took course on an especially for this project created Facebook page.

Comment 11 (Student 6): Some of the occurring problems could be explained by the language barrier and were quickly resolved.

Comment 12 (Student 6): The collaboration with a mother tongue French-speaking permitted us to fulfill the project in two languages and open, this way, the circle of interested end users.

Comment 13 (Student 6): For communication outside of the virtual meetings, the Facebook messages were used, for the meetings, TeamViewer. Unfortunately, technical problems occurred with the Swiss students while she was using TeamViewer. They could not be resolved due to the language barrier. That's why Skype was used as an alternative in the end.

Comment 14 (Student 7): The biggest problem was to find dates, on which everyone had time. This was a difficult issue, because of the different timetables.

Comment 15 (Student 7): We stayed in regular contact by using an especially created Facebook group. This way, we had the same level of knowledge and knew what the other was doing.

Comment 16 (Student 8): The exclusively virtual collaboration was for all an unfamiliar situation. Short consultations, like they are possible when we meet in high schools' corridor, were not possible.

Comment 17 (Student 8): In any case, this form of collaboration was a precious experience. I think this is relevant in the professional life, as well, if, for example, want to collaborate with other libraries.

Comment 18 (Student 8): The chosen tools (Facebook, Skype, Dropbox, Mail...) were during the project phase enough.

Comment 19 (Professor 1): We had a meeting every second week, but usually, not all groups were present (two or three). During these meetings, the groups were mostly working on their own, sometimes together with the others by using Skype. There were questions addressed to me, as well. As far as I know, the other groups had different meetings and were skype-ing from their homes.

The Benefits of Integrating Information Literacy Activities into the Higher Education Curriculum of Future Healthcare Professionals

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Abstract. It is often said that Internet users are not information literate at the level they are expected to be. Internet is right now the most used means to search and find information on any field of knowledge, and has become 'the' primary source of information for both health professionals and patients. It is essential for medical students to master information literacy skills. Since digital education has been revealed as indispensable for improving users' information skills, and the labour market is requesting more and more information literate people, academic structures are the most indicated to take over this issue. This paper provides a reflection on the benefits of embedding information literacy into the academic curriculum of students in Medical and Health Sciences, and on institutional measures that can contribute to the improvement of the information literacy skills of the future health professionals.

Keywords: Information literacy, online health information, higher education, lifelong learning, transversal knowledge, future healthcare professionals.

1 Introduction

ICT (Information and Communication Technologies) are currently present in all social spheres and in any activity we undertake. Right now, the Internet is the most used means of searching and finding information in any field of knowledge. In the specific case of the Medical and Healthcare field, eight out of ten Internet users look for health information online. This is the third most popular online activity, preceded by email and using a search engine [1]. Users care more about health issues than they did over recent years, and besides looking for online information, they increasingly approach healthcare professionals, either to get more information about a specific health concern, or to contrast the information they gather from the Internet.

In the digital age we live in today, it is important for all users to have information literacy (IL) skills to "recognize when information is needed and to locate, evaluate, and use effectively the needed information" [2]. However, as many studies have pointed out in recent years, Internet users are not information literate at the level they are expected to be. Many users, students included, often confess their weaknesses in IL competencies, either when trying to translate an information need into understand-

able words for the search engines, or when selecting the information that is supposed to satisfy their information requirements.

Information literacy is "common to all disciplines, to all learning environments, and to all levels of education" [3]. The difficulties for becoming fully information literate are also common to all users. Healthcare providers belong to a field of knowledge where IL skills are particularly relevant given the sensitive nature of its subject matter and the effects it can have on the individual patient and on society.

"Increasingly, professionals and consumers engage in interactive health communication" [4]. A survey conducted by Fox and Fallows [5] reveals that "people use the Internet to inform themselves about their relevant health care issues and then carry that information to their health care providers". This means that those professionals, in addition to playing the role of healthcare providers, face a complementary role of on-line health information prescribers. This new scene, along with the rising demand for highly information-skilled professionals in the labour market, stresses the fact that IL is a widespread concern that educational institutions should take into consideration, specially Medical and Healthcare universities, whose students will have to face informative and communicative situations where IL competencies will have a key role.

In a period where patient-centred care is boosted, where relationship-based care leads to patient satisfaction, and where the Internet is fast becoming the first source for health information for many people, medical and healthcare students need to learn to use effective health communication skills and to improve their IL skills. They should be well trained and highly skilled in order to meet the challenges they will have to face in their upcoming professional careers, and in order to be able to perform complex tasks in today's ever-changing healthcare environment. Universities and faculty staff have the mechanisms to deal with this challenging opportunity and can determine the appropriate policies to make students improve their information literacy levels. Higher education institutions in medicine and related fields should be aware of this trend and take advantage of it by adopting educational initiatives that help increase IL skills among students at a very early age.

The purpose of this article is to present a picture of the current needs for information literacy skills of students, particularly medical and health students, in the digital age, and to examine how higher education institutions take over this concern. An extensive literature review, focusing on analysis of a wide range of IL initiatives in different higher institutions, has been conducted. The paper discusses the elements that make up the concept of information literacy. It addresses aspects such the role of information specialists in higher education, the perceptions of faculty regarding IL, and the positive effects of collaboration between faculty and information specialists on the development of students' IL skills. It also highlights the approach that literature suggests as being the most suitable to improve students' information literacy skills: embedding information literacy into the higher education curriculum.

2   Information Literacy and Critical Thinking: Lifelong Values in Higher Education

Throughout our lives, we acquire, via learning or direct experience, a set of transversal abilities that we use in the domain of work, but not exclusively. These skills are

helpful in handling any daily situations. Information Literacy is a continuum [6] and "lies at the core of lifelong learning. It empowers people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals" [7]. Therefore, "IL cannot be seen as something to be addressed once and then ignored. It is an integrated part of lifelong learning which must be recognised, enhanced and continually updated" [8]. Although "developing lifelong learners is central to the mission of higher education institutions" [3], it has been reported that many of them understand IL as an optional matter of the general apprenticeship of a student [9].

Everyone agrees that education and training are crucial elements to success in any skill; and that a continuous learning of IL skills, or whatever subject, from primary school and broadened throughout the years is much more effective and productive than discontinuous learning. It is clear that learning does not end with the awarding of a university degree, or that one does not become IL-skilled for having followed a 4-hour, a 2-day course, or a single library research class. It should be noted, however, that these last scenarios are often seen in higher education institutions, where information literacy is presented as an optional training, with voluntary attendance, instead of as a compulsory element in the education curricula.

College and university students follow a predetermined curriculum that occupies all their hours. Their programs are so charged that they do not have enough time to engage properly in the extra activities they are asked to do. By and large, students, besides being pressured by the rush, pay little attention to certain tasks, as they consider that the skills they will be assessed for are of low or basic importance. It is during the process of looking for, selecting, analysing and synthesising online information that they face some real difficulties. They are often not aware that what they are asked to do is a high intellectual effort that requires critical thinking, defined by Scriven and Paul [10] as "the intellectually disciplined process of actively and skilfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action". Critical thinking skills take time, need practice and are essential for making decisions.

Regardless of the pressure of time, students rely too much on their own capacities. "Because of their familiarity with electronic gadgetry and the internet, students tend to believe that they are more information literate than they in fact are" [11]. They have, in general, a biased perception of their own information skills, even if many of them are not aware of what IL is or means [12]. It is good to note that "even though users may be able to use a search engine or other resources they did not necessarily know how to get quality information from it" [13]. IL deals with an information problem-solving process, which includes steps such as reading, internalization, interpretation and synthesis of information from a variety of sources, and many other related skills such as media literacy or technical literacy. Students will be evaluated for their ability of understanding what information is important, for their capacity to think critically, and for their proficiency in making informed decisions.

Students' misconceptions of information literacy leads us to wonder if educational institutions are disregarding IL education within their premises, while, on the other

hand, the labour market is increasingly seeking highly information-literate professionals. Without any doubt, cultivating critical thinking skills helps people identify accurate and trustworthy information, and that is why it is of utmost importance that higher education institutions do not minimize students' IL skills, since these have a relevant impact on daily activities and in the workplace.

"We are living in the information age where, on a daily basis, we are constantly exposed to an ever growing and rapidly changing pool of information. Being able to evaluate this information, sort the valuable from the trivial, analyze its relevance and meaning, and relate it to other information is a priceless skill with universal applicability" [14]. If people are able to have a critical eye on information and assess it consciously, they are also able to take more informed decisions and accomplish effectively any task. By ensuring that individuals have the intellectual abilities of reasoning and critical thinking, and by helping them construct a framework for learning how to learn, colleges and universities provide the foundation for continued growth throughout their careers" [3].

3   The Role of Information Specialists and Their Collaboration with Faculty

"IL is an area with a lot of increasing interest among librarians. This interest is reflected in the extensive literature on IL, that has mushroomed since the 1990s" [15]. For years, librarians and information specialists have been in charge of teaching IL to students, though, as pointed out by many researchers, the emphasis in the digital age has widely been placed "on the product - the library catalogue, the abstract and indexing database, the reference management software" [9], instead of on a comprehensive learning process.

Focusing on the "product" is not enough to improve students' IL skills, and "being information literate does not consist of the ability to use a library, a catalogue or an abstract" [9]. Information literacy is a process that involves technical knowledge, but, mainly, intellectual capabilities. Therefore, it is necessary to teach students not only how to use a library and its resources, but to teach them about information. "They should be empowered to recognise and manage their own learning development as a strand that runs parallel with mastery of their subject discipline" [9]. "When reflection on learning to be information literate is added to the experience of information literacy, students are helped to recognize the transferability of the processes involved to everyday life, community and workplace contexts" [16]. If we are able to put in place this paradigm, we will be able to get information literate people, who, according to the American Library Association (ALA) "are those who have learned how to learn", those "who know how to learn because they know how knowledge is organized, how to find information, and how to use information in such a way that others can learn from them" [2].

Looking at information literacy practices undertaken by higher education institutions, one notices that most of them, regardless of their field of knowledge, design their teaching strategies under a fragmented approach to information literacy instruction.

They consider IL as an optional skill instead of an essential requirement to be able to work effectively. Besides, they delegate its development to library services rather than academic departments, which means that library tutorials and IL activities are usually detached from the curriculum.

Many studies point out that higher education institutions are the main agents responsible for ensuring that students will become effective information users. Even though libraries play an important role in the development of IL skills, information literacy "cannot be addressed only by librarians or only in isolated experiences" [17]. Hence, many researchers advocate that IL requires a curriculum integration approach and a coordinated relationship among the main stakeholders (faculty, librarians and administrators). According to their findings, embedding IL into the academic curriculum is the most effective means of enhancing the IL skills of students.

Some of the advocates of such an approach believe that "IL is invisible to academia because it is misunderstood, academic administrators have not put it on their institutions' agendas, the literature of IL remains in the library silo, […], faculty culture makes IL less significant than other educational pursuits, faculty have a limited perception of the ability of librarians, and accrediting bodies have not yet advanced information literacy to a viable position in higher education" [18].

If we look now at the faculty members, who according to the above opinion also have their share of responsibility for IL education, one may notice that they "perceive students as being more digitally capable than is really the case" [19]. They believe that students are able to develop information literacy skills on their own, or expect that they have acquired these skills in their previous education [20]; or even that student's ability to gain IL skills is driven by the student's own motivation, interests and innovative abilities, rather than the quality and format of the available instructional opportunities [21].

In addition to these assumptions, it also often occurs that faculty members themselves lack solid IL skills, which implies that in most cases they are not able to provide students with clear guidelines when they are asked to carry out some research. The ambiguity in the assignments confuses students, who feel frustrated and left to their own devices on information literacy matters. In order to avoid such situations, some authors recommend opportunities for faculty to develop information literacy skills and strategies for discipline-specific information literacy development [21]. This would address two aspects at once. On the one hand, faculty would improve their own IL skills, and on the other hand they would have a better understanding of how IL skills can benefit both their courses and students' IL skills.

Smith already noted in 1997 that "librarians must help faculty incorporate information literacy into instruction in ways that are pedagogically sound and which help faculty deliver content. Faculty cannot be expected to teach information literacy unless they are provided with the knowledge to do so" [22]. To reach this objective, it is essential that the higher education governance bodies enable both collectives to work together. In the era where collaboration and sharing are on the agenda, closer collaboration between the academic staff and the information specialists should be fostered. Such collaboration has proven to be a successful strategy to improve IL skills in higher education [23]. However, even if there are many examples of effective collaboration,

existing research studies show evidence of a disconnection between faculty and librarians around teaching roles [20]. Each group preserves its own territory and since there are no clear instructions from the educational governing bodies that address this issue, each University and college implements the IL strategy and sets the collaborative links between teaching staff and library members that they want.

Many studies report a wide variety of initiatives on IL at the higher education level. Among the many examples cited by the authors, the following are of particular note: credit-bearing module [24], course-integrated model [25], course-related library instruction sessions [26], or optional e-learning and b-learning[1] courses provided by libraries [27]. The curriculum-integrated approach deserves special attention. The proposition of linking IL instruction with the entire curriculum is widely supported in the scholarly literature (ACRL, 2000; AASL & AECT, 1998; Eisenberg & Berkowitz, 1990; Stripling & Pitts, 1988; Kulthau, 1986; Irving, 1985; quoted by Fabbi [28], [15]. Evidence shows that the most successful results have taken place in those higher education institutions where IL has been considered "as an academic matter rather than an issue confined to the library" [29].

After having pondered the discussions and conclusions provided by researchers, it emerges that the academic structures are the best suited to deal with the IL issue. They have the tools and means to do so. It seems, therefore, appropriate to suggest that higher education institutions should assume an enhanced responsibility in regard to information literacy education, in order to bring effective solutions to students, academics and information specialists.

4   Challenging Opportunities for Future Health Professionals

Information technology and related fields are in a constant state of change. The explosion of ICTs has had a significant impact on patients in recent years, encouraging them to be more active in their own health care and more willing to consume online information. They use the Internet to look for health information online, to share experiences on social media and to ask for advice. These new dynamics have implied changes in the way that health professionals and patients communicate and relate to each other. Patient empowerment invades clinical practice little by little, and for their part, health providers promote the role of educators. It is obvious that such changes bring along new challenges and also opportunities for both patients and future health professionals.

ICTs enable patients to easily access online information, but this ease of access is accompanied by the difficulty of identifying reliable health information from a large amount of online data that is inaccurate, unreliable and from dubious sources. Reliable and up-to-date information shares space with information that is "unordered, unverified, yet freely available and seductively easy to use" [9], the latter of which can lead

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[1] b-learning (blended learning, mixed learning) course is a combined course comprising face-to-face and the internet-based sessions.

users to serious misunderstandings. Fortunately, some of those patients who search for information online ask medical and health professionals for advice or guidance. Thanks to their knowledge and expertise on medical issues, they can quickly contrast the information that patients bring to appointments, and, if necessary, guide them towards reliable online sources of information. By doing so, health professionals contribute, on the one hand, to educate patients, and, on the other hand, to reduce the potential damage of erroneous information.

The more active participation of patients in their own healthcare has also contributed to modifying the way healthcare professionals carry out their everyday tasks in clinical settings. In addition to finding the best up-to-date evidence-based information that helps them make the right decisions in their daily clinical practice, healthcare providers also have to direct patients to reliable information sources online. For all medical and health professionals it is of utmost importance to be IL skilled and to master information resources in order to perform their duties. They need to know how to search for good quality information and they need to be able to assess the validity of what they find. For their everyday work they must access and evaluate different information resources such as the web, reference material or academic journals. But, just as for patients, they also encounter limitations when searching for accurate, trustworthy and quality healthcare information on the net. Even if they would like to be fully IL skilled, they cannot since they have not been taught to be so.

In the health sector, IL skills are needed at all levels. Given that medical students will be the researchers and clinicians of the future, it is very important that the education system takes care of providing students with the best formulas for acquiring and developing IL competencies. The higher the level of their information skills, the more able they will be at facing the challenges of healthcare today and at addressing the needs of patients. Even if they have been trained in online resources at high school, they need to be highly skilled in IL to deal with the continuous changing requirements they will encounter during their professional careers.

As mentioned earlier, numerous researchers advocate the strategy of integrating IL competencies into the academic curricula of future health professionals to meet challenges in research, training and education. Many medical schools are already using this approach. Scientific literature echoes positive outcomes for students and faculty of Health/Medical Sciences Faculties that have adopted a curriculum-integrated IL program [30-35]. In most of these initiatives, two factors stand out:

1. The Library is a very central and important collaborator.
2. The comprehensive curriculum that integrates the information literacy program is made in cooperation with the Medical faculty.

Since most researchers agree that "the most successful way to cultivate IL is to integrate essential concepts into the academic curriculum, where the necessary skills can be learned in context" [29], we want to reflect from now on upon the benefits of such a model, and upon the measures that should be taken at the institutional and academic levels to get medical and health students' IL skills improved.

5   Conclusions

The rapid advancement of technology and the changing market labour requirements show how urgent it is for students to be information-competent. This situation puts higher education institutions in the spotlight. They have to face the important and challenging task of preparing students for the information and knowledge society by equipping them with the skills that will enable them to critically evaluate the overwhelming amount and variety of information they will encounter.

Embedding IL into the academic curriculum is pointed out as the most effective means of enhancing the students' IL skills in higher education institutions. Among the benefits of such a model of integration, the following stand out:

1. It allows the contextualization of the skills into the discipline, which adds greater meaning and effectiveness to the skills;
2. It promotes critical thinking skills and puts in place the means to develop lifelong learning;
3. It fosters students ability to assess information systematically;
4. It helps students improve the quality of their information seeking and retrieval habits as well as their research assignments;
5. It enables the transferability and applicability of the skills and the processes involved into both professional and daily life, e.g. into new contexts;
6. It allows better communication between faculty members and information specialists, and in turn, a mutual understanding of each other's roles and responsibilities;
7. It contributes to improving teaching quality and learning outcomes;
8. It helps optimize resources and expertise to achieve the best outcomes;
9. It increases visibility for library services and for collaborative activities.

Planning and developing an effective model requires firstly that the governing boards of Universities see IL as an academic matter rather that a mere training activity. "Education, as opposed to training, engages the learner in reflective practice, learning specific skills alongside the development of a wider awareness of their learning" [36]. Once it is assumed that IL is a continuous process, the competent bodies should:

1. Recognize IL as a fundamental element of academic theory and practice;
2. Find ways to involve all the stakeholders (administrators, policy makers, curriculum designers, faculty, information specialists, students) in the promotion of effective learning and teaching information literacy experiences for students;
3. Find strategies that help faculty recognize the importance of information literacy, and know how to teach information literacy themselves;
4. Encourage and facilitate engagement and collaborations between faculty and information specialists within the specific context of the courses.

The information society demands an information-literate population. If future medical and health professionals can optimally develop IL skills through immersion in higher education, they will be able to transfer their knowledge and skills beyond academia, and contribute to increasing the health literacy level of the individual patient.

The education and empowerment of patients will be a major focus in medical and healthcare settings for years to come. Future healthcare professionals are expected to successfully meet this challenge that, undoubtedly, can have an overall impact on society as a whole and thus result in significant savings and better health outcomes.

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Moldovan and Norwegian PhD-Students' Information Needs

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Abstract. In order to achieve comparability of standards and quality in European higher education there is a need for evaluation and comparisons. This holds true also for the PhD, the third cycle in the educational system. In this paper the authors compare information needs as articulated by a group of Norwegian and Moldovan PhD-students. The objective of the study was to find data to harmonize online PhD Information Literacy Tutorials in Norway and Moldova. The end result will be to develop a new PhD tutorial for Moldova, based on the Norwegian resource «PhD on track», while taking into account the differences, difficulties and barriers in accessing, collecting, using and communicating research information for PhD students in the two countries.

Keywords: PhD students, information literacy, focus group, Moldavia, Norway.

1   Introduction

In 2012-2014, the Academy of Economical Sciences of Moldova (ASEM) and the University of Bergen Library, in collaboration with Transilvania University of Brasov engaged in the project "Development of New Information Services for Moldovan Higher Economic Education". The project was funded by the Norwegian EURASIA-program. The objectives of the project are to maintain and develop the libraries of the educational system under the Bologna process, and train library staff to become specialists and oriented to European educational standards. In order to achieve this, Information Literacy must be developed for improvement of the quality of higher education in the Republic of Moldova. This includes developing the organizational, technical and operating infrastructure of library processes, in order to make them compatible with the state of the art standards of the knowledge and information society.

The University of Bergen Library had already been involved in several collaborative development projects within the field of Information Literacy, and had also participated in making the web resource "Søk og Skriv" (Search and Write) (www.sokogskriv.no). Through this effort, the library found that PhD-students, the third cycle in the Bologna

Process, had different information needs from students at lower levels. The project partners, universities and university colleges in Norway and Denmark, obtained funding through The National Library of Norway in order to investigate this issue. The first part of their project was to conduct a literature review, and then to interview PhD-students and -supervisors in focus groups. Based on the findings of the literature review and the focus group interviews, a new tutorial was developed, called PhD on Track (phdon-track.net).

2   Theoretical Background

PhD students are in a very important period of maturing, when research skills are crucial for obtaining good results. They need IT skills and Information Literacy skills. There are many studies about the informational behavior of PhD students. The literature shows that good IT skills alone are insufficient for constructing good searches. With more experience and training, candidates ranked IT skills comparatively lower and were able to make their searches more effective by using more complex keywords [1].

Kleinert and Stewart [2] show that researchers view IT skills as important tools in their field. However, some of the studies seem to indicate that PhD candidates and researchers do not have excellent IT skills [3].

In addition to IT skills, studies emphasize the importance of training in conducting searches, as most candidates prefer to conduct their own searches rather than ask for assistance [4]. The research process requires more and more advanced literature searches as the work develops [1]. Adaptation to the discipline is important, because it affects the scope and thoroughness of the searches [1], [5]. Libutta and Kopala [4] reviewed literature on the PhD process in the social sciences. They conclude that supervisors expect PhD candidates to have the skills necessary to conduct a literature review, but for the PhD candidates there is little literature available to teach them how to start and conduct a literature review. For example, they do not meet the expectations of their supervisors and the academic community [3]. When candidates have read a relevant article, they trace references backwards via bibliographies and forwards through citation services, such as ISI Web of Science, Scopus or Google Scholar [3], [6]. Tracing references remains an important method at later career stages, but the extent to which the method is used varies [5].

Orla and Stevens [7, p. 22] try to remedy the lack of realistic practical advice on gathering information and transforming it into knowledge and ideas in a research project, and thereafter writing it up – transforming it back into a dissertation or a report, generally for all researchers.

3   Research Method

The Moldovan and Romanian partners in the EURASIA-project visited the University of Bergen Library in January 2014 for the annual meeting. In the meeting, the partners were introduced to the University of Bergen web-resources, PhD on track among

them, and the project decided to look into information needs also for Moldovan PhD-students.

To better understand the tendencies and practices in scientific communication at the PhD-level, the Scientific Library of the Academy of Economic Studies of Moldova carried out qualitative research on the topic "PhD students and scientific research process: the role of the library".

Research objectives:

1. analyzing the peculiarities of information consumption by PhD students;
2. identifying the types of information resources necessary for the scientific production process;
3. identifying the issues regarding the processes of obtaining, processing and analyzing scientific information;
4. studying the degree of awareness of the necessity of ethical use of information resources and the citation of sources;
5. validating the knowledge and attitude of PhD students to Open Access policy in the institution;
6. defining the role of the scientific library in the scientific research process.

Research data was collected through the focus group method. This method is used for issues that are difficult to research by the survey method. The interviews enable the discussion of aspects related to the specific needs of a certain group of users.

The focus group was attended by 12 PhD students from the Academy of Economic Studies of Moldova (with 6 participants in two steps). The first focus group was held on May 19, 2014, the second one - on May 21, 2014. The discussions held with each group took about 2 hours. Audio recording media was used, and immediate transcription followed.

The findings of this research will help identify the key issues in scientific communication of PhD students, and will also suggest new forms and methods for information assurance in the scientific research process.

4   Research Findings

The participants in the two focus groups who took part in the discussions pursue their PhD at the Academy of Economic Studies of Moldova. The average age of the respondents is about 30 years old. One group included second year PhD students; the other group included third year PhD students, from various fields of economics.

During the interviews the focus group participants were questioned on different aspects of their scientific activity and the role of the scientific library in their doctoral research.

The respondents' answers were analyzed by thematic blocks according to the interview guide:

4.1   As a PhD Student

During the discussion the respondents mentioned the changes that occurred in the process of becoming a PhD student from Master/BSc student:

- accumulating more useful information from one process of studies to another;
- upgrading the level of professionalism;
- systematically enriching knowledge in the field;
- clarifying preferences in future work and research;
- self-fulfillment and increase in prestige.

It was also noted that there is a need for more thorough documentation, quality information, analytical and synthesis skills development. Some respondents mentioned they had become more responsible; others had abandoned professional activity for doctoral studies.

When asked "What are your main tasks?" the respondents enumerated the following: developing qualitative scientific papers, carrying out doctoral research and defending their PhD theses, contributing to the development of the national economy, implementing innovative ideas, enriching knowledge in the chosen research area, taking the position of a senior lecturer. In both formal and informal communication the majority of respondents consider themselves PhD students, others - as researchers.

The discussion identified the problems that PhD students face while pursuing their PhD These are: selecting the most useful material from the great diversity of information, conducting field research, crystallizing their own vision and developing recommendations for solving the issue under research, getting access to research findings from abroad and foreign literature. Too much time, according to the respondents, is consumed for data processing and interpretation. Lack of time is a major problem; another problem mentioned is rigorous requirements and many formalities of the National Council for Accreditation and Attestation (NCAA).

According to the respondents, the main goal of a PhD student is to develop research skills, to become a distinguished researcher, to identify scientific novelty and to apply theoretical knowledge to practice, to find employment, and to pass PhD defense.

The Norwegian PhD-students interviewed in the study by Gullbekk, Rullestad and Torras i Calvo [8, p. 56] had "Independence" as their main descriptive word for the PhD. This includes the feeling of freedom versus responsibility, and the individuality versus the wish to belong in a research community.

4.2   PhD Student's Behavior in Seeking Information and Information Needs

The discussions highlighted the types of information resources used in PhD research: monographs, teaching materials, journals, electronic resources, databases, national and international legislation, scientific reports, newspapers, and PhD theses.

When asked "How and where do you find the literature and information you use for research?" the respondents said they use library resources, buy scientific and instructional

publications, use Internet resources, and access databases. While seeking information, PhD students use keywords, and the sources indicated in the reference list to other papers. According to the respondents, it is necessary to select information very carefully because the process is quite complicated, not all sources found are relevant, it requires a sustained effort and specific skills. A problem mentioned by the majority of PhD students is that not all the information found is useful but only nearly 20%. During the research a great deal of information remains unused.

The scientific adviser is concerned about the fact that the information selected by a PhD student, used and integrated into the research should be up-to-date, relevant, from reliable sources of high quality.

When asked "How do you keep up with your field of research?" the interviewees said they find new information in scientific journals, visiting websites, participating in conferences, round tables, RSS, discussion lists, exhibitions, information by email, and forums.

The information is selected according to the following criteria: urgent character, relevance, reliability, the language of the document, and the author's reputation. PhD students rarely use the citation index in selecting information.

According to the respondents, most important for research are the following types of information: articles, monographs, PhD theses, legislation and statistical collections.

Most respondents rarely use or never use reference management tools in their research (EndNote).

The Norwegian PhD-students express the same concerns about finding relevant literature and information for their research as their Moldovan counterparts [8, p. 65].

4.3   Awareness of Ethics and Use of Sources

In the Norwegian focus group interviews different views emerged regarding academic dishonesty, depending on the different fields of study. The PhD-students from the humanities had a different perception of what using sources in a proper way included, than the PhD-students from the sciences. Those working with texts as research objects found that correct and transparent translations also were important. However, the PhD-students from ASEM are all within one field – economics, and when asked "What does "academic dishonesty" mean to you?" they answered: plagiarism, using someone else's ideas in the thesis or articles without reference to the author.

Academic dishonesty also involves falsifying data, links, information, and presenting unverified information. This question caused difficulties: some respondents did not provide a firm answer.

All respondents answered in the affirmative the question "Is your academic community concerned with plagiarism / cheating / academic dishonesty?"

Most respondents who also teach talk to their own students about the ethical use of information, combating plagiarism, etc.

During the discussion the respondents noted that they discuss issues of plagiarism with their students at surgery classes for project implementation, developing License and Master theses, and preparing presentations for students' scientific forums.

Among the measures taken to combat plagiarism, all respondents mentioned the anti-plagiarism system (exclusive in higher education institutions in the Republic of Moldova) used at the Academy of Economic Studies of Moldova. The functions of this system are that the students place their License and Master theses in a special repository where they are monitored for plagiarism detection. The respondents also noted that theses that do not meet the academic requirements are not accepted for defense.

4.4   Editorial Activities and Choosing Sources of Publication

When asked "Is the editorial activity the target in your PhD program?" most respondents in Moldova answered in the affirmative. *The Regulation on Organizing and Conducting PhD and Sc.D. studies* provides for the publication of research findings in journals and collections of materials of conferences. However, during the discussion it was discovered that some respondents did not have a clear vision of the editing process while pursuing the PhD

The focus group participants mentioned the moments that are important when publishing research findings. First, the subject area of the publication, which must correspond to the subject of research, the category and prestige of the edition, the language in which the information is published, and whether it is an international or local publication.

Most respondents argue that when assessing editorial activity, the scientific community in the country is focused on such indicators as journal score. Conducted by NCAA it serves to monitor the productivity and efficiency of research.

Nine participants in the focus group said they are not familiar with the citation index and impact factor, three PhD students are familiar with these indicators but they do not use them in practice.

PhD students mentioned that they are aware of the existence of the Department of Science, which coordinates research, and evaluates the scientific work of PhD students, departments and other units of the institution based on annual reports on science.

4.5   Knowledge and Attitudes Regarding Open Access

A set of questions put to the Moldovan respondents about the Open Access movement created some difficulties for PhD students. Eight respondents are aware of this movement, but none of the focus group participants has experience of publishing research findings in Open Access journals, and none of the respondents used the digital repository of AESM (IREK) for presenting research findings.

The respondents who have knowledge of Open Access were informed about it during presentations organized by the Scientific Library of AESM, during discussions held at the departments and at the events organized by the library. Two of the participants learned about it from promotional materials received at the meeting of the Senate of ASEM as part of OA promotion campaign.

PhD students presented the following arguments for and against OA:

- advantages: quick access, no fees, increase in visibility and in the number of citations;
- disadvantages: low quality of scientific information, lack of trust in the ethical use of information.

The same concerns were shared by the Norwegian PhD-students, although they also had relatively little knowledge about publishing in Open Access journals [8, p. 75].

4.6   Collaborative Publication and Copyright

During the discussion at ASEM the respondents mentioned the sources where they prefer to publish research findings. The respondents publish both sole-authored and collaborative articles, i.e. they use both ways to present scientific material for publication. Three respondents prefer to publish sole-authored work and three others opt for collaborative publishing of research findings.

Virtually none of the respondents encountered problems with copyright compliance in the scientific community.

When asked "How do you view proper sharing of rights to academic publications? Editor VS author? Supervisor VS principal researcher?" the respondents had difficulty in perceiving the relationship of *editor VS author*. This relationship means compliance with the editorial policy of the journal. Regarding the relationship of *supervisor VS principal researcher*, most respondents believe that priority should be given to the principal researcher. Two PhD students believe that placing the name of the supervisor first confers a high degree of credibility on the article.

4.7   Support in Research

The most important person who supports scientific research, according to the Moldovan respondents, is the supervisor of the PhD student; close and fruitful collaboration between them is very necessary.

The important factors that influence researchers in scientific research are lack of time, language barriers, participation in professional international forums, availability of sufficient scientific and factual information of high quality, research project funding, qualitative assistance for a PhD student from institutional structures, access to official sources, and the opinions of economic entities and experts in the field.

4.8   Using Social Networks

PhD students use innovative forms of communication more frequently in their research. Thus, four respondents from ASEM use social networks in scientific research. Many universities place information about conferences and links to useful information in social networks, and discussion groups and information exchanges for PhD students are organized on the websites of the universities. Informal communication through social networks was highly appreciated by all respondents.

PhD students participate in social networks like Facebook, LinkedIn, VKontakte, and Odnoklassniki. Social networks are used by PhD students to learn about the organization of scientific forums and professional trainings, links to the publications on the research topic, discussions with the colleagues from other regions and countries, etc. During the discussion we noted that the respondents did not distinguish between social networks and systems such as MOODLE.

4.9   Experience and Expectations of the Library

When asked "What role does the library play in your research?" the following answers were received from the ASEM-PhD's:

- "The library is one of the main sources of information";
- "The library plays an important role in scientific research";
- "It supports the process of seeking information";
- "It is information service provider";
- "A rather important role in documentation on the topic";
- "A core role";
- "Important";
- "It provides information on innovations in the field";
- "A significant role";
- "It guides PhD students on references format";
- "A very big role";
- "It provides knowledge of bibliographic sources estimation".

During the discussion the PhD students mentioned positive and negative experiences related to the Scientific Library of ASEM:

- positive: promptitude, close collaboration with the library staff, access to international databases, comfortable conditions for providing information.
- negative: many formalities, lack of necessary scientific information, outdated information, sophisticated search system, not so much literature.

Seven participants were trained in their PhD studies on Information Culture and the ethical use of information. All PhD students said they had attended the presentation of scientific information resources provided by the Scientific Library of AESM. Five PhD students said they need additional training on search and use of information for research purposes.

Six respondents attended classes on how to use the library when taking their License or Master degree (two academic hours in cycle I (License) and two hours in cycle II (Master).

When asked "How do you use the services of the Scientific Library of AESM?" the respondents answered as follows:

- "As needed";
- "In the first year of PhD - daily, now in the third year - once a month";

- "I constantly visit the periodicals reading room and use the library electronic services";
- "I use services directly and online";
- "I access online sources in Multimedia Center";
- "Information on the news";
- "I use the services effectively";
- "Constantly, both classical sources (journals, books) in the reading rooms and online sources and digital documents";
- "I use the library sources and scientific information in Open Access that is posted on the library website";
- "I use the library occasionally";
- "I'm very interested in PhD theses collection as we can find it only in the library";
- "I come to the library just to consult scientific databases".

During the discussion the respondents mentioned the support the library provides to them during their scientific research. This is, first, aid in retrieving the necessary information, providing access to subscribed scientific databases, to the database The Legislation of the Republic of Moldova, technical assistance and advice on the use of the library electronic resources, advice on writing citations and bibliographic references development, virtual exhibition, etc.

PhD students involved in the discussion wished the library would provide them with the option of accessing electronic libraries with monographic publications, journal articles, and full text reference publications from various domains.

When asked "How could the library help you to carry out your research tasks?" the respondents argued for improved working conditions (high-speed Internet access, providing working rooms for individual work, coffee, etc.), purchase of basic scientific publications that cannot be found in online databases, providing support in organizing video conferences, online publication of papers, etc. They believe the library can assist them in publishing in open access editions, in institutional repositories and archives.

Thus, we conclude that there is a latent demand for services that can be met with the help of IREK deposit. However, few PhD students know of its existence and the terms and conditions for publishing research findings.

According to the respondents, the library can help them through various forms of advisory assistance, training regarding the publication of research findings in Open Access, in IREK, providing support in disseminating information, providing foreign publications through interlibrary loan.

The Norwegian PhD-students suggested that university libraries could develop both courses and tutorials to be taken face-to-face, and as web-resources. They emphasized the benefit of a web-resource in that it can be consulted as often as needed, and at all times/from anywhere.

4.10   Final Subjects

In connection with the development of the library website some suggestions and pro-posals regarding the organization of online access to full text documents, widening access to electronic services, electronic catalog optimization, and digital library de-velopment were made.

The information on the library website should be presented in Romanian, English and Russian. Also, information about databases with limited term access or under testing should be made more operative. The ASEM PhD students proposed to organ-ize information on the website in accordance with the fields of knowledge and the disciplines of study to simplify navigation.

During the discussions PhD students had the following suggestions for improving library services:

1. "Improving the online version of the electronic catalog";
2. "Developing PhD students' database";
3. "Appointing one librarian for each PhD specialty";
4. "Including PhD students in the priority group of information distribution and the library assistance in bibliography";
5. "Increasing the representativeness of the library collection through the acquisition of fundamental publications, full-text database, subscriptions to electronic journals in Romanian, English and Russian";
6. "Intensifying the activities of promoting the products and services provided by the library";
7. "Developing subject bibliographies on demand (and for a fee)";
8. "Diversifying the services rendered to PhD students";
9. "Distributing information by electronic means (e-mail, Twitter, Facebook, etc.) about new acquisitions in the library";
10. "Subscribing to multiple print journals";
11. "The library should organize much more training activities";
12. "Reviewing bibliographic references to PhD theses".

4.11   Summary of the Results of the ASEM Focus Group Interviews

The study undertaken has shown that:

- Scientific research is a complex process that involves several steps, burdened with the problems of increased growth in the volume of information, rapid obsoles-cence and complexity of the search for relevant information.
- Current trends of the development of science, society and information technolo-gies influence the development of scientific communication and change research strategies.

The main goal of a PhD student is to develop analytical and synthesis skills, to make qualitative scientific products, to develop creativity and ingenuity, international orien-tation and integrity, to become a competitive researcher, to identify scientific novelty

and to apply theoretical knowledge into practice, be able to find employment, and to pass PhD defense.

The study highlighted the problems that PhD students face while pursuing their PhD: selecting the most relevant information, conducting field research, conceptualizing their own vision and solving the problems, access to research from abroad and foreign publications, rigorous criteria and multiple formalities of NCAA.

The search, accumulation and integration of scientific information is carried out through scholarly and educational publications, the use of resources available on the Internet, access to scientific databases and the use of library resources.

While conducting their research PhD students select information according to such criteria as urgent character, relevance, accuracy, reliability, language, the publisher/author's authority, etc. PhD students rarely use the citation index in developing publications.

PhD students are actively involved in combating plagiarism and academic dishonesty, which is manifested in teaching when their students are consulted on the development of projects, annual and graduate theses, preparation of communications and reports at students' scientific forums.

While pursuing their PhD the focus group participants became familiar with the Code of Academic Ethics of AESM, NCAA regulations, the Law of copyright and related rights of the Republic of Moldova etc.

During the discussion the respondents indicated their preferences for publishing research findings. Most respondents publish sole-authored or collaborative articles, i.e. they use both versions of scientific publishing.

PhD students do not have sufficient knowledge about Open Access policies. The participants in the debate do not have experience of publishing in Open Access editions; none of them has ever used the institutional repository IREK for presenting scientific research findings.

PhD students highly appreciate the role of the scientific library in guiding them during the process of information retrieval, the support provided in accessing authorized scientific databases, training in the use of new information products, advice on writing bibliographic references and citations for publications etc.

Some suggestions and proposals regarding the development of the library website were made: improvement of online access to full text documents, expansion and diversification of electronic services, optimization of access to the electronic catalog, digital library development and exposure of the information on the library website in Romanian, English and Russian.

5   Discussions on Findings

The analysis shows that the Moldovan PhD-students have similar information needs and face similar challenges in their pursuit of research careers as the ones from Norway. Thus, in conclusion, we formulate some *directions for improving* information assistance with scientific research:

1. The Scientific Library of AESM should focus on the PhD students' segment for providing support in conducting quality scientific research.
2. Adding to the informational potential of the library by purchasing fundamental publications, scientific databases, subscribing to prestigious scientific journals in electronic and traditional formats.
3. Improving the PhD students' training by introducing a compulsory course "Information Culture", promote the use of the tool "PhD on track", and also develop additional resources for this category of users.
4. Promoting the values of Open Access to information and the ethical use of scientific information by introduction in the Information Literacy course one chapter about Open Access, institutional repositories and open access journals, as one important resource of information
5. Take a leading role in and facilitate the promotion of scientific research of the Republic of Moldova in international scientific community through the institutional repository IREK, make scientometric analyses like mapping the science and co-authors analyse to provide PhD students methods to choose their best publishing environment.

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Piloting a Holistic Information Culture Program: The Experience of CETYS Universidad System of Libraries

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Abstract. This article presents the staff, structure, methods and preliminary results from the pilot of a holistic information literacy program developed in the System of Libraries of CETYS Universidad in Mexico. 'Information Culture Development' (ICD) is driven by action research (AR) and the concept of information culture (IC), comprised of information literacy (IL), digital literacy (DL), and research competences. ICD aims at developing these competences and supporting reflection and improvement upon university practices related to curriculum, teaching, and research. ICD's initiatives and products were divided into four axes: a) curriculum and learning support, b) information and digital literacies development, c) research and scientific communication support, and d) evaluation and communication of results. ICD's pilot involved workshops and activities framed within an AR perspective and a mixed methods approach. Preliminary results determine the success of activities with academics and students regarding their strengths and weaknesses in IC-related competencies.

Keywords: Information literacy, digital literacy, information culture, action research, higher education, CETYS Universidad.

1   Introduction

Information literacy (IL) indicates the capacity to develop competencies for locating, retrieving, evaluating, and using information. Several academics and experts have written about IL, generally associating it with problem solving, decision making, emancipation and the exercise of citizenship, the overcoming of different forms of oppression and divides, critical thinking, and lifelong learning [1]. Many of these purposes fulfilled by an IL initiative are part of the worldwide tendencies seeking to support learning processes and are present in the vision of CETYS Universidad [2]. Hence, the IL program described in this document is grounded in both national [3] and international guidelines [4], as well as in sound research agendas [1], [5]. Apart from IL, it is also a priority for the program to develop digital literacy (DL), which refers to the 'proper use' of Information and Communication Technologies (ICTs) for teaching and learning; and institutional needs also point toward addressing academic communication and research competences [6]. The latter area has been currently

explored and enhanced at the institution. Therefore, this initiative was conceived as a transversal axis and a driving force for the support of reflection and improvement upon practices related to curriculum, teaching and research activities within the institution. The term information culture (IC) has been used in current literature and in institutional guidelines [2]. There have been different concepts and approaches to IC [7]; some nuances pointed out by researchers are: that it is related to groups or institutions, it consists of shared values toward information-related activities [8] that "may significantly motivate information sharing incentives" [9], among others. One of the most recent references on the subject consists of a three-level model related to people's values and attitudes toward information, where the 2nd level is devoted to IL and DL and has been currently explored at a conceptual level [10]. The present understanding of IC is grounded in the cited understandings, and furthermore, concentrates on information practices and development of competences for the integration of IL, DL, as well as academic writing, communication and research competences. The following sections summarize insights into the institutional context, staff involved, objectives, structure, methods and preliminary results of the new and holistic information literacy program being developed within the System of Libraries (SL) of the three-campus CETYS Universidad in Baja California (Mexico).

1.1   Institutional Context

The Program 'Information Culture Development' (ICD) has been grounded in the previous working and research experiences of the 'Information and Learning Development Librarians' (ILDL) [11], who were tasked with its development, as well as in a research study based on the available literature and interviews with academic staff in order to find out about their needs. ILDL is also framed within the ideas of key institutional documents, such as the 2020 Development Plan (P2020) [2] and the Higher Education Teacher's Guide (HETG) [12]. ICD is one of the flagship projects of the SL, and the main project of the ILDL, undertaken under the HETG principle of fostering culture, reading, supporting teaching-learning processes, and being a dynamic source of knowledge [12]. ICD is directed mainly to CETYS teachers and students, but its execution will also raise new processes for staff training and reengineering of library activities related to ICD. Moreover, it will facilitate the necessary knowledge for their users to develop strategies for acquiring, appropriating and assessing information and ICTs, specifically for learning purposes. ICD is consonant with different facets of the P2020 [2], its concepts, pillars, and objectives. The concepts highlighted are: flexibility, innovation and pertinence, applied research, sustainability, accreditation, competences, community impact, results orientation, transparency, and evidence. P2020 pillars are: a) high educational quality, related to national and international accreditation; b) sustainability; c) learning community, involving learning-centered curriculum design, its measuring and the use of information in decision-making, enhancing a research culture, and information seeking and analysis, which are aspects clearly related with IL programs; d) worldwide competitiveness. Regarding P2020 objectives the SL, through their ILDL, must contribute to enhance teaching, research and extension tasks by developing teachers with the required

competences, with a focus on learning measurement and the use of technology to support learning. Moreover, IC must be transformed and consolidated, to reflect the objective of diversifying educational offerings, emphasizing blended and online modalities, and improving information systems and resources in order to be able to deploy these learning modalities. P2020 also proposes the so called Distinctive Elements of CETYS Education (EDECS), which are: a) information culture; b) entrepreneur and innovation culture; c) internationalization; d) sustainability; and e) linkage and social responsibility. Clearly, ICD was framed within the first of these EDECS, information culture. In consequence, the program must concentrate on this element's actions that are described in the P2020, to further develop and expand upon them. These actions are related to: service capacity and variety, hiring professional staff and professionalizing nonprofessional staff in the SL to strengthen IC, to evaluate the impact of the SL initiatives. In 2013, the institution hired two highly qualified librarians, one national and one international. They were initially appointed as reference librarians, but later renamed as Information and Learning Development Librarians (ILDL). The hiring of the ILDL was proposed in P2020 as one of the actions to strengthen IC and it was among the recommendations that the Western Association of Schools and Colleges (WASC) made after granting CETYS their international accreditation. The reasoning behind the renaming was that these librarians are expected to make large contributions and have more comprehensive roles; they still provide reference services but they are teachers and lifelong learners, researchers, experts on information, technology objects and environments; they are information customizers, embedded librarians, and dynamic agents of change in the institution. They have the institutional mission of developing IC through the creation, planning, development, execution, and evaluation of the ICD. The name ILDL was partly inspired by the "Selected Academic Librarian Position Titles for Positions that Further the Teaching Mission of the Library" [13]. Although the final name is long, it was intended to be very simplistic: Librarians tasked with the Development of Information culture for Learning experiences and purposes.

2   The Program Information Culture Development (ICD)

ICD was built after some diagnostic interviews were conducted among academics. These interviews were not structured but only driven by some guiding questions to profile the staff interviewed, their needs and expectations regarding library services, and to identify possible allied academic staff [11], determining their academic, professional and research background, English proficiency, among other aspects. Then, their needs and expectations helped shape the first incarnations of the IL program, as they are the first intended stakeholders; thus, the ICD intends to support academic staff regarding learning through IL and DL, together with what the SL can do for them and what they want it to do for them. Furthermore, the interviews continued as conversations as the ILDL librarians talked about the input from other academics, their ideas for the IL Program and about what types of services they could provide. Staff comments for this latter part were interesting to measure the reactions toward some ideas and possibilities. Given the importance placed on participation, IL, DL,

reflection and improvement upon learning and teaching practices, ICD is driven by the methodological tradition of action research (AR). Framing IL initiatives within AR is nothing extravagant [14-15]; it is just something that has not been widely or properly stated by researchers and practitioners [1]. In fact, ICD's vision is that all its activities must be grounded in research [1], [10], [15-16], because among other things, ICD seeks to position the SL as a research unit of the institution, which would feed learning processes and apply the scientific method to the SL's activities, use, and professionalize their non-professional staff. This new position of the SL, following the guidelines of P2020 [2], seeks to generate institutional conditions for academic staff to enhance research. The SL's role is to be an example of an active research community and a driving force for encouraging and supporting CETYS researchers.

The use of an AR perspective was already decided upon and kept in mind at the moment of conducting the previously mentioned diagnostic interviews. This was important for keeping a bottom-up participatory approach in the IL initiative. By having the ILDL systematize, adopt, and build upon the academic staff input, the IL initiative became a product of the learning community. Moreover, this is a primordial approach for defining the aspects related to this project and it would set a precedent and an example of a SL that participates in, enhances and promotes IC within and for an academic institution, by also seeking the active participation of academic staff. After conducting the interviews, reviewing pertinent literature, and setting the basic ideas, ICD's main elements started to be developed. ICD's aims at addressing information and digital literacy tasks, as well as provoking and supporting reflection and improvement upon other university practices related to curriculum, teaching, and research. Accordingly, ICD's objectives were stated in order to address all university stakeholders, as well as these methodological and conceptual stances. The general objective of the Program is to serve as a supporting axis to research, teaching, and learning in CETYS Universidad. Specific objectives are as follows: a) support and nurture teaching and learning practices of CETYS community through information culture and reflection; b) promote products, services, and resources of the SL and justify their increase and development through the enhancing and massively increasing their use; c) develop an information culture in the CETYS community and at the individual level develop independent and critical information users, who are able to tap into appropriate information and technological tools; d) Professionalize and enhance the staff, procedures and resources of the SL.

ICD must be an initiative from the SL, executed by the ILDL, under a close collaboration with academic staff, thus generating results and best practices with a bottom-up approach and avoiding the imposition of practices without first studying all elements at stake. Additionally, the courses of this initiative would contribute to the achievement of the above-mentioned practices, and their socialization would provide feedback to the enrichment and revision of the courses as well.

2.1   ICD Axes and Initiatives

ICD's initiatives, products and resources were divided into four axes, three main ones and a transversal axis. All but the latter include the development of courses and video

tutorials derived from courses and intended for students and members of the university. The following paragraphs summarize the axes and their initiatives.

Axis I. Curriculum and Learning Support through IL and DL. It seeks to support teachers to enhance and innovate classroom practices, both those of student learning and of teaching through IL and DL. Initiatives of this axis include:

1. development of subject guides both by teachers' request and through the initiative of the ILDL, in order to strategically cover university curricula. These guides compile references of recent documents that are related to a given course available in the library, subscribed databases and bookstores, in order to provide the possibility of updating the library collection, the bibliography of the courses, and the teachers themselves
2. library-academia joint activities: product of a curricular analysis and determining a learning activity with a given teacher that integrates IC into the curriculum of their courses
3. documents offered by area of knowledge: this is a variation of the subject guide, but intended for students and made in general for every study program and not each course, they list resources available in the subscribed databases and some keywords students can use to retrieve them
4. courses of this axis: they are exclusively for academic staff and alternatively can be offered to students of the Master in education, they cover: a) recording and editing of digital audio and video, b) social media for education purposes, c) content curation, and d) really simple syndication (RSS) for learning.

Axis II. Information and Digital Literacies Development. It contains the majority of courses for teachers and students about access, use and evaluation of information, and the appropriation of ICTs for learning purposes. It includes the initiatives: a) developing flyers on the SL's resources and containing a summary of course contents; b) production of promotional videos on the SL's products and services; c) courses on: how to use the SL, SL online catalog, and academic databases (AD).

Axis III. Research and Scientific Communication Support. It concentrates initiatives related to research and scientific communication and is targeted at each academic program of the institution. The following actions are included: a) promotion materials for citation styles for each field: demonstrating the different citation styles used by each field, i.e. IEEE, MLA, ISO, Chicago; b) Scientific Communication Support Guides: provided to facilitate research and lowering the barriers of entry for the publication on a given field, compiling information about publications (language, publisher, indexing, availability in the SL, manuscript types and extension, citation style, and open access policy), together with information on pertinent professional congresses, groups of interest, and professional associations; c) Courses: on citation styles; the peer review process; reference managers; Self-archiving in open Access repositories, writing an article and publishing it; AR workshops; creation and

management of online researchers profiles in order to improve the promotion, visibili-ty, and recognition of CETYS researchers. This latter course would contain the con-struction of a communication, promotion and visibility strategy by using sites such as LinkedIn, ResearchGate, Google Scholar, ORCID, among others.

Transversal Axis. Evaluation and Communication of Results. This is intended as an administrative axis, which would aim at conducting research to enrich the other axes, and evaluate and communicate the results of the initiative. It is comprised of: a) con-structing data collection instruments to measure both learning and user satisfaction; b) developing procedures and formats for new services and instructional design formats; c) measurement and statistics; d) supporting IC testing through international instruments such as SAILS and iSkills; e) building a mirror SL website as a highly updated blog; f) communicating ICD's results in scientific conferences and publications.

2.2   Development of Courses

ICD entails the offering of courses, which are being developed with a common me-thodology among the ILDL. Prior to their arrival at the institution, there were already user training initiatives, however, the current effort seeks to unify and formalize a solid structure of supporting materials and learning experiences comprised of learning objectives, contents, activities, and complementary readings. This working methodol-ogy is consonant with the HETG [12], which considers an integrative student profile, so it compels teachers to use more than one pedagogical resource. The level of diffi-culty of the courses consists in dividing the courses into a modular structure according to learning objectives and contents and arranging them by difficulty. In this manner, the course offerings consist of the levels beginner, intermediate, and advanced. Be-cause ICD was designed, executed and evaluated at the same time, the courses are developed in two modalities: the first we call 'remedial', proactively offered to the community but mostly facilitated by request, but that does not follow a fixed structure, because it still could not be properly developed. The second modality is 'formal', because these are courses that were properly planned and instructionally designed. The production of the courses has to be exhaustive in order to generate simultaneously, and for every topic, a regular course, an online course, a video tutori-al, and the corresponding flyers or manuals of instructions. The development of courses was planned this way in order to cover all demands from different learning styles and being able to offer something to all stakeholders.

2.3   Holistic Cycle

ICD introduces the idea of a holistic cycle as the ideal way of presenting IC courses that are naturally related among each other. The holistic cycle comprises a reasoned and sequential articulation of courses from different axes. Despite the fact that this is more time consuming for the participant than isolated courses, the main idea is to be able to offer different combinations of stages and competences tailored for each group of stakeholders. The holistic cycle implies sessions of training, working, and reflection,

which as AR dictates: one stage can lead to the other, as well as to the previous one, or to repeat the entire cycle once it is finished. The ideal holistic information culture cycle would contain the following stages and competences: a) Search in AD; b) Store and annotate through reference managers and note-taking and archiving software; c) Research and reflect by conducting an AR project in order to revise teaching or classroom practices; d) Communicate through presentations, conferences, publications, and media-editing software; and e) Promote visibility using professionally-oriented social media sites and traditional academic online indexes.

3   Piloting the Program

This section summarizes the methods and results from ICD's pilot stage, which consisted of two pilot studies conducted in two CETYS campuses, and involved AR-grounded training activities. Results are provided for Pilot 1 with High School Teachers (HST) in Mexicali and for Pilot 2 with undergraduate students (UGS) in Tijuana. Each pilot experimented with different forms of a holistic cycle.

Pilot 1. Mexicali. Holistic Cycle for HST. It was based on a three-stage holistic cycle for the competences: a) Searching with AD; b) Store and annotate with a reference manager (RM); and c) Research, Reflect by having an AR seminar and conducting an AR project on the HST's own classroom practices. This was planned with the High School Direction of CETYS Universidad Mexicali (CETYS includes the last years of high school in its academic offer). The cycle lasted for 20 hours, divided among an AD, a RM, an AR seminar, and the writing of the research project.

Pilot 2. Tijuana. Holistic Cycle for UGS. It was based on a two-stage holistic cycle for the competences of searching, evaluating, and citing documents from AD. 2-hour training sessions were provided to 10 groups of UGS enrolled in different programs and the examples and practical activities were tailored to each group's interests.

3.1   Data Collection and Analysis

Data collection instruments used were diagnostic and follow-up questionnaires. In the case of the questionnaires, each stage of the holistic cycle had diagnostic and follow-up questionnaires. These questionnaires had similar questions, which were adapted to each competence or platform being taught, in order to make the results comparable. They were intended to provide quantitative and qualitative insights to both learning and satisfaction of the participants enrolled in a holistic cycle. Questions on a diagnostic questionnaire were: a) how are you used to search / investigate / cite? b) Which uses you think you can give to APA Style /AD/AR? Both questions serve to assess learning. c) Have you actually used APA Style/AD /AR? d) Please describe your experience with APA Style/AD/AR. Both questions concentrate on satisfaction. Moreover, the follow-up questionnaire questions were: a) what have you learned in this session? b) Which uses you think you can give to this learning? Both questions

serve to appreciate learning that took place. c) A question that used a Likert scale for rating the topics, teaching strategies, teacher, resources, and other aspects of the session; d) Please provide a positive and a negative aspect of this experience; e) Did this experience fulfilled your expectations? Please explain why or why not. These last three questions seek to assess satisfaction. Similar questions were located in the diagnostic and follow-up questionnaires in order to provide and facilitate contrasting of responses when analyzing them. Furthermore, a final questionnaire was prepared exclusively for Pilot 1, in order to sum up the experience and provide more insights regarding participants' opinions on what they could learn during the workshops and how satisfied they were with them. In essence, the final questionnaire had questions that also intended to look at satisfaction and learning but assessing the holistic cycle as a whole, thus justifying that it was only passed among HST. Pilot 1 participants answered 3 diagnostic, 3 follow-up and the final questionnaire, while UGS in pilot 2 completed 2 diagnostic and 2 follow-up questionnaires. Furthermore, HST's AR projects were other data collection instruments used to determine the success of previous activities and to identify their strengths and weaknesses in IC-related competencies, specifically research and scientific communication competencies. Data Analysis was based on content analysis and category coding of participants' answers. Research projects were analyzed taking into account formal aspects such as: use of concepts, structure, clarity of language, use of sources and citations, methods, and quality of instruments proposed.

3.2 Preliminary Results

Pilot 1. Mexicali. 58 HST enrolled in this pilot study and 81% percent of them were able to present a draft of their AR project. The questionnaires allowed for profiling their information practices. Regarding the use of the tools in question: a) 44% of them used AD at least once, which is a low number, considering that it is one of the resources the institution subscribes. Moreover, when asked about how they search for academic information 29% cited the Internet and 10% cited AD subscribed by the institution; b) 2% have used a RM, which is not so surprising, as this tool is still considered niche and of course most teachers still use computer folders, Internet browsers, or email to store files; and c) 25% have used the AR method, which is a good sign if we were to push an AR agenda in the institution. Regarding the research projects, teachers divided themselves in 11 groups and the ILDL received 19 versions of the projects in total to revise, which had a total of 303 pages, 182 references, and the feedback provided by the ILDL was contained in 11 general comments and 538 comments over the text of these projects. 9 of the 11 projects fit the AR tradition, 6 groups specified this in their texts, but overall all the projects are doable and worthwhile. The topics of the projects were: academic performance, learning environments, following directions, attitudes and perceptions toward learning, emotional health, critical thinking, study habits, and social media. This experience helped confirm some assumptions about the needs and practices of academic staff [6], and furthermore we identified some areas to improve their IC competences: clarity and structure for scientific communication, use of sources, citation style and organizing sources in the text

produced; increase their use of information sources, both subscribed and those produced in the institution; clarity and precision of the language used and consonance with the methodological approach chosen. Regarding their evaluation of this experience, 26% HST communicated that this ICD pilot is better than previously offered library courses. 17% claimed it was similar. 17% percent said it was worse, and 40% declared that this is the first library course they had attended, which still gives ICD a large user base to satisfy, because this is just a sample of CETYS teachers. 65% HST stated they would like to attend more library courses. 3% expressed a negative answer on the matter, while 32% stated that 'it depends', then cited various reasons. Furthermore, they pointed out that some areas to improve ICD's courses are: having more practical activities, though some contents are necessarily theoretical; better balance between what is optional and mandatory, to have complementary readings and compulsory advisory sessions, revise durations and schedules; fragment users according to their competences and have smaller groups; encourage more collaborative work and teachers' active participation; improve computer equipment; and demonstrate more clearly the usefulness of some tools. Regarding the learning they experienced, we can say this experience was successful because HST answered that they learned about AR (33%), AD (27%), RM (25%), about some improvements for their teaching practices (11%), and about methodology in general (4%). In addition, HST main statements on the possible uses for the learning achieved throughout the cycle, consisted in ameliorating their teaching practice (26%), conducting research (17%), managing a personal digital library (11%), among others.

Pilot 2. Tijuana. 10 groups comprised by 127 UGS were trained on the use of AD and APA style. From the questionnaires we gathered that 69% have used AD before. When asked about how they search for academic information 46% cited the Internet, 16% AD subscribed by the institution, and 11% books. Moreover, they listed the uses for AD as to: find reliable information (43%), locate specialized information (32%), for research (16%), and recreation (8%). Their experiences using AD have been good in general (19%); they cited challenges such as complex search and navigation (17%), not finding what they need (13%) and that few platforms are in Spanish (10%). UGS stated that they learned about accessing AD (38%), performing basic searches (20%), creating personalized accounts (13%), use filters to refine searches (11%), correctly use the citation style (10%), and retrieving trustworthy information (8%). UGS expressed that the uses they foresee for the learning they had are: for [writing] academic papers (50%), retrieving reputable information (17%), downloading articles (12%), and recreation (10%). USG shared the desirable belief that through AD they may perform better in academic work.

4   Concluding Remarks

ICD has the potential of facilitating, developing, and strengthening IC in the institution, providing support for the most basic competences to the most complex ones. The ILDL are developing courses, flyers and tutorials, but also initiatives that were not

detailed in this article, including information products such as the Subject Guides and the Scientific Communication Support Guides (SCSG). The SCSG should help lower the barriers of entry to some challenging academic activities such as scientific publishing, which has been pointed out as having an IC based on 'strong input filters' [15]. Meanwhile, and regarding basic competences there is still work to do for the ICD in order to overcome common challenges among UGS and HST such as the language barrier, making sense of the purposes of developing an institutional IC, aligning ICD with the formal Institutional Learning Results, and overcoming the limited use of the subscribed AD and sources produced in the institution, thus reducing and making a more conscious use of the Internet as a source of information. Results indicate that through training sessions, the community may realize that ICD is a means to enhance teaching and learning. Moreover, its grounding on AR, the holistic cycle, axes structure, and complementary initiatives such as flyers, tutorials and innovative information products will result in powerful guidelines and means to support the development of IC in CETYS Universidad.

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Progress Testing of Information Literacy versus Information Literacy Self-Efficacy in Medical Students

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Abstract. Progress testing is a common assessment tool within medical schools. A similar assessment tool, the "Progress Test of Information Literacy" (PTIL) has been created. To become an information literate person, information literacy self-efficacy (ILSE) is a meaningful part and important to evaluate. In this study, every PTIL-item has been mapped with an item of the 38-ILSE scale. Even though the mapping turned out to be delicate and context related, the results of this study suggests a relation between PTIL and specific ILSE items. Students of the first two medical years scored better for certain PTIL questions compared to students in the last years. In addition, students from year 1 were less certain about their answers. Once extra-integrated IL courses were organized, students were much more certain about their answers. Integrated and repeated IL-courses are necessary throughout the whole curriculum.

Keywords: Self-efficacy, information literacy, medical curriculum, higher education, progress test.

1   Introduction

Formal instruction in information sciences is gradually being added to academic curricula. Educational intervention activates the process of learning and self-learning [1-2]. Skills in information literacy (IL) and communication are becoming an obligatory educational objective and have become an important aspect of medical education and the practice of evidence-based medicine [3].

International organizations have published objectives and guidelines for IL and lifelong learning. The American Library Association [4] defined the objectives of IL as "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information".

Evaluation of self-efficacy (SE) is as important as having a right or wrong answer. Self-efficacy is a basic human belief in one's ability to perform a task or a performance successfully. This belief is more important to the user than what is objectively true. Bandura [5] defines SE as a belief in one's capabilities to organize and execute a course of action required to attain a goal. For students, SE is defined as students' judgments of their capabilities to successfully perform specific tasks.

For medical professionals, competencies and outcome are very important. As Khan [6] stated it is not only enough to require requisite knowledge and skills but also beliefs of personal efficacy to use both effectively. Self-confidence to perform in a very stressful environment is vital for all medical students. Therefore, SE is an important topic in medical education research as the training methods used within the curriculum can have an impact on the development of SE of students [1-2].

Previous research at Ghent University suggested that autonomous training has a positive impact on student's SE. However, feedback of experienced physicians is critical for students to find out what level of knowledge and skills they already have. So, there seems to be a need for different teaching methods to find a balance between cognitive components and the development of SE [2].

1.1   Progress Testing of Information Literacy

Progress testing as a common assessment tool within medical schools is usually administered simultaneously to all medical students at regular intervals throughout the entire academic program. At the Faculty of Medicine and Health Sciences of Ghent University, it is administered once a year (November) and has become a familiar way of assessing students [7]. Results of this type of assessment can be used for diagnostic, prognostic and remedial teaching and learning interventions [8].

In this context, a similar assessment tool for IL, the "Progress Test of Information Literacy" (PTIL) has been developed. This test is administered ones a year at the beginning of the academic year (September – October) for students from first to fifth year and at the end of the academic year (June), after the "Final Clinical Examination", for the students of the sixth year.

The longitudinal data coming from these tests can be used for the evaluation of curriculum objectives. [8-9].

1.2   Information Literacy Self-Efficacy

Self-efficacy is an important player in today's information-based society. Information literacy self-efficacy (ILSE) is a meaningful part of becoming an information literate person. High SE will determine how resilient students will be and how much effort they will expend on an activity. Students who are self-assured are less put off from using new information sources, and will not give up when encountering a problem in their search strategy. Persistence or resilience is crucial for information problem solving, self-regulated learning and lifelong learning [10]. The context wherein SE is evaluated is considered to be significant, as an individual can be confident in one domain and uncertain in another situation [9].

1.3   Objectives

Information literacy and lifelong learning are important objectives within the medial curriculum at Ghent University [11]. Since 2005-2006 IL courses have been integrated into the curriculum. This study looks for a possible relationship between PTIL and ILSE. Secondly, it looks for the evolution of ILSE within the curriculum.

2   Methods and Data Collecting Tools

The research protocol and the different assessment tools have been evaluated by the Medical Education Commission and have been approved by the Ethical Commission of Ghent University and the University Hospital of Ghent. The support of the head of the medical curriculum has been an extra value as all assessments were integrated in student's timetables. All students signed a letter of consent and were informed about the anonymisation of the results by a trusted third party. This way, students had the confidence they could answer without inhibitions, because the results would not be taken into account as part of their study results.

   The assessments were organized in computer classes and administered through the digital learning platform.

2.1   Cohort

This study focuses on the results of the data collected in the academic year 2012-2013. All students (n=1253) of the medical curriculum (6 years) were invited to participate; 1129 students (90%) administered the PTIL and the ILSE questionnaire.

2.2   Progress Test of Information Literacy

The PTIL (Table 1) consists of 30 questions and measures basic to advanced skills of IL within a medical context. It was created for the Faculty of Medicine of Ghent University for students from all degrees. The answering time for the PTIL was limited to 30 minutes.

Structure of the questions:

- The test was set up in Dutch (language of the education)
- Each question is followed by four possible answers, and only one is correct.
- After each question the student is asked "How certain are you about your given answer?" with a scale of 0 (0% sure of my answer) - 5 (100% sure of my answer). This level of certainty gives information about whether the student is guessing or whether he/she thinks he/she really knows the answer.
- Combining this level of certainty with the scoring gives some extra information when analyzing the results.

2.3   Information Literacy Self-Efficacy

To assess the ILSE an existing and validated scale from Kurbanoglu, Akkoyunlu and Umay [10] has been amplified. This 28-item subscale consists of 7 factors determined as "defining the need for information", "initiating the search strategy", "locating and accessing the resources", "assessing and comprehending the information", "interpreting, synthesizing, and using the information" , "communicating the information" and "evaluating the product and process" (p. 733). These skills are mandatory in a general context of IL or education. However, because of the medical context and the impact on the development of IL skills [3] 10 questions have been added to evaluate ILSE within this specific medical context. The answering time for the 38-item ILSE was not limited.

Table 1. Topics of the 30 PTIL-questions

Question	Topic	Question	Topic	Question	Topic
Q1	Catalogue searching	Q11	PICO	Q21	Full text Access
Q2	Federated Searching	Q12	Citation-index	Q22	Reliability of sources
Q3	Terminology	Q13	Outcome reporting bias	Q23	Medical Reference style
Q4	Institutional depository	Q14	Mesh	Q24	Bibliographic software
Q5	Boolean operators	Q15	Web of Knowledge	Q25	Primary Literature
Q6	Secondary Literature	Q16	Journal Citation Report	Q26	Abstract Reading
Q7	Data reporting	Q17	Trip	Q27	Cited-references
Q8	Impact factor	Q18	Limits	Q28	Abstract Structure
Q9	Randomized Clinical Trial	Q19	Access Medicine	Q29	Author keywords
Q10	Meta-analysis	Q20	Google Scholar	Q30	Clinical Trial

Structure of the questions:

- The test was set up in English (original language of publication of the scale)
- The degree of confidence was measured in percentages, from 0-100.

2.4   Mapping of Information Literacy and Information Literacy Self-Efficacy

Two independent researchers mapped every item of the PTIL (Table 2) with an item of the 38-ILSE questionnaire and labeled it with "Basic" – "Intermediate" - "Advanced" skill. after which it was compared and discussed.

Table 2. Some examples of mapping

PTIL question	38-item ILSE question	Mapping PTIL-ILSE
The medical literature uses standard one of following reference styles:	I feel competent to reference the sources I use in a reference style used in medicine	Basic skill
When do we speak about "Outcome Reporting Bias"?	I feel confident to evaluate bias	Intermediate skill
What is a meta-analysis?	I feel confident to identify a variety of potential sources of information	Advanced skill

PTIL: Progress Testing on Information Literacy; ILSE: Information Literacy self-efficacy

It was not always possible to map every item of PTIL with an item of the 38-item ILSE questionnaire and in reverse, different items of PTIL are linked to the same ILSE item.

2.5   Statistical Analysis

All statistical analyses have been performed using the open source statistical package R [12]. For PTIL, the item difficulty index and the discrimination index were calculated [13]. Looking for differences in test results between the different years, Kruskal-Wallis tests have been performed. Mann-Whitney-U-tests were calculated between each PTIL-item and the mapped ILSE-item. Chi-square has been calculated between the PTIL-score and the level of certainty one gave her/himself when getting a question right/wrong. Alpha was set at 0.05.

3   Results

Table 3 gives an overview of some basic characteristics of the respondents.

Table 3. Basic characteristics of the respondents

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Female (%)	125 (60.7)	111 (55.5)	115 (59.0)	143 (66.2)	95 (57.6)	101 (66.9)
SO study field						
Sciences	24 (11.7)	48 (24.0)	25 (12.8)	40 (18.6)	25 (15.1)	20 (13.2)
Math	53 (25.8)	40 (20.0)	60 (30.7)	69 (32.0)	48 (29.1)	51 (33.8)
Math+Science	123 (59.7)	109 (54.5)	106 (54.4)	103 (47.7)	88 (53.3)	75 (49.7)
Other	6 (2.9)	3 (1.5)	4 (2.0)	4 (1.9)	4 (2.4)	4 (2.7)
Had 'search strategy' in SO	79 (38.3)	72 (36.0)	49 (25.1)	64 (29.6)	60 (36.4)	38 (25.2)
Wrote an essay in SO	190 (92.2)	181 (90.5)	161 (82.6)	182 (84.3)	137 (83.0)	116 (76.8)

SO: secondary school

Table 4. Scores of the respondents on ILSE, PTIL and level of certainty

Year	ILSE median [range]	PTIL median [range]	PTIL certainty median (range)
All (n=1129)	62.1 [0-100]*	40.0 [0 -77]*	2.4 [0-5]*
Y1 (n=206)	50.6 [7-100]	40.0 [17-70]	1.6 [1-4]
Y2 (n=189)	61.8 [16-93]	62.8 [16-93]	2.7 [1-4]
Y3 (n=198)	59.8 [15-86]	50.0 [23-70]	2.3 [1-4]
Y4 (n=214)	65.6 [2-87]	46.7 [27-73]	2.5 [1-5]
Y5 (n=164)	69.3 [27-93]	69.3 [27-93]	2.7 [1-5]
Y6 (n=158)	65.9 [1-94]	46.7 [0 -77]	2.4 [0-4]

ILSE: Information Literacy self-efficacy; PTIL: Progress Testing on Information Literacy; *P<0.001

Table 4 gives an overview of the respondents' median results on ILSE, PTIL and the level of certainty on the PTIL-question.

An overall significant difference has been found (P<0.001) between the different years for ILSE, PTIL as well as for the level of certainty (Table 4). Students from Y1 (Fig. 1a) have significantly lower scores for PTIL as well as for the associated 'level of certainty' (Fig. 1b) (P<0.001) compared to students from other years.

Two items of the PTIL had an item difficulty ≤0.2 [12] (Q7, Q24) and four items (Q11, Q17, Q20, Q21) did not match the curriculum end terms anymore and were left out for further analysis. For 6 items (Q1, Q2, Q4, Q13, Q15, Q22) students in the first years (Y1-Y2) answered the item significantly more correct compared to those in the last years (Y4-6). Table 5 shows how certain students felt themselves about some items of the PTIL.
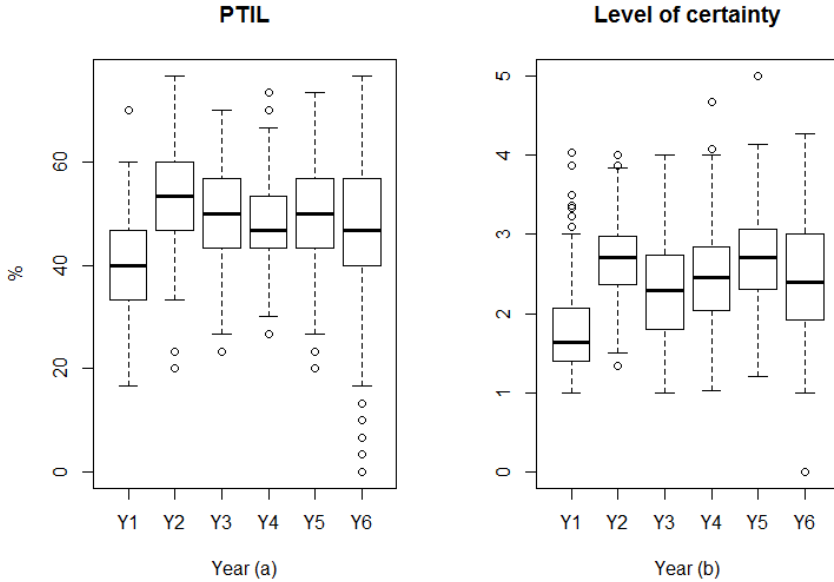
Fig. 1. Scores for the (a) Progress Testing on IL and (b) 'level of certainty' per year

Table 5. Percentage of students being certain to have certain items right (absolute values between brackets)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	P-value
Q1	8.9	15.4	9.6	21.6	11.9 (7/)	9.1	0.034
	(11/123)	(16/104)	(7/73)	(21/97)		(5/55)	
Q2	6.8	32.1	2.6	3.5	5.9	15.7	<0.001
	(10/147)	(45/140)	(3/117)	(5/144)	(6/102)	(16/102)	
Q4	6.1	17.5	8.1	9.2	5.1	17.9	0.581
	(8/131)	(20/114)	(9/111)	(15/214)	(4/78)	(14/78)	
Q13	9.6	23.3	13.0	30.6	34.8	34.2	<0.001
	(10/104)	(20/86)	(14/108)	(11/36)	(8/23)	(13/38)	
Q15	11.9	43.1	31.7	37.0	46.6	42.9	<0.001
	(21/177)	(62/144)	(44/139)	(61/165)	(54/116)	(39/91)	
Q22	19.6	55.0	44.4	21.6	29.7	33.0	0.382
	(27/138)	(60/109)	(63/142)	(27/125)	(27/91)	(31/94)	

MWU-tests were performed between each PTIL item and the mapped ILSE item. Generally, for nine items significant higher ILSE-values were found (Table 6) for those answering the PTIL-item correctly. Looking at the separate years, almost all significance could be attributed to Y1. On the questions PTIL Q12, Q14, Q28 and Q30 only a minority of Y1-students had the answer right.

Table 6. Significance levels of the relation between some PTIL scores and mapped ILSE items (% scoring right on the PTIL question)

	All	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Q2-SE11	0.015	0.029 (71%)	<0.001	0.537	0.448	0.715	0.063
Q10-SE2	0.017	0.775	0.628	0.435	0.040	0.858	0.171
Q12-SE36	0.005	0.005 (38%)	0.964	0.185	0.858	0.341	0.650
Q14-SE32	<0.001	<0.001 (16%)	0.256	0.128	0.013	0.798	0.050
Q16-SE36	<0.001	0.880	0.939	0.035	0.278	0.787	0.989
Q23-SE38	<0.001	0.247	0.554	0.850	0.733	0.545	-
Q27-SE36	0.009	0.025 (58%)	0.204	0.055	0.129	0.441	0.002
Q28-SE21	0.033	0.004 (19%)	0.228	0.226	0.640	0.263	0.674
Q30-SE2	<0.001	0.049 (30%)	0.427	0.090	0.431	0.770	0.900

4   Conclusion and Discussion

The results of this study suggests a relation between the PTIL and specific ILSE items. Even though it is expected that a progressive proportion of answers will be answered correctly [14], students in the first two years scored better for certain questions of the PTIL compared to students in the last years. For three items (Q1, Q2, Q22) it can be expected that the new generation of students has more skills in using digital content compared to students from older years. For the other three questions (Q4, Q13, Q15) it is suspected that students guessed the answers. Possibly students from the new generation are more flexible and reflective in using digital content, or secondary school prepares them in a more effective way to deal with digital content. The great majority of new-generation medical students obtained scientific background in secondary school and had to write an essay, implying that they already had some IL-skills. Further research should therefore focus on a possible link between secondary end terms and goals within the medical curriculum. Another possible explanation is the part of students in Y1 already having a former higher education (about 25%). Students not passing the 'entry exam', cannot start medical education. Quite a number of students who failed, first complete another year of a health-oriented study (e.g. Biomedical Sciences), after which they try another time to pass for the 'entry exam'. One of the courses in Biomedical Sciences focuses on IL. Further analysis should take into account whether students start their medical studies coming directly from secondary school or whether they already had an IL course at university.

In year 1, lower ILSE values are associated with an incorrect answer for four items (Q12, Q14, Q28, Q30). Looking at the detail of the questions this is a very expected result, as these questions are about very 'new' topics for students arriving in their first week at university.

Developing a PTIL for longitudinal use has several challenges. The impact of the way a curriculum is built up, the rapid changes in the society and more specific in the "information society", are aspects that influence the results of the PTIL. Formulating qualitative, for the student, understandable questions and covering different aspects of IL, was a difficult part of this study. Based on the results of the academic year 2012-2013, IL training was reorganized in the curriculum 2013-2014. Further research should analyze the impact of these changes on the PTIL results 2013-2014 and the impact on the objectives of the medical curriculum [11].

Looking at the relation between the level of certainty on PTIL and ILSE it has been found that students from Y1 had lower scores on PTIL and were less certain about their answers. Once students had extra-integrated IL courses (Y3) and started their Master's thesis (Y4) students were much more self-assured. At the end of Y6, when students had a year of internship, again, there was a decrease in scores on ILSE, PTIL and level of certainty. Therefore, integrated and repeated courses on IL should be given throughout the whole curriculum. Khan [6] however declined to accept that there was any correlation between self-efficacy and examination performance at undergraduate level in pre-clinical years. Further research should therefore emphasize these topics.

Mapping the PTIL items with the ILSE items turned out to be delicate and context related. This may be the reason that in the labeling of basic – intermediate and advanced skills, differences occurred with the labeling of Kurbanoglu [10] and Islam [15]. Also, some ILSE-items have different dimensions which cannot be captured by one PTIL question. Furthermore, not all ILSE items can be tested through a PTIL. The certainty of answering could possibly be seen as a more targeted and useful source of information to evaluate the level of a specific PTIL item. Further research should therefore focus on a more thorough understanding of 'level of certainty' and responding on such a test.

Information literacy is an important aspect in lifelong learning. This study suggests a relationship between certain ILSE items and PTIL results. Offering IL courses positively influences a student's ILSE; therefore such courses should be integrated throughout the whole curriculum.

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Information Literacy Competencies among Social Sciences Undergraduates: A Case Study Using Structural Equation Model

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Abstract. The Information Literacy profile of a randomly selected sample of students in Social Sciences from three Spanish universities is analysed, on the base of a mixed assessment model, both subjective-objective, and centred on perceptions and evidences. The measurement tool, based on the IL-HUMASS survey, includes twenty six variables (competences) and three scales: one is based on subjective perceptions (deployed in both motivation and self-efficacy), and the other two point out at objective evidences regarding individuals' knowledge (to know) and skill (know-how). Competencies are clustered in four categories (search, evaluation, processing, communication & dissemination). The application of the structural equation model (SEM) which combines multiple regression and confirmatory factor analysis techniques, provides knowledge of the relationships among the four sets of categories. Results show a strong correlation between the pairs of categories search-evaluation and evaluation-communication with regard to the attitudinal scales (motivation and self-efficacy). As a consequence, further research is needed.

Keywords: Information competences, information literacy, IL HUMASS Test, self-assessment, assessment, structural equation models.

1 Introduction

The aim of this study was to determine the psychometric properties of three scales used for diagnostic evaluation of the set of skills that make up the overall information literacy competencies. These competencies are clustered in four categories or macro-competencies (search, evaluation, processing, communication & dissemination). The IL-HUMAS survey is used as a singular and complex diagnostic tool that approaches the information literacy issue from the double internal dimension of motivation and self-efficacy. Therefore, EVALCI-K and EVALCI-S surveys provide insights into

individuals' knowledge (to know) and skills (know-how), and measure respectively knowledge and ability to apply information skills for problem solving.

On the one hand, we focus on the information competencies that are designated as more useful, that are the most accomplished and that show greater skill. On the other hand, we estimate correlations between macro-competences in order to develop effective training programs

2 Literature Support

In the field of Higher Education, most experts agree that information skills play an important role in the overall education of students, both in their learning process and in subsequent practice. We refer to the command of a set of attitudes, competencies and skills related to information access, retrieval, evaluation and analysis.

We are thus facing an interdisciplinary view of information literacy and a socialization of its principles, where IL is being recognised as a key to accessing and making fair use of information [28]. Information education is moving towards a deeper focus on information competences training and on applying active methods to each context, to foster a greater autonomy among students to solve information related problems [1], [6], [12], [15], [33], [37].

A diagnosis of the perceptions of students regarding their own information literacy and its competences can be achieved through the application of self-assessment tests, and their respective "self-report measures" [22], [34]. There is a large number of works that make use of self-assessment as a diagnostic method that provides information about students' training perceptions and needs [5], [8], [10], [17], [25-26], [35].

Nevertheless, self-assessment initiatives don't usually come up in an isolated way, and there are many instances in which self-assessment is combined and/or compared with an objective assessment [2], [24] . It is a matter of knowing "how students' self-assessment of their ability compares to their actual skill as demonstrated through testing" [34]. This combination of objective and subjective tools provide a look at the "association between scores on an IL skills test and students' estimates of their IL skills [10-11]. In this sense, we refer to [28-29], where subjective and objective instruments are simultaneously applied for measuring information skills among undergraduate students.

Nowadays there are multiple information competences diagnostic assessment experiences available for an ample breadth of scientific subject areas.

In Social Sciences and Humanities there are a considerable number of studies which are available already. In the particular field of Translation and Interpreting studies [28], [31-33], [36], existing research provides evidence of information behavior and the degree of acquisition of information competences among a group of students, teachers, and professionals, thus allowing a better design of training proposals. A self-assessment experience is reported by the ACEJMC survey [38], which measures the perceptions of Journalism students about their information competences. Journalism Studies have also deserved attention by [3], from the view of authentic evaluation, who used real cases addressing professional practice. Alternatively, self-assessment methods have also been

applied to Psychology Studies to diagnose information competences, in addition to interviews with experts, as [39], and blended methods that triangulate data gathered from in-class task assignments with questions relating to students' process of solving information-related problems, and from semi-structured interviews with students [14]. Recently, [20] published another interesting study where students' perceptions about their efficiency in information-related tasks were measured by a number of tools (namely, questionnaire, test, focus groups, and students' tasks). [7] undertook a research focused on MBA students and made use of the InfoIQ model.

Finally, in the field of Library Information Science (LIS) there is outstanding multinational research dated 2013 that has included undergraduate students in 19 countries, including Turkey [18] and Zagreb in Croatia [9] among others. The PIL survey instrument, that addresses aspects about LIS students' research experience, information behavior and information literacy skills, has also been used. Results emphasize the importance of transferability of information skills in the field of LIS, where it is often assumed that professionals master them.

3   Methodology

The research was conducted in Spain, and its scope focused on higher education within the field of Social Sciences and Humanities. The data gathering was collected during the 2012–2013 academic year at three Spanish Higher Education institutions: Faculty of Communication and Information Science at Granada University and Faculty of Communication and Information Science at Complutense of Madrid, Faculty of Psychology at Granada University and Faculty of Translation and Documentation at Malaga University.

The goal at this initial stage of the research was restricted to a descriptive analysis of the variables and categories of the three scales (that is, four dimensions: motivation, self-efficacy, knowledge and know-how), which provided us information on the nature and characteristics of the collected data. The analysis was developed using SPSS 20.0 software.

In a second stage, we have applied Structural Equation Modeling (SEM) to quantify the overall level of knowledge and skills acquired, the level of Importance and Self-efficacy declared in IL-HUMASS and, finally, possible correlations between macro-competences considering the above four dimensions. This analysis was developed using LISREL software.

Structural equation models, which combine multiple regression and factorial analysis, are a very useful tool in order to identify relationships between the macro-competences that cannot be directly measured. We can find these techniques in [4], [19], [21], [23], to name a few.

In the structural equation model, we can identify two main components: (a) a measurement model that represents the relationships of latent variables (or macro-competencies) with its indicators (or observed variables), and (b) a structural model which describes the relationship between the latent variables. As the data did not present a Normal behavior, inter-item polyseric-correlation matrices and their asymp-

totic variance-covariance matrices were calculated and we have used the weighted least squares (WLS) model using PRELIS [13].

4 Results

The recruitment of participants was done using a simple random sampling, stratified by courses. The distribution of the sample attending the University of origin and degree is collected in Table 1.

Across the course, subjects were distributed, 27.7% in the first year, 53.3% in second year, and 19% in third year. Of the surveyed students 24.1% were male and the remaining 75.9% were women.

Table 1. University and degree of participants

	Information Science	*Translation Interpretation*	*Psychology*	*Total*
Complutense Madrid	25	0	0	25
Granada	52	0	40	92
Málaga	0	78	0	78
Total	77	78	40	195

The scales have been extensively validated in previous studies [25-26], [30]. With regard to reliability, Cronbach's alpha shows how well the IL-HUMASS works. The internal consistency achieved was high 0.94. Similar results were obtained for EVALCI-K and EVALCI-S (0.87 and 0. 83, respectively) showing that the surveys can be assumed to be reliable.

Descriptive statistics were calculated to uncover data location through the most representative measure of the central tendency (mean). As expected, on the subjective side, the overall mean score was higher in the dimension of belief in importance (7.96) than in self-efficacy (6.71). Objective mean scores relating to the students' knowledge and skills are somewhat lower (5.97 and 5.32, respectively).

Table 2. Mean results considering the scale and the competence category

Competencies	*Dimension*			
	Importance	Self-efficacy	Knowledge	Know-how
Information search	7,93	6,83	5,96	5,31
Information evaluation	7,88	6,76	6,96	5,24
Information processing	7,72	6,36	5.03	5,94
Communication	8,30	6,87	5,95	4,77
Global	**7,96**	**6,71**	**5,97**	**5,32**

SEM provided the measurement models specifying the relationships between observed and latent variables, their reliability, and the contribution of each item to its respective construct and the goodness of fit statistics.

In a first step, a measurement model for each dimension was designed to specify the relationships between observed variables and latent competencies. More significant items were maintained and the high dimensionality of the problem was reduced. Results obtained [27], showed an acceptable fit, with values of GFI, NFI and RMSEA above 0.90 and below 0.06 respectively [16].

We also studied the correlations between macro-competencies for each scale. Selected items are considered inthis paper. If we take into account the Importance dimension, the results included in Table 3 and Figure 1 show the strong correlation between the latent variables, with the highest relationship being between Evaluation and Processing.

Table 3. Correlation matrix between latent competencies for motivation

	Search	*Evaluation*	*Processing*	*Communication*
Search	1.00			
Evaluation	0.77	1.00		
Processing	0.64	0.82	1.00	
Communication	0.75	0.81	0.66	1.00
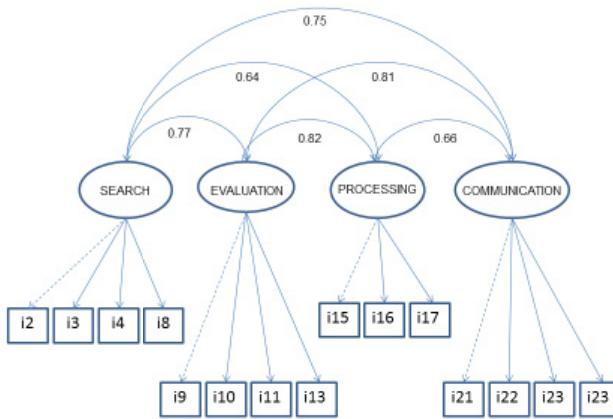
Fig. 1. Structural model for importance dimension

Correlations between latent competencies for Self-efficacy are included in Table 4. These results confirm a very strong correlation between the pairs of categories search-evaluation and evaluation-communication.

With regard to the knowledge scale, Table 5 shows that the correlations, although significant, are somewhat weaker. Strongest correlations have been found among the categories of evaluation, processing and communication.

Table 4. Correlation matrix between latent competencies for self-efficacy

	Search	*Evaluation*	*Processing*	*Communication*
Search	1.00			
Evaluation	0.77	1.00		
Processing	0.55	0.51	1.00	
Communication	0.51	0.78	0.48	1.00

Table 5. Correlation matrix between latent competencies for knowledge

	Search	*Evaluation*	*Processing*	*Communication*
Search	1.00			
Evaluation	0.40	1.00		
Processing	0.51	0.83	1.00	
Communication	0.44	0.73	0.98	1.00

Finally, concerning the know-how scale, values in Table 6 show the low correlation found between macro-competencies. In this case, as with the observed items, correlations between constructs are very weak, with none exceeding 0.27. Some measures were not significant.

Table 6. Correlation matrix between latent competencies for know-how

	Search	*Evaluation*	*Processing*	*Communication*
Search	1.00			
Evaluation	0.18[*]	1.00		
Processing	0.13[*]	0.13	1.00	
Communication	0.20	0.27	0.09	1.00

[*] not significant

5   Conclusion

The categories of Information Search and Information Evaluation show a similar global mean behavior. Regarding the results of the knowledge test, there is a higher variation in the mean results. Considering information skills, Information Management gets almost 6 as a global mean. It's surprising that, this same category gets the lowest mean value in the knowledge test.

In general terms, the greater the motivation an individual gives to a given variable, the higher the level of self-efficacy is declared. Clearly, global average results achieved

by respondents indicate high levels of motivation for most variables, but their levels of knowledge and skills are significantly lower. That is, when they are asked to demonstrate in practice their knowledge and know-how, the average level achieved drops significantly, being even lower in know-how. Therefore, it is essential to develop subsequent research on evaluating information competencies training, as we have seen that what seems most important is not always what they have learnt best.

SEM models are consolidated as a useful tool for modeling latent variables like the macro-competencies considered. Furthermore, SEM allows us to estimate the existing correlations between latent competencies. Results obtained reveal a strong correlation between the pairs of categories search-evaluation and evaluation-communication concerning motivation and self-efficacy scales. With regard to the knowledge scale, strongest correlations have been found among the categories of evaluation, processing and communication. On the contrary, the same comparison of categories regarding the know-how scale shows lower results.

The analysis and evaluation of these correlation structures will contribute as a basis for future intervention strategies in Information Literacy teaching-learning in order to offer an effective academic response.

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Information Literacy: A Research Report with the Directors of the Libraries of Institutions of Higher Education in Southern Brazil

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Abstract. This work, now published as a final report of research carried out between 2006 and 2011 provides "pathways" on the concept of Information Literacy and its development. It is argued in favor of studying the technical dimensions, aesthetic, ethic and policy of the Information Literacy. The survey results show that philosophy, sociology and education are areas of knowledge that have a close relationship with Information Literacy. The study also suggests that the creation of theoretical principles for this subject area must be based on the social construction of reality, social representation, among others. Regarding the methodology of the research, this was based on a qualitative approach and application of a structured interview with open questions for thirteen (13) directors of libraries at Institutions of Higher Education (IES) of the State of Santa Catarina, southern Brazil.

Keywords: Information literacy, university libraries, institutions of higher education, information literacy education.

1   Introduction

All over the world – as in Brazil – there are efforts for social change, poverty reduction, human rights, security, peace and ethics. In the Brazilian context those efforts are bound to the developing objectives of the United Nations for Education, Science and Culture (UNESCO), which are social equality and respect for the collective and individual human rights; necessity for new social participation and control programs; projects and actions that indicate a movement of positive transformations; stronger cooperation for ethics and science; the promotion of principles, practices and ethic norms relevant to the country's development, to grant that the Brazilian population can learn about the conceptual fundamentals of the principles and values of world peace [1].

This area does not lack statistics and arguments favoring education: uneven opportunities on education feed poverty, hunger and child mortality and reduce the country's growing possibilities. That's why the governments must act urgently on this matter.

The development of the individual's Information Literacy is one way to minimize social imbalance and allow the access and correct use of information, creating even opportunities in the communities. We are certain that the directors of university libraries, being competent users of information and recognizing this phenomenon, will be more able to help students and university teachers develop this meta-competency, collaborating for the scientific, economic and social changes of the nation.

Under this perspective and context this research has been conducted. The research objectives were defined as follows: first, to understand the social representations and the social construction of reality about Information Literacy of the directors of university libraries of the state of Santa Catarina, Southern Brazil, and, second, to propose a set of theoretical principles to the development of Information Literacy of these professionals as subjects of transformation. These libraries are bound to the state's Educational Organizations Association (ACAFE) [2]. Also the goal was to gather theoretical knowledge on Information Literacy, it's technical, aesthetical, ethical and political dimensions, to analyze these dimensions under the view of the directors and formulate theoretical principles for the development of Information Literacy of these professionals as transformation subjects.

To understand the reality of the directors of university libraries, their social representation needed to be collected through interviews. Regarding the methodology of the research, this was based on a qualitative approach and application of a structured interview with open questions for thirteen (13) directors of libraries Institutions of Higher Education (IES) of the State of Santa Catarina, southern Brazil. The responses were analyzed according to the technique of the Collective Subject Discourse (DSC) and theoretical and conceptual aspects of Information Literacy. We agree with Moscovici [3], when he says that by wanting to cover too much, we may cover too little. In other words, to want to comprehend all can make you lose all and, subsequently, the analysis may be impaired. The intuition and also the experience of other researchers suggests that it is impossible to cover a range of knowledge and beliefs so wide when we choose a qualitative approach research, for they are heterogeneous and cannot be defined by few characteristics. That's why we needed to classify the social representations: they must be seen as a specific way to comprehend and communicate the world we live in, the complex and in constant transformation reality. This will be clarified in the following sections about the methodology of the research, the director's speech and data analysis.

2   Research Methodologies

The social representations of the world as viewed by the directors of libraries affiliated to Superior Education Institutions of Santa Catarina about Information Literacy have been obtained by a methodology by which the research objectives have been turned into questions and then into individual speeches that, under analysis and synthesis processes, became the Collective Subject Discourse (DSC). According to Berger and Luckmann [4], between the multiple realities there is one that presents itself as being the reality by excellence: the everyday reality. Its privileged position authorizes it to be called the dominant reality. Under these conditions, we were interested on this

research to investigate the directors of university libraries on duty, in their reality and everyday practice.

To collect the speeches, a qualitative approach was used for the theoretical bases of the subject's conscience, understanding the social reality as a human construction. The environment and context on which the individuals perform their actions have an essential value to achieve a clearer comprehension of the activities of these people. The qualitative approach uses as raw material both language and practice [5]: the social reality is qualitative and the events are presented as qualities. The spoken words and daily chat on the director's speeches were the raw material for the research.

In the first part of the research an exhaustive search investigated Brazilian and international segmented literature between 1996 and 2006 (to investigate the ten years previous to the beginning of the research), as well as the theoretical marks about the subject, on the main scientific communication publications about Information Science and related areas – Philosophy, Sociology, Education and, in some cases, also the area of Administration, when related to the specific theme "Literacy".

The subjects of the research are the directors of university libraries (mainly graduates in librarianship) bound to Superior Education Institutions (IES) both public and private of the state of Santa Catarina, southern Brazil. The interviews were scheduled by e-mail and phone and happened within the directors' work environment. To understand the social construction of the research subject's reality, the Collective Subject Discourse (DSC) technique was used. According to Lefèvre and Lefèvre [6], this is the manifestation of the thinking of a collective subject that expresses the traces of collectivity thinking into which the individual subject is inserted. The speeches have been collected, written and fully read, to allow the description of the reality.

3   Main Results of the Research

To become or to be a literate person in information does not mean to follow rules or to be evaluated by someone, but to be able to act discursively on a society configured and measured by speech [7]; it is the main goal of this section. Beyond the speech, the definitions about the themes involved with the notion of Information Literacy are presented. Some of the themes are wider than others. The definitions aim to guide the comprehension of the context involved in Information Literacy, as well as the elements and dimensions that compose it.

3.1   About the Notion of Information Literacy

The results of the research show that Philosophy, Sociology and Education are areas of study most closely associated to Information Science for an adequate comprehension of Information Literacy. When characterizing Philosophy as the loving search for wisdom, Rios [8] says that Philosophy is *historical*, for it suffers transformations and can be explained with specific problems on each context. What distinguishes philosophical knowledge from other knowledge is comprehension. Philosophy uses reality to go further than explication and description, to find the sense of this reality, in other

words, the relation of men's work to his products. And this is what connects it to Information Science, and, as so, to Information Literacy.

Another area connected to Information Literacy is Sociology. By investigating the relations and interactions that happen through life in a society, it allows the study of social groups (the directors of university libraries, for example), of social facts (the Information Literacy, for example), of the different layers a society is divided into, of social mobility, the cooperation processes, the competition and the struggles in society etc. [9]. Sociology brings a double value to Information Science and, also, to Information Literacy: it can widen the knowledge the director has about himself and his group in society.

In this informational ecology [10], education can be used as the main factor that creates opportunities, and ignorance [11]. When Education is experience in a permanent and continuous way, people who were previously excluded can be integrated to the unceasing changes of the world of work. For Chauí [12], a critical integration and reflection over this area is needed, and it means an internal transformation movement of those who come from a supposed knowledge (or ignorance) to real knowledge (or the comprehension of itself, others, reality, cultural baggage). Education is inseparable from Information Literacy, for it consists of a continuous, reflexive and critical process.

This "tridimensional" look – Philosophy, Sociology and Education – to Information Literacy is needed for we are living in a complex age, which creates the possible epistemological ruptures and seeks "new" paradigms [13]. The globalization phenomenon results in dimensions never seen before, a progressive constitution of a unique world space, ruled by solidary mechanisms and that works with multiple interconnected webs that tend to overlap traditional cultural differences [14].

So, the DSC (Collective Subject Discourse), related to the reflection "I am literate in information, so…", that represents the collective of the interviewed directors resulted:

I manage information all day, every day, all the time, and share this information with whoever needs it. I am always ready to disseminate information and to help the user find it, for I help my user the best way I can, always giving meaning to that research and never leaving him without an answer. I seek information wherever it is. This is the mission of our library: to inform. This is our mission! I have pursued knowledge and try to actualize that in the Librarianship area. I am always looking for new tools, new ways to serve the community, searching what is new, because I have an ability for what I do. Today, with experience, I can separate the librarianship's vision and the vision of the person who comes in search of information. So I think that this is an ability we only develop with experience. But, still, I am information literate, mainly, because I like what I do.

To Lloyd [15], to become competent in information consists of a holistic process, influenced by social, physical and textual relations with information, which demand a series of practices and attest for the complexity and variety of the information sources within a context. The Information Literacy, as a meta-competency, is constituted as a creator area of study, allowing for the acquisition of new skills and new cognition

[16]. Such abilities and knowledge are constructed on the interpersonal, social and professional relations. There is mix of reflections on the necessity of continuous formation, on pedagogical action and on feelings on the speech of the interviewed directors. On the DSC, elements of Philosophy, Sociology and Education can be perceived.

Figure 1 shows the complicity and dependence between these themes on any context:

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               ┌─────────────────────┐
               │                     │
               │     Sociology       │
               │                     │
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│              │                     │              │
│              │   INFORMATION       │              │
│ Philosophy   │    LITERACY         │  Education    │
│              │                     │              │
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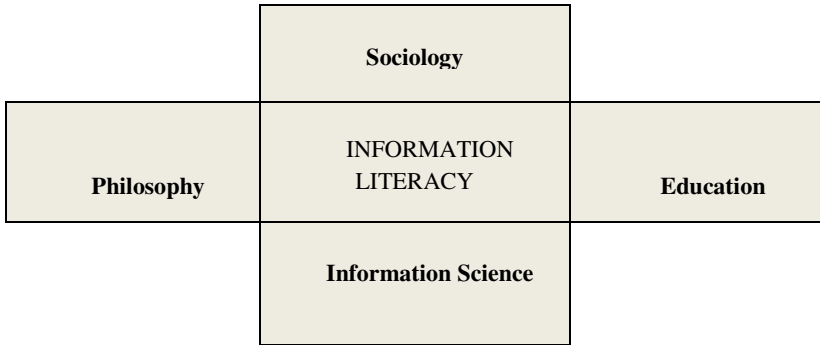
Fig. 1. The context of Information Literacy

3.2   The Dimensions of Information Literacy

When Rios [9] began his investigation on the notion of literacy, he verified that it had four related dimensions: technical, political, aesthetical and ethical. The first, the technical dimension, is the basis of literacy, for it is revealed in the actions of the professionals – related to the mastering of knowledge and abilities of many natures that allow practical intervention on reality. The second, the political dimension, is related to the political duty, in other words, to the participation in the collective construction of the society to the exercise of rights and duties, and indicates a critical vision of the impact of actions and the commitment with the needs of the social context. The third, the aesthetical dimension, is the sensible perception of reality, and relates to a creator perspective. In other words, the presence of sensibility and beauty as elements that constitute knowledge and professional behavior – attached to the order of feelings: to conscious apprehension of reality, to intellectuality and to the affection of individuals and guided towards social activity. This is significant for the social and collective well-being. The fourth, the ethical dimension, is the mediation element between the four dimensions and guarantees the dialectical character of this relation [9] – it is the founding dimension – because technical, political and aesthetical dimensions get their complete meaning when guided by ethical principles. It is related to the orientation of actions, based on the principle of respect, solidarity, aiming to sum to the society (see Table 1).

For these dimensions, we resort to the speech of the directors of University Libraries, on their professional duties and their work place as answer to the question: about the technical, political, aesthetical and ethical aspects of their professional practice: can you explain this? The results show that:

Table 1. The dimensions of Information Literacy

Dimensions of the Information Literacy	Technical	Aesthetical	Political	Ethical
	Process Basis	Creativity	Collective	Founding Dimension
Acting in Balance	Reflection	Sensibility	Reach of the Professional Goals	Share
	Know-how	Innovation		
	Research		Research	Commitment

The ethical matter is essential. If I did not have this technical knowledge it would harm the access to communication and information. For me, technique is of extreme importance: it is fundamental to organize the procedures. In truth, it is necessary to master technique so you can ease the user's life. About politics, that's what I think: by the time I took this job (director of a university library) I was already committed to the work, the people who work here, the people who need the space and who come in search of information or to research here. Therefore I feel involved, interested, I like… I think it is a wonderful thing, especially when you get involved with the user's needs. Well… In fact, to achieve my goals I depend on others. Always, when possible, I practice interdisciplinarity, for it adds to the group with different visions. Aesthetics, for me, happen on the interactions with other professionals, when you talk, when you debate, when you discuss a theme and, from that, ideas and insights begin to appear. It happens during the relations with people: life in society, the world, contact with our knowledge, because I think aesthetics are personal. Sensibility is the care with details. It happens on demand, by the needs of the users and the professionals themselves. It is necessary to have sensibility to realize what is missing. Sensibility is when you can understand or decode a request from your user. Ethics happen like this: the more people develop, the more you grow professionally, the more critical you become, because you can see processes that could be made differently. I have developed these questions in a way to analyze each occurrence and to position myself to them. I am very exigent with myself and with others too. I am highly critical, but also flexible.

Technique is inherent to professions - it gives sense to the work. But the dominance of technique can harm the practice. Jacobs [17] observes that, being placed within a sociopolitical context, Information Literacy could not be directed any way other than politically. So, when limiting the potential of Information Literacy to norms and guidelines, there's the risk to minimize, if not to deny, the political nature that is inherent to it. Because of this, politics are something an "imperious need for the human life" and also for the individual and the society [18]. It allows the individual to seek its objectives, is based on the plurality of men, deals with the acquaintanceships between the different people, and is centered around freedom, in a place that can only be produced by many, where each one moves between equals.

According to Harris [19] the processes of creation, discovery, evaluation and usage of the information are not performed in vacuum, away from the community context, where meanings and values are at stake, but are connected to the involvement of

individuals in a community and these processes invariably have a sociopolitical aspect. Under the aesthetical dimension, something new is produced, a new situation and not an imitation, a creation. According to Morin [5], evolution is a result of the successful deviation that transforms the system where it was born, disorganizing and reorganizing the system. The great transformations create new forms that may constitute a real metamorphosis.

Johnston and Webber [20] describe Information Literacy as an area of fundamental relevance to the Information Society, and define it as the adoption of an informational behavior appropriated to identify, by any channel or media, adequate information, and the correct and ethical use of information in society.

In Australia, where the initiatives related to the development of Information Literacy for the society are raising the interest of many researchers, the *Council of Australian University Librarian* (CAUL) [21] equated the concept elaborated by *American Library Association (ALA)*, to emphasize the ethical sense of the creation and use of informational content. According to the document, information literate individuals possess the ability to define, locate, access, evaluate and use information on an ethical and socially responsible way as part of a learning strategy throughout life.

3.3   The Development of Information Literacy

The directors of libraries bound to Superior Education Institutions of Santa Catarina were asked about the implications of initial and continuous formation for the Information Literacy. The DSC has been constituted as:

Knowledge is never too much: the courses I have taken contributed a lot to my professional actions here in the library. Yet, among the practices that we see, it's a matter of adaptation, of figuring out situations, of intuition! This professional knowledge I have today is due to my previous experiences. It was obtained by experience, by opportunities. Then you begin to develop your critical sense, positioning yourself in other ways. The daily routine always brings something different, something new. That's why I'm always taking courses. I have taken some courses related to Librarianship, for example. I am always actualizing myself in the technological area. Where there is an opportunity, I am looking for it. I have taken courses for my knowledge, to have another vision, to invigorate my work and also to better serve the users. So, by the time I build and get a hold of this knowledge, I can also offer it to the people around me.

By reading and analyzing the DSC, it is possible to affirm that, directly bounded to the human condition of permanent learning, learning to learn and lifelong learning. Information Literacy Education (ILE), that we will call Development of Informational Literacy, is the path that guarantees this condition [22]. It is also a process that begins with the perception of the information needs and socializing the physical and intellectual accesses to information. It happens slowly and demands cooperation of all the educational community.

The initial formation directed to the technical dimension also reflects on the development of the Information Literacy of adults. Because a college degree does not guarantee knowledge, it is necessary to pay attention to the subject's education [23].

On the other hand, Belluzzo [24] affirms that education must assure that everybody, without exception, develops talents and creative potentials. The DSC shows a professional concern with the development of Information Literacy, taking account that the interviewees have already attended or attend to continuous formation, focused mainly on people management, financial management and quality management, among others.

Considering what has been presented so far, some theorization about the development of Information Literacy of the directors of libraries bound to IES for the Brazilian context has been possible. The next section presents a sketch of this proposition.

3.4   Theorethical Principles for the Development of Information Literacy

In this section, we have assembled a group of principles for the development of Information Literacy for the directors of university libraries - results from the research that analyzed their social realities and the context of the investigated literature.

A theoretical sketch of the development of Information Literacy on the Brazilian context consists of a group of principles considered as epistemological and methodological commitments [25], that contemplate the dimensions of literacy identified through the DSC in a balanced, continuous and infinite way. This implies a conception of the learnings related to life experiences and intellectual and emotional postures of the directors of university libraries. So, we will adopt as a primary facet, the idea that the education of adults is an organized activity with the objective of favoring the development of actions, knowledge and aptitudes on the adult, as well as the integration of values that allow him to perform, on a creative and critical way, his role in the society [25].

Demo [11] suggests something fundamental: we can only go beyond the technical dimension, pure and simple, with political literacy in first place. So, it is essential that education is not reduced to knowledge (technical dimension), but also include aesthetical, ethical and political dimensions.

For the author, it is urgent to "educate" for knowledge. Knowledge needs education to assure its ethical condition and to exchange with the excluded creativity and sensibility. This relation between knowledge and education is as necessary as it is hard to achieve, says Demo [11].

In the end, what obstructs the most in this relationship is the ambivalent context of the information and that is why, on the principles shown in Table 2, information is present throughout the development of Information Literacy.

To develop Information Literacy on "the other hand" requires to integrate it "into yourself", and this is already a challenge. It is necessary to consider first, some principles regarding information (see Table 2).

Other principles to be considered, which are of equal importance, refer to the dimensions of Information Literacy. The technical, aesthetical, ethical and political dimensions are crucial to the group of principles proposed. Table 3 clarifies the principles that, according to the speech of the directors of university libraries, constitute the dimensions of Information Literacy and deserve attention.

Table 2. Information on the development of information literacy

Feedstock for Informacional Literacy	Principles according to the Collective Subject Discourse (DSC)
Information (permeates the process)	It is a "precious good", "feedstock", and "the basis" of the informational process. Helps the development of the subject. It's wide and generates knowledge. Happens on our senses and is perceived through them. Represents concepts. It is related to distribution, in other words, to channels and information instruments. Represents research and investigation. Represents results. Happens on a "gesture", and "act of donation". It's an achievement.

The principles listed on Tables 2 and 3 show that the balance between the dimensions of literacy (see also Table 1) is an essential condition to establish the development of the Information Literacy among the directors of libraries. Those who propose programs of initial and continuous formation for these professionals, which attend to these principles can succeed.

4   Final Considerations

The basic idea supporting this work is that the process of implementing projects that aim for continuous formation of Information Professionals as subjects of transformation must be developed using a group of principles that come from the social representations that its protagonists have of Information Literacy on the technical, aesthetical, ethical and political dimensions.

The directors of the libraries of Institutions of Higher Education in Southern Brazil create representations through the interaction, communication, cooperation and on human relations [3], which results in representations that are collective, for they are created by a professional in isolation and, once created, gain "life", move, meet, attract and repel themselves, creating a speech and the principles proposed on this research. Philosophy, Education and Sociology are associated to the comprehension of the notion of Information Literacy and this fact strengthens the importance of incursions to these areas of knowledge.

In search of answers which explain on their own terms the notion of Information Literacy and its dimensions and relations with initial and continuous training, we obtained answers – transitory, maybe, but useful to our initial purposes – in the speeches of the directors of libraries bound to Superior Education Institutes of Santa Catarina, on the South of Brazil. The research format – conceptual, theoretical

and based on the DSC – necessary for the amount of speeches placed in the study's methodology, reveals that theorization from other contexts can be useful to guide actions toward the development of Information Literacy in the Brazilian context.

The technical, aesthetical, ethical and political dimensions are not disposable or replaceable (as says Demo, [11]), but agglutinating and necessary for the development of Information Literacy. And, for this reason, it is possible to compose a group of principles necessary to the initial and continuous training for the development of Information Literacy of these directors as transformation subjects.

Table 3. Technical, aesthetical, ethical and political dimensions on the development of Informational Literacy

Dimensions	*Principles according to the Collective Subject Discourse (DSC)*
Technical (process basis)	It's fundamental for the professional practice: it's the librarian do. It's related to the technical process, to the "know how". It's a synonym of rules and norms and it's hard to maintain. Excessive worries with technique are not "healthy" to Information Literacy: it's necessary to think about its nature and purposes. Information Technologies (IT) allow and favor technique. Requires the knowledge of foreign languages. Helps managing information and administrative activities. Linked to invention, imagination. Linked to knowledge. It's linked with Information and Communication Technologies (ICT), but does not depend exclusively on them. It is related to problem solutions. It's the comprehension of "the other" as "a whole".
Aesthetical (sensibility)	Depends on "knowing how to use" the available resources properly (financial, for example). It is bounded to professional recognition and satisfaction at work. Related to care, "zeal" with details. Linked with the capacity of being flexible, attending demands, priorities and information necessities. Associated with emotion, "heart" and "passion" for the profession. Favored by "knowing to hear". Being reasonable is ethical. Favored on the initial professional shaping and professional practice.
Ethical (founding dimension)	It's favored by "sharing", by communicating, through dialogue, participation and exchange of experiences. Favored by "freedom of speech". It's favored by "mutual respect". It's professional commitment, taking onto information "function" fully. Occurs on participation, debates and discussions with professional of the area: professional engagement. It's the commitment with context and with the user's needs. It's to disseminate and divulgate the profession.
Political (the other, the collective)	The development of studies and researches on the profession favors the political dimension. Planning is a political ingredient. Professional actualization contributes to the development of this dimension. Teamwork, space management and team management favor this dimension. Politics are favored by the capacity of being flexible, attending demands, priorities and information needs.

Any attempt to theorize the development of Information Literacy must be based on the political dimension, as an instrument of emancipation and citizenship – essential to life in society, as well as the technical dimension - what refers to the domain of information resources and of information itself for the resolution of problems, conflicts, gaps, doubts and, information opportunities. Looking at the aesthetical dimension, the sensible, the creation, the innovation and the autonomy must be present and encouraged through the initial and continuous education of Information Professionals. Critical thinking attached to ethical posture – fundamental for literacy and when handling information - are basic and characterized by the ethical dimension.

It is known that "some doors must be opened" which necessitates the creation of groups and entities focused on Information Literacy, and on the organization of meetings, on different graduate and professional degrees (through transversal seminars, for example), and extension activities to gather directors, users, local community and the society. The creation of discussion groups is an opportunity to for these professionals to "return to the academy", to read texts, to hear and to have their own reflections heard (see gpcin.paginas.ufsc.br for some initiatives). Another "front" must focus on the implementation of programs aiming to develop Information Literacy and the evaluation of it. This notion has become one of the most debated areas of Librarianship and Information Science and of so many other areas and professions that intensively use information, and the matter must be better understood.

Such investigations need to be based – yet not locked or out of focus – around four aspects – technical, aesthetical, ethical and political dimensions. That is why, even though this research shows that there is a "good harvest" of reflections and theorizations, those can become fragile if they are not insistently investigated and put into practice. Maybe it is necessary to research other contexts – in a comparative manner, to help deepen the principles proposed here. That is what is suggested for new studies. Literacy only makes sense when it critically reflects the interests that guide practice, the intentions that move it, the destiny of these actions in the societal context [9]. There cannot exist in any information society without Information Literacy in its respective dimension and balance.

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The Effects of Integrating Information Literacy into Inquiry Learning: A Longitudinal Study

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Abstract. The purpose of this study was to examine the effects of four-year integrated information literacy instruction on elementary students' comprehension of subject contents through inquiry learning. Moderating factors of students' academic achievements was another focus of this study. The subjects were 72 students who have participated in this study since they entered an elementary school. This elementary school adopted the information literacy instruction and integrated it into various subject matters via the framework of inquiry learning, such as Super 3 and Big6 models. A total of seven inquiry learning projects have been implemented from grade one through grade four. The results show that inquiry-based integrated information literacy instruction could help students from grade one through grade four grasp and apply the new concepts of subject contents. Regardless of academic achievements, if students would like to devote their efforts to inquiry processes, their conceptual understanding of subject contents improved effectively.

Keywords: Information literacy, inquiry-based learning, comprehension, academic achievement, longitudinal study.

1 Introduction

Information literacy is the abilities to recognize, locate, evaluate, use and create effectively the need information [1]. Many studies find that information literacy instruction should be integrated across the contexts of school curriculum, through inquiry-based learning [2-3]. Inquiry-based learning results better knowledge application and reasoning skills, but performs less well in basic or factual knowledge acquisition than traditional curriculum [4-5]. Studies also find that students of different academic achievements may perform differently in integrated information literacy instruction [6-8]. However, the above mentioned studies most are conducted in a short term; few investigate the effects of information literacy instruction in a longer period of time.

The purpose of this study is to investigate the effects of four-year integrated information literacy instruction on elementary students' comprehension of subject contents through inquiry-based learning. The moderating factor of students' academic

achievements is another focus of this study. Specific problems related to the purpose are as follows:

- How do students comprehend subject matters in the four-year integrated information literacy instruction?
- Do students of different academic achievements comprehend subject matters differently in the four-year integrated information literacy instruction?
- How does the comprehension learning trend differ among students of different academic achievements in the four-year integrated information literacy instruction?

2   Literature Review

2.1   Information Literacy Instruction

Information literacy instruction is a valuable and essential part of the school's program. It emphasizes both problem solving processes and multiple literacies of library, media, and computer [1-2]. Information literacy instruction has been shown to be more effective when taught as an inquiry process combined with classroom subject contents [2-3], [6].

Many researchers indicate that information literacy should be taught systematically from elementary school level [1-2]. Callison [9] even suggests for more quantitative data and rigorous experimental research methodology as strategies for convincing school administrators of the benefits of information literacy instruction on student learning. However, the majority of previous studies in information literacy have been sporadic and in a short term; few studies systematically develop and evaluate the overall effectiveness of information literacy instruction on student learning.

2.2   Inquiry-Based Learning

The teaching of information literacy can be enhanced by the use of inquiry-based learning. The main purpose of inquiry-based learning is to teach students how, rather than what, to learn; it requires students to take active responsibility for their own learning and to apply concepts in a new situation [10].

Instruction based on inquiry is most advocated in science education by the National Research Council. It is believed that inquiry learning promotes a deeper understanding of the subject matter through the process of questioning, seeking evidence, developing explanations, evaluating the explanations, and communicating conclusions. In recent years, inquiry-based learning has also gained attention in social science instruction. Soares and Wood [11] advocate that every citizen should become problem solvers who collect, evaluate and apply data critically, in order to solve problems faced in today's democratic society.

Eisenberg and Berkowitz [12] develop an inquiry-based Big6 model for integrating information literacy into subject matters [13]. Afterwards, Eisenberg and Robinson construct the Super3 model, which includes three stages of Plan, Do and Review for young learners to start thinking in terms of process. Several studies confirm that

the Big6 and Super3 models could improve students' learning in information literacy and subject contents [2], [14].

2.3   Comprehension

Comprehension emphasizes transferring conceptual understanding in a new context through cognitive processes of interpreting, exemplifying, inferring, and comparing [15]. A number of meta-analysis has focused on the effects of inquiry-based learning on cognitive learning. Schroeder et al. [16] analyze 61 U.S. studies dealing with science teaching strategies and student achievement published from 1980 to 2004. They find that the effect size of inquiry learning strategy on student cognitive achievement is 0.65, which is judged to be significant. That is, inquiry-based science learning exhibits a positive influence on student achievement.

With respect to comprehension of student achievement, Wilson, Taylor, Kowalski and Carlson [17] randomly assign 58 students aged 14-16 years old to inquiry-based learning group or traditional learning group. The results show that students in the inquiry-based group outperform the traditional group in scientific knowledge, reasoning, and scientific explanations. A qualitative research by Chen [2] investigates third-grade students' performance on an integrated information literacy instruction in science curriculum. It shows that students' science learning on both memory and comprehension improved through inquiry learning.

On the other hand, Chang and Mao [4] investigate the effects of an inquiry-based teaching in earth science and find that significant higher achievement scores only at the comprehensive test, not at the factual level. Wolf and Fraser [5] also compare the differences between inquiry and non-inquiry learning in scientific inquiry skills and scientific concepts. Both studies do not find significant differences.

Thus, it is not completely clear whether inquiry-based integrated information literacy instruction can improve students' comprehension of subject matters. More research should be conducted to explore this issue.

2.4   Students of Different Academic Achievements

Students of different academic achievements is another issue examined in the research on inquiry-based information literacy instruction. Cuevas, Lee, Hart and Deaktor [7] conduct the instructional intervention which incorporates science inquiry and information literacy for 25 third and fourth graders of diverse backgrounds. The results demonstrate that the intervention enhanced the inquiry ability of all students regardless of achievements. Particularly, low-achieving students make larger gains compared to the high-achieving students. However, a limitation to this study is the small sample size. Therefore, further research may need to verify the conclusions.

However, Chu [6] uses an inquiry project-based learning approach to examine the subject learning performance of fourth graders of different academic abilities. Surveys and interviews are conducted with students. Their perceived improvements in learning are not affected by the level of academic ability. Chu concludes that students benefit

from inquiry-learning regardless of their innate abilities. Both high achievers and lower-tier students improve their skills by participating in inquiry-driven projects.

In sum, for lack of thorough and conclusive empirical evidences concerning the effect of integrating information literacy into inquiry learning on students' subject learning, more research needs to be conducted to explore this issue.

3   Methodology

Researchers collaborated with classroom teachers and school librarians to develop the inquiry-based information literacy instruction and integrated it into various subject matters year by year. All participants received a pretest, the integrated instruction, and a posttest each semester since grade one. The tests were designed to test participants' comprehension of the instructional contents. This research was a longitudinal study.

3.1   Research Site and Participants

The study was conducted at Chiachia Elementary School (a pseudonym), which was in the urban southern part of Taiwan. Since 2005, this school has adopted the information literacy instruction and integrated it into various subject matters. The instruction was taught once a week from grade one to grade two, and twice from grade three through grade six. Each period was forty-minutes. The participants were 72 students, who have enrolled in this study since they were first graders entering the elementary school. According to their performance in five subject areas (Chinese, mathematics, life, science, and social studies) for the past four years, participants were divided into three groups of low, medium, and high-academic achievement students.

3.2   Instructional Contents

The information literacy instruction was integrated into subject matters via inquiry-learning frameworks of Super3 and Big6 models. A total of seven inquiry projects had been carried out in each semester since the second semester of first grade. The inquiry themes involved relevant units in subject matters, so that students could apply the information literacy skills in real situations. In other words, the integrated information literacy instruction provided students with meaningful learning contexts to inquire interesting problems. The details were listed in Table 1.

3.3   Instrument

Seven instruments were used as pretests and posttests to assess students' comprehension of subject contents in different projects. There were various types of questions in the instruments, such as multiple-choice, fill-in-the blank, essay, drawing, etc. The Cronbach α reliability coefficients of seven tests were from .710~.785. The discrimination coefficients of seven tests ranged from .217 to .600.

3.4   Data Collection and Analysis

Data sources for this study were scores from the instruments. Data were collected over 4 years from 7 inquiry projects and analyzed by SPSS 20. Paired sample *t* tests were conducted to measure students' improvements in comprehension between pretests and posttests. Since the item numbers were different among the seven instruments, the test scores all were transformed into standard T scores, and pair-wise comparisons (i.e. low-achieving group vs. medium-achieving group) were used to obtain the differences between them. Then effect sizes (*Cohen's d*) were calculated in order to determine the relative magnitudes of experimental treatments and to judge the practical meaningfulness of the results derived. At last, the effect size values were plotted out in a run chart which displayed four-year trend among students of different academic achievements. According to the effect size index in Cohen [18], effect size less than .20 is a trivial effect which has no practical significance, and effect sizes of .20, .50, and .80 are viewed as small, medium, and large effect sizes, respectively.

Table 1. Details about inquiry projects

Grade/Semester	Super3/Big6	Theme	Subject
G1/2nd S.	Super3	Investigation of Life on Campus	Life
G2/1st S	Super3	Our Community	Life
G2/2nd S	Super3	Folklore & Festival	Life
G3/1st S	Super3	My Plant Friend	Science
G3/2nd S	Big6	My Home Town	Social Studies
G4/1st S	Big6	Our Aquarium	Science
G4/2nd S	Big6	My Insect Friend	Science

4   Results

4.1   Students' Comprehension in the Inquiry-Based Learning Projects

The results of paired-sample *t* tests for seven pre-tests and post-tests in the inquiry-based projects are presented in Table 2. The obtained *t* values were all significant which meant all students improved in comprehending subject contents. Based on the effect size index in Cohen [18], there were 5 large and 2 medium values among 7 *Cohen's d* effect sizes. It meant that there existed non-ignorable significant improvements of comprehension in practice, especially for the "*My Plant Friend*" project in science subject and "*My Home Town*" in social studies of third grade (*Cohen's d* equal to 1.652 and 1.758, respectively). Thus, in four years, the integrated information literacy instruction had had a positive effect on students' ability to comprehend subject-matter contents associated with relevant inquiry topics. This finding confirms many researchers' claims that inquiry-based learning can help deep learning and concepts transferring [2], [10].

4.2   Comprehension Differences in Students of Different Academic Achievements

For further understanding learning differences among students of different academic achievements, paired *t* tests for pretests and posttests on seven inquiry projects were conducted respectively. As shown in Table 3, among 21 *t* test results, most were significant except students of high academic achievement in "*Our Aquarium*" project (*t*= 1.80, *p*=.08). Based on Cohen's effect size index, regardless of low-, medium- and high-achieving students, the numbers of large effect size were more than the numbers of medium and small effect size (17, 3 and 1 respectively). The medium achievers progressed with the highest level of improvement (averaged *Cohen's d* = 1.290*)*. The comprehension performances of high achievers reached great improvement with a value of 1.117 of averaged *Cohen's d.* Even for the low-achieving students, they also displayed a high level of progression (averaged *Cohen's d* = 1.116) after receiving the information literacy instruction. It implies that the instructional interventions could improve effectively students' comprehension learning, regardless of their academic achievements.

Table 2. Paired-sample *t* tests for seven inquiry-based projects (N=72)

| Grade/ | Pre-test | | Post-test | | t | p | Cohen's | Effect |
Semester	M	SD	M	SD			d	Size
1/2	21.03	5.22	24.54	4.03	6.70	.00	0.788	M
2/1	29.79	8.90	37.60	7.74	7.03	.00	0.829	H
2/2	14.36	5.64	18.68	5.30	7.98	.00	0.940	H
3/1	8.64	4.05	17.24	5.22	14.02	.00	1.652	H
3/2	13.58	4.22	23.21	5.32	14.90	.00	1.758	H
4/1	34.89	13.07	43.36	13.29	5.69	.00	0.671	M
4/2	14.75	6.37	22.29	5.67	11.58	.00	1.364	H

α＝.05

4.3   Comprehension Learning Trend Analysis

From the previous results in section 4.2, we found that medium-achieving students displayed most progress, and the low achievers displayed equivalent progress with the high-achieving students. It is interesting to investigate how the lower achieving students progressed to reach to the comprehension ability levels of higher achievers. Thus, we further examined the trends of effect sizes across the four years by comparing the posttest scores between two groups, e.g. low vs. medium (L-M), medium vs. high (M-H), and low vs. high (L-H) (see Figure 1).

For the comparisons between the L-M, the posttest scores were not significantly different for Grade 1 (*t*=1.228, *p*=.226, *Cohen's d*=0.367), but were significantly different for Grade 2 (*t*=2.488, *p*=.017, *Cohen's d*=0.743), Grade 3 (*t*=3.015, *p*=.004, *Cohen's d*=0.902), and Grade 4 (*t*=2.634, *p*=.011, *Cohen's d*=0.787). For the M-H comparisons, there were not significantly different for Grade 1 (*t*=1.54, *p*=.130, *Cohen's d*=0.438) and for Grade 4 (*t*=0.490, *p*=.627, *Cohen's d*=0.144), but were

significantly different for Grade 2 (t=4.716, $p<.001$, *Cohen's d*=1.339) and Grade 3 (*t*=2.078, *p*=.043, *Cohen's d* =0.590). Finally, all the comparisons of comprehension learnings for the L-H were significantly different for Grade 1 (*t*=2.345, *p*=.026, *Cohen's d*=0.763), Grade 2 (*t*=7.341, *p*<.001, *Cohen's d*=2.275), Grade 3 (*t*=4.845, *p*<.001, *Cohen's d*= 1.502), and Grade 4 (*t*=2.426, *p*=.020, *Cohen's d*=0.752).

Table 3. Paired-sample *t* tests for students of different academic achievements

G/S	A.A.	N	Pre-test		Post-test		t	p	Cohen's d	Effect Size
			M	SD	M	SD				
1/2	L	20	17.30	6.48	22.90	5.10	4.09	.00	0.914	H
	M	28	21.46	4.04	24.50	3.70	4.72	.00	0.893	H
	H	24	23.63	3.31	25.96	2.85	3.43	.00	0.699	M
2/1	L	20	24.75	8.61	34.65	7.26	4.27	.00	0.955	H
	M	28	29.68	8.64	36.50	7.28	3.77	.00	0.711	M
	H	24	34.13	7.34	41.33	7.46	4.17	.00	0.850	H
2/2	L	20	10.15	4.55	14.40	4.84	5.04	.00	1.128	H
	M	28	13.29	4.59	17.96	4.10	4.97	.00	0.938	H
	H	24	19.13	3.98	23.08	3.28	3.96	.00	0.806	H
3/1	L	20	7.60	3.75	14.55	4.21	5.81	.00	1.300	H
	M	28	7.79	3.56	16.11	5.10	8.07	.00	1.525	H
	H	24	10.50	4.31	20.79	4.24	11.39	.00	2.323	H
3/2	L	20	11.65	5.02	19.45	5.74	5.56	.00	1.244	H
	M	28	13.61	4.06	24.93	3.87	12.48	.00	2.358	H
	H	24	15.17	3.00	24.33	5.05	8.71	.00	1.777	H
4/1	L	20	28.15	10.81	37.40	17.61	3.07	.01	0.686	M
	M	28	33.75	11.33	45.32	9.76	4.94	.00	0.934	H
	H	24	41.83	13.73	46.04	11.57	1.80	.08	0.369	L
4/2	L	20	12.25	4.48	19.80	3.64	7.09	.00	1.585	H
	M	28	14.68	5.29	22.86	4.25	8.83	.00	1.669	H
	H	24	16.92	8.09	23.71	7.70	4.89	.00	0.997	H

α＝.05, G/S represents Grade/Semester. A.A. represents Academic Achievement.

	Grade 1	Grade 2	Grade 3	Grade 4
L vs. M	0,367	0,743	0,902	0,787
M vs. H	0,438	1,339	0,59	0,144
L vs. H	0,763	2,275	1,502	0,752
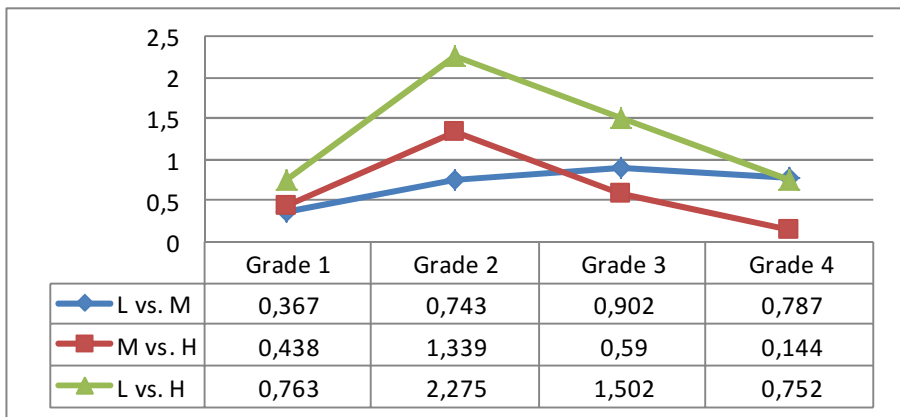
Fig. 1. Trends of effect sizes in group comparisons across grades

All the three trends of effect sizes seemed to increase in Grade 2 and then to decrease from Grade 3 to Grade 4. This means that the discrepancies of comprehension capability between lower and higher levels of academic-achieving students were first enlarged but shrunk later after integrating information literacy into the inquiry projects during the four years. In other words, the lower levels of academic-achieving students may be not familiar with comprehension learning in the information literacy instructions at the beginning, but they can progress and reach to the level of high academic-achieving students in one or two years later. The scenario of progressions on comprehension ability is specially manifested for the medium-achievers to reach to level of the high achievers. As for the low-achieving students, the instructional intervention helps them draw near the comprehension levels of their medium- and high-achieving peers; however, the effect sizes of L-M and L-H in grade 4 still are medium magnitude (*Cohen's d*=0.787 and 0.752, respectively), which have practical significance. Thus, it implies that low-achieving students may need more time to get familiar with inquiry-based learning strategy.

5   Discussion and Conclusions

In the four-year integrated information literacy instruction, students performed well in comprehending subject contents. Therefore, integrating information literacy into inquiry learning can help elementary students comprehend subjects' concepts and apply them in new situations. These findings are similar to the results found by previous researchers [2], [10]. That is, during inquiry, students actively engage in higher level thinking, i.e. posing real questions, comparing a variety of related information. In fact, in the four-year integrated information literacy instruction, the selection of inquiry topics and design of instructional activities were both completed via constant dialogues among researchers, classroom teachers and librarians. Thus, the integrated instruction matched the elements for building inquiry motivation proposed by Thomas, Crow and Franklin [19]. The elements included choice of topics, ties between course content and research topics, explicit goals and evaluation criteria, etc.

Regardless of their academic achievements, it was found that if students devote their efforts to inquiry processes, their conceptual understanding of subject contents improves effectively. Low-achieving students were still behind other levels of achievers in comprehension learning. These results confirm Hung's claim [20] that students of low-academic achievements might need more time to be familiar with inquiry-based learning strategy.

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Using the I-LEARN Model to Design Information Literacy Instruction

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Abstract. An experimental study examined whether information literacy skills instruction designed using the I-LEARN model increased student (N=112) understanding and application of information literacy concepts. While the analysis of the results of pre- and post-test scores and scores on a citation analysis showed that there was no significant difference between the two groups, students in the experimental group used the I-LEARN-designed research guide more often that students in the control group. This warrants further study, and the author is currently working with others to use I-LEARN as a framework to design research guides.

Keywords: Instructional design, I-LEARN, instructional technology, course guides, LibGuides, instructional strategies.

1 Introduction

Given the proliferation of information and the lifelong importance of information literacy and critical thinking skills, instructional designers, school media specialists, and librarians need to determine how to best design information literacy instruction in order to help students locate, evaluate, and use information effectively. This paper describes the first experimental research study [1] conducted to determine how instruction designed using the I-LEARN model [2] could increase student understanding and application of information literacy concepts and offer recommendations for future implementations of the model.

2 I-LEARN: Background and Elements

I-LEARN is an instructional design model connecting information science and instructional design. Like others [3-4], Neuman argues that information literacy skills should be integrated into the curriculum. They are more than just library skills; they are essential skills for learning at all levels and cannot be taught in a vacuum. Neuman describes this in some detail in an article describing the history and value of the school media center [5].

Library science and instructional design are complementary, and Neuman presents the I-LEARN model which is an instructional design model focused on information use. The model is not solely a library skills model; it is a learning model which could be applied in a variety of situations focused in nearly any subject. Grounded in instructional design research and theories of information science, the model's central premise is that information is the basic building block of all learning and that use of information is learning. Simply put, learning is the central reason for seeking information in the first place. Neuman describes the work of a number of prominent researchers in information science theory [6-7] and uses Anderson and Krathwohl's [8] revised Bloom's Taxonomy as the underlying framework. The model is recursive, flexible, and can be used in any information setting. The model maps to both the AASL standards [9] as well as the current ACRL standards [10]. The I-LEARN model includes six elements as described in Table 1.

Table 1. The I-LEARN model

Identify	an information problem by activating an interest, scanning the environment, and focusing on a question
Locate	the needed information through searching and extracting the relevant information
Evaluate	that information through questioning its authority, relevance, and timeliness
Apply	that information to the question thorough organizing and communicating
Reflect	on what is found and revising as needed
Know	through personalizing and internalizing the information

3   Overview of Experimental Study

The primary purpose of the experimental study was to determine if information literacy skills instruction designed using the I-LEARN model increases student understanding and application of information literacy concepts as compared to how librarians currently provide information literacy skills instruction. This experimental research involved two groups: the experimental group (I-LEARN Instruction) and the control group (Standard Instruction). The experimental group (I-LEARN Instruction) received information literacy skills instruction in a single class period and had access to a library research guide designed using the I-LEARN model. The control group (Standard Instruction) received information literacy skills instruction in a single class period and had access to a library research guide designed using a systems design model.

The experimental group (I-LEARN Instruction) and the control group (Standard Instruction) were tested with information literacy pre- and post-test instruments, and the information resources participants selected for their class assignments were evaluated using a citation analysis rubric. A participant survey was given to participants upon submission of their assignment and included items gauging use of the library research guide, participant attitudes, and perceived value of the in-person instruction and library research guide. The pre- and post-test instruments were designed by the researcher and reviewed by two librarians and three instructional design faculty.

The study included 134 first-year undergraduate students enrolled in seven sections of the same required composition and communications course. Of the 134 students enrolled, 112 attended the information literacy skills class session and completed the information literacy skills pre-test, information literacy skills post-test, and participant survey.

3.1 Treatments

As is typical for much of information literacy instruction, both treatments included a one-shot, 50 minute class period of instruction. For both groups, the first 20 minutes included the same content:

0-5 min: Objectives; class needs/topics; introduction to library research guide which includes research process steps, links to relevant databases, checklists for evaluating information resources, where to get help, etc.

5-10 min: Importance of evaluation, steps for evaluating an information resource, evaluation practice.

10-20 min: Background research and pre-search strategies, keywords versus subjects, developing basic search strategy with practice searching, places to find sources for class needs/topics.

For the remaining 30 minutes, the control group had an opportunity for hands-on practice with assistance from the course instructor and the author. The control group used a standard online library research guide designed with a systems approach as their primary tool for this activity.

For the experimental group, the remaining 30 minutes included an introduction to the steps of the I-LEARN process through an online library research guide designed using I-LEARN as the framework (see http://libguides.uky.edu/ilearn for examples). The experimental group had a class discussion about various types of information and their uses, focusing on how those could be used for class topics. The experimental group discussed how they would find, evaluate, and integrate information resources for their assignment. Participants had time to practice finding information in groups, and the session concluded with a review of the model via the guide.

3.2 Results of Experimental Study

I-LEARN Instruction. This group had 70 participants. On the information literacy skills test, the group had a pre-test score of $M=70.79$, $SD=12.15$ and a post-test score of $M=74.86$, $SD=13.78$. The difference score for this group was $M=4.07$, $SD=11.37$. The citation analysis score for those who submitted their assignment online to the author ($N=38$) was $M=2.89$, $SD=0.96$ on a four point scale.

Standard Instruction. This group had 42 participants. On the information literacy skills test, the group had a pre-test score of $M=62.62$, $SD=15.51$ and a post-test score

of *M*=66.07, *SD*=18.63. The difference score for this group was *M*=3.45, *SD*=17.62. The citation analysis score for those who submitted their assignment online to the author (*N*=25) was *M*=2.92, *SD*=0.72 on a four point scale.

Participant Survey. Participants were given a ten item scaled survey rating their experience with the instruction and the library research guide as well items gauging use of the library research guide, participant attitudes, and perceived value of the in-person instruction. The participant survey included two open-ended questions to provide participants with the opportunity to elaborate on their responses. Most participants agreed with all of the statements in the participant survey.

Looking across both groups, there were no striking differences in responses. Of the participants (*N*=112), 94 agreed or strongly agreed that using the library research guide made it easier to find information resources for their assignment, 90 agreed or strongly agreed that they developed a better understanding of the research process after participating in the information literacy instruction session, 90 agreed or strongly agreed that information from the information literacy instruction session and library research guide will help them academically in the future, 88 indicated that they will use the library research guide for assignments in other classes, and 84 indicated that they will use what they learned from the information literacy instruction session for assignments in other classes. Only three participants felt that the information literacy instruction session was not a good use of class time.

Additionally, the participant survey included two open-ended items. Of the 57 participants who completed the open-ended items, 39 described the information literacy instruction session as helpful, and 26 participants offered a specific suggestion to improve the session or the library research guide for the future, with nine stating that the amount of time spent on information literacy instruction during the semester needed to be increased. Most of those respondents suggested that at least two class periods be devoted to library research. Five participants specifically described using the library research guide for an assignment in another course. Only three participants commented negatively on the information literacy instruction session.

3.3   Hypothesis Testing

Test of Hypothesis 1. The first hypothesis tested was as follows: "Students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the information literacy skills test that covers the steps and procedure necessary to locate and evaluate information compared to students who do not receive the instruction."

In order to test the hypothesis, a *t*-test was performed. Prior to conducting the t-test, Levene's Test for Equality of Variances was conducted. Based on the result ($F(1,110) = 2.08$, $p = 0.15$), equal variances were assumed. The test of the primary hypothesis that students who receive information literacy instruction designed with the I-LEARN model (*M*=4.07, *SD*=11.37) will perform significantly higher on the information literacy skills test compared to students who received the standard

instruction (M=3.45, SD=17.62) did not yield a significant difference (t(110) = 0.23, p =0.82). Thus the hypothesis is not supported.

Test of Hypothesis 2. The second hypothesis tested was as follows: "Students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the citation analysis rubric than students who do not receive the instruction."

In order to test the hypothesis, a t-test was performed. Prior to conducting the t-test, Levene's Test for Equality of Variances was conducted. Based on the result (F(1,61) = 2.41, p = 0.13), equal variances were assumed. The test of the primary hypothesis that students who receive information literacy instruction designed with the I-LEARN model (M=2.89, SD=0.96) will perform significantly higher on the citation analysis rubric compared to students who received the standard instruction (M=2.92, SD=0.72) did not yield a significant difference (t(61) = 0.13, p = 0.89). Thus the hypothesis is not supported.

3.4   Use of Library Research Guides

Usage of the library research guides for each group of participants was tracked using the library research guide software. Tracking was not available for individual participants, but total hits per guide were available as shown in Table 2.

Table 2. Number of Library Research Guide views, January – March 2013

	Number of Guide Views
I-LEARN Instruction (N=70)	678
Standard Instruction (N=42)	282

These usage figures show that the guide for the experimental group, I-LEARN Instruction (N=70), was viewed 678 times. The guide was viewed approximately 16 times per day during the period that participants were completing their assignments. Standard Instruction group participants (N=42) viewed their library research guide 282 times. The guide was viewed approximately 8 times per day during the period that participants were completing their assignments. Participants in the I-LEARN group viewed their guide twice as often as those in the standard instruction group. Despite examination of all data collected in the study, it is unclear why this is so and warrants future study.

4   Future Implementation and Study of I-LEARN

While no statistically significant difference was found in the experimental study, participants who received the standard instruction did not perform as well on the information literacy skills test as participants who received the I-LEARN instruction. The information literacy test difference score of those in the I-LEARN group (N=70)

was M=4.07, SD=11.37, and the difference score for those in the standard instruction group (N=42) was M=3.45, SD=17.62. The I-LEARN model is new, and at the time of this experiment, no examples of its use were available in the literature. This was one of the first times the model had been used in a real world setting, particularly in an academic library environment. As the I-LEARN instruction was the same as or slightly better than the standard instruction, this suggests that future study of the use of the I-LEARN model is needed.

Based upon this study, the author has several suggestions for future implementation and study of I-LEARN. First, it would be helpful for the librarian to work more closely with the faculty member on the class assignment. This would allow the instruction to be integrated more closely with the assignment and might provide opportunities for the librarian to participate in the class throughout the semester. Instruction designed with the I-LEARN model does lend itself to needing more time than a single class period information literacy instruction session; however, continuing to explore ways to improve the single class period information literacy instruction session is important as it is often the only time allotted for this instruction.

Future use and study should consider other options for delivery. In particular, the use of I-LEARN as a framework for an online library research guide should be examined more closely. Given the positive reaction from students in using the I-LEARN-designed research guide, the author has continued to explore using I-LEARN as a template for developing online library research guides. Librarians at another university have used I-LEARN as a template for course guides in chemistry, psychology, earth science, and writing to date. Currently two librarians there are conducting a study related to the effectiveness of I-LEARN as an online research library guide framework.

A future study might include more qualitative components in the research. Some questions arose as a result of this study. For students, what specifically did they find valuable about the in-person instruction and the library research guide designed using the I-LEARN model? The student insights in the participant survey were invaluable, and perhaps focus groups could be conducted in a future study to better understand student preferences between use of one design model versus another.

For faculty, how might they consider integrating concepts from the I-LEARN model into their course? Currently the author and the model's author are working with a small group of faculty to determine how faculty might do that. These teaching faculty are working to develop instruction and instructional materials designed using the I-LEARN model. The rationale for having faculty create materials is that they will be able to work with students throughout the entire research process. Librarians typically help with identifying a research question and locating and evaluating information. The faculty will work with students throughout the process and can be of particular assistance in helping students apply the information, reflect on/revise their work, and ultimately incorporate the information into their knowledge base and develop new questions with this new knowledge.

The model is promising in developing other types of instructional materials. The author is planning to develop an I-LEARN-designed Blackboard module to scaffold an assignment for a course she is teaching this fall. I-LEARN would serve as a strong

framework for video tutorials as well. Current information on additional research projects and examples of I-LEARN in practice can be found on the author's I-LEARN website: http://libguides.uky.edu/ilearn

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Development of Visual Skills: Digital Photography as a Tool for Research and Teaching in Architectural Education

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Abstract. An architect's education requires a broad mastery of visual skills. Particularly in design courses, students must demonstrate the skills necessary for the use and production of images to achieve a competitive academic performance. However, the development of these skills in students and the evaluation of their work by faculty members are based mostly on subjective criteria supported by the faculty's experience. The research used digital photography as an object of research to understand the processes of learning in architectural design. The results help to establish new educational strategies for the development of visual skills to be used during the design process. The collaboration between faculty members and librarians of the School of Architecture at the University of Puerto Rico presented new partnerships that have enriched the planning process of different pedagogical activities for the advancement of knowledge with the development of visual literacy skills in students.

Keywords: Visual skills, digital photography, architectural education, visual methodologies, architectural design process, urban landscape.

1 Introduction

An architect's education requires a broad mastery of visual skills. Particularly in design courses, students must demonstrate the skills necessary for the use and production of images to achieve a competitive academic performance. However, the development of these skills in students and the evaluation of their work by faculty members are based mostly on subjective criteria supported by the faculty's experience. Seldom are pedagogical practices considered within the hegemony of the workshop culture and the architectural design process. One of the general practices in a design workshop is to concentrate on the formal and aesthetic aspects of the final product, instead of the design process itself [1]. Furthermore, this teaching strategy isolates the designer from the environmental considerations where the architectural work takes place [2].

The objective to this research is to recognize the use of photographs in architectural education, as a research tool in the study of urban landscape, as well as an object of research, to understand the processes of learning in architectural design. The research used digital photography, as an appropriate instrument of teaching to develop visual

thinking, needed by any student of architecture and as a mean to facilitate teaching. This study employs a case study method that examines the processes of teaching-learning mediated by visual artistic products, specifically to: make a diagnosis of the level of first-year design students in terms of image production; analyze the production and post-production of images taken in a place; and, analyze the visual results in the identification of problems throughout the design process.

The development of visual skills was conducted in the course *Architectural Design Fundamentals*, first year studio. The paper charts how we studied the experiences of the students at the beginning of their training as architects, specifically, of photographic activity by students when they interact with a place for the understanding of the urban landscape and the identification of problematic situations.

This process is addressed by the Visual Literacy Competency Standards for Higher Education, published by the Association of College and Research Libraries [3]. As a result, outcomes are established as a function of the student's capacity for creating photographic images using aesthetics and design choices to enhance effective representation and communication of concepts, narratives, and arguments arising from the analysis of a place, and, in turn, this visual product will be a useful tool for the definition of problems in the design process, which, in the context of the architectural teaching-learning process, has value for both, students and instructors.

1.1   First Year Design Course

The courses *Architectural Design Fundamentals*, ARQU 3131 and ARQU 3132, of the undergraduate program of the School of Architecture at the University of Puerto Rico, introduce the students to the factors that influence architectural design. The students confront the design process for the first time and have to organize their ideas to intervene and transform the surrounding environment. They must develop skills to conceptualize and organize the function program, and understand the concepts of function and form, along with the analysis and synthesis of context variables as well as the design, and development of constructible forms. They are introduced to the use of principles of spatial ordering and spatial sequence while being trained in the use of tools for architectural representation. They experiment with the role of materiality and its implications in architectural design, and the study of precedents in architecture. Mastery of these skills leads to asking questions, defining problems and finding solutions in the design process. In these courses, several criteria for accreditation set out by the National Architectural Accrediting Board [4] for design students, are met[1].

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[1] A.2. Design Thinking Skills: Ability to raise clear and precise questions, use abstract ideas to interpret information, consider diverse points of view, reach well-reasoned conclusions, and test alternative outcomes against relevant criteria and standards. A.3. Visual Communication Skills: Ability to use appropriate representational media, such as traditional graphic and digital technology skills, to convey essential formal elements at each stage of the programming and design process. A.6. Fundamental Design Skills: Ability to effectively use basic architectural and environmental principles in design. A.8. Ordering Systems Skills: Understanding of the fundamentals of both natural and formal ordering systems and the capacity of each to inform two- and three-dimensional design.

Farivarsadri [5] highlights the importance of these introductory design courses, since they are the first confrontation by students with the representation and visualization skills, with the concepts of architecture, language and design thought. According to Konyk [6] the first year design course is a compressed version of a methodology for all subsequent years, hence it is important that from the beginning, students identify the design process as one individual process that will continuously evolve throughout their education. This process assumes, as a requirement, the acquisition of knowledge and the development of individual skills, since it uses critical and operational tools in each of its stages for the creation of the architectural object.

The learning method used in the course is based on a Problem Based Learning[2] approach. This method raises a very close and dynamic teacher-student interaction. It is common that education in the design studio will focus on the traditional relationship of master-apprentice. There is also a view that often the intention in studio is to transmit knowledge, not to encourage students to think for themselves [7]. Irrespective of the specific domain, some educational models in design education are based upon the replication of professional task performance [1]. Baum [8] points out that design workshops rely too heavily on mimetic learning, which uses architectural precedents and models to develop the ideas, rather than learning by focusing on the specific and the universal, the methods and processes, or in patterns and structures.

Previous studies by de la Harpe and Peterson [9] provide evidence that very few theories of learning are made explicit in art and design. As well as lacking a language with which to talk about teaching, and in many cases, struggling to describe a philosophy or approach, the interviewees also demonstrated little knowledge of research or theory on teaching and learning [10]. This result makes us wonder about design teaching in general and the pedagogical tools used by professors in the design studios.

The pedagogical commitment is to guide the students toward discovery, using critical tools to allow them to establish an effective, cognitive method to interpret and intervene with their surrounding environment [5]. Also, the aim is to cultivate their concurrent reflection on their design problem-solving skills, assisted by attitudes of systemic exploration of possibilities that allow them to understand their own cognitive process [1]. This process is dependent on visual expression; therefore the teaching of operative tools for representation is also required in this process. The visual means are intrinsic to the methodical and expressive part of the process; drawings, photographs, models, and two and three-dimensional representations constitute the visual skills of personal analysis and the exteriorization of mental visualizations, within the design process. Up to this moment, the School of Architecture has not applied the standards, performance indicators, and learning outcomes, as established by the ACRL for the development of students' visual skills.

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[2] Problem Based Learning (PBL) is a teaching method in which student gains knowledge and skills by working to investigate and respond to specific design's problems. It includes processes for students to give and receive feedback and critiques of their work by the professor, leading them to make further reflections. These critiques are one-on-one interaction with the professor through personal dialogues and use of visuals representations that attempt to find solutions to design problems.

2   Visual Skills

Visual literacy, according to ACRL, [3] is: "…a set of abilities that enables an individual to effectively find, interpret, evaluate, use, and create images and visual media. Visual literacy skills equip a learner to understand and analyze the contextual, cultural, ethical, aesthetic, intellectual, and technical components involved in the production and use of visual materials. A visually literate individual is both a critical consumer of visual media and a competent contributor to a body of shared knowledge and culture."

The standards established by ACRL [3] for visual and information literacy development [11] provide a guide for the comprehensive integration of these skills in the curriculum for architectural studies. The *Information Competencies for Students in Design Disciplines*, published by the Art Libraries Society of North America [12], are essential to verify the basic information skills that need to be developed by first year architecture students, as the case in the sample[3]. These standards provide a framework to develop in students the skills necessary for the production of effective visual materials, while stimulating the creativity and skills of analytical thinking through the production process. In addition, it would result in students trained to produce significant visual products for a variety of purposes, such as representation and communication concepts, narratives, arguments, and presentation of data and information properly represented. For this study, the aforementioned standard 6 was instrumental since it serves the production of images as an essential component of visual literacy. These basic skills should be taught deliberately [13-14].

For Hattwig et al. [14] in the participative academic culture, it is expected that students contribute toward research, learning and communication as sources of knowledge. Self-expression, through the creation of visual products, also helps students in their critical view, interpretation and evaluation of the work of others as experimenters, and in making decisions about the visual representation of their ideas. For all architects, visual communication skills are fundamental to her/his training as a student and later on [4-5], [15].

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[3] With this publication, professors and information professionals have a series of standards, which can be referenced while teaching visual skills in the classroom. The seven visual skills from ACRL, that are aligned with the ACRL Information Literacy Standards, are: Determine the nature and extent of the visual materials needed; Find and access needed images and visual media effectively and efficiently; Interpret and analyze the meanings of images and visual media; Evaluate images and their sources; Use images and visual media effectively; Design and create meaningful images and visual media; Understand many of the ethical, legal, social, and economic issues surrounding the creation and use of images and visual media, and access and use visual materials ethically.

3   Digital Photography as a Tool for Research and Teaching in Architectural Education

In academia, architecture is one of the few disciplines in which the image, rather than the word, is the primary language of communication. In fact, visual representations in architecture are considered academic tools to root ideas, knowledge and reasoning [16]. Commitment to the visual is evident in the teaching of subjects such as history and technology, but is particularly important in the design workshop. Visual skills are directly inherent to the solution of problems and to critical thinking applied to the design processes. Architectural undergraduate education uses visual methods such as drawings/sketching, photography and models as a way of helping students perceive more accurately in three dimensions and to promote the development of spatial or visual thinking [16-17].

Architectural product requires skills of creation, interpretation, and evaluation, specifically those related to visual material. To be able to develop the ability to analyze, interpret, use, and produce photographic images to construct meaning, within the architectural curriculum, can reach a significant level in the critical conscience of the student. Visual literacy offers students a critical lens, so they are less likely to take pictures for their appearance and more likely to "read the world" [18].

Since the invention of the photographic process, cultural and sociopolitical studies have extended the use of photography for research [19]. Moreover, photographs have been used as visual artifacts that narrate behaviors, places, and experiences, making photography part of a "critical visual methodology" [20]. Furthermore, Sontag says that photography is not a true reflection of the photographed reality because it is accompanied by multiple meanings and great potential for interpretation [21]. From this perspective, the creation of pictures establishes close ties between the existing environment and its creator, allowing a constructive process as a result of the codification of experiences and meanings. Photography allows the architectural student to interact with and interpret the urban landscape, not only while taking photos, but also during the postproduction stage to highlight issues that later will be integrated into their design process. This method allows the students to see the place, not as passive observers, but as active participants in a construction and production process through photographic activity. Using photography intrinsically is considering it speech with notable aesthetic qualities, which not only presents, but simultaneously interprets, what is represented and therefore manages to ask questions in depth, describe situations, defend ethical positions or reach reasonable justifiable conclusions [22]. Images, visual thinking and aesthetic methods are important in knowledge production and have been significant in the interaction between art and science as it has been defined by Kemp [23].

In the case study presented herein, the authors are betting on the experience of photographing using aesthetic and composition resources, as well as artistic research methodologies, to provoke a wider and deeper understanding of the place. That is, there is an intentional effort (both inductive and deductive) to comprehend the sensory experience represented in the photo, coupled with awareness and accounting of the feelings, thoughts, memories and emotions which are stimulated through engaging with that experience [17].

4   Case Study: See and Intervene in Loíza Street

The final task leads to eleven students from the *Architectural Design Fundamentals* courses to investigate the urban landscape through the living experience at the Loíza street of Santurce in San Juan, Puerto Rico. It is expected that the visual record of this urban space, and its components, will educate students in the formulation and definition of architectural design problems. The visual record by the students, through photographic images of the place, produces new visual interpretations, through the use of compositional and artistic means. With this task, it is expected that the student will develop the skills and knowledge needed for sound decision-making during the architectural design process.

The task at hand can be divided into two parts. The first part is a visit from students and professors to the Loíza Street with the purpose of registering themes, situations, actions and objects, through digital photography. Once the site visit is concluded, students will select five photos that comply with the criteria established by the instructor: composition - volumes and leading lines, brightness and contrast, color, focus, framing and camera shots. In addition, the photographic sequence of the images selected by the students is evaluated, taking into account important aspects such as narrative logic, plot progress (time and space), and theme. The criteria to select and work on the photographic images are based on the concerns and interpretations that they have experienced in place. Thus, a work of image postproduction is required to effectively express the theme. Prior to performing this task, students attended lectures on principles of composition, drawing and handling of graphics editing programs. In addition, students received general instructions for the task, discussed the instructional objectives and the rubric, and suggested topics to guide their observations at Loíza Street: its components, inhabitants, physical, cultural and social aspects as well as considerations of time-space. Instructors offered them a lecture about grammatical cinema conventions. During their visit, they were told that the amount of photographic images would not be limited, as well as the way that the visit would be visually registered. This process was conceived to provide students with enough independence for experimentation and expression, with minimal intervention from the professor in the student's creation or selection process.

The second part of the task focuses on the design of an architectural object on a lot between parcels on the Loíza Street. Using a graphic, and oral exposure to peers and instructors, students: 1) define the preferences and needs of an imaginary client 2) determine potential uses and spatial functions (a part dedicated to housing and another one for the development of a specific and important activity in the life of the imaginary client, 3) develop the theme (concept) of the architectural object. These three components, a direct result of the experience of the place, are essential to initiate the design process of the architectural object.

For purposes of this study, we evaluate the photographic sequence and how it contributes to the design process. The criteria evaluated, according to the rubric are: 1) General image (photography), 2) Cinema conventions in photography, 3) Visual narratives of the photography, and 4) Spatial composition of the architectural object. The rubric was applied to four students who met all the requirements of final delivery of the task. However, the theme criterion was applied to all students in this section, since they all met it.

5   Findings

The work accomplished by the students show the following results. The following aspects are addressed in general image: composition-volumes and leading lines, brightness and contrast, and color. On the first aspect, students demonstrated expertise in creating balanced compositions using the leading lines or volumes in the image in the post-production stage. Students effectively applied the brightness and contrast technique to express atmospheres in accordance with the image's intention. The use of color was the most effective in all sequences submitted by students to establish visual narratives, highlight a theme or focus on urban elements.

In the cinema conventions of photographs, the criteria in which students showed lesser skills were angle and depth of field. Photographs of urban objects were taken parallel to the lens or in perspective at the level of the human eye. Even when students maintained a logical narrative about images, they did not show curiosity in exploring the techniques of angle and depth in field, as well as framing and camera shots. As to the selection of an object in particular as a focal theme of the investigation, two students focused on objects or architectural elements. All students developed the approach using postproduction techniques, altering the photographic image.

In the category of visual narratives, the following issues were discussed: theme, plot progress (time and space), and narrative logic (technique). Four students showed total command in expressing and maintaining the theme in a coherent manner, using objects and color repetitively, and by the postproduction techniques applied. Regarding the plot progress (time and space), only one student excelled when compared to the rest, due to the fact that he/she showed command in the three aspects: theme, plot and narrative logic. In other jobs, the concept of time remains unchanged. Space in each image is autonomous, i.e. does not need captured space on previous or future photos to be understood. The appearance of the narrative logic was effectively expressed by four students using post-production technical resources through the manipulation of the original photographic image.

In summary, in the first part of the task, students depended mostly on post-production techniques to express their concerns about the urban landscape and to address the aspects outlined in the task and in the rubric. Students' photographic sequences are an example of the visual expression of the initial design problems, identified by the students. In the visual materials produced by students, we could not observe consistently the incorporation of the cinema conventions, particularly in angle and depth of field, and framing and camera shots.

In the second part of the task, which consists of architectural design, new criteria were incorporated: the relationship of the architectural form with the theme, the hierarchy, the spatial richness, as well as the beginning and end of the architectural sequence. In all four cases, the architectural object clearly expressed the relationship between the architectural forms with the theme. The theme guided architectural strategies in the design process to define spaces, select materials, and define relationships between solid and voids, among others. During the process, some students distanced themselves from the theme, placing more importance on other variables of the design process to enhance the quality of the architectural product. Consideration of architectural precedents and critiques by the professors influenced change in the form-theme relationship chosen originally by students in the first part of the task. Some of

the critiques given by the professors were driven to address design problems, specifically related to the aspects of space and form.

Regarding the spatial quality criteria, hierarchy, spatial richness and space sequence, the students' work showed a great spatial richness and a clear understanding of the creation of spaces. Those spatial qualities responded to the theme developed by the students. For example, Figure 1 shows the photographic sequence of the student 2, and Figure 2 shows the design proposed by that student, from its original developed theme. In Figure 1, spaces of the Loíza Street are recorded from day and night, showing opposite conditions in the activities carried out: color, lighting and occupation. As a result of student work, it can be observed that the photographic sequence helped define the theme, based on contrasts and mutability. This process, in turn, facilitated the definition of problems and the formulation of design solutions.

Fig. 1. Photographic sequence from student 2 is shown, where the contrast from day and night at Loíza Street is observed.
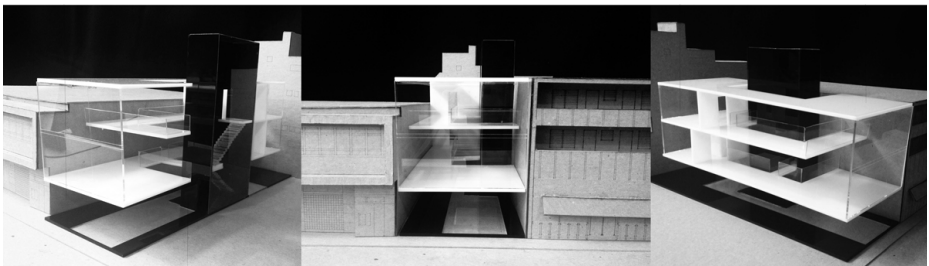
Fig. 2. Architectural design proposal from student 2, based on his original developed theme

The students' results showed that the photographic image served as a connector for the architectural design's final product. For all students, the photographs, product of the living experience in the Loíza Street, were used as the basis to identify a theme, develop an imaginary client, and define a program of spatial functions that would be reflected in the final design proposal.

6   Conclusions

The design process is complex, non-linear, with multiple variables that arise during its development to the extent that the designer is defining and solving problems. This process is challenging for a first year student of architecture who is still developing the skills and knowledge that may assist them. To define a theme, framed in the visual

register of the living experiences of a place, served as a starting point to the design process and exposed the students to real problems of the urban landscape. Visual literacy provided tools for development of the artistic, as well as an appreciation of the aesthetic. They were fundamental since most of the decisions taken during the design process included formal, proportional and composite considerations of the object, and hence, require aesthetic judgments.

In this case study, the integration of photography, as a visual tool for the development of visual skills for first-year architecture students was an appropriate instrument to facilitate teaching. The task of photographic production and postproduction allowed establishing a coherent and concrete relationship between what was discovered in the place and the final architectural product.

The assignment of a task, the creation of instructional objectives, and the implementation of a rubric for the measurement of specific criteria that are part of an architectural project, sets a first methodical approach for the development of the visual skills in the first year of design at the School of Architecture of the University of Puerto Rico. As a result of what they learned, the course students showed the skills necessary for the production and post-production of photographic images, which served as a starting point for their proposal of architectural design in their first academic year. As noted, we need to further develop the students' compositional, artistic and aesthetic skills. The results show the need to address, in a systematic and consistent way, visual skills in the curriculum of the undergraduate academic program, in design courses as well as the sequences of history, theory and technology.

Librarians must have a greater involvement in the integration of visual skills in the academic program, contributing to the creation of rubrics, establishing direct contact with the student in the workshop or classroom, and assisting in the selection of precedents, among others. Collaborative and interdisciplinary participation presents a great opportunity to enrich the visual products of the students.

On the other hand, the pedagogical training of instructors for the creation of adequate instructional resources to develop visual literacy in design courses deserves attention. The process of establishing instructional objectives, defining the task, creating instruments for the assessment of student learning, among others, should not begin with improvisation. It is important to assess the activities that were not as effective, according to the results presented by the students. Future studies will be required to explore in depth the development of these skills, as well as the implementation and evaluation of new strategies for teaching and learning in design courses. This concern leads to a move away from theory to the concrete implementation of educational practices that will allow measurable pedagogical results.

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From Know That to Know How – Providing New Learning Strategies for Information Literacy Instruction

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Abstract. Gameful design has become a popular trend to create more engagement in the area of education and learning environments. Using games mechanics and game principles from both digital and non-digital games can also be incorporated into information literacy instruction. Therefore the project "The Legend of Zyren" was initiated to gamify a course on information literacy and provide a new educational environment with a focus on new technologies and dynamic learning structures. This paper focuses on evaluation of the online platform and parts of the practical session, and the ability to impart information literacy with regard to perceived quality (e.g. user-friendliness, usefulness, security/trust and fun) of content, implementation and the general concept of gameful design. The results of the evaluation confirm the positive effect of the gamified learning environment on motivation and content mastery among students regarding the acquisition of information literacy. The students were more engaged in the learning content and able to apply the acquired knowledge to solve arising problems.

Keywords: Information literacy instruction, knowledge representation, gamification, gameful design, higher education.

1   Gamified Learning in Information Literacy Instruction

Humans love to play. From the day we are born, we play [1]. As we grow older, playing becomes a smaller part of our life, but the desire to play never really leaves us. Video games in particular are becoming even more popular among today's digital natives – people who have grown up in and around the digital world [2]. Gamers expend countless hours playing and mastering techniques and tactics, improving their skills and overcoming difficult challenges, often reaching the "flow state," a temporary state of mind in which users are so fully immersed in their work that it seems to be an effortless process [3]. Gamification aims to utilize peoples' desire to play and aims to evoke a similar degree of motivation and dedication by using game mechanics to make otherwise mundane or difficult tasks more appealing. Besides addressing a general desire to play, the various game mechanics also satisfy a broad range of human (core) desires like reward and status, achievement and self-expression or competition and

altruism [4]. Furthermore, Sebastian Kelle [5] defines two important game design principles that contribute to learning success. Incorporating collaboration and competition into a gamified framework aims to achieve a balance between knowledge acquisition through teamwork and engagement through competition, so that "learners should be motivated and "drawn" into the game, but not overly distracted from the learning goal" [5, p. 14]. Besides this, the natural structure of a game serves as a catalyst for content mastery. The content is bound to an interactive context in which the students have to apply the disciplinary content meaningfully [6, p. 520]. The knowledge which is acquired at one level of the game has to be applied and intensified to accomplish the next one, which is supported by feedback loops [7, p. 12] and visual manifestations of the learning progress in the form of leaderboards, levels and rankings [8]. This cyclic implementation and the constant upward movement of the difficulty levels of a game create a cycle of expertise and support content mastery and consolidation [9].

In recent years, gamification has become increasingly popular with implementations ranging from simple point systems on websites to tools like jogging apps, in which users have to run through a zombie apocalypse [10]. At the same time teamwork, competitiveness, and especially information literacy, have become key skills in today's society. However, as the new generation of learners demands a more interactive and motivating learning environment, gamification seems to be a promising approach to mediate these skills [11]. "Games and game-like elements have begun to invade the real world" [11, p. 1] and researchers are starting to recognize the worth of games for education and other purposes. Games mechanics and game principles from both digital and non-digital games can also be incorporated into information literacy instruction [12-13].

Inspired by other successful gamification projects in education like *The Multiplayer Classroom* [14] or the *Khan Academy* [15], we decided to gamify one of our obligatory second semester courses on Knowledge Representation by turning it into a fantasy role-playing game. By applying various game mechanics like experience points, levels and leader boards and combining them with an adventurous story, we wanted to create an interactive environment that increases students' motivation and engagement. The project is divided into a classical lecture with focus on information literacy, an online platform where a text-based adventure is set and students solve quests, and a practical session, where the content is intensified and students can solve tasks in groups (guild quests) and demonstrate how information literate they are [16]. Partial aspects of the project have been presented in [16-18], but this paper represents a first comprehensive overview of the whole project.

2   Gamified Framework – Student Centered Design

We did not want to use just one or two gimmicks to make the course more interesting; more likely, our aim was to turn the whole course into an actual game and make the experience as immersing and motivating as possible. A lot of our ideas came from fantasy role-playing (video) games (RPGs) like Skyrim and World of Warcraft. Just

as in RPGs, the student can choose between different races, like elves, goblins, humans and orcs. The chosen avatar then travels through the fantasy world of Zyren, fighting monsters and bad guys, helping people out, finding treasures and saving the world.

As the main part of The Legend of Zyren is a text-based adventure, the story with its plot and narration is the core element of the game. The student embarks on a mission through the realm of Zyren to find the mysterious book of knowledge which was lost long ago. Since the book contains the collective knowledge of all inhabitants of Zyren, it is said to have an immeasurable power that allows its owner to gain control over the whole realm of Zyren. These missions, called quests, are challenges or riddles that the student has to face on his journey through Zyren. They can be regarded as exercises which test the student's knowledge of the lecture's contents and prepare him for the final exam. All in all there are 153 quests integrated in the main quest lines and side quest lines of the game that are of different types such as multiple choice items, text-box exercises, crossword puzzles or drag and drop graphics. These types of quests are automatically evaluated by the system and the student immediately gets to know whether his solution was correct or not. In case of a wrong submitted solution, the student has the possibility to restart the quest and try to solve it again. Besides this there are the so called "hand-in quests" which have to be submitted via email to the supervising tutors. These quests are more comprehensive than the automatically evaluated ones and are suitable for topics which have to be acquired in a more intense way.

Through solving quests the students earn experience points (XP), which are needed to rise to higher levels and directly reflect a student's progress [8], [11]. The level of progression is exponential, so as the plot proceeds, a student needs to earn more and more XP to reach the next level. Correspondingly, the amount of XP that can be earned through solving a quest also rises exponentially and a student will earn more points for solving later, more difficult tasks. Just like in real RPGs, there is no 'wrong' in the traditional sense. If a submitted solution is wrong, a student can simply try again until the right solution will be rewarded with the attached number of XP.

Most video games these days also feature an achievement system. Achievements can be regarded as additional status symbols that can be earned by accomplishing extra challenges or special attainments, which are linked to various requirements [19]. They address the desire for status and self-expression and motivate players to go above and beyond the necessary requirements of a game. Throughout, students can earn achievements for things like solving quests, reaching certain levels, making no mistakes or being present in the practical session.

Besides allowing students to work through the quests, the platform also serves to give students an overview of their progress. The main page displays the student's avatar, which evolves every time the student levels up, as well as the current level and the attached number of XP and the current quest. There are 15 possible levels and reaching level 11 is necessary in order to pass the course. Reaching higher levels gives the students a bonus on their final exams. From the main page the student can either continue where he left the adventure or access the quest overview, his achievements or a map of the realm of Zyren. The quest overview holds all quests arranged by quest lines and acts and separated into (obligatory) main quests and (optional) side quests.

Parallel to the online platform the students visit a weekly practical session, where they participate in so called "guild quests". At the beginning of the semester, students form guilds, with a guild name and a leader who is in charge of the groups. These guilds then compete against each other in gamified tasks ranging from Jeopardy-style quizzes to treasure hunts.

3   Implementation

The first prototype of the online platform was programmed in PHP using the CakePHP rapid development framework [20] and utilizing the Model-View-Controller software design pattern, which ensures strict division between the objects (models), the user interface (views) and the functionality (controllers). The platform is based on a MySQL database (Fig. 1).
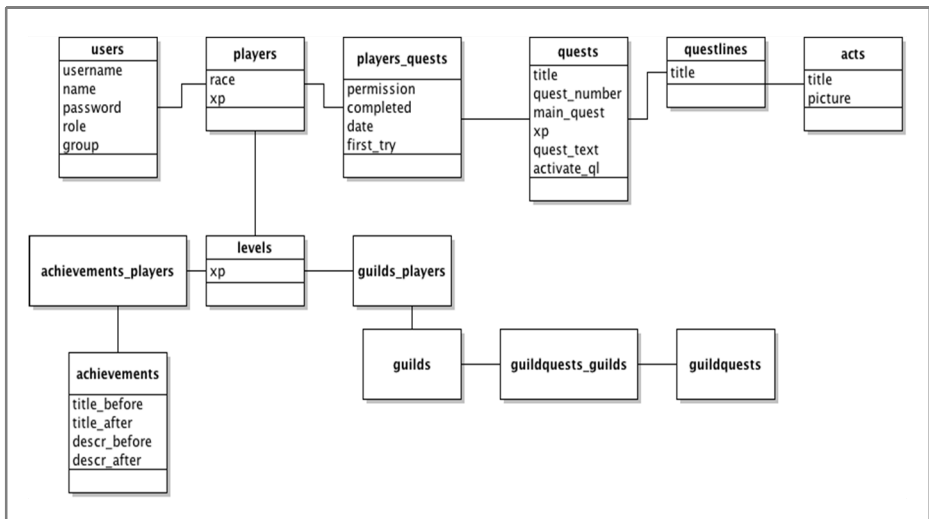
Fig. 1. Database scheme for the online platform

Each table in the database is represented by a corresponding model that makes the table data available to its controller and defines the relationship to other tables. A model can have multiple views, which are responsible for displaying information (e.g. an overview over available quests) and for processing user inputs. The controller serves as an intermediary between a model and its views, performing various user-defined functions on the model's data (e.g. calculating XPs) and passing the results to a view. Users are divided into *players* and *administrators* through the *role* attribute. The role governs global permissions, as well as the presentation (*view*) of the main page. The acts, quest lines, quests, levels and achievements tables hold the static game information. The exercises associated with a quest are implemented in the corresponding *controller* and displayed via the associated *view*.

Each student's progress is tracked in the players_quests and achievements_players tables. The conditions for achievements are implemented at the appropriate places within the code. As soon as the requirement is fulfilled, the appropriate entry is made in the achievements_players table. The players_quests table not only keeps track of which quests a student has finished, but also stores additional information like the date of completion and whether an exercise was solved on first try, as well as whether or not a student has already unlocked a quest. The guilds table contains all guilds, while the guilds_players table associates each player with his guild. The guildquests and guildquests_guilds tables function like the quests and players_quests tables.

4   Evaluation – Measurement of a Game

For the evaluation of The Legend of Zyren we developed a research model that covers all relevant aspects that are significant for the realization and the analysis of the approach. In this paper we present only a detail of the results focusing on the quality of the represented content, the platform as a gamified teaching-learning project and the gameful design concept in general. The central research questions that motivate this paper are:

RQ1: Is the representation of the content appropriate for the intermediation and the recap of the learning content?

RQ2: Is the use of the platform success-promising for the intermediation of the course content?

RQ3: Can students be supported by targeted use of gameful design in didactics to learn information literacy?

The analyzed aspects ranged from the representation of the content through the concept and its usefulness over the intermediation of the content to a general analysis of the gamified concept regarding learning success, which were represented through various hypotheses (Table 1).

Table 1. Evaluation overview containing research questions and hypotheses

Research Question	Hypotheses
RQ1: Quality of Content	H1.1: Perceived Quality of Content [21, 22]
	H1.2: Mediation of Information Literacy [21]
RQ2: Platform	H2.1: Acceptance and Use [23]
	H2.2: Perceived User-Friendliness & Usefulness [24]
	H2.3: Perceived Security / Trust [25, 26]
	H2.4: Perceived Fun [27, 28, 29]
RQ3: General Concept	H3.1: Guilds [5, 16]
	H3.2: Game Elements [7, 8, 14, 30]
	H3.3: Content Mastery & Learning Outcomes [6-9, 16, 31]

H1.1:   The learning content was fluently/well embedded in the gamified framework.

H1.2:   The used concept for the mediation and recap is appropriate for the intended purpose

H2.1:   The platform is accepted and regularly used by the students.

H2.2:   The students perceive the platform as useful and the design as user-friendly.

H2.3:   The platform is perceived as secure and trusted.

H2.4:   In the use of the platform the students experience fun and motivation.

H3.1:   The concept of guilds influences the learning behavior of the students.

H3.2:   The use of game mechanics has a positive influence on the learning motivation.

H3.3:   The gameful design effects that the students are more motivated and deal with the lecture content more intensively and internalize it better. The content mastery has a direct impact on the learning outcomes.

5   Results

The first analyzed research question (RQ1) dealt with the quality of the teaching content. 75.8% of the students agreed with the statement that the content of information literacy instruction was well presented on the platform (n = 91). The majority of the participants also perceived the connection of lecture content and story as successful. Only 24.0% of the students disagreed with their fellow students (n = 91). The transition between the story line and the information literacy quests are perceived as fluently by 53.8% of the students. Therefore it can be said that hypotheses H1.1 concerning the perceived quality of content is confirmed. In terms of the hypothesis that focuses on the mediation of the teaching content, the students consider that the varied assignments of tasks boost their attention and prevent them from becoming easily exhausted by the quests (53.8% of n = 91). Moreover the division between main quests for general recap of teaching matters and optional side quests to intensify knowledge proved to be very appealing for 86.8% of the students (n = 91). To sum up, the quality of content is assessed as positive. Both perceived quality concerning the representation of the content, as well as realization of the mediation are well received by the students.

The second research question RQ2 is based on the platform. The hypothesis H2.1 considers that the students accept the platform as a learning system and regularly use it. At the beginning 138 students registered on the platform. 84.1% of the students actively participated in the course and regularly used the platform. The remaining 22 users dropped out of the course, which corresponds to a normal dropout rate. 105 students passed the course successfully and reached the foreseen number of experience points. Most of the students even used the platform beyond this point. Based on this obligatory point level, the mean value is around 168.5 percent.

Hypothesis H2.2 focuses on user-friendliness and usefulness. Use and onboarding process are perceived as easy and uncomplicated. Thus it appears for example for 78.0% of the students (n = 91) that the first interaction on the platform is obvious and linked with positive feedback. Above all, the opportunity for flexible timing regarding

the work load is conducive for the students' learning behavior (58.4% of n = 91). The perceived usefulness of the platform is investigated by the factors of usefulness in general, the additional value for exam preparation and individual learning success. The students rated usefulness in 94.6%, surplus value in 95.7% and their personal learning success in 89.1% of all cases as positive (n = 91). The assumption of perceived security and trust is concerned with the students' feeling of safety and confidence in the accuracy of the platform. 65.6% of the students consider that they trust the platform, e.g. in calculating XP correctly and processing the solutions (n = 90). Perceived trust also regards whether the students have the feeling that they are kept under surveillance by the point and level system. Only 15.4% (n = 91) have the impression that these game mechanics are also an interception method to observe their individual working progress. The last hypothesis for research question RQ2 deals with the aspect of fun, which also includes motivation and flow. We can state that 82.5% of the students have fun with the platform and enjoy solving quests (n = 91). 77 of all respondents (85.6%) are motivated by the story and the challenge of fulfilling tasks. Furthermore, 59.4% of the participants lose their sense of time and are completely absorbed in the world of Zyren (n = 91) to the extent that they achieve the feeling of flow and immersion.

The third research question deals with the general concept of gameful design. Hypothesis H3.1 focuses on the guild concept as a combination of collaborative and competitive patterns. Almost 73% of the students registered an increase of their engagement through the competitive context (n = 91). Furthermore, in half of the cases the students say that the guild concept has a positive influence on their learning behavior (49.5% for n = 91). The guilds also functioned as collaborative learning groups for the final exam (48.8% for n = 91). Hypothesis H3.2 analyzed the influence of game mechanics on the students' motivation. 83% of the participants are of the opinion that the use of game mechanics is a creative learning alternative. 82.5% (n = 91) favorably view the aspect of fun in the platform. In regard to the restructured tutorials with the guild quests, fun is rated positively in 91.9% (n = 111) of cases. For the traditional tutorial, consisting of theoretical recap and exercises, the fun factor only achieved a rate of 72.6% (n = 112). In terms of motivation, 85.6% (n = 90) and 81.3% (n = 112) of the students confirm that the platform and the guild quests have a positive influence on their engagement - the value for the traditional tutorial just reaches 76.4% (n = 110). Additionally, content mastery and the learning results benefit from gameful design. As already shown with RQ1 the content is well-embedded into the platform and the supportive concept promotes the intermediation of the teaching matters. To enhance the learning experience, the project is created in such a way that the acquired knowledge of an earlier level is required to complete the higher ones. In 73.6% of the cases (n = 91) the students intensively perceived this aspect in their learning progress. Furthermore, the feedback loops (in the form of tutors' response) are an important catalyst for content mastery. In most cases the feedback provided for the students' submitted tasks was sufficient and helpful for the learning process. In addition assistance in achieving the educational targets is rated as appropriate (Fig. 2). These positive results are related to the fact that 97.8% of the students consider the support of the tutors as adequate (n = 91).
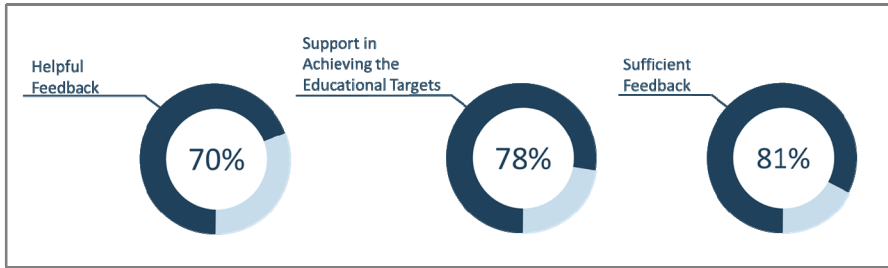
Fig. 1. Support by the tutors (n = 91)

To have a closer look at the success of the gameful design approach we analyzed the correlation between the final grades and the achieved XP. As the XP could be earned on the platform and during the practical sessions, the measurement considers both sub-projects and represents the influence of The Legend of Zyren in total. The analysis of the correlation shows that there is a strong tendency: the higher the involvement in the project, the better the final grades (Table 2). The Pearson coefficient of 0.614 shows a strong dependency between the grades and the achieved XP. In addition to that, we compared the performance record of the gamified course with the traditional teaching methods. With teacher-centered teaching the students achieved a grade point average of 1.5 (letter grade: ~C- to D+). The introduction of the gamified concept led to an increase of grade point average to 2.1 (letter grade: ~C+ to C). The failure rate was reduced from 44.0% to 30.8% within one year.

Table 2. Comparison of the performance records

Letter Grade	Summer Semester 2012 (traditional teaching)	Summer Semester 2013 (The Legend of Zyren)
A/A+	7.1% (6)	22.0% (20)
A-	9.5% (8)	7.7% (7)
B+	3.6% (3)	7.7% (7)
B	2.4% (2)	6.6% (6)
B-	6.0% (5)	4.4% (4)
C+	8.3% (7)	6.6% (6)
C	3.6% (3)	9.9% (9)
C-	6.0% (5)	-
D+	4.8% (4)	-
D	4.8% (4)	4.4% (4)
F	44.0% (37)	30.8% (28)
Average Grade (GPA)	1.5	2.1
# Participants	84	91

6   Conclusion

The process of playing is omnipresent in the human development. With the emergence of the digital era, the game industry experienced an economic recovery and digital games entered everyday life. Since the elements used in these games bear a high potential of driving motivation, gamification also offers a fitting tool for higher education. Game elements in the form of quests, experience points, levels or achievements correlate with game dynamics that drive intrinsic features such as reward, competition or self-expression, and influences motivation. Furthermore, the students, as well as the supervisors, get an overview of the learning progress through the measurable system of XP and levels supported by a visually displayed ranking.

The implementation of The Legend of Zyren includes all of the important game elements presented by the current state of research. The final evaluation of the project analyzed the platform, the content with regard to its implementation in the gamified setting and the concept in general. The results of all analyzed dimensions confirmed the projects' success and demonstrate the positive effect of game elements on Information Literacy instruction.

However, aspects like flexible time management could be improved. As some students had problems regarding this aspect, an implementation of deadlines for the hand-in quests could be an option of further improvement. A general point for discussion is the visual design of the platform. As the game is a text-based adventure, it merely contains text-blocks and several graphics. An implementation of more dynamic elements could therefore be a possibility to improve the platform in terms of the gaming experience.

In conclusion, this paper shows that the implementation of gameful design is definitely a possible realization of a new teaching and learning method in the area of Information Literacy. The Legend of Zyren demonstrates that gamification is a promising way to enhance students' motivation, increases their overall enjoyment and supports content mastery. It should be noted that gamification is not meant as a substitute for students' intrinsic motivation to learn, but simply a framework to support and extend it.

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Debating Transformative Approaches to Information Literacy Education: A Critical Look at the Transformative Learning Theory

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Abstract. Information literacy as a concept is often thought of in the dimensions of being a functional competency. This paper aims to contribute to the critique of the limitations such an approach may imply and explores a different, critical approach. If IL is perceived as a concept that enables learning, and empowers learners through acquired understanding, then we should also ask: What kind of learning is to be enabled? It is because of that question that we aim to analyze the pedagogical process that is inherent to information literacy from the viewpoint of transformative education. We undertake an analysis of concepts in which we examine the transformative learning theory as conceived by its author Jack Mezirow and its subsequent critique. Transformative learning is examined through the connections drawn with information literacy made by Andrew Whitworth and is cross-examined with his outlook of critical information literacy.

Keywords: Information literacy, learning, transformative learning theory, critical information literacy, Mezirow, Freire, Whitworth.

1   Introduction

Information literacy (IL) as a concept is still often thought of in the dimensions of being a functional competency. Although favored by practitioners, this functionalist approach has been criticized as limiting information literacy to a set of decontextualized skills [1] which can hardly be applied in real life situations, that it describes it as merely a taught way of achieving a specific, instrumentally defined purpose while not enabling deeper understandings of the problem at hand [2] or that it, in its agenda to be able to certify and measure IL, reduces IL to discrete units which once obtained can be pervasively applied in all contexts [3]. A different or an opposing view to this approach sees information literate people as those who "are aware of when it is necessary to bring functional skills to play, but also when to transcend them [...]" [4]. Considering this critique, broader conceptualizations were conceived that understand literacy, as well as IL, as a way to reveal power structures,

to resist manipulations, dehumanization and colonizing principles of steering media[1] or, as Freire put it, as means of understanding and orientation to reveal the social, political and economic contradictions in ones environment [5]. They focus not only on educational but social, political and cultural dimensions of IL. Herein we subscribe to the view of IL which cautions us that to limit IL's "potentials to outcomes and standards, is [to] run the risk of minimizing the complex situatedness of information literacy and diminishing - if not negating - its inherent political nature." [1].

Such a rethinking devised a more progressive educational stance that claims IL "needs to be specific, relevant, meaningful and contextualized for the particular learners and their contexts." [1].

Pertaining to this viewpoint, in her paper about reflective pedagogical praxis in relation to IL education, Heidi Jacobs rightfully restated the question: How do we teach it? She avoided presenting a defined method and rather evoked the need to cultivate a critical and (self)reflective pedagogy and offered a starting point, in Freireian tradition: engagement in creative and reflective dialogue. One could say that she advocated a vision, a needed rethinking of our habits of mind when debating IL educational practices.

The value of critical and reflective pedagogical practices has been noted by many authors debating IL education (Jacobs [1], Whitworth [2], Elmborg [6], Bruce [7] and others) but these approaches need deeper theoretical grounding. Altering points of view to acknowledge more open ways of thinking, fostering critical reflection to arrive at more truthful understandings of both ourselves and our reality, effecting change to be able to understand and deal with our experiences have been key goals in this debate but many problems still remain. Interestingly, these problems have formulated an area of inquiry today known as transformative education which was established outside the field of IL. The aim of this paper will be to analyze the pedagogical insights IL educational practice can gain from this paradigm, mainly the theory of transformative learning as conceived by its author Jack Mezirow and its critique. One particular author already opened the discussion of transformative learning theory in the field of information literacy, and especially in ICT education. Andrew Withworth in his book 'Information Obesity' from an outlook of a critical social science took these articulations of critical and reflective learning and teaching towards a communicatively rational critical pedagogy. He developed this view in his more recent paper on the reflective IL educator. How theory of transformative learning (TL) was connected to and informed the debate about IL education will now be explored.

2   Drawn Connections of IL and TL

To understand how the connection between IL and TL has been drawn we first need to take a look at the notions of communicative rationality, communicative action and critical social science as Whitworth presents them.

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[1] In Habermasian sense [2].

The connection has been placed into an understanding of how social science evolved[2] and critical social science came to be. Whitworth presented three diachronically evolving views of social science: the positivist, interpretive and the critical view. It is not our intention to explicate this development or what critical social science is; rather we present important points in Whitworth's explication.

He points out that, while contrary to the above-mentioned positivist exclusionary ideals, critical social science also remedies the relativism of interpretivism and its inability to examine "the conditions which give rise to actions, rules and beliefs, which it [or the information literate person] seeks to explicate" [Fay, 1975, p. 83 in 2, p. 117]. Resolving this inability is crucial in a critical understanding of IL since ignorance of those underlying conditions effectively leads to or might be abused to retain the status quo [Fay, 1975 in 2, p. 118] (and to being unaware of the contradictions in those conditions).

To translate these theories into action Whitworth turns to the work of Jürgen Habermas and his theory of communicative action.

Habermas believed that there is another possible way of justifying action that does not have to be "instrumental and thus controlling" [2, p. 124]. This justification, called communicative rationality, appears on an intersubjective level rather than objective or subjective. The ultimate goal, the ideal, of communicative action is reaching a consensus. This consensus in general relates to negotiated meanings and the activities undertaken on the community level, but more importantly to those that are aimed at resisting potential appearances of dehumanization. "Dehumanization retards the ability and rights of communities and individuals to participate in decisions that affect their lives, with information (and access to it) being systematically manipulated and distorted in order to effect this." [1, p. 122].

The starting point for Whitworth, as one could argue as well for Jacobs, is phenomenographical[3] - the implicit knowledge, stories and the knowledge of history which can bring critical thinking and reflection into ones awareness and might influence people to consider them in relation to their point of view[4]. However, as Whitworth notes for ICT education, changing the point of view does not stipulate the obstacles one may encounter in his/her learning, work, community participation etc. or in combating the colonizing effects of information obesity. In 'Information Obesity', Whitworth examined whether and how TL offers required stipulations.

Autonomous critical thinking, the basis of TL, is in itself very demanding and it develops to the end of cognitive development. It requires questioning of basic assumptions that carry psychological and organizational risks while existing cognitive structures retard the need for it. This makes intellectual structures created by prior experiences of education underprepared for critical thinking [Mezirow, 1990 in 2].

Transformative learning has its roots in action theory and the concept of problem based learning (further: PBL). PBL is described as a complex intellectual process involving coordination of demanding and interrelated skills:

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[2] For an overview of this development see Chapter 7. Critical social science [in 2].

[3] This part of Whitworth's outlook also relates to, as it can be seen in its development subsequent to 'Information Obesity', the influential work of Bruce and the concept of informed learning and the relational framing of IL. For an overview see Bruce's keynote speech at the ECIL 2013 conference [in 7].

[4] Here understood in Mezirow's sense which is elaborated in the 3rd part of this article.

- Understanding and representing the problem (and identifying what kinds of information are relevant to its solution),
- gathering and organizing relevant information,
- constructing and managing a plan of action, or a strategy,
- reasoning, hypothesis-testing and decision-making and
- using various problem-solving tools [Whitebread in McFarlane, 1997, p. 17 in 2].

This all happens in a dynamic environment where the problem occurs, requires an ability to plan ahead, to be able to picture a potential situation and to integrate existing knowledge with new situations. PBL employs a cyclical, iterative approach where potential solutions might not be found the first time we undertake an analysis of the problem. Also it is an approach where it is possible that no employed solution can be a permanent one. Whitworth adds that there should be a continual review of both the applied solutions and the process through which the solution was reached. Such a revision would only be communicatively rational if it was undertaken by those who have created the solution, from inside the activity system. Thus, Whitworth describes the principles of action learning. The main obstacles to wide educational application of PBL are that it cannot be expected that children (or adults) can undertake such learning at any stage of their cognitive development nor to be able to formulate appropriate filtering strategies [2].

But, if individuals cannot, is it the same for groups? Following Wenger's "Social theory of learning" an activity system which views decision making as an iterative, continually revised process can handle this complexity. Also, through action learning in a community of practice it might be possible to resolve the issue of not being able to develop appropriate filtering strategies. Action learning requires learners to formulate personal theories of action that are being revised continually through action and engagement in problem solving. These theories then serve as filtering criteria and are developed at the group level [2] with a distinct critical potential that "requires learners to do more than follow set patterns of information retrieval […as…] they must [also] learn about the potential deficiencies of these patterns." [4, p. 45].

Further in Whitworth's explication another possible connection of IL and TL appears. When Whitworth [2:160] agrees with the notion that we need "to teach word processing, not Word" he points out the difference here--that we need knowledge as orientation, which cognitively penetrates and permeates. He then further elaborates: "It is through use that technologies can be rewritten. Active use – meaning, not just using tools assigned beforehand, but selecting appropriate ones from a wider ecology of resources – and information production, on terms that as far as possible are developed by the learners rather than assigned to them, are essential teaching strategies." [2, p. 163]. Considering PBL approaches to ICT education, Whitworth's focus in 'Information Obesity', resources are transformed through addressing the problem – resources that are not used as readymade for application rather than being molded for particular problem solving through their application [2].

Transformative learning in Mezirow's sense, as well as IL practices informed in this respect, would like to offer exactly this power to mold: a "way we control our experiences" [Mezirow, 1990 in 2, p. 177], becoming autonomous through

understanding underlying assumptions and effecting change in practice, altering ways of thinking and understanding [Kahn; Baume in 2, p. 177].

It is clear that having relevant information is crucial for most problem-solving tasks. Thus, information literacy becomes an apparent requirement [2]. A true shaping of the connectedness of IL and TL, as well as transformational approaches in IL theory in general, is yet to be fully devised. To see how deep the possible connections between IL and TL are, it is crucial to present what TL actually is as Mezirow presented and developed it.

3   What is Transformative Learning (to IL)?

It is prudent to start with definitions. Transformative learning is "a description of a learning process by which the subject moves from an unexamined way of thinking to a more examined and critically reflective way and hence a more dependable way of interpreting meaning." [8:59]. Because there are no "anticipated learning outcomes" transformative learning escapes prescribing implicit purposes or definitive goals of the learning process. In short, it is "a revision of meaning structures from experiences that is addressed by the theory of perspective transformation." [9].

Transformative learning theory states its task is to empower for autonomous thinking by effecting change in frames of reference and paradigms. Frames of reference can become problematic as they become taken-for-granted – "sets of fixed assumptions and expectations (habits of mind, meaning perspectives, mindsets)." [8:58]. As a theory of adult education it presupposes that the transformative learner reached the required stage of development. This is one of the reasons why Mezirow points out that TL pictures an ideal situation. TL "delineates the optimal conditions for effective discourse and suggests that these conditions also constitute optimal ("ideal") conditions of learning in any culture that wants to foster transformative learning" [9].

The meaning structures one affects through TL are constituted of meaning schemes and meaning perspectives. Meaning schemes are "made up of specific knowledge, beliefs, value judgments, and feelings that constitute interpretations of experience" [Mezirow, 1991 in 10:6]. Meaning perspective is a general frame of reference, a world view or a personal paradigm constituted from the smaller parts – the meaning schemes [10]. This frame of reference has two dimensions: habits of mind and points of view. Points of view shape a particular interpretation. Our habits of mind are expressed through these points of view. They are broad, abstract, orienting, habitual ways of thinking, feeling, and acting influenced by assumptions." [10:2].

Mezirow's envisioning of TL considers objects of inquiry about which in critical IL theory one becomes information literate. These objects of inquiry are indeed the taken-for-granted frames of reference, often formed without critical examination (which Mezirow enumerated: "[…] fixed interpersonal relationships, political orientations, cultural bias, ideologies, schemata, stereotyped attitudes and practices, occupational habits of mind, religious doctrine, moral-ethical norms, psychological preferences and schema, paradigms in science and mathematics, frames in linguistics and social sciences, and aesthetic values and standards." [8, p. 58]). To be able to transform them, learners have to critically assess them. For Mezirow, the transformation of cultural and

psychological limitations of the frame of reference needs to undergo subjective reframing, i.e., critical self-reflection of assumptions.

When considering TL's theoretical foundations there are certain obvious similarities with the foundations of both Whitworth's and Elmborg's [10] outlook of a critical IL. TL has strong roots in Habermas's concept of communicative learning and Freire's concept of conscientization, as well as Kuhn's concept of the paradigm that shaped Mezirow's definitions of frames of reference. "Communicative learning refers to understanding what someone means when they communicate with you. This understanding includes becoming aware of the assumptions, intentions and qualifications of the person communicating." [8, p. 60]. Interestingly, this revelation of meaning is aimed at the distorting effects of the various epistemic, psychological, sociolinguistic etc. contradictions – an awareness which is different in focus then Freire's *conscientization*.

When recognizing how broad an influence transformative approaches may have on the theory of IL we also need to take a look at the different conceptualizations of the transformative education than that of Mezirow's. These approaches also informed Taylor's[5] internal critical review of Mezirow's view of transformative learning. We limit ourselves to two points of his critical review: the emphasis of personal transformation and the theory's inherently positive orientation. Taylor [10] explains that Mezirow's concept deals more with personal transformation and not with social transformation as Freire's does. While Mezirow finds similarities within Freire's sensibility towards critical reflection his theory does not appropriate the idea of praxis – the theoretically informed and continually revised practice – crucial to Freire's understanding of transformativity. Transformation is for Freire a transformation of society. On the other hand, Mezirow's view of TL was criticized as not truly dealing with the 'conceptual baggage' which comes from grounding TL in Habermas's theory of communicative action. The most criticized aspect is that he fails to explain the social influences of the process of perspective transformation and its relationship with social change and social action which critics claim to be a crucial aspect of theories based on Habermas's philosophy. Mezirow answered this critique, saying that the choice of social action resides with the learner and that individual transformation is a separate entity from sociocultural transformation. While seeking to conceive IL pedagogies in a transformative way Whitworth [12] looks to the Russian author Bakhtin to point out to the importance of intersubjective knowledge formation. "Truth is not born nor is it to be found inside the head of an individual person, it is born between people collectively searching for truth, in the process of their dialogic interaction" [Bakhtin in 12]. Thus, contrary to Mezirow's placement of TL between the individual and social change where the individual can choose to act socially [10], Whitworth's view of transformative IL education suggests that if IL is to empower people for transformative action this will be an intersubjective affair and its pedagogy dialogical. His view might point at a theoretical contradiction in TL because it is deemed profoundly intersubjective. What is needed is a deeper exploration whether

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[5] For a full critical review see [10] and [11] where he addresses other problematic points of the theory which have been more or less resolved over the years of TL's development. These include: the attempted universality of the theory, its decontextualized view of learning and the role of experience, the missing ingredient of empathy etc.

there are personal transformations that can evade their influence on society even though, but also especially if, the choice of social action resides with the learner.

Before looking into the other aspect of Taylor's critique (the inherently positive orientation of TL) it is informative how Mezirow answers the critique of postmodernist authors about metanarratives (i.e. emancipation, education, autonomy etc.) – terms so often used in TL theory. TL must be careful, in this respect, not to fail at its own game. Although autonomous, a transformative thinker rejects "the notion that 'emancipation' [or any other grand narrative] becomes a search for certainty and control through definitive knowledge, totalizing explanation and the elimination of difference" [9]. But, rather to blindly reject them, he "attempts to redefine their meaning in a contemporary context of adult learning." [9]. This redefinition does in fact aim to reveal and transform that which is dominant, definitive, exclusionary and taken-for-granted. TL "is not movement from a false belief to a true one but rather from an unexamined to a critically examined belief" [9] while also following the principle of falsification. This piece of argumentation is a good introduction into Taylor's critique of the inherently positive attitude of TL. He looks at authors who have questioned the 'unqualified goodness of freedom' which romanticizes the notion of freedom from any constraints, present both in Freire's and Mezirow's concepts. These authors are interested in "learning trajectories which frequently lie outside of what is right, good and beautiful but are nonetheless animated by new insights and negotiation of one's own purposes, values, beliefs, feelings, dispositions and judgments" [Naughton; Shied, 2010, p. 338 in 11]. If transformative education does not provide definitive answers, should not be following any grand narrative, and is a way of taking a glance at more truthful understandings acquired by educating a stance of critical awareness, how can it then fail to examine those unethical, norm-defiant, illegal but still transformative learning experiences? Can the same critique be applied to the concept of IL? Or more precisely, is a dehumanizing IL possible? As Bruce [7] also noticed, IL can be used for both good and bad. Definitions like the one coined by Association of College and Research Libraries state that an information literate practice is one which is ethical and legal. Does that mean the phenomenon of IL is not present if the observed IL practice is unethical or illegal? In phenomenographical research particularly this kind of variation might be most informative about information literacy practices that lead to social transformation. On the other hand, Whitworth following Hamelink's view of IL inspired by Freire [1976 in 12], noticed that literacy can be used as a tool of oppression, but this is just one of the, to use the aforementioned author's words, many information literacy practice trajectories which lie outside the ethical, good, expected, prescribed. The most interesting though is the possibility that here exist unmapped the most creative practices which have been aimed at the transformation of oppressive elements of reality but had to step out of the socially accepted ways of achieving it.

In the end we point out some areas of correspondence between IL and TL, which justify discussions about TL as a theoretical frame of IL. Both IL and TL:

- acknowledge the focus on transformation (personal or social),
- aim to empower for autonomous critical thinking,
- claim they view learning as experiential and contextual,
- claim to understand meaning as negotiated, intersubjective,

- confront the possibility to be used for the purpose of dehumanization,
- have been influenced by Paolo Freire's view of education and Habermas's theory of communicative action,
- note the value of and the need for critical reflection and
- seek to define critical and reflective pedagogical practices.

4   Conclusion

Sets of skills are not up to the task of exploration, understanding and effecting change in subjectively and intersubjectively constructed meaning structures. Transformative learning as presented by its author Jack Mezirow formed the basis for creation of a paradigm for educators and researchers in search of a different theory of education that delves into understanding and transforming underlying assumptions. Mezirow formed a theory that focuses more on the individual and his personal transformation. Subsequent critique of this approach opened a space for discussions about transformative education in general. Taking a look from the outside, the authors and their thoughts assembled around this paradigm of transformative education give relevant thoughts and voices for conceptualizing IL education in a transformative way.

There are three theoretical bases of TL: Habermas, Freire and Kuhn. So far we have seen how the ideas of Habermas and Freire inform information literacy pedagogies. TL as movement from unexamined to critically examined beliefs to arrive at a tentative best judgment that can then be contested by new information, points to an outlook of IL informed by philosophy of science, mainly the principle of falsification and the Kuhnian concept of paradigms. TL thus may encourage researchers to gain deeper understandings of this philosophy and how it relates to IL.

A brief overview of the theory and critiques of TL showed how its key theoretical questions and terminology correspond to key elements of current IL debate and that it is worthy of further analysis, although IL education may be better informed by theories of social transformation and accompanying pedagogies.

The critique of the inherently positive orientation of TL informs the phenomenographical approaches to IL research to look into the variation of the less explored information literacy practices that step out of the boundaries of the ethical and legal. Such insights may indeed show us, similar to Mezirow's stance, that the responsibility of definition and revision of the general orientation of the information literate actors frame of reference is his own.

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Using Collaborative Teaching and Inquiry-Based Learning to Help Elementary School Students Develop Information Literacy and Information Technology Skills

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Abstract. The purpose of this study is to investigate the effects of an intervention that used a collaborative teaching approach and inquiry-based learning (IBL) on the development of sixth graders' information literacy (IL) and information technology (IT) skills in Taiwan. A collaborative teaching method involving three teachers (teacher librarian, Social Studies teacher, and Computer teacher) in different subject areas was adopted in guiding students through this project. The participants consisted of 23 sixth-grade students and three teachers). The instrument included information literacy and IT measurement, and Survey of students' self-evaluation on IBL. *t*-test and percentage analysis were used to analyze the data. In addition, qualitative data were obtained from interviews with 3 teachers and 6 students. From this study we found: The three teachers played essential roles in preparing students with IL and IT skills through their collaboration and instructional content design. The score of students' IL and IT skills improved significantly after employing the IBL. The students reported the positive impact of collaborative teaching and IBL on the development of their information literacy and IT skills.

Keywords: Collaborative teaching, inquiry-based learning, information literacy, information technology.

1 Introduction

IL is a set of skills required by a person to find, retrieve, analyze and use information. IL is directly linked to lifelong learning, critical thinking, and learning to learn concepts of education. In a technology dependent society, the methods we used to find, organize and research information involve more and more IT. Studies found IBL

far more effective than traditional rote learning [1]. IBL improved students' independent learning capabilities, develop their generic skills and interpersonal relationships. IBL also enabled students to combine knowledge, skills, values, and attitudes to construct knowledge through a variety of learning experiences [2]. Studies also found that collaboration among teachers promoted effective learning [3] and that school librarians and teachers work together effectively in guiding students' inquiry learning [4]. Donham, Kuhlthau, and Oberg (2001) studies focused mainly on collaboration among school librarians and subject teachers [5]. Chu, Chow, Tse, and Kuhlthau (2008) demonstrated how the collaborative teaching approach combined with inquiry PBL improved students' research skills [6]. Related literature [7] indicated the positive impact of collaborative teaching and inquiry PBL on the development of students' IL and IT skills in Hong Kong.

After evaluating the current students' IT skills, the researchers observed many of them had only limited access to pertinent databases for primary level research and were not well-trained with IL skills. Therefore, this research initiated a collaborative teaching approach which brought in various teaching staff (Social Studies teacher, Computer teacher and teacher librarian) to equip students with necessary resources and skills, and to guide sixth grade students through inquiry learning group projects in a school in Taiwan. Every participating teacher contributed to different aspects, maximizing students' learning support. This also explored students' acquisition of IL and IT skills.

2   Literature Review

2.1   Information Literacy and Big6

The ability to locate, evaluate and use information appropriately and effectively has been useful, and with the boom of online library and Internet resources, these skills become imperative. An opportunity to progress through skills, dispositions, responsibilities, and self-assessment from K-12 and beyond is provided in the *Standards for the 21st-Century Learner* published in 2007 by the American Association of School Librarians (AASL) [8]. These standards focus on the progression of students' IL learning and allow school librarians the opportunity to scaffold learning. All subjects utilize this progression to integrate IL skills with content area skills. The AASL standards for the 21st-Century Learner provide practitioners with a global approach to IL by including multiple literacies (digital, visual, textual, and technological).

Developed by Eisenberg and Berkowitz [9], Big6 is an instructional system, and is one of the most well-known and widely taught models as a guide for their research students, especially at the K-12 level. Big6 integrates 6 steps (task definition, information seeking strategies, location and access, use of information, synthesis, and evaluation) into the existing curricula, student work and projects. Big6 is applicable to any information problem-solving situation and inquiries that require deep competency skills, particularly at the Task Definition and Use of Information stages. Framing good questions being at the heart of meaningful inquiry, Big6 skills are aligned with the standards for the 21st-century learner [8].

2.2   Collaborative Teaching Approach

Studies suggest that collaboration among different teachers promotes effective IBL. According to Thousand, Villa, and Nevin (2006), by collaborating in their planning and teaching, teachers are much better prepared to meet the needs of students with diverse backgrounds [3]. Similarly, Schwab Learning of the Charles and Helen Schwab Foundation [10] found that team teaching resulted in superior overall student achievement, fewer disruptive problems, less paperwork, an increasing number of students qualifying for gifted and talented education services, and decreasing referrals for behavioral problems. Collaboration has been the focus of a number of studies [6].

Librarians have taken an essential role in developing IL and have become more involved in student education [11]. Inquiry learning has also gained emphasis in the recent standards by AASL [8], which suggest inquiry provides a framework for learning in a complex information environment.

2.3   Inquiry-Based Learning

Traditionally, teachers used a transmissive approach, i.e., students "copying word for word from a text or lecture and report back, in the form of a test" [12]. Nowadays, many educators find the constructivist approach more effective. Students bring and develop informal ideas towards a structured set of concepts and procedures through the dynamics of experience [13]. IBL has incorporated the idea of self-generated or semi-imposed tasks, in which the students negotiate through a thematic and problem-based content [14]. Students have a stronger sense of ownership towards self-generated tasks as compared to imposed tasks [15]. Inquiry projects are completed well when the topics are of personal interest to the students [16]. Kuhlthau *et al*. (2007) reaffirm this by stating that the curriculum and the student's world need to be closely aligned for deep personal learning to take place [4]. Donham *et al*. (2001) found that the change from rote to inquiry learning clearly benefited students in terms of authentic and meaningful learning regardless of their innate abilities [5]. IBL may occur in the best manner through the implementation of projects [17]. As such, to improve children's school performance, assignments need to allow students to choose and personalize their work.

3   Research Questions

This study was collected through specific questions:

1. How do the teacher librarian, Computer teacher and Social Studies teacher design their IBL lessons collaboratively?
2. How effectively do the students utilize their research skills through the Big6 information process?
3. What is the impact of the IBL on the achievement of students' IL and IT skills**?**
4. What do the students think of their learning experience of IBL? What are the students' evaluation and comments about IBL?

4   Methods

4.1   Participants

The participants were 23 sixth-grade students with some previous inquiry experiences, one teacher librarian, one Computer teacher, and one Social Studies teacher. Students were divided into 6 groups. Each had 3 or 4 members.

4.2   Instructional Content

The project's instructional content was arranged with the following strategy:

1. Context: the "multicultural" unit from the sixth-grade Social Studies textbook.
2. Methodology: integrating IL and IT skill training into an inquiry-based curriculum
3. Instructors involved:
   a. Teacher librarian: to teach students how to search digital database and print resources through the OPAC
   b. Social Studies teacher: to teach subject content, mind mapping and research skills
   c. Computer teacher: to teach Xmind skills, power point, Google Cloud Platform and Google Sites
4. Students' worksheets were based on the Big6 model.

The project went with the designed tasks below, following these steps:

1. The Social Studies teacher explained the unit content, ("multicultural") and encouraged students to look into related topics. The teacher librarian taught searching skills about online and printed materials, so the students in groups could generate at least three questions for inquiry. The students were asked to finish their Big6 worksheets.
2. The Social Studies teacher checked the students' research questions and helped them finish the concept mapping worksheet. The teacher librarian demonstrated how to locate online resources and print out materials available in the school library. The students used their free time to practice searching resources, keywords,   webpage address and finished the Big6 worksheet.
3. The computer teacher taught related IT skills such as Xmind, Google skills, Word and PowerPoint editing skills. The students reviewed and evaluated information from all different resources to choose the best answers for their questions.
4. The students presented search results in front of the class and went over their own performance and summarized their IBL experience.

The integrated instruction project was scheduled for 16 weeks, a total of 48 class sessions, 40 minutes each. Table 1 shows the syllabus.

Table 1. Lessons designed for teacher collaboration

Week	Social Studies Teacher	Teacher Librarian	Computer Teacher
3		IL pretest	Word / power point pretest
4	1. Concept of multicultural 2. Grouping 3. Choosing group topics	1. Reviewing OPAC searching strategies and skills 2. Assisting group to choose topics	1. Helping individual student set up individual Gmail accounts 2. One group set its own account
5	KWL、5W+1 H Concept map	Digital database Web searching strategy	Xmind
7	Located information	Newspaper and periodical searching	UDN (United Daily News) data searching strategy
8	Synthesized teaching	Information evaluation	Word
9		Information ethics	Google Cloud Platform
10		APA style	Google sites
11			PowerPoint
12	Collecting data		
13			Group projects
14			
15	Rehearsal for oral presentation	Rehearsal for oral presentation	Rehearsal for oral presentation
16		Editing materials	Editing PowerPoint
17	Oral presentations	Oral presentations	Oral presentations
18		Survey of students' self-evaluation on IBL	
19		IL post test	Word/PowerPoint post test

4.3   Research Instruments

The researchers developed the survey of students' self-evaluation on IBL, IL, IT measurement, Big6 Worksheet, and Observation recording papers were developed. This survey had 6 dimensions: learning to learn, knowledge construction, reading ability, IL, social and communication skills, teacher and parents' assistance. This was to answer the research question about students' degree of "satisfaction" of IBL learning from collaborative teaching: 25 multiple choices for IL, 10 Word and 9 PowerPoint performance tests for IT measurement and the invitation of 3 teachers and 6 students for semi-structured interviews.

4.4   Data Analysis

The researchers organized, coded, reviewed and analyzed the "Big6 Worksheet, Observation recording paper." The data of Students' self-evaluation were analyzed by percentage. The researchers used t-test to analyze the pre- and post-tests of IL and IT

skills. The researchers obtained further data on the variables through interviews. Transcripts of the interviews were sent to the interviewees for validation.

5   Results and Discussion

5.1   Contributions of Collaboration among Teacher Librarian, Computer Teacher and Social Studies Teacher

Students' learning was facilitated by collaborative activities to ensure they were well equipped with the necessary IL skills to search, locate, and use relevant information sources. The teacher librarian's responsibility was to provide students with a range of resources in a variety of formats, including print and non-print resources. He offered a few library sessions for the students' Big6 worksheet to enhance their IL skills. The Social Studies teacher's responsibility was to guide students through the IBL projects by focusing on the subject aspect and research process of the projects. The Computer teacher's responsibility was to train students with the computer skills such as Word, PowerPoint, Xmind and Google platform related skills.

In the end, all three teachers agreed that the students needed more time to practice information skills and IT. Due to the students' lack of proficiency, the Social Studies teacher believed the teacher librarian might even have contributed more than the former to the project. The researchers noticed, from classroom observations and interviews with teachers, these activities helped the students proceed with their project: arranging appropriate homework, offering occasional rewards, and encouraging students to take responsibility of their own learning. All three teachers agreed that the collaboration improved their teaching skills. They also indicated that teachers' immediate help and the group leader's ability had an effect on the implementation of the project.

5.2   Students' Big6 Information Process

The researchers noted how the students utilized the Big6 steps to achieve the goals:

Task Definition. Focused on culinary culture and simple questions. The Social Studies teacher gave students detailed information and examples of the unit. Students selected interested topics and posted high level questions after consulting their partners, the Social Studies teacher and teacher librarian.

Information Seeking. Students listed a variety of print, web, and databases sources, and chose among them.

Location and Access. Having located and explored the relevant sources intellectually and physically, the students systematically recorded the information gathered. Some groups obtained their sources through interlibrary loan.

Use of Information. Students used the researcher-designed form to take notes and record bibliographic information. They discovered some questions were irrelevant to

their topics and revised the questions. The researcher found that three groups did not apply APA style correctly when citing their sources.

Synthesis. Students clarified, evaluated, and synthesized the collected information to answer their questions on the worksheet.   The researchers found two groups chose to copy sources of information without good synthesis. Teachers opted to spend additional time teaching the students how to synthesize their information. The computer teacher added one more class hour to prepare the students for oral presentation. The computer teacher also demonstrated animation techniques and application of correct information to PowerPoint backgrounds.

Evaluation. Students presented the organized information via PowerPoint slides and evaluated their work to ensure all criteria had been met. They shared their learning experiences. After 4 months of dedicated work, students successfully completed the project. The researchers invited parents, teachers, and other students to the oral presentation. The researchers noticed that 70% of students reported they have learned and understood the unit better..

Teachers evaluated by categories: (1) Creativity: One group of the students reached the proficient level. (2) Information analysis skill: 3 groups were proficient and one group met only the basic level. (3) Information collection, IT skills and self-management: 4 groups were proficient.

5.3   Students' Information Literacy and Information Technology Skills

Table 2 lists the students' *t*-test grades. Clearly the after-intervention scores are higher than before-intervention.

5.4   Students' Self-evaluation on IBL

A survey collected the students' self-evaluation on their improvement in IBL:

1. 60% of the students strongly agreed that IBL promoted their ability to choose the right questions, analyze, research, access and organize information.
2. 70% agreed that IBL helped them better understand the content of the topic, improve critical thinking skills, construct new ideas and knowledge about their topic.
3. 87% agreed to share reading topics with classmates afterwards.
4. 65% strongly agreed that they learned search strategies from different formats and library sites, information ethics, and information credibility. However, only 43.5% of students strongly agreed that they learned to cite the information sources.
5. 87.3% agreed that they learned to interact with their partners.
6. 86.9% of the students agreed that they learned most from the Teacher librarian.

Table 2. Information technology and information literacy t-test

Assessment	N	Pre-test		Post-test		t
		Mean	SD	Mean	SD	
Power point	23	17.78	7.38	28.28	10.14	4.07**
Word	23	11.00	5.09	23.85	2.68	8.25***
Information Literacy	23	63.82	18.90	78.55	5.09	4.20***

Table 3. Students' self-evaluation on IBL mean distribution

Self-evaluation on IBL (number of questions)	Students' mean score	The highest mean item	Score of highest mean item
Learning to learn(5)	4.41	Learn how to do oral presentation	4.59
Knowledge construction(4)	4.59	Think deeply of the topics	4.59
Reading ability	4.27	Share reading topics with classmates	4.50
Information literacy(6)	4.34	Be confident in identifying credible information sources	4.40
Social and communication skill(6)	4.5	Increase interaction with partners	4.63
Teacher and parents' guidance(3)	4.51	Support from teacher librarian is most significant	4.63

6   Discussion

The students' IL and IT skills improved as they practiced IBL. This confirms the studies of the effectiveness of IBL over rote learning [14]. Also, this research combined IBL with collaborative teaching. Most students found it difficult to ask good questions at the initial stage. This is in line with the Eisenberg and Berkowitz (2014) study [18]. The research results also support their observation, that the Big6 information process helps students grow and make real and lasting improvements, consistent with the studies of Song [19] and David [20]. This research shows teachers' roles in helping students complete their IBL project, which helped them apply knowledge in problem-solving. The students engaged in six kinds of learning: (1) learning how to learn, (2) knowledge construction, (3) reading ability, (4) information literacy, (5) social skills, (6) receive teachers' and parents' guidance, similar to Kuhlthau, Maniotes, and Caspari's (2007) study [4]. This research found that the students enjoyed this kind of learning because they had the chance to choose all topics according to their interests, just as Railsback (2002) pointed out: project based learning is student-driven, challenging, and meaningful to students [21].

7   Conclusions and Future Work

From the positive results of a 16 weeks' teaching process, the researchers conclude that collaborative teaching and IBL:

1. helped improve the students' information literacy and IT skills immensely,
2. were effective and helped build a very close relationship between the teachers and the students.

The researchers would recommend the following prospects for future research studies:

1. Build a core team of teachers across subjects and a teacher librarian to reveal curriculum needs before the new semester starts. This would help teachers plan and intervene within and across schools.
2. Train students with more website evaluation and reading synthesis practice**s** before implementing IBL.
3. Establish incentive rules to encourage initiative among groups and individuals.
4. Develop an online IBL implementation platform for secondary school students.

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Virtual Embedded Librarianship
for Information Literacy Teaching

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Abstract. This paper reports on the planning and preliminary results of an action research project undertaken for the redesign of an online distance learning information literacy (IL) module on the basis of virtual 'embedded librarianship'. The research project, which followed an action research design, brought together the IL module coordinator and an Academic Liaison Librarian, working at different institutions to collaboratively redesign the assessment and teaching of the module. Data were collected via a qualitative analysis of students' work and a series of open-ended questions addressed to students on the value of the approach followed. Students reacted positively to the embedded librarianship design and engaged constructively in situated learning. Challenges included time-zone differences, the contribution level of students and lack of confidence. The paper puts emphasis on educating future information professionals as embedded information literacy partners, promoting the development of transferable skills and a collaborative/sharing online working ethos.

Keywords: Blended librarianship, embedded librarianship, information literacy, university, collaboration, online learning, teamwork, sharing, confidence.

1   Introduction

The concept of both embedded and blended academic librarianship is founded on the premise of a purposeful interaction and partnership between academics and librarians who operate at the centre of the teaching and learning process, participating actively and holistically in the design and delivery of learning [1-2]. The blended librarian participates actively and holistically in the design, delivery and assessment of learning developing an essential skill set which blurs the boundaries between traditional library competencies, information technology and instructional/educational design skills. A number of fundamental qualities empower this role: leadership, commitment, collaboration, communication and engagement, which are fundamental for creating partnerships between librarians and faculty [3]. Although reaching beyond the academic context to address the wider organisational environment, the model of 'embedded librarianship' carrying similar connotations with blended librarianship, is

described as the physical movement of the work of librarians from a central library close to the customer groups of an organisation. Embedded librarians offer "a variety of service innovations in a variety of organizational settings" including "training, relevant research, information resource development, current awareness and alerting services, assessing literature and managing web, intranet and wiki content" which require the development of information technology skills [4]. Within the context of academic library work specifically, this may involve participating in academic courses and teaching IL on a regular basis.

Dene described the embedded librarian "as an integral part to the whole, based on the geological definition of an embedded element" [5]. This model of librarianship deliberately divorces librarians from the physical space of the library, creating new and less predictable working situations that offer opportunities for extending library and information practices beyond standard expectations. If we embrace a definition of context as "something you swim in like a fish. You are in it. It is in you" [6], then this altered setting/situation can become the catalyst for creating novel working paradigms, as librarians become both products and producers of context via enriched experiences taking place in their embedded working environments. Schumacher, offers a number of case studies which present the extent to which physical collocation can influence the nature and complexity of activities of embedded librarians within a number of different corporate and academic environments, demonstrating the higher level of engagement and contribution possible when librarians work as part of a unit, a community/group, as part of the whole. This systemic contribution creates new avenues for customised, value-added contributions and the power of their transformational influence is demonstrated as librarians' engagement in the team grows, moving from simple information collection responsibilities to more team-based expert roles within the organisation (e.g. of a primary research partner and information curator) [7].

1.1   Research Rationale

There is a body of theoretical studies which examines the significance and positive impact of embedded librarianship in higher education and provides evidence that this type of partnership is effective for creating a more involved community of learners. These studies position academic librarians at the core of the learning process, and the mission of the academic library as predominantly educational, aligned with the broader mission statement and goals of the academic institution they serve. However, this vision spans beyond the direct beneficial impact to learning for students, to further support the changing roles of academic librarians themselves as the library becomes less important as physical space and more "an extension of the classroom" that "needs to embody new pedagogies, including collaborative and interactive learning modalities" [8]. Sinclair [9] envisages a library "which although it ceases to be the *de facto* center of information", in view of the plethora and popularity of online commercial information services, offers librarians new opportunities to reassert and empower their existing educational roles, working together with academics to advance academic missions and taking librarians outside of the library, challenging traditional expectations of the librarian *in situ*.

Furthermore, the increasing demand on academic libraries to formally demonstrate the value and quality of their services to key partners and external stakeholders using systematic social and economic impact indicators requires a more proactive and rigorous analysis as evidence of their value not simply in terms of output data but on the level of the wider goals of the institution and the community of learners they serve in terms of positive impact on learning teaching and research: the "much harder issues relating to impact and value" [10]. There has never been a more meaningful time to move these paradigms to the online environment, as academic library users' expectations of access to information and their overall information seeking patterns increasingly involve less engagement with the physical space of the library and more independent and dynamic information exchanges and discovery in modern online information environments. With the rise of online education and more blended learning approaches followed in education, there is a need to understand whether this type of partnership could be equally effective online. Recent research is starting to provide evidence that librarians can become virtual instructional partners with academics, emerged in online learning management systems and effectively achieving virtual embedding into courses, adopting the role of online instructors [11-13]. Although virtual embedding appears to be equally effective via the use of online digital technologies [7], there is still a significant gap in terms of real practical examples of online courses which have implemented a holistic integration of a librarian in the pedagogical process.

1.2   Aims and Objectives

This paper discusses the planning phase, design and preliminary evaluation outcomes of an online distance learning information literacy (IL) module which resulted from a creative collaboration and ongoing dialogic relationship of a subject librarian and an academic working in the area of IL, following a novel *virtual embedded librarian* model. This term will be used in this project to describe a librarian who takes an active role in the preparation, teaching and the reflective evaluation of an online class, and who is immersed together with the academic in shared pedagogical goals. A negotiated common ground is accomplished which is the outcome of merging the two perspectives to facilitate a collective effort, utilizing a shared repertoire of expertise. Values, beliefs and goals become shared entities in a mutually agreed teaching and learning approach. This broadens IL instruction to a novel collaboration, extending IL teaching to incorporate the professional context. The particular objectives of the project included: a) to follow a virtual embedded collaboration model with the purpose of collaboratively redesigning the teaching approach and assessment procedures of an existing IL module; b) to provide students with an enhanced quality of teaching and learning experience that is meaningful and applicable to the real working library context; c) to add practical value to the students' learning experience by offering them the opportunity to share their work with the wider IL community of practitioners and academics; d) to evaluate the outcome of the programme from the perspective of the students, focusing on issues such as direct involvement, development of team-work skills, and the connection to the real context of work.

2 Research Design

For the realisation of this project, the skills of an IL academic and those of an IL practitioner were brought together with the aim of helping students understand some of the requirements of the professional environment, putting together a real life project scenario. At the same time, it was an opportunity to extend and test the embedded librarian idea in an academic programme which prepares future librarians, not restricting it to the research skills skin-deep approach. The idea was to offer students the opportunity to be creative and help them build subject-specific and transferable skills. The practitioner worked as an Academic Liaison Librarian, with responsibilities for the Faculty of Engineering and Physical Sciences of an English university library. The academic had experience on running the IL module for a number of years and a good understanding of the background and theoretical principles of IL. For the librarian there was a twofold benefit. Initially it was the idea of giving something back to the community of librarians, helping new professionals to develop an understanding of the requirements for running a practical IL instructional activity in context. However, what also emerged was that there would be an opportunity to also introduce students to the value of sharing knowledge and working with collaborative communities which characterises the working ethos of modern librarianship. Finally, as the librarian and the academic worked in different institutions, this approach offered a novel model of virtual embedded librarianship beyond institutional and geographical restrictions, which naturally extends this partnership to embrace the dynamic character of information creation, exchange and learning taking place in the online environment.

2.1 Description of the IL Module

The IL module forms part of a Graduate Certificate course, a distance-learning access programme, which prepares students for a number of Master's level courses within the area of library and information management. The distance-learning mode of study is delivered entirely online via Moodle, the university's online learning environment. The module provides students with a broad understanding of IL as it relates to the contemporary library, information and knowledge work environment, and enables them to identify ways in which the information professional can support others in becoming information literate.

2.2 The Design of the Project

The design of the project followed an action research framework which has been described as a systematic enquiry, a form of investigation into existing professional activities. Data are then employed in reflection, decision-making and the development of improved practice [14].

The first phase of the project involved identifying key roles and collectively redesigning the assessment instruments of the module. This required an initial understanding of the learning outcomes of the IL sessions organised by the librarian and how this context could be incorporated into the student assignment. The design of the module was developed using aspects of Kolb's experiential learning model,

which describes higher education teachers as "curators" of "social knowledge". They prepare students to reach "integration", a higher stage of development that includes "capabilities of the whole person towards creating wisdom and integrity" [15]. This higher level integration can be achieved via a number of different learning environments: the "affectively complex", where students are offered the experience of living the life of the professional in their subject; the "perceptually complex", where students understand and relate to concepts by combining sources of information and concentrating more on the processes; the "symbolically complex", where students are asked to solve problems by using the information acquired; and the "behavioural complex", which presents a real case scenario focusing on describing and completing a task based on specific criteria [15]. It was therefore important to offer students opportunities, which involved a rich learning environment that offered problem-solving opportunities within a professional context.

The initial intention was to solely include a single librarian and scenario; however after consultation with the Course Leader, it was made clear that students had an interest in both academic librarianship and the business information management context. For this reason, a second Academic Liaison Librarian working at the academic's parent institution within the area of business information was called to offer an additional scenario. The first scenario addressed year 1 undergraduate mechanical engineering students based on an IL training programme designed by the Librarian. The second scenario was set in the content of business information users in the oil and gas industry and was informed by a guide that the second librarian had put together for postgraduate students studying oil and gas management. The objectives of the assignment were aligned with the learning objectives of the IL training programme designed by the first librarian and the teaching material of the second librarian, although the latter was not embedded in the collaborative planning of the module. The learning objectives of the IL sessions prepared by the librarians addressed a number of IL objectives, spanning from understanding different types of publications to searching in different information sources and referencing. However, to achieve a required level of depth for their assignment, the students were asked to make a choice between one of the following paired areas: a) understanding the characteristics of different types of publications and using phrase and proximity searching; b) searching for and critically evaluating web information; and c) using Boolean operators and truncation and applying the Harvard referencing style.

To help the students immerse themselves into the scenario more effectively, an online recorded lecture with each one of the librarians which addressed the objectives of the assignment and the opportunity to apply students' work in the real context as teaching materials was organised. Although the lecture was originally offered as a synchronous event, the different time-zones and other commitments of students did not allow this direct communication and thus they were encouraged to ask follow up questions in a chat session organised by the academic at a later time. After the completion of the module, a questionnaire, including open-ended questions was distributed to the students via email in which they were asked to evaluate the involvement of the librarians, the teamwork activity, the online lectures offered by the librarians and the assignment scenarios. The data collected were analysed qualitatively using aspects of Grounded Theory [16]. This involved coding, categorizing and creating theory from a constant comparative analysis of the themes

which emerged from the raw data: collaboration, involvement, sharing, building contextual/community knowledge, confidence, critical reflection, teamwork and real-life practical application of knowledge.

3   Discussion of Results

3.1   Team Activity Outcomes

A total of thirteen students participated in the module, divided into two teams. Team A examined the ISB of undergraduate engineering students and Team B focused on the ISB and needs of business information users working in the oil & gas industry. However, only 11 students took an active part in the teamwork activity. Two of the students (one in each team) failed to contribute to any of the discussions and also achieve an overall successful outcome in the module.

An analysis of the history of the interaction that took place in Team A revealed that the team created thirty versions of the wiki document. Six out of the total eight group members actively contributed to the learning activity, while one of the two non-contributors took an active part in the discussion forum and shared resources (A4). Team B was slower to start the wiki activity and of the five students, only three were active contributors, with a total number of sixteen alterations to the wiki document.

The analysis of the students' interactions in the online forum and their reflective reports demonstrated that overall they engaged constructively in situated learning and practiced team-working skills via different negotiated roles. Team A explored the strengths, skills, knowledge and preferences of the team members so that these qualities could also be developed in others through the task (A2). Another student was eager to "break this activity down into individual tasks and assign dates to them" but expressed less confidence with the technical aspects of the wiki: "I nearly always manage to delete posts I've uploaded! Wikis don't like me much" (A1). Similarly another student described themselves as "not the biggest fan of wikis" for collaborative work (A3) but took a direct role in terms of how the process was going to be completed emphasizing the need for a methodical approach (A3).   The team exchanged interesting critical reflections on the content interactivity, recall, visual impact, ease of navigation (A2), format (A6) fun, clarity, comprehensiveness and value (A5) of the resources they had identified, which would address the "student's learning experience from thinking and reflecting" to "professional development" (A5) and "assist the life-long development of these skills, rather than just dictating these skills" (A2). The students considered the intended audience critically: "This type of guide would be good for students at my college, as they are mostly non-native English speakers, so the visuals and interactivity would be interesting for them" (A3).   They also reflected upon the value of this learning in their own working contexts: "I liked it so much I am now looking to create something along a similar line for my work place… more ideas for me and my colleagues to "repurpose" (A6).

Team B initially arranged to meet up in the online chat area but this approach was not successful in the end, as the team was not only "split over several time zones and we are logging on at different times" (B1) but had other "working, parenting and travelling" commitments (B2). On the whole Team B preferred the use of the wiki and the notes pages and was less concerned about editing the other students' work.

Despite that, both teams found the teamwork a positive addition to the module. It was an "engaging" learning activity (A6) which allowed them "to prepare for the assignment collaboratively and find a good base of information" (A3) that contributed to the outcomes of the final assignment (B1). Students enjoyed working together in the group (A5;B1) which "provided an opportunity for stimulating conversation and idea sharing", emphasizing the value of teamwork in supporting each other and learning from the combined knowledge of the team members *(A6;B1;B2)*. The teamwork activity also helped students work with each other, "making new connections and interacting with different cultures and opinions" (A2). However, they also acknowledged that in distance-learning it is not always possible to engage every student at the same level. There was only one student who did not understand the Wiki task, although they felt that the organisation of the module was good and easy to navigate (B2). The only difficulties the students encountered were related to the difference in time-zones which allowed fewer opportunities for synchronous interaction (A2;A5), the lack of a more coordinated plan in terms of taking charge of activities and the contribution level of each member of the team (B1). As one student put it "some people took a more proactive role in organising us, no one took charge which meant at times we seemed to be going round in circles trying to reach a decision" (A5).

3.2   The Presence of the Librarian

Overall, students found the input of the librarians particularly useful (A6; B1; A2) as they offered them the opportunity to not only understand the assignment but also "hear first-hand experience" (B1), "a professional perspective" (A5) which helped them emerge themselves into a "realistic scenario…like it was part of my job rather than just a textbook assignment" (A2). However, there were mixed responses in relation to the recorded lectures particularly. While some students found them "very helpful" - especially because they could be accessed at any time (A6), and they contributed towards alleviating the feeling of working in isolation (B1), others encountered technical difficulties, created by the accessibility of the video (A3), its playback navigation speed (A2) or its sound quality (A5). Another student felt that the librarian lectures were useful, however, they felt they did not "grasp everything" (B2), while others suggested enhancing the interaction between the invited librarians and the students, via a Q & A, session (A3) and offering "more guidance in terms of the scenarios" (A5). Interestingly, a student recognised that their assignment "had a practical application and was not just an academic exercise - but a real world activity" (A1) but they could not comment on the value of the approach due to increased levels of anxiety and lack of confidence which made them distance themselves from the online learning environment: "I had no expectation that anything I produced would be near the standard expected" (A1). However, this was quite surprising as the same student produced one of the strongest IL guides. Only one student, did not see the value of the librarian lecture because they would have liked to interact with professionals within different industries (e.g. related to IT) (B3).

4   Conclusion

The results of this study demonstrate that students reacted positively to the embedded librarian design and embraced the presence of the librarians, the meaning of the practical task and how the scaffolding content contributed to their final assignment. They also offered suggestions for the further enhancement of this collaboration, extending it to other contexts. In some cases technical barriers were presented but it was also found that lack of confidence played a more important role in students' motivation to engage and interact. Finally, a more systematic allocation of team roles and responsibilities might have improved their contribution and group dynamics.

From the analysis of the data, a number of important issues for educating the IL professionals of the future have emerged. The role of the embedded librarian in this context is to help students develop not only an understanding of IL theory but also higher level transferable skills and a collaborative, sharing and team working ethic which epitomises the professional practice of modern information professionals. These transcend the development of the vital IL related skills of knowing how to find, understand and use information, addressed in most IL definitions to also incorporate critical reflection, team-working, confidence (both digital and professional), contextual/community understanding and the practical application of theory. The following model provides a novel framework for achieving the objectives of the embedded librarian mindset (Fig. 1.). These core areas are not exhaustive, but developmental, and can be used in the context of additional research to further expand the vision of virtual embedded librarianship.

Research on embedded librarianship agrees on the fundamental principle of the librarian becoming an integral part of a group. Embedded librarians should act as team players, develop an "entrepreneurial mindset" outside of the traditional boundaries of the library, accept risks, have the ability to explain their knowledge, skills, and expertise to others, build trusted relationships, act outside of comfort zone**s** and think creatively [17]. Creaser and Spezi note that "the acquisition of new skills and knowledge – beyond the traditional librarianship skills – is essential for librarians", emphasising teaching skills, proactively engaging with users, creating personal relationships with academic staff and clearly demonstrating the impact of library interventions [18]. IL education for the development of future LIS professionals should therefore aim towards pushing the traditional boundaries towards an embedded librarian frame of mind which embraces new challenging roles and competencies. According to Kaplowitz, educators should follow a learner-centered approach, which offers students opportunities for collaboration, active participation and critical responsibility for their learning. They should also inspire them to be passionate about their subject, confident and develop as lifelong learners. To achieve this they should listen to students, engage them by encouraging them to use what they have learnt in an effective way and inspire them by showing them passion for the subject [19]. These are core values which will provide a stepping stone for the education of future information professionals as embedded IL partners.

Fig. 1. Umbrella model of IL teaching for the future proof information professional

The evaluation of the involvement of the librarian as an embedded information professional in the IL module provided an initial framework for an on-going partnership project which will involve a second level of collaboration and embedding with the evaluation of students' work for inclusion to a real IL session and the submission of their work to an online repository, JORUM (http://www.jorum.ac.uk/), as open educational material. The future plan for this work involves the development of a more on-going sustained collaboration with the embedded librarian and the involvement of the second librarian as a more embedded partner. In the next phase of the project, the academic and the two librarians will review the students' assignments collaboratively following a set of criteria that will address: the quality of content (e.g. subject/theory correct material, relevant to the objectives given in the scenario; reusability, originality, richness), the suitability of the material for use in different teaching situations (e.g. online tutorial, workshop, tutorial, group seminar, demonstration), and the inclusion of interesting and engaging activities. There is already indication that the students' work includes a few examples of high quality submissions which could be applicable in context and would be of value for sharing with the wider LIS community. The aim will also be to increase the level of involvement of other practitioners in different sectors and start a new tradition of online collaboration of library professionals working in the area of IL. This work offers a real practical example of a virtual embedding model which breaks away from the traditional perspective of the librarian as a service provider situated within a given context and offers future directions for new creative collaborative partnerships and enhanced working relationships beyond the restrictions of physical space or traditionally expected roles.

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A New Approach to Equip Students with Visual Literacy Skills: Use of Infographics in Education*

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Abstract. In today's ever more visual world, visual literacy skills became more critical for learners. Therefore teaching visual literacy helps students interpret visual media and becoming a much broader and extensive body of learning and comprehension in education. In this paper, how to use infographics as a learning tool was discussed in order to equip students with visual literacy. Research was conducted with 64 teacher candidates. The aim of the study is to expose the usage of infographics as a learning tool. Teacher candidates designed infographics of instructional design model themed individually within the course. As a result of the rubric evaluation the scores of "visualization" and "components" dimensions was found lowest; scores of "colors", "fonts" and "information organization" dimensions was found relatively higher.

Keywords: Infographics, visual literacy, instructional design, teacher education.

1 Introduction

The increased number of visual messages surrounding individuals creates visual information processing needs and has led to the movement for developing visual literacy and spatial skills [1]. Visual literacy is defined as 'A group of acquired competencies for interpreting and composing visible messages' [2]. Visual literacy allows a deeper interaction with messages of all kinds and introduces the process of analytical thinking about representation and meaning. Educators have realized that this visual age requires visual literacy skills as well as verbal skills and that both of them must be developed [3]. Therefore teaching visual literacy helps students interpret visual media and to access a much broader and more extensive body of learning and comprehension in education.

"A visually literate person is able to: (a) discriminate, and make sense of visible objects as part of visual acuity, (b) create static and dynamic visible objects effectively in a defined space, (c) comprehend and appreciate the visual testaments of others, and (d) conjure objects in the mind's eye" [2]. In order to use especially

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visually intensive information and communication technology applications effectively teachers and students should be able to communicate visually [4]. To prepare students to be successful learners, confident and creative individuals, and active and informed citizens, they must be able to comprehend, interpret and extrapolate from information presented in a wide variety of formats. Infographic is one of those formats which is defined as "visualization of data or ideas that tries to convey complex information to an audience in a manner that can be quickly consumed and easily understood" [5].

As technology advances, teachers and teacher candidates should gain skill in teaching visual literacy skills. Two ways to improve image literacy skills are recommended: 1) to help learners read or decode visuals through practicing analysis techniques 2) to help learners write or encode visuals as a tool for communication [6]. In this paper how to equip students with visual literacy using infographics as a learning tool is discussed.

1.1 Infographic Design

An infographic is the visual display of any data or information with the aim of presenting the information in a quick and clear way. It may be named as data visualization, information design or architecture of information depending on its aim [5]. The history of the infographics, which are quite common in the digital environment today, goes back to the prehistoric ages when patterns were drawn on the cave walls for communication purposes. Modern infographics may be complicated such as displaying a visual analysis of the global economy, or it may be as simple as a traffic sign, but the purpose is to aid communication [7]. Visual presentations became more complicated with the utilization of technology and it is important to discuss how to interpret and design infographics in the context of visual literacy in education [8].

Regardless of being verbal or visual, the most important characteristics of an effective communication method are its "appeal", "comprehension" and "retention" aspects [7]. In the light of these three characteristics, the communication process should be realized in a clear and comprehensible way and the aim should be to create impressive knowledge for individuals. The order of importance attributed to the appeal, comprehension and retention in designs depends upon the fields of use. With respect to educational infographics, how appeal, comprehension and retention elements should be balanced is shaped according to the design and utilization purposes of the infographic.

Infographics could be quite essential in visual summarization; however, this could shade the importance of the content to support the most appropriate discussion. In order to avoid such cases the visualization should not dominate a strong discussion and an appealing wording. Knowledge that could impress the reader should depend on clear and detailed analyses. Knowledge should be presented in such a way to ensure that the reader could find examples of practice according to his/her fields of interest. Design should enable readers to understand the knowledge by revealing patterns and by facilitating reading. The design material should support the reader in review of the topic through providing filtering and search options [9].

Infographic design is studied in graphic design and computer sciences, changing according to the aim such as data, information or knowledge visualization, knowledge design and architecture. The increase in its utilization in the field of education has revealed the need for research on educational technology with respect to infographics.

1.2   Instructional Technology

Due to its dynamic structure, instructional technology has diverse definitions. Technological developments, innovations, new ideas and diverse perspectives of the scientists working on varied dimensions in the field has led to continuous updates on the definition of instructional technology. On the other hand, interdisciplinary interaction enriches the field while changing its definitions. Instructional technology developments can be analyzed within five periods. First it was perceived as media, then as a process. It was subsequently perceived to be beyond a process, and then perceived as combining the roles of the media, systematic instructional design and performance technology. Finally it has come to be perceived as instructional design and technology [10]. The instructional technology concept has moved beyond the notion of a process and been defined as "the theory and practice including design, improvement, implementation, management and evaluation of processes and resources for learning to occur [11]. It is defined as "ensuring learning and improving performance through "design", "utilization" and "management" of appropriate technological processes and resources" [12].

The most important issues of the information age that should be subjected by instructional technology are "structuring high-quality knowledge, and producing and designing information". Within this framework, the questions, "Could infographics be used in the learning process for learners to construct and design information as well as structuring knowledge?" and "Could infographics that are developed based on their qualifications along with the principles of design and learning, be a way of ensuring qualified information when they are used in learning environments?" need to be discussed. Additionally for success on this issue improvement of visual literacy skills of learners is an important topic that could be investigated by using infographics in educational contexts. These discussions could provide some solutions to the problems of the information age. This study aims to analyze the utilization of infographics within the learning process as research and learning tools with a focus on their usage in structuring knowledge, designing and constructing information through the instructional design example.

2   Method

The research was conducted with 64 (32 female and 32 male) 2nd year students, who enrolled in the Computer Education and Instructional Technology Department of the Faculty of Education at Hacettepe University during the spring semester of 2012 – 2013 academic year. The entire process was in the Instructional Design course in Turkish. In the previous semesters, students had attended courses in "Material Design and Utilization in Education" and "Principles and Methods of Teaching", which are pre-requisites for the instructional design course content.

2.1   Implementation Process

Course Description. The instructional design course, during which the research was conducted, involved, "identifying problems through analyzing the existing education and teaching environment with respect to the instructional design principles, finding solutions to the identified problems and designing new models using the instructional design theories, and designing instructional materials for online learning environments". In line with these outcomes, the theoretical part of the instructional design course involved the basics and history of instructional design and technology, identification and analysis of the needs, characteristics of learners in learning environments, teaching strategies and conceptual teaching, concept maps, worksheets, instructional design models and infographics as learning tools. In line with the theoretical course content, the practice part involved a process where learners attained practical skills about instructional design. Students were expected to select one of the instructional design models and design an infographic to be used as an instructional design tool as term project.

Implementation on Infographic. The implementation process was initiated in the second week of the research with an infographic titled "How to Design Instructional Design Process" that was assigned to the students online along with the instruction saying, "As an instructional designer of a team which produce educational solutions…". The infographic (Fig.1) that was given to the students as a road map was composed of two cycles. The macro level, cycle was about the position of the instructional designer in the educational team, while the cycle at the micro level indicated the purpose of their positions as instructional designers and provided the framework of their responsibilities. The application process that was initiated with the infographic, provided a solid structure and they were able to enrich or expand the visual material presented in line with their readings or requirements.

The infographic involved a design pattern from the general to the specific. The cyclical display centered the field expert and the resource continued with an external and internal intercyclical pattern with the inclusion of the instructional designer, visual designer and the linguist respectively. The second cycle, which remained within the field expertize of the instructional designer, started with the questions asking, "What kind of educational design are you asked for?" and "Is the content that you have is enough for design?" In answering the question on the type of the instructional design, students were provided with the keywords symbolized with question marks. The keywords, were individual, online, implementation, group work, discussion, instruction, question and answer, sliding, web, face-to-face, visual, book, digital, verbal and print. These were introduced to the students in the form of word clouds as reminders of how to find answers to the given questions.

The instructional design cycle started with the reading and analysis of the content provided by the field expert. The data developed in an intercyclical process within the process rather than being a sequenced structure where the data in the micro cycle involved those in the macro cycle including structure was explained to the students face-to-face during the lessons. Considering the situations where the field expert could be absent, the content was requested to be obtained from the resources to be

followed by compilation and analysis. In order to emphasize the continuous communication with the field expert within the cycle, dimensions of cooperation with the field expert or scanning other resources in the event that the knowledge is obtained from a resource were added to the cycle.

After the content is created, it was suggested that the script be divided into meaningful sections and that the key words or key concepts in the script be determined. This was one of the most important phases in terms of ensuring that the instructional designer mastered the content. Questioning the systematics of the script and organizing the systematics between the meaningful sections, determining the relationships, completing the missing points in the content as determined in the research or removing the unnecessary sections indicated the progress in creating the script. After the modifications in the meaning dimension such as finding a title or emphasizing the essential points in a script, the visual organizations came as the next phase.

The initial phase of the instructional design involved organization of the script and wording. Students were expected to analyze the script in line with the given sample content and follow the steps explained above using the given figure. The importance of this phase, which set the basis for the following phases, was emphasized and the instructional design process was presented to the students by placing the other relevant experts (field expert, visual designer, and linguist) in the instructional design team on the same infographic. The infographic was designed using the questions and keywords in a flexible way, which could be extended with the purpose of ensuring students to experience the process through inquiry.

For the following week, the instruction saying "We are seeking an answer to the question on how we could turn the scripts we organized into an online course?" was provided and the students were expected to divide the scripts into meaningful sections and place them on a white background using the intended software (PowerPoint, and Flash) while supporting with the visuals. During this week, when the figure and script exercise were performed, students were requested to search "education" on Pinterest which is a kind of social network that consist of visual bookmarks as pins and evaluate the infographics they found so that they could see as many examples as possible.

With the aim of assisting students in their infographic design and script analysis, conceptual teaching and concept maps were emphasized and students were expected to create concept maps using the given script. The functioning of the mind, attainment and processing of knowledge and "the construction of meaning" were studied as the processes that an instructional designer should consider in design. Instructional design models were examined and the learners were expected to work individually on the instructional design models starting from the script organization phase. The question on why infographics should be preferred as educational tools was focused. The purposes for using infographics, infographic design process, and infographic design dynamics along with the types of approaches and design were studied in the theoretical course. Diverse educational infographic samples were examined.

Fig. 1. Instructional design process infographic

3 Data Collection Tool

The infographics designed by the students were evaluated through the rubric that was developed by the researchers (Table1). The rubric was composed of the title, elements, visualization, font, colors, page format and organization of information dimensions. The infographics were scored for each dimension as 0, 1, 2 and 3.

Table 1. Infographic design scoring measures

Dimensions	Score	Measure
Title	0	There is no title or there is a title that is irrelevant with the topic.
	1	The title is unclear.
	2	The title could be more comprehensive in order to present the essential points in the content.
	3	The title is in line with the content and informative.
Elements	0	Elements are never used or they are used irrelevantly.
	1	Elements are used in varied patterns and this complicated the readability of the design.
	2	Elements are used in varied patterns reflecting the content.
	3	Elements include repetitions for the transfer of the content and for the learner to understand easier.
Visualization	0	There is no visualization or the visuals are irrelevant.
	1	More varied visualization patterns should be used for the visualization of the content.
	2	The implemented visualization pattern reflects the content; however, some of them complicate comprehensibility.
	3	Visualization pattern reflects the content and ensures that the content is comprehended easily and rapidly.
Font	0	There is no font.
	1	The font complicates the reading of the script.
	2	There is more than a single font and/or the font is not in line with the topic.
	3	The font completes the content and readable
Colors	0	There are no colors or the selection of colors is irrelevant to each other and the topic.
	1	Selection of colors is not visually satisfying and it decreased the level of visibility.
	2	There is a good selection of colors; however too many colors have been used.
	3	Selection of colors increased visibility; different tones of the same color have been used wisely.
Page Layout	0	There is no page layout or there is a disorder irrelevant to the content.
	1	The page layout is not organized in such a way to address the content-related components.
	2	The page layout involves content-related components; however it is not arranged from the general to the specific or from the specific to the general.
	3	The page layout involves the components that reflect the content and it is organized from the general to the specific or from the specific to the general.
Organization of information	0	There is no organization of information (place, alphabetical order, timeline, category, hierarchy).
	1	There is an organization of information but the display of knowledge lacks conformity.
	2	One of the methods for organization of information is used.
	3	One of the methods for organization of information is used in such a way to reflect the content.

4   Findings

The scores obtained from the rubric were presented in Table 2. The highest percentages in the 0 and 1 categories belonged to the "elements" (0: 26 %, 1: 29,7 %) and "visualization" (0: 12,5 %, 1: 45,3 %) dimensions which means the students scored quite low in elements and visualization. The highest percentages in the 3rd

category belonged to the "organization of information (21,9 %), "colors" (23,4 %) and "fonts" (26,6 %) dimensions that means students were more successful in the organization of information, colors and fonts.

Table 2. Infographic design scores

Dimensions	Score	f	%	Dimensions	Score	f	%
Title	0	3	4.7	Visualization	0	8	12.5
	1	19	29.7		1	29	45.3
	2	34	53.1		2	20	31.3
	3	8	12.5		3	7	10.9
Elements	0	17	26.6	Font	0	0	0
	1	19	29.7		1	28	43.8
	2	23	35.9		2	19	29.7
	3	5	7.8		3	17	26.6
Organization of information	0	4	6.3	Colors	0	2	3.1
	1	17	26.6		1	28	43.8
	2	29	45.3		2	19	29.7
	3	14	21.9		3	15	23.4
Page Layout	0	3	4.7				
	1	31	48.4				
	2	20	31.3				
	3	10	15.6				

In terms of dimensions and measures, the scores indicated that the highest percentages belonged to (1) "the title could be more comprehensive in order to present the essential points in the content" in the title dimension, (2) "elements are used in varied patterns reflecting the content" in elements dimension, (3) "one of the methods for organization of information is used" in the organization of information dimension, (4) "the page layout is not organized in such a way to address the content-related components" in the page layout dimension, (5) "more varied visualization patterns should be used for the visualization of the content" in visualization dimension, (6) "the font complicates the reading of the script" in the fonts dimension, and (7) "selection of colors is not visually satisfying and it decreased the level of visibility" in the colors dimension (Table 2).

Using the rubric the overall infographic design score (M=1.65; SD = .66) was calculated. The distribution graphic showed that the design scores were normal with a positively skewed distribution. It could be interpreted that the design scores of students had a normal distribution and there was a condensation in the low degrees.

5   Discussion, Conclusion and Recommendations

This research has introduced the instructional design course example, throughout which infographic design is used within the learning process for the learners to structure knowledge and construct information. The findings of the research have provided presumptions for the development of a learning model based on the relationship between infographic and instructional design. According to students'

design scores, the accumulation is observed to have occurred in the low degrees and this indicates that sub-applications should be made with respect to the dimensions.

The low scores obtained by the students in "elements" and "visualization" dimensions have shown that these two dimensions are quite challenging for the students, which could be derived from visual literacy skills of learners. The "Elements" dimension looks at the provision of visual unity in a script and the design solutions that are produced for reinforcing the meaning through repetitions during the transfer of the knowledge. In the elements dimension, students are observed to have used irrelevant and complicated elements, which affected readability negatively. They are observed to have the same problem with visualization. In order for students to produce better design solutions, they could be advised to work periodically on their drafts in small groups starting from the moment they work individually on their themes. In order to assess the quality of an infographic, which is in the form of a summary, it is important to determine how much it acknowledges, impresses and attracts the attention of the reader [9]. In this respect, the feedback that peers of the students may provide about their design solutions could assist them in producing better solutions. The criticism made by their peers could enable students to organize their own design processes and ensure that they evaluate and improve their visual design solutions through communication-based applications to be performed in groups.

In addition to the search and analysis made on Pinterest, students could be expected to analyze more infographic examples to be able to perform better in the visualization phase. These infographic samples could be evaluated in groups using rubrics. Within the scope of the visualization dimension, students' visual literacy also comes to the forefront. Visual literacy refers to the name given to a series of visual competencies developed by individuals through using their eyesight. Improvement in these competencies set the basis for students learning. An individual with such competencies has improved skills to recognize and interpret visual actions, objects, symbols and other things in his/her environment. Utilization of these competencies in a creative way would enable individuals to establish more effective communication with others and use visual communication in a better way [13]. Curriculum could be enriched with the inclusion of courses that improve students' visual literacy levels.

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Information Competences – University Professors' Perspective

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Abstract. The constant advancement of information technologies had begun to affect information handling requirements, commonly recognized as information literacy, which has been widely and increasingly cited as an essential competency. This is congruent with tendencies in contemporary educational systems that recognize the need for a harmonious development of the human being characterized by the development of generic as well as specific competences. Capabilities like identifying, finding or using relevant information for critical thinking fall in the spectrum of generic information competencies. We consider that creating an adult information competent person is based on three key factors; university teachers, students and the world of work. The final goal of the higher education system and university teachers is to prepare students for the labor market. This paper represents the views of university professors on the development of student's information competencies during the study itself and the importance of the development of information competencies for future student's professional work.

Keywords: Information competences, higher education, labour market, teacher perspectives.

1   Introduction

Information literacy is an extensively discussed and researched concept, especially in the LIS field. Although it has been conceptualized in a variety of contexts, there is no doubt that systematic IL research prevails in the educational domain. This comes as no surprise since information literacy was, from its very beginnings, defined and promoted by using terminology from pedagogy and education; as visible in the often-cited construct about "information literacy as a prerequisite for lifelong learning".

The focus on the interrelation between IL and lifelong learning reveals the core rationale of integrating IL in education; it is to empower people, not only during formal education, but throughout life and in different "walks of life" [1-2]. However, when analyzing IL research in different contexts and "walks of life", it becomes clear that IL is far less researched in every-day life or the workplace, than in educational contexts. This seems surprising because the interconnectedness of IL and the workplace even has a historical dimension. The very coining of the term *IL* in 1974

by Zurkowski was accompanied by the highlighting of its importance for the attainment of economic and workplace-related goals [3].

Although IL is still mostly researched in the educational sphere, authors as Lloyd [4-6], Crawford and Irving [7], Kirkton and Barham [8], Hepworth and Smith [9] or Head [10] have begun to change this trend. Lloyd [6] has reviewed the crucial issues that emanate from workplace research: 1. the difference of context (workplace as a different type of setting compared to education), 2, the collective dimension of information use and creation (as opposed to educational settings which focuses on the individual). 3. questionable transferability. Although many of the reviewed sources are motivated by the awareness that IL is context-bound and that it can not be easily transferred generically across the same setting or into new settings, hereto conducted studies focus on IL in a specific workplace setting, aim at characterizations of this setting and lead to conclusions that information literacy skills do not appear to successfully transfer [6]. However, to be able to gain more detailed insights, it is important to focus such studies not only at the setting, but also at the junction of transfer, the point where higher education perspectives and workplace perspectives meet.

There seems to be a significant dismatch between these two worlds, which is visible already at the terminological level. While in the higher education domain and specifically in LIS literature the term „information literacy" dominates discourse, relevant European frameworks aimed at defining workforce-related abilities often use the word competences. One of the most comprehensive and most frequently quoted approaches to the development of competences and learning outcomes has been designed within the European project *Tuning Educational Structures in Europe* [11] whose central assumption is that general and specific competences i.e., learning outcomes should be the central element in the structuring of educational programmes. Competences include knowledge, knowledge application, attitudes and responsibilities, and are divided into general (common for all study programmes) and subject-specific competences. According to the research studies of the project, learning outcomes of undergraduate study should be more related to general competences, while learning outcomes of graduate study should be more related to subject-specific competences. Similar assertions are made in the EU legislative [12] which incorporates key competences for lifelong learning with the emphasis on critical thinking, creativity, initiative, problem solving, risk assessment, decision taking and constructive management of feelings. The more recent research on the transfer of competences between education and economy is presented in the project *Higher Education as a Generator of Strategic Competences* (*HEGESCO*) [13]. In 2009 the project researched the employability of graduate students and their job transitions based on the competences acquired during their study. They have conducted the comprehensive graduate employability surveys in Europe addressing the needs of the main groups of higher education (HE) stakeholders who are interested in the employability of graduates.

In order to improve the quality of their study programs, universities/faculties today are facing increasing demands to include the above mentioned employment skills into their curricula in order to maximize the potential of their students for a successful career. A number of reports issued by employers urged them to make more explicit efforts to develop the "transferable" or "generic" skills needed in many types of high-level

employment. For some employers, even the degree subject studied is not as important as the graduates' ability to handle complex information and communicate it effectively [14-15]. This comes as no surprise, since in an ever increasing world of information and an economy that can be deemed as knowledge-based, the core component of these generic skills are information competencies – the skill set needed for effective gathering, evaluating and communicating information in all its forms and contexts. In the academic, and especially library and information world, the set of abilities focused at dealing with and handling information is well known as information literacy. Although the requirements of the workplace converge, at least on a conceptual level, with IL goals, the language of the academic and workplace culture is quite different.

Key factors that will influence how and what kinds of information competences are instilled in higher education, apart from librarians, are university teachers, students and the world of work. The kinds of competences needed are defined by the world of work, since the ultimate goal of higher educational systems is to prepare students for the labour market. A number of papers portraits research conducted among students in order to define information competences they have developed during their studies [16-18]. A recent interesting study has researched this topic from more balanced perspective combining different views: that of the employers who hire graduates, and that of graduates who have recently started work. [10]. Insights from the perspective of university teachers are however rare, although they are an important agent in the development of information competences in higher education.

As many authors and declarations have stated before [1-3], information competences are relevant in the contemporary world of work. However, these competences are not a permanent or stable set of knowledge, skills or attitudes. The constant reevaluation of characteristics of an information literate person is of utmost importance in the final stages of the formal education, after which they are expected to transfer to the workplace setting. University teachers have a great influence on the development of information literacy of students. The goal of this paper is to examine the attitudes of university teachers with regard to how students develop information competences during the study, and how they estimate the importance of the development of specific competences of information literacy for the student's future professional work. Such perspectives are generally underrepresented in the literature, although beside employers and students perspectives on information competences, the views of university teachers are relevant for creating a holistic frame of interpretation. By triangulating perspectives of these three agents; teachers, students and employers, we would be able to reach more in-depth conclusions about transferability of information competences from stable educational settings into the more fluid and non-predictive world of work.

This particular research is aimed at defining the perspectives of university teachers in the context of the development of information competences among students. This will be achieved by using a list of information competences defined by the Australian and New Zealand Information Literacy Framework [19]. The paper represents the views of university professors on the development of student's information competences during the study itself and the importance of development of information competences for future student's professional work. In this way, it will contribute to more holistic frames for analyzing the problem of IL transferability between tertiary education and workplace.

2   Methodology

The research was conducted by surveying teachers from the Faculty of Humanities and Social Sciences at University of Zagreb. Quantitative statistical methods were used. Data was collected from a non-probabilistic sample. Respondents were asked to rate the level to which information competences are developed during studies at university and how important are certain information competencies for future professional work of their students. The development of information competence is measured on a scale from 1 (not developed) to 5 (maximum development) and the importance for future professional work was rated on a scale from 1 (not important) to 5 (most important). List of information competences defined by Australian and New Zealand Information Literacy Framework [19] was used in this research. A questionnaire was filled out by 27 respondents using Google Forms service. The sample by gender comprised of 18 females (67%) and 9 males (33%). Descriptive statistical measures were used in order to collect, analyze and present data. Analysis of numerical data was based on arithmetic mean and correlative statistics.

3   Results

Average importance of information competencies of 4.25 indicates that university teachers believe that the information competences are extremely important for future professional work. A significant difference between the levels that are achieved during the study (3.17) and the average importance for future work (4.25) are apparent. The results show a significant correlation between the level of development of information competences during the study and the importance of information competences for future professional work (r = 0.64).

As the most important information competence for future work teachers have emphasized *2.2. Construct and implement effective search strategies* (4.7) which shows the awareness of teachers about the importance of the proper application of search strategies. The second most important information competency for future work is *1.1. Define and articulate the information need* (4.68). *Use diverse sources of information to inform decisions* (1.4.) is listed as the third most important information competence for future work (4.63). This competence is also listed as the most advanced information competence during the study (3.63), which suggests that most students during the study develop the need to use multiple sources and they start to assess the quality of information sources they use in their research. The second most developed information competence during studies is *5.2. communicate knowledge and new understandings effectively* (3.52) which can be explained by the fact that the Faculty of Humanities and Social Sciences is the largest institution that educates teachers in Croatia, and the study programs are aimed at developing skills of knowledge transfer. It is interesting to note that this competence has an extremely low ranking (14th), according to importance for future professional work. The third most developed information competence during the study is *4.2. organises (orders / classifies / stores) information* (3.35).

Table 1. Information competences and their perceived levels of development during study and importance for future professional work

Source	Developed	Importance
1.1. Define and articulate the information need	3.33	4.68
1.2. Understands the purpose, scope and appropriateness of a variety of information sources	3.22	4.51
1.3. Re-evaluate the nature and extent of the information need	3.19	4.33
1.4. Use diverse sources of information to inform decisions	3.63	4.63
2.1. Select the most appropriate methods or tools for finding information	3.30	4.41
2.2. Construct and implement effective search strategies	3.26	4.70
2.3. Obtain information using appropriate methods	3.12	4.48
2.4. Keep up to date with information sources, information technologies, information access tools and investigative methods	2.93	4.30
3.1. Assess the usefulness and relevance of the information obtained	3.15	4.63
3.2. Define and apply criteria for evaluating information	2.97	4.07
3.3. reflects on the information seeking process and revises search strategies as necessary	2.63	3.63
4.1. records information and its sources	3.30	4.00
4.2. organises (orders/classifies/stores) information	3.35	4.37
5.1. compares and integrates new understandings with prior knowledge to determine the value added, contradictions, or other unique characteristics of the information	3.03	4.12
5.2. communicate knowledge and new understandings effectively	3.52	4.11
6.1. acknowledge cultural, ethical, and socioeconomic issues related to access to, and use of, information	2.85	3.51
6.2. recognises that information is underpinned by values and beliefs	3.00	3.74
6.3. conforms with conventions and etiquette related to access to, and use of, information	3.17	4.22
6.4. legally obtains, stores, and disseminates text, data, images, or sounds	3.28	4.28
Average	3.17	4.25

The least developed information competence during studies is *3.3. reflects on the information seeking process and revises search strategies as necessary* (2.63), which is least important information competence for future work (3.63). Information competence *6.1. acknowledge cultural, ethical, and socioeconomic issues related to access to, and use of information* is the second least developed information competence during the study (2.85), and it is perceived as the least important information competencies for future professional work (3.51).

It should be noted that the smallest difference between development during the university study and importance for future work (diff = 0.59) is visible in information competence *5.2. communicate knowledge and new understandings effectively which* demonstrates a high level of development during the study (3.52), but relatively low perceived level of significance for future professional work (4.11). The biggest difference between the importance for future professional work and development during the study can be seen in information competence *3.1. Assess the usefulness and relevance of the information obtained* (d = 1.48) which is the 4th most important information competence for future work and it is ranked as 12th by the level of development during university study.
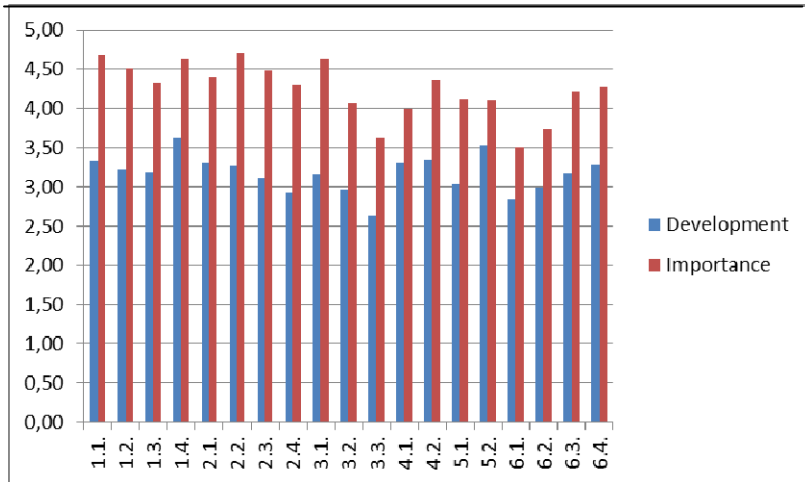
Fig. 1. Development and importance of information competences
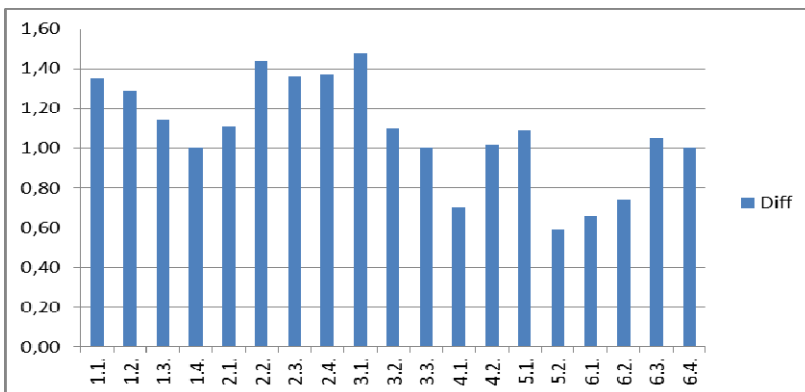
Fig. 2. Difference between develoment and importance of information competences

4   Conclusion

In the wake of a rapidly changing labour market and increasing requirements regarding employee's competencies, universities came under intense pressure to equip graduates with more than just the skills traditionally represented by a subject discipline. Employers needs related to the workforce competencies are increasingly oriented towards generic information handling and information managing abilities. Although these are well known in the higher education and library/information arena under the umbrella term *information literacy*, documents written from employer's standpoint and the workplace setting, prefer the word *competences*. Obviously, more congruence is needed in the language of the academic and workplace culture.

The main point of departure for our study was to complement existing studies mainly focusing on students and/or employers. For a holistic picture, however, it is necessary to analyze viewpoints on information competences of university teachers, who are an important agent of strengthening information competencies in students before they transfer to the workplace. For a better understanding of the transition, it is necessary to gain insight into the point of transition where perspective of students, teachers and the employers meet. The main aim of our paper was to draw attention to this hereto neglected third research string, relevant for gaining a holistic and balanced insight into IL transitions from tertiary education to the workplace. Insights gained from different stakeholders – teachers, employers and students – will provide such a holistic perspective.

Our research has showed that university teachers believe that information competences are extremely important for future professional work (4.25). It is also evident that teachers believe that the level of development of information competences during studies is relatively low (3.17). The result showed that teachers are aware of the importance of information competences, but also think that they need to evolve in a more systematic way and that it is necessary to significantly enrich the content of university courses with additional content that will more intensively develop information competences, thereby enabling students to be as ready as possible for their use in future professional work.

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Teaching Information Literacy Using Argument, Alternative Perspectives, and Images

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Abstract. This paper reports on a pilot study conducted at a medium–sized state university in California. An information literacy instructional method which incorporated instruction in argument analysis using both text and image-based material was used in in two sections of a two unit quarter length first year information literacy course. The course was part of a first year experience cluster program that included several linked general education courses, including instruction in writing and reasoning. The information literacy course required an argument and research paper. The instruction consisted of: an analysis of an article's argument components, a topic analysis worksheet; news photo, advertisement, political cartoon and infographic assignments, emphasizing various elements of argument and alternative perspectives. Results of the pre and post-tests and of a sampling of research papers are reported and discussed.

Keywords: Information literacy, argument, images, visual literacy, critical thinking, dialogue, threshold concepts, confirmation bias, Toulmin's theory of argument.

1 Introduction

Understanding more than one point of view, critiquing and creating arguments are widely accepted learning outcomes for any student engaged in a college-level liberal arts education. As Gerald Graff states: "This argument literacy, the ability to listen, summarize, and respond, is rightly viewed as central to being educated" [1, p. 3]. Many colleges and universities have argument–related writing and information literacy institutional learning outcomes and students' ability to gain a foothold in these skills can impact their academic success [2]. For example, while 70% of colleges and universities articulate student-learning outcomes at an institutional level, over 54% of all colleges include information literacy goals.

But how does this learning take place? Responsibility for this learning is often given to English Composition and/or critical thinking faculty teaching first year composition or first year critical thinking classes (either stand alone or as part of a first year learning community). Information literacy instruction provided by librarians is incorporated into this instruction in order to teach students how to do the research part of the paper -- how to find, evaluate, incorporate and cite sources in their writing.

There are many ways to teach students how to write an argument research paper; most often, instruction in English composition involves scaffolding the various steps of the process from researching and reading articles, to taking notes, organizing ideas into an outline; writing a rough draft; then revising [4]. At the stage of structuring the argument, The Toulmin [5] method has been used extensively in teaching argument analysis in rhetoric and composition courses. The method breaks arguments into: claims (what is being argued for), evidence, warrants (the logical links between the evidence and the claim), counter-arguments and rebuttals. Many instructors of college composition have chosen this method to provide students with a schema for understanding the structure of arguments and, therefore, a way to think critically about them, detect bias, and evaluate evidence. The Toulmin [5] method is also a good way to help students understand how providing a counter-argument strengthens an argument. Having this understanding can also help students avoid "myside" bias [6], which happens when a student ignores evidence that supports the opposing side of their own argument.

Other studies [7-8] have explored the use of a more dialectical approach to teaching students how to understand and evaluate arguments. Nussbaum [7] explored alternatives to the Toulmin model of argument, such as: "Walton's dialogue theory and Bayesian models of everyday arguments". Nussbaum's main thesis was that while Toulmin's model is good it tends to encourage students to dissect parts of a completed argument while Walton's [9] dialogue method is more generative of critical thinking questions relating to the argument's strengths and weaknesses. Nussbaum and Edwards [8] used Walton's dialectic method to teach students how to critique, evaluate and integrate elements of arguments on both sides of a controversial issue in order to construct stronger arguments that incorporated more than one perspective on an issue.

What many of these studies on the impact of instruction in argument schema and in critical questioning on student writing have in common is their focus on the later stages of writing; revising the rough draft; they tend to by-pass the earlier stages of writing an argument paper: developing a topic; researching the topic; evaluating sources, leading to creating an outline and ultimately to incorporating ideas and evidence from sources into the finished paper. These earlier stages tend to be regarded by composition faculty as more the province of librarians than of writing instructors. Indeed librarians have similarly done research on how to best instruct students in this earlier phase of writing the argument research papers. And many share the same concerns of the composition studies.

For example, librarians, as information literacy instructors, have also become increasingly concerned with incorporating critical questioning learning outcomes into their collaborative instruction designs. Armstrong [9], for example, discussed how critical thinking skills were mapped onto information literacy learning and writing objectives in a cultural studies class requiring an argument research paper that incorporated alternative perspectives. Other studies [10-12] all describe efforts to integrate an understanding of dialogue, critical thinking and argument into the research process, by highlighting an understanding of bias and alternative viewpoints at the stage of gathering and evaluating sources for an argument research paper.

In the first study mentioned, Alfino, Pajer, Pierce and Jenks [10] previewed this skill by dissecting Wikipedia article revisions and, basing their approach on

Bartholomae's [13] theory of discourse communities. Kobzina [11] collaborated with environmental science and English faculty to design instruction that had students explore various perspectives on environmental problems. Lupton [12] found that students need help moving from a "seeking evidence" modality to a "developing an argument" -- one which Lupton saw as a more advanced and inclusive view of information literacy; in this case students were also asked to find social relevance in their topic which involved more self–reflection and evaluation of ideas, relative to other disciplines and to their own point of view. Based on the study results in which Lupton used students' reflections on their processes to come up with these general categories, Lupton suggests providing students with opportunities to reflect on their own assumptions about the research process and to reflect critically on their own argument construction and evidence gathering processes.

All of these studies from the library science or information literacy literature show how potentially valuable including a process to teach students how to recognize and evaluate their own biases and alternative viewpoints in the literature alternative viewpoints can be in helping them formulate and write argument papers on a topic that avoid "Myside" bias; however, these are isolated studies, offering primarily anecdotal evidence and are fairly unique to particular courses and collaborative situations and not particularly reflective of how information literacy is traditionally taught. The more common approach reflects the current Association of College and Research Libraries (ACRL) standards [14] (and does not emphasize alternative perspectives and focuses on a checklist (timeliness, relevance, credibility, authority) approach to evaluating sources that does not take argument analysis (quality of evidence, strength of logical connections, reasonableness of claims) into account.

Currently the library profession has become somewhat unsatisfied with the structure and content of these same ACRL standards the direction the revisions are taking is to re-define information literacy concepts: authorship, ethical use of information, quality of sources as threshold concepts; threshold concepts are understood to be ones that are not necessarily static in their definitions but once understood can change a students' understanding of that element of information literacy [14-15].

The new standards under development also characterize information literacy as more broadly connected to other literacies such as visual and digital literacies. In fact, researchers Hattwig, Bussert, Medaille and Burgess [16], and Mackey and Jacobson [17] have argued that visual literacy is becoming an essential aspect of information literacy given the vast amount of information now represented in both visual and digital formats. Others such as Harris [18] and Patterson [19] have examined how visual mapping of arguments and articles has become a useful tool in teaching students information literacy and critical reading skills.

Our current generation of students have almost certainly used at least one of the following media: Pinterest, Instagram, YouTube, Flickr, Facebook, or Snapchat to communicate their thoughts and ideas via images. In fact according to a recent PEW Research report [20] over 50% of all internet users post pictures online and over 45% re-post them. Those numbers go up to 81% and 61 % respectively for adults aged 18-29. To them, the image is as much (if not more) a medium of communication as the word. This interest in the visual is echoed in argument theory and research. Although it is still debated [21-22] whether images can be arguments in and of themselves; the

idea that students can learn to think critically and gain a better understanding of perspective and argument by analyzing images for claims and content is not [23]. Images have been used in information literacy instruction as well. For example, librarians Ravas and Stark [24], utilized archival photographs to teach critical thinking and information literacy skills.

The above studies and others are examples of this trend to make information literacy learning a more critically reflective process for students, but they are fairly isolated and unique; also they have not been have not been empirically studied or applied in different classes or situations. In contrast, the instruction techniques employed by the argument studies are more readily applicable to a variety of composition courses and topics, but they never address the earlier stages of the argument research process. So there is a gap in the literature because there is a lack of empirical studies that look at the impact of incorporating instruction in argument analysis and critical questioning into the research stage of the writing process.

Studies from the library world that incorporate instruction in argument and critical questioning using both textual and visual means, mentioned earlier, encourage further investigation although they themselves are primarily descriptive, not empirical. Their claims need to be further verified with a more controlled study across several sections of the same course.

2   Purpose of Study

The purpose of my study is to fill this gap in the literature by testing out the structural Toulmin [5] approach to argument, using both textual and visual material. The purpose behind the instruction is to help students learn to explore and integrate alternative viewpoints, reflect on their own assumptions, discover bias, and build strong arguments from good sources that take more than one perspective into account. A pre/post-test and content analysis of student papers, and intermediary work will be assessed to determine the merits of this method.

3   Significance of the Study

This study is significant because it will show if including instruction in argument, using Toulmin's method of argumentation in which various perspectives are integrated to build stronger, less biased arguments works well as an intervention during the research stage of writing an argument and research paper at the college level. The study will also gauge its impact on "myside bias" and on increasing self-reflection as a goal for students during the process of researching, building an argument, avoiding "finding alternative perspectives" and finally writing a paper. Also, the use of images will be evaluated as a way of helping students understand multiple perspectives and begin to incorporate argumentative thinking into their writing processes. It is important to see if this method works, especially for college students who may be relatively unprepared for constructing coherent arguments, evaluating evidence from multiple sources and exploring a variety of perspectives on an issue, all of which they will be expected to do with increasing acumen as they matriculate through college.

4   Theoretical Framework

The theoretical framework for this study is argument theory, both that of Toulmin [5] and of Walton [9]. They will both be taught using a social constructivist method [25]. Nussbaum [7] tested out both of these theories and found that using Walton's methods had better results in terms of students creating stronger arguments with more integration of alternative or opposing viewpoints. He also pointed out that Walton's theory of argument is a good fit with social constructivist learning theory as it can naturally be taught while having students interact and present alternative view points on an issue in groups which is also a good way to model a social constructivist approach to learning. However, given the goal of testing these methods out in a new context that of information literacy instruction, it is worthwhile to compare both of them as Nussbaum did even though he found that Walton seemed to work better. At this point, only the Toulmin method has been tested.

Threshold concepts, [14] such as: research as inquiry, authority as contextualized and constructed, scholarship as a conversation and format as process complement the use of Walton's dialectic theory of argument are also largely based on a social constructivist approach to education. Finally the use of visual materials is consistent with social constructivism as visual literacy concepts can be taught using a social constructivist methodology.

5   Research Questions

1. What is the effect on students' proficiency in constructing good arguments using appropriate sources and presenting alternative views when Toulmin's argument theory is included in teaching the research process?
2. How successful is the instruction in generating self-reflection in students on their argument topics, assumptions and research strategies?
3. Do the results for question 2 correlate with scores on the information literacy pre-test.

6   Definition of Terms

Information Literacy. The ability to determine the extent of information needed, formulate a search strategy and evaluate and utilize the information found in an ethical way [14].

Toulmin Argument Theory. A structural view of argument in which arguments have: claims, warrants, backing, qualifiers, data and rebuttals [5].

Walton's Dialectical Theory of Argumentation. A method of argument that dynamically compares claims and evidence from more than one perspective with a goal of both evaluation and integration [26].

Threshold Concepts. Concepts that once learned change understanding of that aspect of the discipline [15].

Metaliteracy. A group of interconnected literacies, which include: visual literacy, information literacy and computer literacy. This concept may also include a students' understanding of their level of skill in these literacies [17].

7   Proposed Methodology

A pilot study of an information literacy instructional method incorporating argument and images in a freshman course, requiring an argument and research paper, was tested out in two sections of the required information literacy course. Results of, a pre/post-test and content analysis of student papers were reported. The instruction consisted of the following assignments: A topic analysis worksheet; an assignment illustrating alternative perspectives via news photographs; an assignment on advertisements illustrating the connection (or disconnection) between claims and evidence; a comparison of political cartoons, revealing the effects of bias on argument and an assignment on infographics, also focused on bias and evidence manipulation. All of the assignments were based on the Toulmin method of argument.

The study took place at a medium-sized state university, CSU East Bay in the required Information Literacy course, LIBY 1210. This course is taught to all incoming freshman as part of their first year experience. Each section has students who are part of a cluster with a particular broad theme, such as the environment or leadership. CSU East Bay students are very diverse and representative of Northern California's demographics, with many students being from economically disadvantaged backgrounds and/or the first in their family to attend college. CSU East Bay librarians have determined that there is a statistically significant correlation between passing the LIBY 1210 course and graduating from CSU East Bay. It is important that students learn argument and research skills that they can transfer to other situations and courses and for the purposes of continuing to learn after graduation.

The learning outcomes are based on Association of American College Universities' information literacy standards, which are similar to ACRL's. The need to teach students skills that can be used in other courses, makes the idea of including instruction in argument as part of the information literacy attractive as it will undoubtedly make the content more relevant to other courses and allow students to develop stronger critical thinking skills for the future both in and beyond college.

This was a single group study with a pre/post-test; formative analysis in the form of completed group work in class and homework assignments, a content analysis of students papers.

7.1   Definition of Variables

- Independent variable: Toulmin–based Instruction
- Dependent Variables:
  - Scores on the information literacy post-test
  - Scores on rubric analysis of group work,
  - Homework
  - Rubric scores/analysis of reflective essay on research process

- Rubric scores/analysis on argumentative essays
- Covariants:
  - Pre-test on information literacy test

7.2   Instruments

- Pre/post-test on information literacy
- Rubric to analyze research papers

8   Pilot Study Results and Discussion

As of this writing a pilot study to test out the Toulmin methodology has been completed though not all the data has been analyzed. Preliminary results are presented below. A pilot of the Walton-based instruction is planned for Winter Quarter 2015. This study will include an affective survey to assess student interest in the use of images. A comparison study with Toulmin and Walton based instruction is planned for Spring of 2015 or the following fall. The following results were also reported at the 2014 Instruction of the West Conference and proceedings. In this pilot study, students (n=37) in two sections of LIBY 1210, were introduced to argument, alternative perspectives in the topic development phase of research and evaluating of sources via the use of both text-based and visual based assignments. The text-based assignments consisted of a topic development worksheet, which specifically asked students to discuss alternative views on their topic and a group project in class to analyze an article using the Toulmin method. The visual assignment were:

- A photojournalism assignment in which students had to research and find a second photograph of an event was used to explore the idea of alternative perspective or counter-argument.
- An advertising assignment was used to infer claims and check evidence and reasoning.
- A political cartoon assignment was used to explore bias.
- An infographic assignment was used to explore credibility of evidence and bias.

All of these visual assignments had argument, critical thinking and information literacy components and supported students' understanding of the connections between building an argument by exploring counter-arguments and supporting claims with well-researched sources and evidence.

The pre/post-test that was administered showed that students did improve significantly. A paired t-test was done and significance was found at $p=.05$. See table below:

Table 1. Pre and post-test mean scores sections one, two and combined

Mean Change in Scores			
Section	Pre	Post	Mean Change
1 (n= 22)	10.64	12.50	1.86
2 (n=15)	11.20	11.60	0.40
Combined (n=37)	10.83	12.11	1.28

A comparison of the distributions for the pre and post-test scores showed that the students in the middle improved the most while students with lower levels of information literacy knowledge and higher levels did not improve as much. This may also explain why section one improved more than section two as section two had more students starting out at the lower and higher levels of achievement.

Research papers were analyzed for their works cited content; in-text citations and content, using a rubric of three information literacy and three writing learning objectives from both the information literacy course and the corresponding General Education writing course. The results (preliminary) for fifteen papers selected at random were: (averages for a 1-4 point rubric: 4=proficient, 3=good, 2=developing, 1=absent)

Information Literacy

- Determine the extent of information needed: 3.0
- Access needed information: 2.97
- Evaluate sources critically: 2.87

Writing

- Demonstrate awareness of other points of view and how to address them: 2.9
- Incorporate research into an essay including paraphrasing quoting and properly citing material from other sources: 2.83
- Know the ethics of academic writing and accuracy in use of evidence: 2.87

This shows that students are on average at the "developing level, close to good, but not completely proficient in these skills.

The works cited preliminary analysis revealed the following about where students got their sources. Categories are listed in order of most used by students with means for the sample:

1. General (popular) websites: 2.5
2. Scholarly articles from library databases: 2.33
3. Popular articles from library databases: 1.8
4. Film/media: 1.8
5. Authoritative websites: 1.75
6. Encyclopedia articles: 1.67
7. Popular articles published on the web: 1.5
8. Books: 1

Figures, tables and other images were included at a rate of 1.25 per paper. These were adequately cited in terms of being linked to a source in the "works cited" section, but did not usually follow the correct special format for these types of items. The rating of the format (1-4 rubric score) was 3.17, Students could cite correctly, having the most difficulty with scholarly articles from online databases, often dropping out the journal name.

The internal citing rating was 2.8, with students not always following proper format, but usually making it clear where information came from. The average number of internal citations in the three-five page papers was 7.5, with an average of 5 paraphrases and 2.5 quotations. Seven papers had data that was not cited. Students had the most problems when citing summarized material, but did a good job when facts were quoted or paraphrased. There seems to be an assumption on the part of some students that information gathered from having read about a topic and then reported in the paper is now "common knowledge" and need not be cited, so training students to track sources of information as they engage in drafting the paper is paramount.

Despite the instructional focus on understanding and developing arguments and evaluating of sources, students still had marked difficulty including a majority of credible sources in their works cited and this made their ability to marshal evidence for an argument weaker; although most students made an effort to include an alternative view or counter-argument, often it was under-supported with evidence. Students did well on determining the extent of information needed and accessing it.

While further analysis is ongoing, these preliminary results indicate that the most difficult areas for students to master are: evaluating sources and incorporating alternative viewpoints into an argument. It remains to be seen, if the Walton [26] approach will yield better results. Also, it would be of interest to examine if students are more interested in the instruction if images are used and if that creates a higher level of engagement and motivation. This could be measured with an affective survey. Also the outcome that the instruction worked better on mid-level students could be further explored. The instruction could be modified to attain better results on both lower achieving students and higher level ones. One result that this review of the literature and study reveals is that information literacy learning outcomes are inextricably intertwined with writing, argument and critical thinking learning outcomes; therefore a collaborative and multi-disciplinary approach using a variety of teaching methods and media will likely work best.

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Reception and Application of Information Literacy Instruction in Portuguese Academic Libraries

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Abstract. Over the past decade, information literacy has been a challenge for academic libraries in Portugal. Lately, academic library professionals all over the country have been providing a consistent foundation for both teaching sessions and guidance for students. In this article a systematic literature review is used, in an attempt "to identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a given research question" [1]. The aim is therefore to carry out a review that seeks to systematize the state of knowledge about information literacy instruction, trying to answer the research question: how is literacy instruction conducted and provided in Portugal? The objective was to achieve an overview of the practices of information literacy instructional training in a south European country. The overall contribution to the field of IL is mainly a focus on the state of the art of information literacy instruction in Portugal.

Keywords: Academic libraries, Information literacy training, Portuguese university libraries.

1 Introduction

Information literacy (IL) is a field of studies that includes a large number of theories, themes and conceptual references. The intention of a thorough study on a national scale is to seek to understand how the global reality is shaped in this specific case. The idea of this research is to understand the expression of IL training, which acts as a bridge between theoretical knowledge and practices, in the field of user education, nearing the understanding of the international discourse and its guidelines to national realities.

Portugal, as a European country, felt the influences and framed the senses of modernity, albeit in a context relatively delayed in time. Nevertheless, in the school setting, significant transformations emerged in the 1960s, in terms of curriculum content and organization of knowledge for training and education. Thus in the beginning of the second half of the twentieth century profound changes in the school system occurred, steepening the influences of the economy, new technological trends and social and political organization, as mechanization and mass production became an irreversible force. In the third quarter of the century sharp endogenous changes in

the education system occurred, which would completely transform the educational reality in Portugal. The last decades of the twentieth century were marked by a school crisis and the tension between globalization and the model of school culture; the national resistance; and the emergence of local identities, from a popular revolution. This conflict was consistent with the growth of cultural diversity and the promotion of new forms of citizenship. Decisive transformations took place, which were intrinsic to education and schooling, such as the introduction and implementation of lifelong education and the massification of higher education. The Portuguese university libraries followed this trend and quickly adapted to the new reality, transforming their services and resources to respond to more students with more and different demands.

2   Object of Analysis

It is important to understand the university libraries within their host institution and insofar as they are a crucial support to the specialties it comprises. With the increasing number of students and resources at their disposal, university libraries have sought to develop and implement training programs for users. The present research was inspired by a broader investigation by the author [2] about the contribution of information literacy to university pedagogy, which sought to deepen some of these topics. The focus of this investigation arises from reflection around the training needs of users of university libraries, mainly university students. These people seek information resources in their academic libraries that enable them to meet the goals and targets proposed in the academic context. So, the question was what IL training is being provided in Portuguese academic libraries?

3   Methodology of Analysis

A systematic literature review was chosen, based on the credibility of the methodology. This ensures transparency of findings and is suited to a comprehensive search that ensures the inclusion of all published studies to be analyzed, thus decreasing the risk of bias. So an attempt was made "to identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a given research question" [1]. There are some techniques that facilitate the definition of key research and strategy, as stated in The Cochrane Handbook for Systematic Reviews of Interventions [1].

To carry out a significant observation a selection of studies available on the Internet were chosen. Then, a survey was performed, both in Portuguese and English, on aggregators and portals: EBSCO HOST, B-on and RCAAP (the Scientific Open Access Repository of Portugal) that gathers the key scientific repositories of various universities and other research institutions.

The literature surveys were conducted during the first quarter of 2013. To carry out the research, date filters and document type were waived, and the search was performed instead around the key concepts that enable the achievement of meaningful expression for this investigation and combine user training and the context of the university library.

At its base were the terms user education [formação de utilizadores] and information literacy [literacia de informação] in conjunction with synonymous terms university libraries [bibliotecas universitárias] or academic libraries [bibliotecas académicas] surveyed in general word, and also the research expressions translated into English under the same scope: user education, information literacy; academic libraries or university libraries.

The EBSCO HOST portal was tested with the combination of these search terms resulting in 846 articles matching the terms. However, after application of the source filter to Portugal, only 4 items remained. These were not exactly about the research questions and therefore were excluded from the list for analysis. The same survey was carried out in the B-on portal. The combined results yielded over 45,000 references. After a limitation with the filter Portugal, only 5 articles were obtained. Of these, 1 concerned the economic value of information and 4 were related specifically to the university libraries as places of learning and training of users, namely: Amante [3]; Amante, Estremenõ Placer and Costa [4]; Costa [5]; Segurado [6]; Segurado and Amante [7]. Also Lopes and Pinto [8] addressed issues of training of users in information literacy, but in another dimension. Their longitudinal study, covering about 1,000 students from various universities and sought to validate an instrument for measuring information skills, and therefore it was excluded.

All these articles were about the importance of user education in university libraries, without limiting the analysis to a particular library, to which a case study methodology or questionnaire survey had been applied to obtain results about a specific training program.

The same search was performed in the Science Open Access Repository of Portugal (RCAAP) and the combined results in Portuguese language totaled 154 references. Using the corresponding English language search terms generated almost identical outcomes with 153 references.

Naturally, redundancies were found due to the cross-search for terms and the existence of abstracts in English, in most Portuguese electronic documents. Since all the significant results found previously were replicated in this last source of information, the definitive selection was based on references found in the RCAAP.

These results were selected primarily based on observation of the titles found and subsequently on the basis of selectivity. The selectivity criteria allowed contain the items for further analysis girded for the simultaneous matching with a set of conditions: a specific subject (user education in information literacy); the type of study and methodology (case study analysis of a reality by observation, survey, or interviews), participants (users, readers, students), and context (university library).

Combined, these conditions acted as a filter network, from which it was possible to structure a list of articles for analysis. Within the studies found, only 11 corresponded to these criteria, with a direct connection to six university libraries.

It was considered appropriate to also include the study of Teresa Costa [5], librarian at the Foundation for National Scientific Computing (FCCN), promoter of the institution on portal B-on (Knowledge Library Online) concerning the training of users of that portal, because, generally speaking, it fits the criteria presented above.

While the B-on institution is not an organic unity associated with a school or university, it is nonetheless a state entity that provides transversal services, mainly in a technological framework, promoting training for library users and assiduously being

called to work in this area, particularly in university library services. That's why it is important to refer to their action and the type of training activities they promote.

I should mention that the extraction of this documentation for analysis does not exhaust the universe of programs or training schemes currently being carried out in Portugal. The purpose was to restrict the analysis to the documented and disseminated experiences and, through this circumstance, to become the exemplary community of university libraries. Thus, it can be said that an additional criterion was that these experiences were properly recorded, disclosed in the university library community, and publicized in internet national channels. The results found were sorted by the date of publication.

4   Presentation of the Case Studies

4.1   Case 1 – Universidade do Minho (Minho University)

An observation of these case studies allows us to find some similarities and specificities, and to look at the development of training programs in information literacy over the past two decades. A cross-cutting concern of professionals providing training in libraries is reported, from the beginning, with the specific needs of its stakeholders [9]. Eloy Rodrigues, of the Minho University, also addresses the need for the integration of the training curriculum level such as promoting skills and capabilities in strategy management information, for future professionals who will be in the labor market after their university education.

4.2   Case 2 – Universidade do Algarve (Algarve University)

The case of the Algarve University, observable through three articles [10-12] is considered an example of evolution and adaptation of training practices from the study of the community served over the years as well as the use of international guiding instruments for measuring the performance of the library in this area. In the article called *A literacia da informação e o contributo da biblioteca universitária* [10] the issue of students' information skills is addressed, based on the observation of a group of undergraduate students at the Algarve University, to understand how the library can act to contribute to the improvement of their performance. This paper concludes that, despite training provided by the library, there was not at that stage a complete utilization of the resources available. A brief analysis of the data obtained showed that the skills related to the location and access of information, have fewer weaknesses than skills related to use and assessment of information. We concluded that students were not making full use of the electronic resources available, including databases for references, both in the B-on and in the library Web page. Although they demonstrate capabilities that have been developed over the course, such as locating, identifying and researching information, there was a need for students to identify the variety of types and formats of potential sources of information.

The second article [11], was a reflection about the implemented practices, stressing the need to disclose training actions, in order to reach a larger number of students, and

pointed to the future path towards the realization of training programs embedded in the curriculum.

The last article [12] of the Algarve University was based on a self-assessment of the formative activity of the library. It stresses the need for systematization and continuity of training plans addressing students and the need for formal integration in the academic curriculum.

4.3   Case 3 – Universidade Nova de Lisboa (Nova University of Lisbon)

The case of the Nova University of Lisbon is very interesting an example of a higher education institution that was able to implement a strategy directed at the school community, of cross training to various organizational units. The article submitted by the Faculty of Science and Technology [13], is a reflection based on the results of questionnaires issued to users about the training provided within the library. The authors conclude that this training is not properly valued because its value and utility for personal and professional development is not effectively communicated. It is recommended that the training should focus on redefining its concepts, aims and objectives and their transmission to the audience more effectively. The focus is especially on communication issues involved in the training project.

4.4   Case 4 – B-on, Biblioteca do Conhecimento On-line (B-on)

The article by Maria Teresa Costa [5] was dedicated to the formative aspects inherent to the use of the platform and databases provided by B-on Consortium (Knowledge Library Online). The reflection focused particularly on the return on the investment of providing such a comprehensive set of sources of online scientific information, and tried to find strategies to address this challenge. Training in the use of resources is a necessary strategy, highlighting the effect on the spread of use, particularly with regard to the training of trainers who can then replicate the training to users at institutions that make use of this platform. On the other hand, aspects such as adaptability and accessibility are highlighted as important vectors for the promotion of comprehensive training. In this sense, training in e-learning is a form displayed as a permanent and ubiquitous solution that supports the possibility of interactive learning by users. The author thus sought to sustain the argument that the effective use of the resources of B-on is enhanced by a larger, more diverse and more widespread training provision.

4.5   Case 5 – Universidade de Lisboa, Faculdade de Medicina (Lisbon University, Faculty of Medicine)

In the case of the Faculty of Medicine, Lisbon University, a comprehensive study of training was conducted in the context of the library [14]. This academic work, submitted by Susana Henriques for the degree of Master of Science in the field of Documentation and Information, proposed an educational project based on an institutional analysis. The issues that gave rise to her work were based on the idea of the integration of training in the academic curriculum and its implications. Henriques

points as aspects to consider the statement of the strategic value of the library in higher education, and the recognition of qualifications and skills of librarians as promoters of educational success. She recommends that these professionals coordinate the training activities with faculty, building strong partnerships that aim to improve the learning processes of students and to empower the library user.

4.6   Case 6 – Instituto Politécnico de Castelo Branco (Polytechnic Institute of Castelo Branco)

The library of the Polytechnic Institute of Castelo Branco [15] conducted a study dedicated to understanding the informational student profile. The main objective of the study was to prepare the training aimed at this target audience, taking into account its features. One important finding is that the observed group believes they do not need training to use the library and refer to the internet as the most appreciated service. The self-perception of their skills will thus become a discouraging factor with regard to deciding to attend training offered by the library. The authors underline the poor utilization of available resources (space, tools, documents and information), mainly due to the lack of knowledge of their existence, of their functions and their capabilities. The study reveals that there is a lack of information which has to be tackled regarding library matters and the purposes of the catalog. That circumstance is translated into an inappropriate use of the library space, ignorance of the catalog as a potential tool for locating documents / information, ignorance of the rules about bibliographic referencing and, finally, the assertion that no training is required for using the library and its resources. The authors concluded that intervention by the libraries must necessarily stress their ability to motivate and stimulate their audience, using a basis of proximity and interrelationship from which to establish the necessary mediation actions between the information and the user.

4.7   Case 7 – Universidade de Lisboa, Faculdade de Psicologia e Instituto de Educação (Lisbon University, Faculty of Psychology and Institute of Education)

Finally, the last article [16] focuses on the reality of the library that serves two organizational units - Faculty of Psychology and the Institute of Education, Lisbon University. The article presents a theoretical background for the learning actions in information literacy as a tool of empowerment for the achievement of academic goals. Regarding the underlying theorization of university pedagogy, the article argues that it is by empowering students that a better training in information skills can be developed. These are the same skills that they could autonomously use throughout academic life.

5   Discussion of Results

The cross-analysis of the selected articles that represent the current reality and the state of the art of user training in university libraries in Portugal has revealed a few

commonalities in the ideas of librarians. The first idea is that a better understanding of the target audience allows for better intervention and response to their needs. On the other hand, there is the idea that there is a weak profitability of informational resources available in university libraries. This finding has triggered suggestions and actions that are already under way in several libraries and that emerge as *leitmotiv* across the analyzed articles. This may be expressed in recommendations for the majority of university libraries:

- Insist on knowledge, on the part of students, of existing resources.
- Develop and affirm the intrinsic value of libraries for the personal and professional development of its users.
- Better communicate with target audiences.
- Actively disseminate training.
- Understand the multiplying effect of training.
- Affirm librarians as promoters of educational success.
- Integrate the content of training in information literacy in the curriculum.

Information skills fall into one practical application frame and consist of locating, selecting, evaluating, using, synthesizing, and presenting information. These information skills are not expressed directly in any of the training programs suggested in the articles analyzed. On the contrary, librarians are observed to prefer presenting tools (such as databases, catalog, and software) that are explored and from which they demonstrate information skills in the form of exercises. This underlying trait of information literacy, omitting its direct expression, may have the disadvantage of lack of awareness of the research process, retrieval and presentation of information, if it is not clearly stated. On the other hand, it presents clear advantages when performing direct instruction, based on available information sources from libraries. These actions contribute to one of the four pillars of education promoted by UNESCO, namely learning to do. As successive searches are made on B-on, in catalogs, or in specific databases and reference managers are used, research becomes more proficient as does the recovery of relevant information and the detection and evaluation of relevant results for the topic of interest. It thus appears that the skills that seek to promote most training activities analyzed here are those relating to previous or preparatory processes in information management - the process of location, selection and evaluation of information - which is required to meet certain academic requirements.

It appears that teaching the use, synthesis and presentation of information of these skills is not relevant, although they are part of the cast of information skills advocated in international policy documents.

Indeed, in the simultaneous observation of the literature cited in the documents analyzed, although it is not conclusive, the most cited orientation document appears to be *Information literacy competency standards for higher Education* [17]. The international reception of information literacy theories is also made by citing studies, articles and several experiences in the scope. However, despite specific examples, it seems that Portuguese librarians do not address the training curricula in order to reflect all the components of information literacy.

Exceptions to this are the Nova University of Lisbon, through its Faculty of Science and Technology Library, and the University of Lisbon, with the library of the Faculty of Psychology and the Institute of Education. In their training activities, both libraries mention ideas related to structuring a scientific work, to registering information and to writing strategies. The widespread failure of this second batch of information skills on the part of librarians is a very interesting aspect that can be analyzed in light of the professional profile of the librarian.

The dimension of technicality (organization, classification and cataloguing of information) that underpinned the identity formation of libraries is the same one that has informed the profile of these professionals. Hence, the technical skills they have to share with the students are those regarding which they feel most comfortable. Areas associated with subjective aspects, such as writing skills and creativity in general, are relegated to the students themselves who, under the guidance of teachers, develop activities to put into action skills related to academic writing. In the training proposals presented here, these students should, so it appears, autonomously (though under the supervision of their Professor) find ways to summarize and present the information found, usually through a written work.

6   Conclusions

Investigations and studies on the role of librarians in higher education in Portugal are still incipient, particularly with regard to their skills, including teaching competences or pedagogical methods in user education. Information about training in information literacy is equally scarce, as found by the preceding analysis. In Portugal, so far there are no national initiatives for the study and promotion of IL across university libraries. We would like to suggest the creation of working groups in this regard, with common aims and activities, in order to strengthen IL in Portugal.

This study sought to contribute to the analysis of this reality. In a context where the demands of society encourage diversity and curricular flexibility in higher education, greater proficiency in research, understanding and use of information, and the purchase of tools for lifelong learning. This reflection is one step further towards future work in these areas.

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Strategies for the Effective Implementation of Information Literacy Instruction in Medical Libraries of Pakistan

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Abstract. The purpose of this study was to propose appropriate strategies that could be adopted for the effective implementation of information literacy (IL) instruction in academic medical libraries of Pakistan. Head librarians of academic medical institutions were surveyed using a semi-structured questionnaire. The results have revealed that IL skills of library users have been perceived by the head librarians as inadequate. Respondents identified workshops/seminars and formal in-class teaching as part of the main curriculum as the most effective IL instruction delivery methods. The majority of the respondents were in favor of integrating IL instruction into the curriculum as a credit course. An overwhelming majority of the respondents was of the opinion that both librarians and faculty should design IL curriculum. However, respondents were divided and undecided regarding the role of the teaching faculty in imparting IL instruction.

Keywords: Information literacy instruction, strategies, medical libraries, Pakistan.

1 Introduction

Information literacy (IL) has been defined as "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" [1, p.1]. Later, keeping in mind regional cultures and conditions, the Empowering 8 (E8) IL model was developed in Sri Lanka in a workshop sponsored by UNESCO for South Asian countries. The eight components of this model are: the abilities to identify, explore, select, organize, create, present, assess and apply information to address an issue or a problem [2].

In Pakistan, the literature of library and information science (LIS) mentioned "user education" in the past [3]. In 2008, for the first time, IL was included in the curriculum of LIS at university of the Punjab. Later, IL was also included in the LIS curriculum approved by the Higher Education Commission (HEC) of Pakistan in 2009 [4]. The first significant writing with the term IL in local perspective was published in 2009 [5].

The Pakistan Medical and Dental Council (PMDC) requires that librarians from all of its recognized institutions "provide instruction in accessing resource[s] to the users" [6, p. 54]. However, the first part of this study [7] reveals that IL instruction practices in most of the medical libraries in Pakistan are in their infancy and limited generally to the newcomers' library orientation. Only a few medical institutions have integrated IL into their curriculum as a non-credit course. Medical librarians lack collaboration with faculty for development of IL curriculum and its teaching. PMDC requires one chief librarian and three deputy librarians for intake of 100 medical students in a medical college [6]. Head librarians are required to impart IL instruction as no instructional librarian positions currently exist in Pakistani medical libraries. Ullah and Ameen [7] recommended that proper strategies are to be adapted for the delivery of IL instruction in a systematic and effective manner. Therefore, this study aimed to come up with proposed strategies for the effective implementation of IL instruction in academic medical libraries of Pakistan in general. Also, it explored whether any differences exist in the opinions of head librarians employed at different types of medical institutions and funded by public and private sectors.

This study will be useful not only to medical libraries but also to other academic libraries and policymakers. It will serve as baseline study in Pakistan's perspective, and may also be of significance for other developing countries.

2   Literature Review

The IFLA, Information Literacy Section and UNESCO [8] have compiled a comprehensive directory of resources on IL, with the primary purpose of sharing and promoting IL instruction in all types of libraries and information centers. IFLA has also provided guidelines for running IL programs for different categories of information users [9].

Previous studies [10-15] found that integration of IL instruction into the subject curricula, collaboration with IL stakeholders, especially faculty, adoption of professional standards, and teaching methodologies, were the key areas of IL strategies in academic institutions.

The Association of College and Research Libraries (ACRL) of the American Library Association (ALA) published "Information literacy competency standards for higher education" in 2000. This document includes five standards with performance indicators and learning outcomes [16]. Australian standards for information literacy were published in 2001 and a second edition was published in 2003, to support IL programs at all levels. These included six standards along with learning outcomes and examples [17]. UNESCO has a mission of fostering information and media literate societies by encouraging the development of national information and media literacy policies and integrating it into the curriculum at all levels. They are also providing appropriate pedagogical methods, training and curriculum [18].

ACRL also prepared "guidelines for instructional programs in academic libraries" for implementation of effective IL instruction programs in 2003, which were updated in 2011 [19]. Medical librarians have been providing library orientation and informal and unsystematic IL instruction in Pakistan [20]. A review of the literature establishes that there is a gap regarding the ways medical libraries should have proper planning

and strategies to adopt for effective and successful implementation of IL instruction programs for their users; therefore, this study aims to bridge this gap.

3   Methodology

The objective of this study was to answer the following research questions: what are the perceptions of medical librarians regarding IL skills of their library users and effective methods for imparting IL instruction, how IL should be taught to the medical students, who should be responsible for designing the curriculum of IL instruction and delivering IL instruction?

A semi-structured questionnaire, based on the literature presently available, was designed. Six questions were asked to seek each respondent's opinion on information literacy (IL) skills of their library users, effective IL teaching methods, approaches suitable for IL mainstreaming and suitable staff to be involved in IL curriculum designing and teaching. Firstly, it was sent to a panel of experts, comprised of LIS faculty members, medical librarians and IL experts, for comments. The questionnaire was revised based on their comments. Secondly, it was pilot tested on ten medical librarians. Pilot testing helped in further refine the questionnaire. The questionnaire was then sent through postal mail along with self-addressed and stamped envelope, to the head librarians of all (114) medical institutions (81 medical colleges, 21 postgraduate medical institutes and 12 medical universities), established by August 2013 and recognized by the Pakistan Medical & Dental Council (PMDC). Out of 114 medical institutions, 58 (51%) were in the public sector and 56 (49%) in the private sector. SPSS software was used for analysis of data and relevant descriptive (frequency, percentage, mean standard deviation) and inferential statistics were applied, such as t-test, One-way ANOVA, Chi-square or Fisher's Exact Test (in case chi-square test was not valid to apply). The percentages were turned into round numbers.

4   Findings

4.1   Response Rate and Demographic Information

Initially 26 questionnaires were returned, out of 114, then follow-up e-mail messages and telephone calls were made. As a result 70 (61%) head librarians responded to the survey. One questionnaire was discarded, as it was carelessly completed. Therefore, 69 (60%) usable responses of head librarians were analyzed. Out of 69 respondents, 31 (45%) were employed in the public sector and 38 (55 %) in private sector medical institutions. A total of 52 (75 %) were males and 17 (25 %) were females. Forty-four (64 %) respondents were from medical colleges, 14 (20%) from postgraduate medical institutes and 11 (16%) from medical universities.

4.2   Perceptions of Head Librarians Regarding Their Library User's IL Skills

Respondents were asked to rate eight IL skills of their library users on a 5-point Likert scale 1 (very weak) to 5 (very strong). The underlying premise of the question was

since librarians interact with their users during the information search process, their observations should be important in determining the user's IL skills.

The responses (rank, mean and SD) of public and private sector head librarians regarding each IL skill are presented separately in Table 1 along with the value of t-test significance (p value).

Table 1. Perceived level of library user's IL skills along with t-test results

No	IL Skills	Sector	N	Rank	Mean	SD	Sig. (2-tailed)
1	Locating relevant information sources in the library	Public	31	1	3.77	.884	.224
		Private	38	1	3.53	.862	
2	Identifying authoritative/reliable information sources, such as journal articles	Public	30	2	3.47	1.008	.738
		Private	38	3	3.39	.755	
3	Using print and online resources legally and ethically	Public	30	3	3.27	.980	.633
		Private	38	7	3.16	.886	
4	Searching online databases	Public	30	4	3.17	1.177	.342
		Private	37	2	3.41	.865	
5	Formulation of search strategy using keywords to search information from Internet	Public	30	5	3.00	1.017	.370
		Private	38	5	3.21	.905	
6	Evaluation of information for authenticity, currency and accuracy	Public	30	6	2.93	.980	.294
		Private	36	6	3.17	.811	
7	Citing sources appropriately	Public	30	7	2.87	1.008	.834
		Private	35	8	2.91	.818	
8	Use of OPAC/library catalogue	Public	27	8	2.81	1.241	.107
		Private	36	4	3.28	1.003	

None of the IL skills received a mean score exceeding four from both public and private sector institutions' respondents, which is an indication of low level of perceived IL skills of library users.

The respondents from public sector institutions believed that five IL skills of their library users (S. No. 1 to 5) were of moderate level. However, three IL skills of library users viz. "evaluation of information for authenticity, currency and accuracy", "citing sources appropriately" and "use of OPAC/library catalogue" were perceived by respondents as weak.

The respondents from private sector medical institutions rated their user's IL skills as moderate in the seven areas (S. No. 1 to 6 and 8). The IL skill "citing sources appropriately" was the only that was considered weak by private sector respondents as it got a mean score of less than three.

Independent samples of t-test results reveal that the mean scores of all eight IL skills had no significant differences between the perceptions of head librarians employed in public and private sector medical institutions at the alpha level of 0.05 (Table 1). This means that the sector of institution has no effect on the perceptions of respondents.

One-way ANOVA results (F = .762, Sig. = .471) show that F value is not significant at .05 level of significance; therefore, it is concluded that there are no significant differences regarding IL skills of library users among three types of

medical institutions (medical colleges, medical universities and postgraduate medical institutes) as perceived by head librarians. This means that type of institution has no effect on the perceptions of respondents.

4.3   Perceptions of Head Librarians Regarding Effective Methods for Imparting IL Instruction

The respondents were asked to rate the effectiveness of five IL instruction delivery methods listed in the questionnaire, on a five-point Likert scale of 1 (least effective) to 5 (most effective). The purpose of this question was to identify the most effective IL instruction methods for medical institutions. The results are presented in Table 2 after computing mean, SD and rank of head librarians' perceptions working in public sector and private sector institutions separately. The significant difference between the two groups of head librarians was also examined, using independent sample t-test, and p value is also reported in Table 2.

Table 2. Perceived effective methods for imparting IL instruction along with t-test results

No	Methods	Sector	N	Rank	Mean	SD	Sig. (2-tailed)
1	Workshops and seminars	Public	29	1	4.28	.797	.251
		Private	38	2	4.05	.769	
2	Formal class teaching as part of the main curriculum	Public	30	2	3.97	1.033	.193
		Private	38	1	4.26	.828	
3	One shot group session	Public	30	3	3.33	1.124	.161
		Private	37	5	2.97	.957	
4	Web tutorials	Public	30	4	3.47	1.008	.411
		Private	37	4	3.27	.932	
5	As an extracurricular course	Public	30	5	3.30	.915	.386
		Private	38	3	3.47	.725	

The respondents from public sector medical institutions considered "workshops and seminars" the most effective method and ranked them first with a mean score of 4.28. The other four methods (S. No 2 to 5), although they were considered effective, got mean scores of less than four (Table 2). The respondents from private sector medical institutions believed that "formal class teaching as part of the curriculum" (ranked first with a mean score of 4.26) and "workshops and seminars" (ranked second with a mean score of 4.05) were the most effective IL instruction delivery methods. Two IL instruction delivery methods "as an extracurricular course" and "Web tutorials" got mean scores of less than four. However, they did not consider the "one shot group session" as an effective method for IL instruction delivery. A respondent also mentioned IL instruction "through posters displayed in the library hall and on notice boards as it is difficult for students to spare time due to tough routine of classes and wards" in the open-ended (other methods) option.

Independent samples t-tests results revealed that the mean scores of all five IL delivery methods illustrated no significant differences between the perceptions of head librarians employed in public and private sector medical institutions at the alpha level of 0.05 (Table 2). This means that the sector of institution has no effect on the perceptions of respondents.

4.4   Teaching IL to Medical Students

It was very important to learn respondents' opinion regarding integration of IL instruction into the curriculum; therefore, they were asked how IL should be taught to medical students: "as an extracurricular course" or "as part of main curriculum/integrated into the curriculum". Forty-one (59 %) respondents were in favour of integrating IL instruction into the curriculum; the remaining 28 (41 %) supported it as an extracurricular course.

Pearson's chi-square test and Phi measures (due to 2 x 2 contingency table) were utilized to explore the difference between the opinions of sub-populations (respondents from public sector and private sector institutions) regarding teaching IL skills to the students. There were no significant differences between the respondents in public and private medical institutions (χ^2 (1) = .020, p = 1.000>.05; Phi = .022) indicating similarities in their opinions.

Fisher's exact test (FET) as data had less than 5 counts, and Cramer's V measures (due to 2 x 3 contingency table) were utilized to explore the differences between the opinions of sub-populations (respondents from medical colleges, medical universities and postgraduate medical institutes) regarding teaching IL skills to the medical students. There were no differences among respondents in three types of institutions (FET(2) = 1.903, p = .404>.05; Cramer's V=.218) indicating similarities in their opinions.

4.5   Accommodating IL into the Curriculum

The respondents who opined that IL should be taught to medical students as part of the main curriculum/integrated into the curriculum were further queried about how IL should be accommodated into the curriculum: as an independent course or part of another course. The majority of respondents (28 or 70 %) opined that IL should be accommodated into the curriculum as an independent course and 12 (30 %) supported it as a part of another course.

There were no significant differences between the respondents in public and private medical institutions (χ^2 (1) = .020, p = 1.000>.05; Phi = .022) or among respondents in medical colleges, medical universities and postgraduate medical institutes (FET (2) = 1.903, p = .404 >.05; Cramer's V = .218) indicating similarities in their opinions.

4.6   Integrating IL into the Curriculum

The respondents who opined that IL should be taught to medical students as part of the main curriculum/integrated into the curriculum were further asked how IL instruction should be integrated in the curriculum: either as a credit course or as a non-credit course. The majority of the respondents (31 or 76 %) opined that IL should be integrated into the curriculum as a credit course and 10 (24 %) wanted integration into the curriculum as a non-credit course.

There were no significant differences between respondents in public and private medical institutions (χ^2 (1) = .453, p = .712 >.05; Phi = .105) or among respondents in medical colleges, medical universities and postgraduate medical institutes (FET(2) = 4.347, p = .109 >.05: Cramer's V = .333) indicating similarities in their opinions.

4.7   Responsibility for Designing IL Curriculum

Respondents were queried about who they believed should be responsible for designing the curriculum for IL instruction: faculty, librarian, or both. An overwhelming majority replied that both librarians and faculty should be responsible for this; only five respondents mentioned only the librarian, and none of the respondents believed that only faculty should be responsible for designing the curriculum of IL instruction. It suggests interaction between librarian and faculty to bring mutually agreed upon approach to IL instruction designing.

There were no significant differences between respondents in public and private medical institutions indicating similarities in their opinions (χ^2 (1) = .506, p = .650 >.05; Phi = .087). There were significant differences among respondents in medical colleges, medical universities and postgraduate medical institutes (FET(2) = 5.494, p = .048 <.05). A Cramer's V value of .341 indicated a moderate difference existed among them. However, post-hoc comparison did not show these results to be significantly different between all the sub-populations (colleges and universities p = .052 >.05, Phi = .314; colleges and postgraduate institutes p = 1.000 >.05, Phi = .106; universities and postgraduate institutes p = .082 >.05, Phi = .411).

4.8   **Responsibility for Delivering IL Instruction**

Respondents were further asked who they think should be responsible for delivering IL instruction: librarian, faculty, or both of them. Sixty-seven responded to this question. A little more than half (35 or 52 %) said both librarian and faculty should be responsible for this, while a little less than half (32 or 48 %) believed only the librarian should be responsible. None of the respondents opted for only faculty and did not exclude librarian from this role entirely. There was a clear division among respondents and they were undecided about the role of faculty in imparting IL instruction.

There were no significant differences between respondents from public and private medical institutions (χ^2 (1) = 2.680, p = .102 >.05; Phi = .200) or among respondents from medical colleges, medical universities and postgraduate medical institutes (FET(2) = 2.070, p = .356 >.05: Cramer's V = .177) indicating similarities in their opinions.

5   Discussion

Students must be information literate to be successful in their higher education, research and lifelong learning goals. They must be well versed with the information and research skills for evidence-based learning and practices [11]. Nonetheless, our study shows that medical library users are not adequately equipped with the skills called information literacy. The results suggest that IL skills in all eight areas required improvement by offering IL instruction to library users. Therefore, a proper strategy must be devised to ensure that medical students achieve information literacy prior to entering practical life.

Head librarians considered formal classroom teaching as part of the main curriculum and workshops/seminars as the most effective methods for imparting IL instruction. IL instruction as a part of the curriculum will be the most effective strategy for students. Workshops and seminars should be conducted for those who are not enrolled in any course. The integration of IL instruction into the curriculum can be possible only when awareness of IL instruction is created among higher administration, and strategies are developed in mutual coordination among all stakeholders. Librarians trying to integrate IL instruction in the curriculum will have to convince their often skeptical administrators first, which is an "up-hill battle" [12]. PMDC, an accrediting agency of medical institutions in Pakistan, can play a vital role in this regard. IL should be a part of the academic policy / mandate of the institution. The respondents rated the effectiveness of web tutorials as low for IL instruction delivery. The possible reasons may be the inadequate facilities and resources for creation and implementation of such tutorials.

Although the role of librarians is central to imparting information literacy skills, still the liaison of medical librarians with faculty is a key contributor to IL programmes. The key areas identified in this study are consistent with the literature published, particularly integrating IL instruction into the main curriculum, and collaborating with faculty [10-15].

The results of Pearson's chi-square and Fisher's exact tests suggest that this strategy should be adopted in all types of academic medical institutions in both public and private sectors' medical libraries, as no significant differences in the opinions of respondents between the sub-populations were found. The findings may be of value to other types of academic institutions.

6   Study Limitation

This study is limited to the perceptions of head librarians of academic medical institutions regarding the strategies to be adapted for the effective implementation of IL instruction in medical libraries. Since the views of other stakeholders such as management, health professionals, faculty and students were not covered in this study, its conclusions may not be generalized to other stakeholders.

7   Conclusion and Suggestions

In Pakistan, medical library users have not attained the competencies in various IL aspects to be considered as information literate. Therefore, library users' IL competence level needs to be improved and developed. Following are the recommendations in this regard: (1) medical librarians should design a systematic and comprehensive IL course in collaboration with teaching faculty that would ensure continual education and training of library users in terms of IL, (2) medical institutions should integrate an IL course of at least two credit hours into the main curriculum to foster adequate IL knowledge and skills among students, (3) workshops and seminars should be conducted for the faculty, medical practitioners, and researchers and for all those who are not enrolled in any academic course.

Further studies can be carried out to find out the perceptions of other stakeholders such as faculty, management and students regarding the strategies to be adopted for the effective implementation of IL instruction in medical libraries.

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Curriculum Framework for the Development of Information Literacy: Methodological Issues Based on Hungarian Experiences

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Abstract. In Hungary, the digital pillars of an information society have not been given serious consideration as a complex entity; the structured foundation and development of information literacy have not been achieved. A complex set of competencies necessary to navigate in the information society has to be developed at three levels: basic education (primary and secondary schools), higher education and adult education. The components of information literacy are to be compared with the requirements of the national curriculum, and assigned to the appropriate levels of education. The core elements at each level are selected. In this way a systematic approach for teaching information literacy can be applied from the elementary school to adult education. The aim of the paper is to outline a methodology of creating a curriculum framework for the consecutive development of information literacy skills and competencies at all levels of education.

Keywords: Information literacy, competencies, curriculum, teaching methods, Hungary.

1 Introduction

Since the mid-20th century technology, economics and culture and their effect on each other have been rapidly changing. People need to adapt continuously to the changing environments, equipment, conditions and opportunities. The question is how this is to be done - how to face constant challenges, and what skills, abilities and competencies are needed to be able to progress in the information society and the digital world.

In the international literature Manuel Castells' Information Age trilogy [1] was the first work to emphasize the human factor while describing the digital foundations of the information society. Castells points out that the three pillars - technology, content and knowledge - are developed in a complex, collective and synchronized way. The paper discusses one of these components, knowledge, which has not received sufficient attention. The three pillars form a complex network of interdependencies. It would be a serious oversight, therefore, to ignore the other components and the complexity of the phenomenon.

In the theories of the information society the human factor has received attention mainly from an economic point of view, one that produces goods. However, while compiling the digital pillars, Castells considered the human factor to be the most crucial element. Humans are the primary influence in shaping the information society; they are responsible for technological innovations, the direction they develop in, the fields in which they are utilized, and the kinds of content that are produced or digitalized.

In Hungary, the digital pillars of information society have not been adequately considered as a complex entity; the structured foundation and the development of information literacy have not been achieved [2]. One reason for this is that the concept of information literacy still has not taken root. It is neither part of education policy, nor of normative documents in regard to public, higher and adult education. The complex foundation and the development of information literacy are not prioritized within the goals of public and higher education; therefore, information literacy has not had a chance to take a hold in educational practices. The first task is the complex interpretation of the concept of information literacy, which will allow for the term to become more prevalent, and it would also facilitate implementing it in practice.

Our attempt is to define opportunities and methods for the complex development of information literacy competencies based on the fact that competency-based education and training is one of the greatest challenges of the 21st century.

2   Development of Information Literacy Competencies

21st century competencies, such as information literacy, need to be established and continually developed. The foundation and the development of these competencies are tasks for public and higher education and cultural institutions, while other entities participating in individual learning and socializing processes also have a role to play [3].

The main problem is abundance, namely the phenomenon that the user is faced with organizing and interpreting an impossibly enormous amount of information. It is crucial for young people to acquire the skills for learning individually and managing information as early as possible. This means that they should learn to rank the immense amount of data and documents in order of importance, and to be able to differentiate between the essential and the irrelevant as well as between what is current and what is out-of-date information [4]. Students should be able to sift the kind of information they need to acquire out of all the important elements of information available; they need to know where to find it in books and on the Internet, and how this information can be searched, organized and ethically used. This kind of knowledge is essential for creating an up-to-date literacy and knowledge. Not only public schools should take on establishing the foundations of information literacy, but institutions of higher education, vocational training and others within or outside the education system should be responsible for improving specific competencies [5].

The necessity of the institutional development of new competencies was recognized early on in the United States and in Western Europe, along with the appearance of the individual competency elements [6]. Hungary has been struggling with the fact that it is lagging seriously behind in this field. While teachers, educators,

trainers and tutors at different levels of education are often failing to attend to the foundation and development of new skills including information literacy, youngsters in many cases are acquiring these skills in an autodidactic way. For them the new competencies and their elements are not organized into a coherent pattern; on the contrary, they are clustered together extremely haphazard and unstructured, and, therefore, they lack the sequence of succession; they do not improve and do not support each other. These negative phenomena are also aggravated by people sensing they lack the skills appropriate to their needs, as they are not even aware of what skills they are supposed to have. Thus, the existence or lack of the different competency elements induces significant differences in the spread of knowledge within the citizenry of the information society. This has a significant impact on individuals' socialization, competitiveness and quality of life [7].

Recalling and expanding on Castells' theory of digital pillars, it is necessary to create a system of educational principles for the public, higher and adult education which focuses on the foundation and the development of information literacy [8]. The practice and experiences of American and Western European education regarding information literacy has served as a precedent for the model, which in addition needs to take into consideration the features and legal background of the Hungarian education and public collections systems.

The foundation of information literacy would doubtless be a task for public education. However, neither the Act on National Public Education, nor the National Core Curriculum includes any indication of the importance and indispensability of information literacy in education. The role for higher education, adult education and vocational training would be to improve and intensify the information literacy skills already acquired in the public education system, as well as to provide specific professional training. Nevertheless, adult education providers operating outside the education system, who are in key positions in knowledge-based societies, still have an undefined place and role in the foundation and development of information literacy all over the world.

Teacher training and librarian training in higher education needs to receive much more focus, since training educators of information literacy is a crucial area for supporting the acquisition of information literacy competencies [9]. These educators need to acquire special training in didactics and methodology during their time spent in higher education, and later during the professional development courses required of them every seven years. In order to support the widespread acquisition of information literacy, adult education should also be drawn into the framework, as digital immigrants often feel themselves outsiders in the 21st century.

Information literacy can be acquired in two locations: within the school system and outside it. Of the two, education outside the school system finds itself in a more uncertain position, as the law mandates only public libraries to aid library users in acquiring information literacy [10]. The law does not, however, indicate the opportunities and methods to be used for the fulfilment of this mandate, nor does it provide programs and quality standards. It does not offer guidelines for establishing priorities, and there is no indication that it is going to do so. So far, the subsequent legislation based on the statute has not been published either. In consequence, a lack of know-how and principles may result in institutions ignoring the task.

3   Curriculum Model

There are several models for teaching information literacy skills around the world (e.g. Big6, Plus, SCONUL, ACRL etc.), they all exhibit different aspects of teaching [11]. The American models like to develop information literacy skills integrated in different subject curricula, this way students learn how to search and handle information connected to concrete topics. This method is very useful in primary and secondary education, where students can establish their competencies while learning the curriculum subjects. The same model is applicable to every course.

In higher education this methodology is not suitable. During specialist courses and lectures it is not possible to develop these special skills, so in higher education separate courses are needed for the development of information literacy competencies [12]. The aim of this type of course is not the foundation, but the further development of the skills already acquired during elementary and secondary education. At the end of each stage standards [13] and indicators need to be applied in order to measure the outcomes [14].

A complex set of competencies necessary to navigate in the information society has to be developed at all three levels: basic education (primary and secondary schools), higher education and adult education [15]. The components of information literacy are to be synchronised with the requirements of the national curriculum, and assigned to the various levels of education. The core elements on each level are selected.

In our model information literacy is divided into seven sections:

- *Definition of information need*:
    - question formulation in natural language,
    - defining keywords,
    - defining descriptors or subject headings, using controlled vocabularies
- *Definition of relevant information resources*:
    - printed resources,
    - library catalogues,
    - electronic, digital and virtual libraries,
    - reference databases
- *Localisation of information*:
    - searching in the text,
    - using search engines,
    - using Boolean operators, proximity operators etc.
    - using search strategies
- *Selecting relevant information*:
    - finding relevant information in different resources,
    - using filtering options,
    - using thematic websites
- *Investigation of information from different aspects*:
    - reflection,
    - highlighting the most important elements,
    - analysis,
    - synthetisation,

- *Processing information*:
    - evaluation,
    - organisation,
    - eliminating duplicates
    - making bibliographies,
    - citation
- *Management of information*:
    - saving the information,
    - applying new knowledge,
    - creating new information,
    - presentation of new knowledge,

These skills have to be developed in accordance with the target groups' needs and competencies and harmonised with the curriculum. The following table shows a possible construction, how to build the elements onto each other at the different levels of education:

Table 1. Development of information literacy competencies

	Elementary Edu. (grades 1-4)	Lower Secondary Edu. (grades 5-8)	Upper Secondary Edu. (grades 9-12)	Higher education
Definition of information need	Question formulation in natural language	Defining keywords	Defining subject headings	Using controlled vocabularies
Definition of relevant information resources	Knowing different types of resources (book, dictionary, bibliography, etc.)	Using library catalogues	Using digital and virtual libraries	Using reference databases
Localisation of information	Recognising the parts of a book or journal	Using search engines (Google)	Using Boolean operators	Using search strategies
Selecting relevant information	Finding relevant information in different resources.	Using built in limiters, filtering options (language, document type etc.)	Using thematic websites	Knowing different literature searching methods
Investigation of information from different aspects	Reflection on information	Highlighting the important elements	Analysing the information	Synthetizing the information
Processing information	Evaluating the information	Organizing the information	Eliminating duplicates	Citation, bibliographics
Management of information	Saving information	Applying new information	Creating new information	Presenting new information

4   The Role of the Libraries

Librarians in academic, public and school libraries have been playing a significant role in defining the content and levels of information literacy and in developing the methodology for acquiring this competency. The coordination and cooperation with various types of educational institutions and libraries is also essential. It is crucial to create a multi-segmented system of principles involving schools and libraries,

in which the elements and levels of knowledge, as well as the educational tasks performed by these institutions are clearly defined.

Besides the school system, libraries stand alone in providing support for the acquisition of information literacy, which was written into Hungarian legislation in the autumn of 2012. At the same time, though, public libraries do not have programs for establishing and developing information literacy, and in most cases, they are lacking in the necessary human resources and expertise, which may mean that with only limited success will public libraries be able to provide the services they are mandated to offer.

Public libraries need to be in a position to provide special programs and courses for adults who are eager to learn. They are the only ones who have taken up the task of educating the public in digital and information literacy. While this task has been delegated by legislation, libraries could also in practice become fundamental institutions within the information society, defining directions for development and implementing pilot projects which would provide opportunities for everyone to acquire and develop their information literacy.

5   Conclusions

The shortcomings and problems of research in information literacy in Hungary may lead to serious consequences. As information literacy is not considered a key competency, educational institutions are not addressing it as belonging to the core group of basic skills, and thus they do not spend resources on establishing and developing it. That is why it is crucial to place more focus on studying the Hungarian aspects of such theoretical questions and the methodology of teaching 21st century competencies.

There is an immediate need for a system of educational principles for information literacy, for curricula supporting the acquisition of sub-skills, and for these curricula to be integrated into the public education system. Our model provides an opportunity for students to acquire, practice and improve sub-skills of information literacy in a structured system. In addition, curricula provide special content and tasks relevant to each subject area. The intermediate-level information literacy acquired in public education can then be further developed and made specific within institutions of higher education. That is why close cooperation between educators and librarians in higher education is essential, which can only be effective if educators provide specific tasks and projects for students that require regular use of library resources and services.

Educational institutions as well as libraries are lacking in precise definitions of the roles and tasks which would be essential for the complex development of this competency. What is needed is the availability of and access to the latest technology and the most modern infrastructure, along with a re-evaluated role and precise task definition for institutions of public and higher education and for libraries, as these are the places where establishing and developing 21st century competencies will need to be especially prioritized.

There is a special emphasis to be placed on the role of libraries, since they are the institutions that play a major role in the acquisition and development of information literacy. At the same time, this situation poses a serious challenge for libraries that they need to prepare for. There are international programs and projects that can help libraries in this endeavour.

All this could serve as a foundation for further research, pedagogical programs, and educational concepts, which in turn could contribute to the institutionalized foundation and development of information literacy. Information literacy as an attitude plays an important role for members of the information society acquiring other 21st century skills and competencies, which in turn result in life-long learning and the mitigation of the secondary digital divide.

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The Ball is in Your Court: Information Literacy Self-efficacy and Information Literacy Competence Relation

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Abstract. It is commonly assumed that the self-efficacy is a predictor of the student motivation and learning and therefore could influence self-regulated lifelong learning. Hence, the role of self-efficacy in the formation of information literate person is of special interest for this study. The main objective of this paper is to investigate the relation between the student information literacy self-efficacy and actual information literacy competence, while placing the research study results in the context of the current literature on the information literacy self-efficacy and information literacy competence. The results of the statistical correlation analysis indicate the relationship between results on the information literacy self-efficacy scale and the information literacy competence assessment scale consisting of four content clusters. It was found that information literacy self-efficacy is significantly and positively related to information literacy competence. In addition, the scores on the advanced ILSE are correlated with each of the four information-literacy content clusters.

Keywords: Information literacy self-efficacy, information literacy competence, pre-service teachers.

1 Introduction

Information literacy competences are recognized as the basis for lifelong learning [1]. During the last decade, information literacy competences have been established as a key outcome by a number of teacher education accrediting bodies and professional association [2]. Lifelong learning assumes learning and development of knowledge, skills and attitudes and therefore has an important role in educating future teachers and other educational professionals. Educating the future generations underlines individual and collective responsibility in developing lifelong learners capable of achieving needed information and use it wisely. Since the ball is in the court of higher education institutions, universities should ensure the development of reasoning and critical thinking, and the construction of a framework for learning how to learn by providing the foundation for continued growth throughout careers, as well as the

recognition and development of the roles of informed citizens and members of communities [1].

While self-efficacy enhances the critical attitude of the student and therefore could motivate the student for autonomous lifelong learning [3], the role of self-efficacy in the formation of information literate person is of special interest for this study.

2   Background to Research

Information literacy of the pre-service teachers is a widely researched topic due to the importance of their information literacy related competences for their current studies and future work [4-7]. Since the pedagogy majors involved in this study are pursuing teacher certification, the research results focusing on the pre-service teachers' information literacy is relevant for this study. According to previous analysis of the teacher education programs in Croatia, the majority of the current primary teacher education programs include goals that could be linked to information literacy standards [4].

3   Objectives of this Paper

The main objective of this paper is to investigate the relation between the student information literacy self-efficacy and actual information literacy competence, while placing the research study results in the context of the current literature on the information literacy self-efficacy and information literacy competence. Within the scope of this aim the following questions were formulated:

1. What is the level of perceived information literacy self-efficacy of student teachers majoring in pedagogy?
2. What is the level of information literacy competence of student teachers majoring in pedagogy?
3. Is there a relation between perceived information literacy self-efficacy and the level of information literacy competence of student teachers majoring in pedagogy?

4   Review of Related Literature

According to Bandura [8], perceived self-efficacy refers to a belief in one's capabilities to organize and execute the courses of action required to produce given attainments. Personal capability connects attitudes, behaviour and various skills essential in people's understanding of themselves and others which is crucial in order to make choices. Believing that one can do and is well-prepared cognitively and motivationally to learn quickly [8], can imply that one is stronger in academic achievements and problem-solving. Kruger and Dunning [9] stressed the importance of knowing own abilities in order to avoid mistaken conclusions and recognize own limitation. Gross and Latham [10] underline that the individuals who are unprepared to participate in our

information-rich society are at an increasing disadvantage. Considering the importance of information literacy education in higher education, self-efficacy might be understood as a highly effective predictor of students' motivation and learning and as the mediator of students' academic achievement [11]. Several research studies focused on determining information literacy self-efficacy among students in higher education [12-13] and [14]. Furthermore, in several research studies there was a focus on testing students' information literacy competence [15-18]. Nevertheless, there are seldom research studies that compare student perceived information literacy self-efficacy and information literacy competence related to specific research areas [19] and [3]. Not only that today's students and professionals need to learn certain skills, but they also need to develop confidence in it and be confident, independent, and self-regulated learners [13]. Higher levels of self-efficacy can lead to better problem-solving, trying out new things (or behaviours) and trusting one's capabilities more. Hence, strong self-efficacy perception is essential not only for self-regulation but also for information literacy to accomplish lifelong learning [13]. The information literacy self-efficacy (ILSE) scale developed by Kurubanoglu, Akkoyunlu and Umay [20] stresses the impact of information literacy on many aspects in life and in particular on lifelong learning which is constituted by key skills as self-regulated learning and information literacy.

According to Cameron, Wise and Lottridge [16], information literacy is a set of competences that provides a foundation for academic coursework, effective job performance, active citizenship, and lifelong learning. Hence, information literacy competence encompasses intellectual abilities as reasoning and critical thinking, evaluating, managing, and using information. Based on ACRL standards [1], information literacy competence is an intellectual framework for understanding, finding, evaluating, and using information. According to Wen and Shih [21], there are three levels (standards, main indicators, and secondary indicators) and three dimensions (knowledge, skills, and attitudes) in information literacy competences.

Several researches developed validated scales for measuring information literacy competence. For example, one of the most elaborate scales of this type is SAILS - Standardized Assessment of Information Literacy Skills [22] which measures student information literacy skills grouped into eight skill sets. The test is offered in two options, for individuals and for student cohorts. The SAILS test is based on item response theory (IRT) as the measurement model determining the difficulty of each item.

The ILAS-ED - Information Literacy Assessment Scale for Education [15] and the ILT – Information literacy test [16] and [18] can also be used in measuring student information literacy skills levels and to help in curricular and instructional decisions. For the purpose of the ILAS-ED scale development, Beile [15], used ACRL standards as basic for the study that were aligned with ISTE National Educational Technology Standards for Teachers (NETS*T). ILT – Information Literacy Test [16] was developed to measure the ACRL Information Literacy Competence standards for Higher Education.

5   Overview of Methodology

5.1   Participants

The survey encompassed 283 student teachers majoring in pedagogy at two universities in Croatia. The University of Zagreb has the pedagogy studies program that has the longest tradition, and has both a single major and double major option. On the other hand, the pedagogy study program at the University of Split is the most recently established program that has only a double major option. The selected study programs do not have identical study outcomes. Nevertheless both programs include information literacy related outcomes [23-24].

In academic year 2013/2014 there were approximately 350 students enrolled at the pedagogy studies program at the University of Zagreb and 150 students enrolled at the pedagogy studies program at the University of Split. As visible for table 1, the sample included both Bachelor and Master level students (Table 1).

Table 1. Study participants demographics

University		N	%
University of Split		128	45,9
University of Zagreb		151	54,1
Study level	Year of study	N	%
Bachelor's study	1st year	57	20,4
	2nd year	52	18,6
	3rd year	65	23,3
Master's study	1st year	52	18,6
	2nd year	53	19,0

5.2   Instruments

Two instruments were used in this study: information literacy self-efficacy scale (ILSE) and information literacy competence assessment scale (ILAS). In the process of instrument selection, several information literacy self-efficacy tests and information literacy competence tests were considered for use in this research. ILSE scale has good metric properties for assessment of information literacy self-efficacy and is frequently used in recent studies. The target population for this research are student teachers majoring in pedagogy, hence the apparent reason for selection of the ILAS-ED scale because of its use in education.

ILSE Scale. The original ILSE scale consists of 28 items/7 factors (defining the need for information; initiating the search strategy; locating and accessing the resources; assessing and comprehending the information; interpreting, synthesizing, and using the information; communicating the information; evaluating the product and process). According to Kurbanoglu, Akkoyunlu and Umay [20], the ILSE 28-item scale is considered to be highly reliable with Cronbach's Alpha .92 for the Turkish version and .91 for the English version. A three factor structure based on the complexity level

was provided as a guide for information literacy instruction programs in order to address the information literacy instruction according to their complexity level [20].

For the purpose of this study, the ILSE scale was translated in Croatian and the scale was later translated back to English by an independent translator who has no knowledge of the questionnaire. In the Croatian version of the ILSE scale the respondents were asked to indicate, 'How confident and competent they feel to perform a specific task', on a 5-point scale with 1 = Not at all confident, and 5 = Very confident. For the purpose of this study, we performed the confirmatory factorial analysis of the Croatian version of the scale and the results indicate that the Croatian version of the ILSE scale is highly reliable with Cronbach's Alpha .924. The analysis confirmed the three factor structure with differences in placements of items between Turkish and Croatian version of the ILSE scale, in regards to information literacy complexity level. This finding could be explained with the differences in the outcomes of the information literacy courses for teachers in Turkey and Croatia. The reliability coefficients of the subsections were: .826 for basic information literacy skills, .889 for intermediate information literacy skills, and .805 for advanced information literacy skills.

ILAS Scale. Information Literacy Assessment Scale (ILAS) for Education [15] was used as a frame for the information literacy competence assessment scale development. The information literacy competence assessment scale consisting of 22 questions was compiled to fit the information literacy standard for higher education [1]. The ILAS scale was validated by Beile [15] and for the purpose of this study was adjusted to fit cultural and linguistic differences of students in Croatia. The results on the scale were calculated following the content clusters provided by Beile O'Neil [2], where the ISTE standards were regrouped into the following content clusters: (A) identifying, evaluating, and selecting finding tools; (B) demonstrating knowledge of general search strategies; (C) evaluating and selecting sources; and (D) demonstrating knowledge of legal and ethical practices.

5.3   Data Analysis

Data were analysed using descriptive statistics such as frequency, arithmetic mean and standard deviation. To determine the correlation between information literacy self-efficacy and information literacy competence, Pearson coefficient of correlation was used on $p < .01$ and $p < .05$ level.

6   Findings and Discussions

As presented in table 2, the study participants have an above average level of information literacy self-efficacy as ILSE was measured on a 5-point Likert scale. The analysis of the mean score for the subsections of ILSE shows that the highest level of self-efficacy is related to the basic levels of information literacy (M=4,36, SD=0,83) and the lowest self-efficacy is related to the advanced levels of information literacy (M=4,05, SD=0,96).

The scores on the information literacy assessment scale indicate the average scores on the complete information literacy test and the scores for the specific content sections. When taking into consideration the number of testing items for each content cluster, it is possible to recognize that respondents have somewhat higher achievement on the content cluster A - dealing with identifying, evaluating, and selecting finding tools (M=3,05, SD=1,16), and the lowest achievement on the content cluster B - demonstrating knowledge of general search strategies (M=3,09, SD=1,25).

Table 2. Descriptive statistics of ILSE and ILAS and its subsections.

	Number of items	Mean per item	SD
ILSE	28	4,16	0,87
Basic	7	4,36	0,83
Intermediate	13	4,13	0,82
Advanced	8	4,05	0,96
	Number of items	Mean	SD
ILAS	22	12,38	2,81
A – finding tools	5	3,05	1,16
B – search strategies	6	3,09	1,25
C – evaluating and selecting sources	6	3,32	1,19
D- ethical practices	5	2,87	1,06

The inter-correlations between ILSE and ILAS scales and their subsections are presented in table 3. The information literacy self-efficacy is strongly correlated to the results on the information literacy assessment, r(253)=.279, p>.001. Also, each factor of the ILSE is strongly correlated to the results on the information literacy assessment scale: basic ILS and ILAS, r(253)=.224, p>.001; intermediate ILS and ILAS, r(253)=.221, p>.001; and advanced ILS and ILAS, r(253)=.273, p>.001.

Furthermore, the information literacy self-efficacy is strongly correlated to the information literacy content cluster A - dealing with identifying, evaluating, and selecting finding tools, r(271)=.244, p>.001. The information literacy self-efficacy is also correlated to the content cluster C - evaluating and selecting sources, r(268)=.130, p>.05 and content cluster D - demonstrating knowledge of legal and ethical practices, r(267)=.131, p>.05.

Table 3. Inter-correlations between ILSE and ILAS, and their subsections

ILAS / ILSE	ILAS	A - finding tools	B- search strategies	C - evaluating and selecting sources	D – ethical practices
ILSE	,279**	,244**	,098	,130*	,131*
Basic ILSE	,224**	,197**	,063	,103	,098
Intermediate ILSE	,221**	,222**	,047	,114	,104
Advanced ILSE	,273**	,212**	,146*	,121*	,140*

**Correlation is significant at p<.001   *Correlation is significant at p<.05

Also, each factor of the ILSE is strongly correlated to the information literacy content cluster A - dealing with identifying, evaluating, and selecting finding tools: basic ILS and content cluster A, r(271)=.197, p>.001; intermediate ILS and content cluster A, r(271)=.222, p>.001; and advanced ILS and content cluster A, r(271)=.212, p>.001.

In addition, the advanced ILSE is also correlated to the content cluster B - demonstrating knowledge of general search strategies, r(270)=.146, p>.05; content cluster C - evaluating and selecting sources, r(268)=.121, p>.05; and content cluster - demonstrating knowledge of legal and ethical practices, r(267)=.140, p>.05.

7   Recommendations and Conclusions

It is possible to conclude that the conducted research provided answers to posed research questions. The study findings indicate that the level of perceived information literacy self-efficacy of student teachers' majoring in pedagogy differs in accordance to the level of information literacy competence. The highest level of self-efficacy is related to the basic levels of information literacy, followed by the intermediate level of information literacy. The students had the lowest level of perceived self-efficacy in relation to the advanced levels of information literacy.

Furthermore, it is possible to reason that the level of information literacy competence of student teachers' majoring in pedagogy differs in relation to the particular area of information literacy. The student teachers majoring in pedagogy have the highest competence in the area of identifying, evaluating, and selecting finding tools, followed by the knowledge of ethical practices and evaluating and selecting sources. The student teachers majoring in pedagogy had the least knowledge of the general search strategies.

Finally, the results of the statistical correlation analysis indicate relationship between results on the information literacy self-efficacy scale and information literacy competence assessment scale. It was found that information literacy self-efficacy is significantly and positively related to information literacy competence. In addition, the scores on the advanced ILSE are correlated with each of the four information-literacy content clusters. Furthermore, the scores on the basic and intermediate self-efficacy scale are highly related to the scores of the content cluster dealing with identifying, evaluating and selecting finding tools.

While being aware that only an information literate teacher can successfully work in the lifelong learning environment, these findings are beneficial for the educational policy makers. Also, when recognizing the relation between advanced ILSE and development of the variety of the information-literacy content areas, it is apparent that information literacy self-efficacy testing could serve as guideline for future teacher education programs planning.

In order to improve general information literacy knowledge, it is necessary to integrate information literacy across teacher education curricula. The research results indicate necessity for improvement of general information literacy knowledge and in particular the knowledge of general search strategies, and evaluation and selection of sources. To achieve this goal, it would be beneficial to involve student teachers in meaningful active learning experiences that would involve both digital and print resources.

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Assessing Information Literacy: Creating Generic Indicators and Target Group-Specific Questionnaires

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Abstract. Information literacy is defined as the capacity to identify, locate, evaluate, use, create, store and index information. This article deals with the assessment of information literacy. Therefore a list of skills an information literate person should possess in the 21st century was developed. Based on these indicators, multiple-choice tests were developed which focus on the target groups of pupils, university students, teachers and researchers. With these tests it is possible to assess the knowledge in terms of information literacy.

Keywords: Information literacy, information literacy indicator, questionnaire, assessing information literacy.

1 Information Literacy

For some years Information Literacy is seen more and more as an essential competence for the 21st century. These skills are required not only for university students or library users but for each participant of the knowledge society.

In recent decades, numerous models and standards on information literacy have been developed. Probably the best known information literacy standards are the "Information Literacy Competency Standards for Higher Education" [1] created in 2000 by the Association of College and Research Libraries (ACRL) and the American Library Association (ALA). These standards are based on the definition of information literacy developed in 1989 [2] and describe specific skills that an information literate student should have. This includes the identification of the information need, the effective and efficient access of information, the evaluation and use of information and the understanding of economic, legal and social issues in connection to information. These skills are also mentioned in many other models, standards and projects like the Information for all Program (IFAP) by UNESCO.

But due to the strong developments in information and media technology, new additional skills are now in the focus of science. The proportion of internet publications increases more and more in comparison to traditional scientific publications [3]. For the past several years these internet publications also include user-generated content. In blog posts, wiki articles or on photo and video platforms, the so-called "prosumers" [4] have the opportunity to step out of the role as a passive recipient and to create their

own content. This kind of information creation and dissemination requires new skills from the users. According to Gust von Loh and Stock [5], this new set includes practical skills in the creation of knowledge and knowledge representation. Besides the creation of information, also indexing information (by then performed by information professionals) becomes an important skill. User-generated content can, for example, be tagged by keywords, which makes the information more accessible to other users [6].

However, with the new possibilities of Web 2.0, other traditional skills become increasingly important again. This includes, for example, knowledge about information law and ethics, like ensuring privacy or data security [5].

2   Assessing Information Literacy

Assessing information literacy serves several purposes. On the one hand, the results can be used to review the state of information literacy knowledge or the achievement of the learning objectives, whereby for example the strengths and weaknesses of information literacy instruction programs can be clarified. On the other hand, assessing information literacy helps institutions to create accountability reports, which may lead to further financial support [7]. When choosing a suitable method for assessing information literacy, the implementing institutions should be aware of the exact target, the subsequent use of the data and the target group of the survey. The following sections describe some methods that can be applied for assessment of information literacy. The methods can be divided into two areas: Subjective surveys and interviews as well as performance and knowledge tests. The first section mainly deals with the information and media usage, while the second part covers the actual knowledge and skills related to information literacy.

2.1   Interviews and Written Surveys

According to Bortz and Döring [8], surveys are the most common method used in the empirical social sciences. One can distinguish between interviews and written surveys. In interviews, the test administrator communicates with the subjects. An advantage of this method is that, depending on the degree of standardisation, the interviewer can respond to questions and issues that arise during the interview. A disadvantage of the oral interviews is the possible influence of the subject by the interviewer. This is especially true for low-standardized interviews.

In a written survey participants independently fill out standardized questionnaires. The intervention by an interviewer is not necessary here. The written survey has the advantage that within a short time significantly more subjects can be questioned than can be interviewed orally. In written surveys no issues arising during the survey can be addressed. Also, questions that may arise can only be answered if a test administrator is present during the survey. The method of subjective surveys has the disadvantage that the level of information literacy is assessed by the subjects themselves. With this method, however, subjective judgments as well as desires and fears of the subjects can be recorded which can contribute to the development or improvement of information literacy instructions. Förster and Orszullok [9] used the written survey method to assess

the state on information literacy among German students in grade six and eleven. To avoid problems with the questionnaires and to maximise the return rate the test administrators decided to be present during the whole survey.

2.2   Knowledge and Performance Tests

Knowledge and performance tests are often used in order to achieve an objective assessment of the state of information literacy. A commonly used method, which is also used in this work, is multiple-choice tests. Here constant answers are given, of which the subject has to select one or more answers. Advantage of this test method is the objectivity. Each respondent gets the same questions and answers. For each question there are clearly right and clearly wrong answers, regardless of the test administrators. Moreover, the results can be compared very well. Scharf et al. [10, p. 462] also write: "Such a limited-response test could provide the opportunity for cross institutional comparison, and such comparisons are important." But especially in the area of information usage or similar issues, the disadvantage of this method becomes clear: "Yet such tests may not well-suited to the task of evaluating higher-order skills, such as a student's ability to integrate new information" [10, p. 462]. In addition, there is always the risk of distortion through random checking by the subjects [11].

A well-known example of such a multiple-choice test is the "Information Literacy Test" (ILT) [12] based on the ACRL standards. But the chosen method of the test prevented the inclusion of the fourth ACRL standards ("The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose" [1, p. 13]). Thus, only the standards one, two, three and five were integrated into the test. Other examples for this method are the "Standardized Assessment of Information Literacy Skills" (SAILS), the "Tool for Real-time Assessment of Information Literacy" (TRAILS) or the "Research Readiness Self-Assessment" (RRSA). Also the Department of Information Science at the University Düsseldorf developed a questionnaire for the assessment of information literacy among students in Germany [13]. This questionnaire mixes both the task formats (free and bound) and the methods (survey and test). In addition to the multiple-choice questions, some free text questions are available. Thus, there are also questions that cannot be categorized as correct or incorrect (e.g. "Do you own a blog?").

Different institutions try to minimize the disadvantages mentioned by using Rubrics instead of multiple-choice tests (see e.g. [14]). Rubrics provide teachers or test users the ability to assess results based on specific criteria. Rubrics describe the performance of a specific task, a product or a service and evaluate them. Using Rubrics in the area of information literacy assessments brings some benefits for both teachers and test users. Since the evaluation is not only done by grades or scales, but through performance descriptions, learners can understand what they have learned and where they might have problems. The disadvantages of rubrics are also obvious. Thus, the results of the tasks are rated subjectively, in spite of predetermined evaluation criteria. The analysis is thus not completely objective, and the comparison between test results may suffer. This manual rating, however, brings another problem

with it. The analysis is very time consuming and cannot be processed by machine. Also, the construction of such a Rubric is very time-consuming and costly.

Another form of performance tests are the real-world scenarios. Here the subject is shown a scenario (for example a research task), which he needs to solve in a given time. In most cases, the test is automatically rated based on clicked links, keywords used or selected literature. A good example of this type of testing is the assessment ETS iSkills [15]. The advantage of this method is especially the realistic setting. Through the scenario-based tasks, areas such as critical thinking or the development of problem-solving strategies can be tested. Disadvantage of this type of performance is the high effort in creating the different tasks. Thus, the scenarios and algorithms for rating need to be implemented and the performance of the tests need to be ensured.

3   Information Literacy Indicators

While considering the different definitions, models and standards of information literacy many overlaps can be identified. During the development of the following indicators those overlaps were taken into account. But also less frequently discussed skills in the field of information literacy, such as the observance of privacy and the creation of information were included. The aim of the development of the indicators was to create a list of skills that an information literate person should have to succeed in the knowledge society. Depending on the target group the definition of the indicators need to be customized. For example the indicator „identification of suitable retrieval systems" for students or researcher means the selection of scientific information services (e.g., Web of Science or Scopus), for pupils the selection of suitable child search engines (e.g., in Germany, Binde Kuh or FragFINN). The indicators serve the development of the different questionnaires. Using these skills we were able to develop questions for the target groups. But those indicators can also be used for other purposes. Thus, it is conceivable to develop an instruction program based on the indicators.

The indicators are divides into seven areas:

1. Identifying information need
2. Searching and finding information
3. Evaluating information
4. Using information
5. Organizing Information
6. Communicating and publishing information
7. Responsible handling of information.

In the following, these areas and the associated indicators will be described.

3.1   Identifying Information Need

The ability to recognize a need for information is a prerequisite for a successful information retrieval. Information literate people must be aware of what they know and

also of their knowledge gaps. They are asked to find out what information they need and to what extent. The area of identification of information need is present in almost all models and standards of information literacy. Thus, the ALA writes in their standards: "The information literate student] determines the nature and extent of the information needed" [1, p. 8].

This area includes in addition to the identification of one's own knowledge gaps the identification of concepts, terms and research issues as well as the development of own research questions. Equally important is the articulation of information needs. Those needs should also be communicated to others. As the need for information in most cases cannot be satisfied by a single source of information, it is also necessary to revise the initial information need.

3.2   Searching and Finding Information

"The information literate student accesses needed information effectively and efficiently" [1, p. 9].

This ALA standard describes the area of „searching and finding information" very well. Firstly, an appropriate search strategy must be chosen. In order to use these strategies one must identify suitable retrieval systems.

3.3   Evaluating Information

The evaluation and assessment of information need to happen for various reasons. First, the relevance of information needs to be determined. Information is only relevant if it is constructive for the research questions. The quality of a source is crucial for the quality of the result of the information process [16].

Through the evaluating with the help of meta-information a source can be assessed without even looking at the text. Since this is often insufficient, information should also be evaluated with the help of the actual content.

3.4   Using Information

Without effective use of information, the information process cannot be completed. Information literate persons must identify contradictory statements or find connections between different publications. This area also includes the independent development of theories and ideas as well as the selection of appropriate information and quotes to support arguments.

3.5   Organizing Information

The area of information organization includes literature administration and information management. A particular focus is on the use of reference managing systems like EndNote. In addition, this area contains the graphical representation as well as the thematic mapping of information.

3.6 Communicating and Publishing Information

Communicating and publishing information experienced a real upswing in the past few years. Especially in the Web 2.0 publishing is not only reserved for professional writers and publishers. Each user can make his information accessible to the public through a variety of channels. The ability to create information is a prerequisite for communicating and publishing. In addition, this area of competence includes the correct use of citations and the selection of a suitable communication medium. Another important point related to publishing information is adding tags and keywords to the created information.

3.7 Responsible Handling of Information

Information literacy includes not only traditional skills but also new ones that can be found mainly (but not exclusively) in the digital world. Thus, this area of expertise includes information ethics, which focuses primarily on the fair interaction with other users and the avoidance of unethical behaviour. Closely related to information ethics is the topic of information law. This is about the knowledge and use of different publishing licenses and the protection of intellectual property.

4 Questionnaires

In the following, the development of the different questionnaires will be explained. Therefore the structure of the tests and the differences between the target groups will be highlighted.

Based on the indicators explained above, test items were developed to determine whether an indicator is met by the person tested. With these 68 test items we generated five different questionnaires for the following target groups:

- Students in seventh grade (33 questions)
- Students in tenth grade (38 questions)
- High-school graduates and university students (41 questions)
- Teachers (41 questions)
- Scientists (41 questions)

The different areas of competence contain between two and 24 questions. This difference results from the different importance of the areas and indicators. Also, the information literacy test by the ALA mentioned above established that some standards should be weighted higher than others [12]. However, the different number of test items in the area of competence also results from the choice of the test format. It is not (or only partially) possible to assess specific areas with such a multiple-choice test. For these purposes, the so-called performance tests, such as real-world or rubrics assessments are necessary. The difficulty to measure certain standards and indicators is also recognized by the ALA. The test items were realized with a bound response format, subjects can therefore choose between given answers. The test on the one hand includes questions with only one correct answer. Depending on the complexity

of the question a subject can reach between 0.5 and 2 points per task. In addition, test items were inserted, in which the respondent can tick more than one answer. The points are awarded to the respondent even if he has not selected all correct answers. This type of question involves the risk that a test person ticks every answer. Because of this we decided to give minus points for the ticking of incorrect answers.

Since different target groups should have different skills, five questionnaires were developed to test these different skills. Pupils need to search for information for school as well as for their private lives. For students in the seventh and tenth grades, a focus is placed on the responsible use of information. For high-school graduates, university students and scientists the focus is on exploring, using and generating information. Knowledge of different retrieval systems and search options are as important as the use of systems for organizing knowledge and information. Teachers must be able to deal with information in order to search for materials for teaching or for their own education. They also face the difficulty that they need to prepare this information for their students. In addition they need to copy and distribute information, which requires a deep understanding of copyright issues.

5   Pre-tests

After completion of the questionnaires in September 2013, a pretest was conducted to make sure that the questionnaires meet all requirements. For this purpose, the questionnaires were given to five participants from each group. The pretest groups of students of the 7th and 10th class consisted of participants of a summer camp. In the group of high school graduates and students two school graduates and three students were interviewed. The pretest group of teachers consisted of one secondary school teacher and four primary school teachers. The five members of the group of scientists consisted of staff from the Heinrich-Heine University in Düsseldorf. Those were split into two employees of the Department of Information Science, an employee of Linguistics and two employees of Computer Science. While answering the questionnaires a few problems in understanding some questions could be identified. These problems have been fixed by adjusting the individual questions.Although at the time of this work no extensive representative study has been carried out with the help of these questionnaires, a few results of the pretests are presented here. The following examples are intended as a suggestion for possible evaluations.

It is possible to divide the scores in different levels of the information literacy. With the help of these levels, the results of the tests can be better specified, which facilitates evaluation. The level "beginner" is reached when the subject has received at least 50 % of the maximum number of points. With 75 % level "advanced" is reached. With less than 50% the respondent must be regarded as "not information literate". These degrees of information literacy are arbitrary and used for a clear classification of the participants in competence classes. This method was chosen because we have no statistical data to work with. After we will have finished the survey, there is the possibility of changing these degrees depending on the statistical data.

Figure 1 shows the result of the pretests. Two seventh grade students reached the beginner and the advanced level. Only one student had to be classified as not information literate. In the target groups of 10th Grade students, high-school

`graduates and university students no participant fell below the 50% mark, while teachers came off worse. In the group of Scientists a clear trend towards the stage "advanced" can be seen.
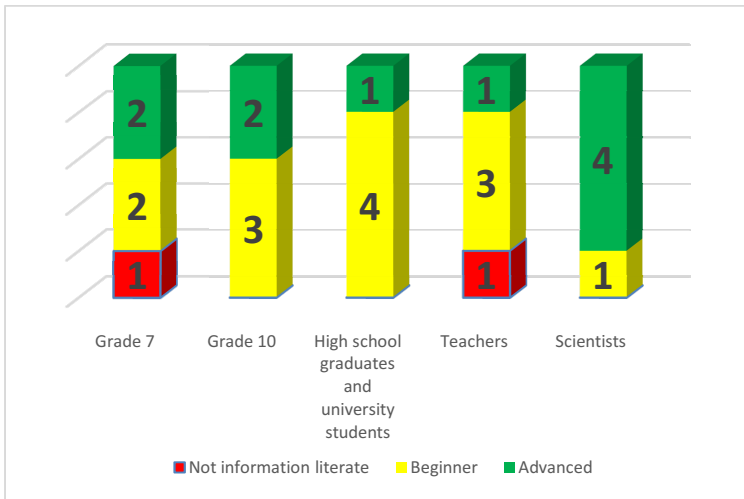
Fig. 1. Pre-test results: Levels of information literacy

Depending on the intended use of the results these should be evaluated and considered different. An important purpose of the tests is the evaluation of programs for teaching information literacy. Before the beginning of such a course, the knowledge of the participants can be tested with the help of questionnaires and so weak points can be identified. After completing the course, the test can be repeated to determine how the participants have improved in each area.

6   Limitations

Based on the available questionnaires, it is possible to detect the level of information literacy of target groups. The method of multiple-choice questionnaires has many advantages, such as the level of objectivity and thus good comparability of the test results or the opportunity to interview many subjects in a short time. However, some disadvantages and limitations can be identified. Some indicators could not be tested because of the multiple-choice format. Here especially those skills which can be detected only by certain actions, such as sharing or creating information, must be named. For this purpose additional methods should be used, Rubrics or Real World scenarios. Another problem that occurs especially in multiple-choice formats is the risk of random checking. Also, depending on how the questionnaire is distributed, the return rate can be very low. The highest response rate is achieved when the survey is conducted in a group association (e.g. in a school class) and under the supervision of a test administrator.

A common problem, which occurs in almost all test and survey methods, is the lack of motivation among the participants. Here, the importance of such acquisition must be made clear or additional motivation, such as participation in a lottery, must be taken into account. In schools and universities, depending on the intended use, participation could also be rewarded with credit points.

7   Conclusion and Further Work

The developed indicators provide a detailed list of skills an information literate person should possess in the 21st century. The seven areas of competence cover the identification of information need, the developing and implementation of search strategies, the effective use and evaluation of information as well as the organization, creation and publication of information. In addition the last area includes issues on information ethics, law and privacy.

The designed questionnaires provide an efficient tool for institutions or individuals to assess their own information literacy or the information literacy of their students, employees and users. The advantage of the chosen method of multiple-choice test lies in the objectivity of the results and in the possibility to test a huge amount of persons in a relatively short time. The limits of these tests are that some areas may not be sufficiently covered. These areas are, for example, the use of information or the identification of information needs.

Follow-up studies will focus on using the developed questionnaires in schools, universities, libraries and research institutions to get an accurate picture of the state of information literacy in Germany and – by translating our questionnaire – in other countries. Moreover, it is also conceivable to extend the multiple-choice test with a performance test. Thus, the areas not covered by the existing questionnaires could also be tested.

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Assessing IL Skills of Primary-5 Students in Singapore

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Abstract. The study was conducted at the end of 2013 with collaborative efforts from a group of information literacy researchers, members of Singapore National Library Board, and child development experts in the Ministry of Education. Some 3435 students from 15 schools, spread across different geographical regions of Singapore, were sampled. Results of data analysis showed a mean percentage score of 64, meaning that students possessed basic IL skills. Students scored very well on cyber wellness questions, defining information task, synthesizing and using information. However, students performed poorly for questions related to seeking information from different sources. It was also observed that students performed poorly at identifying steps in conducting an information project. The results suggest that most of the P5 students might have not been given enough opportunity to carry out independent tasks that required them to find new information, or information may often be given to the students by teachers.

Keywords: Information literacy, survey, grade-5, assessment.

1   Introduction

Information literacy has received a great amount of attention in the academic field since 1974 when the term was first coined by Zurkowski [1]; however, as some researchers have pointed out, students often lack information skills to take advantage of rich information sources offered by school libraries such as electronic databases, online catalogues, websites and multimedia.

   Information literacy (IL) has been described as the ability to locate access, search, evaluate and use information in different contexts [1]. In this day and age, with information being increasingly digitized, and the pervasive use of information and communication technologies (ICTs) in our daily lives, IL has become a basic competency to navigate through the deluge of information to meet our information needs for both work and leisure activities. For students, information literate competency should be a basic skill that will facilitate effectively screening through great amount of resources to identify reliable and pertinent information found through social networks, the Internet, smart phones, television, or friends, either for school-related work or for personal interest and amusement. For the majority of primary students, IL would provide them with the competencies to better take advantage of their information surroundings as a component of their informal and formal learning mechanisms [2]. In a broader context, the

significance of competent IL capabilities has been related to intellectual achievements likewise in the professional life [3]. Given the importance of IL competencies, some educative systems across the world have included IL skills in their curriculum, which are either taught as an independent component, incorporated into the curriculum with the foundation subjects pupils have to study, or in a sole session by the library [4-6].

Moore [7] has reported on the worldwide IL education programs. The impact of IL skills on project work and importance of training teacher librarians have also been highlighted by many authors [8-10]. As educative systems become more aware and appreciate IL competencies, different types of assessment, like questionnaires and tests, have been developed and applied to scrutinize the degree of IL competencies students and teachers possess. Outcomes obtained from diverse instruments across different regions also have been reported. However, most previous IL studies focused on secondary, high school, and university students.

Apparently, there is a heavy dependency on internet search engines compared to reliable sources in some research reports [11-13]. Besides IL competencies, some instruments have assessed search strategy practices [13-15]. Interesting findings includes the need to depend on other people to help them search for information using databases and the utilization of Google as the first information source [16-17]. Even now, IL is a subject on which common digital natives still need to improve [11-13], [15], [17]. Studies performed globally have uncovered possible correlations between IL and factors such as demographic background, access to the internet, way of life, computer usage, teaching approaches for IL, gender differences, ethnicity, working experience, and educational background [18-19].

Categories of Information Literacy Models have been created; for instance, IL models based on perspectives or components and those based on the Research/Information Seeking Process. Some of the models developed under these categories are the following: Seven Faces of Information Literacy [20], The Big6 model [21], the SCONUL Seven Pillars of Information Literacy Model [22], collaborative information seeking [23-24], The Seven Steps of the Research Process Model [25], Standardized Assessment of Information Literacy Skills (SAILS), Tool for Real-time Assessment of Information Literacy (TRAILS), and Research Readiness Self-Assessment (RRSA) assessing discrete information literacy skills [26-28] among others.

Recognized as one of the most successful in the world [29-30], the Singapore education system has been evolving constantly over years. As the country developed, the earlier efficiency-driven system has been replaced with ability-driven education (ADE) paradigm, in which creative thinking and learning skills are identified as important assets. IL in the Singapore school sector has also evolved since it was first introduced in 1997 [31]. Applications of the IL publications and guidelines in school curriculum were short-lived by the end of the last millennium, and after nearly a decade, IL reappeared in the school curriculum [32]. However, most of the past efforts were focused on high school level and above. More recently, in the Teacher Education Model for the 21st Century, abbreviated as the TE21 Model, published in 2009, information literacy skills were recognized among other 21st century skill sets to be taught to students from a younger age [33]. In 2010, several information literacy components were incorporated into textbooks of various subjects. Knowing where students stand today for their IL skills will be instrumental in assessing the impact of

new curriculum as well as guiding future plans in teaching content and pedagogy. This paper will report on the survey results of Singapore Primary 5 students' Information Literacy skills.

2   Methodology

The study was conducted at the end of 2013 with collaborative efforts from a group of IL researchers, members of Singapore National Library Board, and child development experts in the Ministry of Education. Some 3435 students from 15 schools, spread across different geographical regions of Singapore, were sampled. Due to younger age of the students, a paper-based survey questionnaire was used to collect data. Along with 4 items for demographic information, the questionnaire contained 24 IL related questions and was constructed with consideration of the IL related concepts taught in school, Singapore's multi-cultural context, and Primary 5 students' reading proficiency. The questions were divided into five categories, with the number of questions raged from two to nine in each category. The five categories were *Defining Information Task, Selecting Information Source, Seeking and Evaluating Information from Sources, Synthesizing and Using Information, and Appraising the Information Process and Product.* The last category was not analysed in this study due to students' age and only one question was asked, and Cyber Wellness was seen as an extra variable.

The analysis of several Information Literacy appraisal instruments illustrated that all of them had weaknesses and strengths. This study implemented the methodological approach of survey by testing knowledge since it is a cost-effective mean to a obtain large sample size. Assessing performance can produce more reliable outcomes, but it needs more resources.

The survey instrument was generated by a team consisting of Education faculty and Information Studies members of Nanyang Technological University (NTU) in Singapore, based on the model shown in Figure. 1 [31-32], [34-36]. A number of assessment tools developed previously were consulted (e.g. TRAILS, SAILS), the survey components were analysed, and it was formulated to be more appropriate to the Singapore context through many focus group exercises. The questionnaire was sent to information literacy experts from British Columbia, Hong Kong, Kuwait, and Thailand. Their recommendations were related to the structure of the questions and the length of the instrument. Both of such suggestions were included in the final questionnaire. It was subsequently pilot-tested with 35 students from primary five (P5) schools in Singapore [2]. Enhancements were introduced to the instrument based on the feedback obtained from the participants in the pilot study. For instance, a number of lengthy and complex questions were revised, and the words used in some of the questions were changed and simplified to improve the questionnaire readability and comprehension.

The questionnaire was divided into three sections. Section 1 had questions on demographic information about the participants, the primary schools in which they study, gender, internet access, and year of birth. Section 2 comprised 22 multiple-choice questions to test IL skills in five stages. Section 3 gathered information about students' cyber-wellness with two questions.

Fig. 1. Information literacy model

Questions for testing IL skills were weighted in a different way along with their perceived importance levels. For this, the answers were then normalised, where 0 = Incorrect, 1 = Correct (Nice to have) and 2 = Correct (Must have) to derive mean total scores and mean stage scores. The score was then converted to 100% for ease of analysis of findings and presentation in this report.

Data collection was conducted from 31 July 2013 to 15 Nov 2013. Data were analysed and focused on the first four stages in the proposed IL model with two statistical techniques, paired-samples t-tests and one-way between subjects ANOVA, and using Statistical Package for the Social Sciences (SPSS) 19.0.

3   Results and Analysis

This paper presents, mainly, the results of three different types of analysis in relation to Information Literacy for students in primary 5 in Singapore. The first analysis was paired-samples t-tests, comparing four information literacy stages with the Information Literacy total scores. The other two analysis were one-way between subjects ANOVA's. One of them compares gender differences for each one of the Information Literacy stages, and the other compares mean scores by Internet Availability at Home for each one of the Information Literacy stages. The total information literacy scale for Primary 5 was found to be reliable (21 items; $\alpha = 0.71$), in this case the analysis was run with the first four stages.

3.1   Comparing Total Score with Score of Each Stage

Four paired-samples t-tests were conducted to compare the mean of Information Literacy total scores and each one of the means of its four stages: Stage1 - Defining Information Task, Stage2 - Selecting Information Sources, Stage3 - Seeking and Evaluating Information From Sources, and Stage4 - Synthesizing and Using

Information. Stage 5 was not included because only one item was used to test the stage 5 skills. In all these tests, there were significant differences between Information Literacy total scores and each one of the four stages.

The Information Literacy total scores (M=63.58, SD=18.602) were lower than scores in these three stages - the Defining Information scores, Stage1, (M=65.15, SD=33.260); t(3434)= 3.831, p = 0.000; the Selecting Information Sources scores, Stage2, (M=64.28, SD=23.415); t(3434)= 2.556, p = 0.011; and Synthesizing and Using Information scores, Stage4, (M=65.28, SD=24.643); t(3434) = 5.780, p = 0.000. The Information Literacy total scores (M=63.58, SD=18.602) were higher than the score for Seeking and Evaluating Information From Sources scores, Stage3, (M=59.61, SD=24.214) scores; t(3434) = -12.795, p = 0.000.

It appears that Stage 3 is the weakest part among other stages, which pulled down the overall score.

3.2   Gender Differences - Females Scored Higher Than Males

Five one-way between subjects ANOVA's were conducted to compare the genders for each one of the information literacy stages and the total information literacy scores. Since each comparison is done between only two types of subjects, post hoc tests were not necessary. In all these tests, there were significant differences between genders in each one of the four stages and the IL total scores.

In Defining Information Task, Stage1, females scored significantly higher than males [F(1, 3426) = 17.721, p = 0.000]; in Selecting Information Sources, Stage2, females scored significantly higher than males [F(1, 3426) = 44. 208, p = 0.000]; in Seeking and Evaluating Information From Sources, Stage3, females scored significantly higher than males [F(1, 3426) = 44. 208, p = 0.000]; in Synthesizing and Using Information, Stage4, females scored significantly higher than males [F(1, 3426) = 51.722, p = 0.000]; and in Information Literacy Total scores, females scored significantly higher than males [F(1, 3426) = 64.049, p = 0.000]. Females scored significantly higher than males in all stages.

3.3   Internet Access-Students Having Internet Access at Home Scored Higher Than Those Having Not

Five one-way between subjects ANOVA's were conducted to compare the effect that having Internet at home has for each one of the information literacy stages and the total scores over the students. Since each comparison is done between only two types of subjects - students who have do not have access to the internet from home, post hoc tests were not necessary.

In Defining Information Task, Stage1, students with Internet access at home scored significantly higher than those without it [F(1, 3426) = 19.515, p = 0.000]; in Selecting Information Sources, Stage2, students with Internet access at home scored significantly higher than those without [F(1, 3426) = 41.529, p = 0.000]; in Seeking and Evaluating Information From Sources, Stage3, students with Internet access at home scored significantly higher than those without [F(1, 3426) = 71.848, p = 0.000]; in Synthesizing and Using Information, Stage4, students with Internet access at home

scored significantly higher than those without [F(1, 3426) = 63.732, p = 0.000]; and in the Information Literacy Total scores, students with Internet access at home scored significantly higher than those without [F(1, 3426) = 89.435, p = 0.000].

In all these tests, students with Internet access at home scored significantly higher than those without it.

3.4   Overall Results

Results of data analysis showed a mean percentage score of 64, meaning that students possessed basic IL skills. Students scored very well on cyber wellness questions, defining information task, synthesizing and using information. However, students performed poorly for questions related to seeking and evaluating information from different sources. It was also observed that students were not strong at identifying steps in conducting an information project. The results suggest that most of the P5 students might have not been given enough opportunity to carry out independent tasks that required them to find new information, or information may often be given to the students by teachers. Students in general possess a satisfactory amount of the expected IL skills at this grade level. However, it was surprising to see that many were unable to understand information from simple graphics, such as a pie chart.

4   Discussion

These research findings show some issues to be addressed. To start with, it was indentified that pupils had problems identifying resources, specifically, differentiating between fiction and non-fiction and finding a specific book in the library.

This research found that female students scored slightly higher than male students; students with internet access at home scored higher than those without; and Seeking and Evaluating Information from sources had the lowest scores among the four stages studied. These findings will require more detailed scrutiny since uncovering the specific causes of these results will require further research.

This research found that in general lower-order IL competencies (e.g. definition information task and selecting information sources) were possessed by more students than a higher-level competency (e.g. synthesizing and using information). The exception was seeking and evaluating information from sources. The previous finding may imply that there is enough recognition and endeavours in instructing these competencies in the Singapore school, probably as a result of the implementation of TE21 Model [29]. Inversely, it may imply that endeavours should continue to improve seeking and evaluating information from sources since it had the lower scores among the four stages studied. The higher-level competency may require more time and practice to acquire. Maybe, one of the most frequent mechanisms used to instruct students to obtain higher-level IL competencies is by collaboration between educators and librarians working in the school. The teamwork between school librarians and educators could secure and guarantee the access to reliable resources, both non-print and print, and it will more adequately support a unified IL curriculum suitable to Singapore students.

5   Conclusions

The findings of this research have cast light on the levels of IL competencies in Primary 5 students in Singapore schools. It is one of the first attempts to assess primary school students' IL skills on a large scale. In addition, this research has supplied understanding what Singapore P5 students conceive as their IL competencies, their comprehension of the information seeking processes and information organization, both in non-print and print sources, and their perception in terms of social responsibility and cyber wellness. The results may also suggest areas and better ways to help students to improve their IL competencies, such as collaboration among educators, information professionals, syllabus designers, and policy makers.

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Evaluation of Organizational Literacy in Context of Organizational Learning: A Literature Review

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Abstract. Organizations constitute the restructuring conditions to maintain their functions and enable adaption to new competitive conditions for modern changes as a part of globalization. In this context, the emerging concept of learning organization and organizational learning provide opportunities for creating new information, access to information, sharing and transferring information issues. The concept of organizational literacy is considered as an important component of the information literacy for organizations in terms of surviving in the varying marketing conditions, keeping alive the organizational memorials, adapting to the organizational culture and gaining competitive advantage. In this study organizational learning and organizational literacy concepts were explored in the literature as related concepts in terms of organizational identity and organizational culture. The results were obtained via literature review and reflected the importance of two complementary concepts, organizational literacy and organizational learning, on learning organization.

Keywords: Information literacy, organizational learning, organizational literacy, organizational memory, organizational identity.

1   Introduction

Of late, organizations tend to capture, use and share information faster in order to catch up with new developments and advancements in technology. Organizations are required to adapt themselves and their organizational structures to rapidly changing conditions especially in the organizational information management fields such as ingestion, use, and information sharing according to technological convergence emerged in the related sector. Besides, Learning, as one of the core concepts in the education field, is described as one of the fundamental knowledge management processes. It is also a significant concept related to management field which affects organizations in terms of providing competitive advantage and adaptation of new innovative technologies.

In this perspective, adaptation of new technologies and being a leading part of changing conditions are important for organizational development through improving learning methodologies. Organizations' objectives, their general characteristics, and target groups can be stated as decisive organizational information management factors

that differ from organization to organization. Considering organization structures, employees use information sources and their information literacy skills within the boundaries of organizational procedures and facilities. Adjustments to the new processes, rules and regulations in the nature of organizations require a learning period for employees [1]. In the literature, organization defined as a set of coordinated components such as opinions, beliefs, traditions, values and behaviors [2-3]. In line of this definition, norms, regulations and rules determined by the organizations can be shown as not only essential components for the reflection of organizational identity and organizational culture, but also components that are directly affect adaptation processes to new developments. In this context, it is seen that the relationship amongst organizational behavior, culture, identity, organizational learning and organizational information management are explained by models and theories in the literature. In light of this information, this study aims to indicate the relationship of organizational literacy with organizational learning processes and organizational memory.

2   Organizational Identity and Culture

As in many other fields, new developments have led to various changes in the field of management and organization as well. The reduction of boundaries in global meaning, rise of possibilities in access to information and sharing facilities enforced the organizations to various attempts on for implementation and adoption of innovations in order to ensure the sustainability in changing conditions. In this context several interdisciplinary studies about organizations that are mainly trying to ensure continuity in the changing conditions appear in the literature. Basically, organizations which comprise a plurality of components are expressed as structures that bring people together for specific purposes and express the ideas by itself as a whole with a single identity [4]. In this respect, the concept of organization is a structure where tasks are performed towards determined common goals and it also represents a process which reflects the cultural characteristics in the social sense [5]. On the other hand organizations meet the employees' and administrators' needs and provide the harmony for employees and coordination between the groups within the organization through concerted purposes [6-7]. It would be correct to say that organizations have relative continuity and unity of values. Distinctive features of organizations that are shared by employees constitute organization's system and organizational identity [8-9]. At this point, organizations with their unique cultures and characteristics generate their identities in the community where they are belonged and all over the world. Organizational culture is one of the most important steps for generation of organizational identity. It especially determines written and nuncupative rules that affect employees' behaviors and organization's structure as a transcendental reality [1] and also as a general term presents all forms of organizational reflections containing organizational behaviors and modellings. Organizational culture is represented by distinctive beliefs, values and personality owned and shared within the community that is the human resource of organization.

Organizational identity is generally under the effect of not only target audience's needs but also communities' needs and parameters [9]. It is defined as a whole of forms that are used for representation of an organization and organizational identity

determines how the organization is perceived by target audiences and community [4]. All the forms of self-representation in an organization create the identity of the organization. It is seen that organizational culture and organizational identity are highlighted also under the conceptual definitions of organization. In this regard Hürel [10] states the organization as a body that has unique style, standards, rules, regulations and norms.

In general organizations have corporate identities that differentiate them from the other organizations. Main elements that reflect organizational identity to community can be sampled as logo, letterhead, business card, web sites and social media environments with the Web 2.0 technologies. The concept of organizational identity contains information about organizations such as who they are, what they do and how they do. Even the concept of organizational identity is the visible face of the organization, it has developed under the concept of organizational memory. The components of organizational culture and identity are located within the context of organizational memory. Organizational memory which plays an important role on organizational learning processes also brings sustainable learning processes in the organizations.

3   Organizational Memory

Memory is an important concept for organizations as well as individuals. Organizational memory provides many advantages for organizations such as recording workflows for similar processes and reuse of recorded information in order to shorten workflows and providing efficiency in time/costs for organizations. Memory is an environment that allows recording the information by supporting the learning processes. In this regard, organizational memory can be thought as a platform or an environment for storing information in order to share and reuse of stored information with aim of organizational processes and benefits. Organizational memory is defined as the accumulation of information and competencies reflecting organizational decisions and experiences gained from best and previous practices [11]. Stored information provides efficiency for decision making processes within the organization. On the other hand, it is stated that organizational memory reduces the cost of new decisions in organizational workflow [12-13]. In general, organizational memory is an important element for organizations and it is affected by the learning and human factors. Organizations that consist of learning by individuals who know how to learn are different from the others in terms of behaviors for organizational processes, use of information literacy skills such as information seeking behaviors. These factors are considered as important elements for creation of organizational memory and it can be said that organizational literacy and information literacy skills and competencies are used in organizations and support organizational memory as well. It is also pointed that access to tacit information is important factor for organizational memory [14]. Moreover Bejinaru and Lordache [15] consider that providing access to tacit information supports learning processes in organizations and allows easier adaptation and implementation of innovative approaches within the organization. As one of the important concepts for organizational development, organizational memory requires effective organizational learning processes that shape managerial perspectives and decision making processes by providing sustainable structures.

4   Organizational Learning

Improvements of organizational learning capabilities are stated as an important factor for organizations in order to gain competitive advantage in sustainable and global meaning with the advancements in information technologies. In this point, it can be said that individuals can contribute to organizational culture by establishing causal links and critical thinking skills that emerge as a result of fundamental information literacy skills. In this regard, studies also confirm that organizational learning is one of the important components of organizational culture [16-17].

Organizational learning is conceptually defined in the literature as a vital capability for organizations that provide contributions to creating solutions for problems and increasing organizational capabilities in order to assure innovative ideas and sustainable competitive advantage [18]. Ghosh [19] explains that organizational learning, differently from individual learning, is based on interpretation and dissemination of information learned as a result of the business processes. Ghosh also states that organizational learning is a concept that occurs as a result of the integration of employees' inventions and assessments with common intellectual models of organizations. On the other hand, Lin and Huang [20] describe that information systems that present internal information to use of employees provide contributions to organizational learning. In this point it is possible to say that technological capabilities that generally support individual learning activities are also important for organizational learning.

According to another point of view stated in the literature, information should be transferred and shared in order to broaden its impact within the organization. In this respect, transmission and sharing of information support problem solving, individual and collective learning, innovations and multi-faceted approaches within the organization [21].

It is also considered that organizational learning and information management approaches are complementary concepts [12]. On the other hand, questioning processes and applications lead to organizational culture and they are shaped by organizational culture as well. Organizations can also develop competencies for information management with the aim of providing competitive advantage, and efficiency in change management, and improving financial conditions. It is stated that they can become a learning organization in the end of these improvements [12].

It is also seen that there are many models and theories explained in the literature with the aim of describing organizational learning and adaptation of learned processes [22]. In the framework of the literature, it can be said that most of the organizational learning processes represented via community of practices (CoPs), were defined as networks organized informally and consisting of actors who have common aim and interests within the scope of organizational learning and information management [23-25]. Playing an important role of organizations' information systems, CoPs provide the transformation of tacit information into explicit information of organizational learning. Moreover, information when it is used individually is perceived as potentially valuable for the organization, it becomes a real value for the organization by bringing learning perception to organizational dimension. This point of organizational information management processes within the scope of organizational learning can be illustrated as Figure 1.

As it is displayed in Figure 1, while organizational information is used by units of organizations, the characteristics of information is changed from tacit information into explicit information by meaning the conceptual expression of information management processes.

It is also emphasized in Figure 1 that organizational information management mainly focuses on content while organizational learning focuses on processes including capturing, creating, processing and using of information. In this context, it might be said that organizational learning is an aim of organizational information management and it contains motivation processes of creation, delivering and using of information in the organization [26].
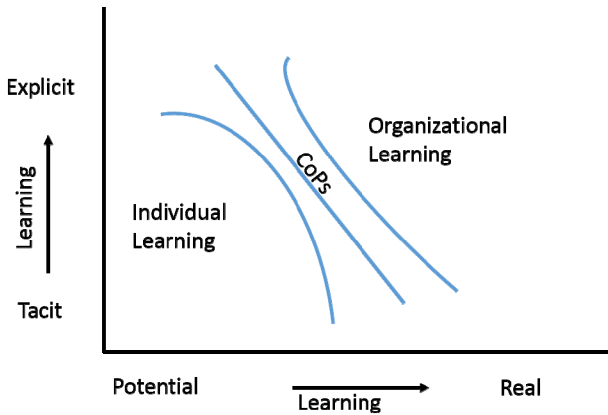
Fig. 1. Transformation of learning and information in the organization

5   Organizational Literacy

Learning processes in organizations are carried out on the basis of organizational objectives, organizational identity and organizational culture. In this context all organizational information management components are affected by the organizational culture and organizational identity. By and large, almost every organization has a hierarchy and all roles and responsibilities are defined clearly and employees complete their works according to assigned roles and responsibilities [27]. In this case, organizational learning processes are formed and improved by organizational workflows, defined roles and responsibilities. It is also acknowledged in the literature that organizational learning is affected by the organizational behavior, norms and organizational culture by requiring active participation of employees and the concept of organizational learning characterized as a process based on common decisions and values of the organization [28]. At this point, organizational literacy can be considered as a concept that is a set of skills and competencies evolved in individuals according to organizational identity, memory and organizational culture. It is also possible to say that the organizational literacy contains all activities related to meeting the information needs, accessing to information, developing strategies for ingestion and capturing of information, sharing and dissemination of information in

the context of organizational benefits. In line with this definition we can infer that organizational literacy as a concept that affects organizational learning and there is an interaction between the organizational culture, identity, behavior and memory. The relationships between these concepts are illustrated and explained in Figure 2. According to organizational literacy - organizational learning relationship model drawn in Figure 2, it can be explained that organizational literacy affects organizational learning processes influenced by organizational memory, culture, behavior and identity. It is also expected in this model that organizational learning affected by organizational literacy has an impact on organizational memory, culture, identity and behavior. Moreover, it would not be wrong to say that organizations who have organizational literacy skills and competencies, develop themselves by learning capabilities, evaluate their workflows and outputs, improve their problem solving skills, adopt new technologies with an innovative perspective and make improvements and developments for sustainable bodies and to become a learning organization [29]. Briefly it is seen that organizational literacy as a concept contains essential skills and competencies that make organizations a learning organization.

According to the literature, it is seen that studies were conducted from different perspectives and generally organizational literacy and corporate literacy terms were used as terminology. UNESCO considers that organizational literacy is a concept that makes organizations stronger and supports them for sustainable competition in 21st century [30]. With regard to this statement, information literacy described as a concept not only for library and librarianship but also it is a concept related to state and private organizations and companies [31]. Lau explains that information professionals can act as experts or consultants for companies in terms of developing information literacy and lifelong learning programs for their organizations. Organizational literacy conceptually used by Blase in 1984 and 1985 in education science by meaning how individuals can be educated better in schools and schools' attributes for individual development [32]. Furthermore it is also revealed that organizations should develop their literacy programs in order to create new opportunities and new innovative approaches [33]. Kauhanen-Simanainen [33], also define organizational literacy as an information flow and set of competencies that are carried out by organizations with the aim of achieving strategic objectives of organizations based on internal and external interactions. As it is explained in the definitions, engagement with the environment is another highlighted factor and it is indicated that organizational literacy is a related concept with learning organization [34].
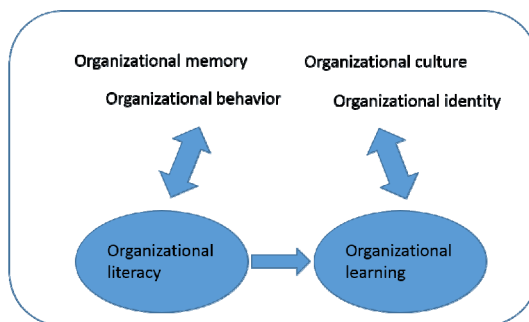
Fig. 2. Organizational literacy - organizational learning relationship model.

On the other hand, organizational literacy is a conceptual road map that directs employees for their workflows, organizational roles and responsibilities. In this context, skills and competencies of organizational literacy are described as taking the systems perspective, focusing on the organizational task & the processes that support the task, understanding roles determined in the organization, understanding individual differences, taking a self-reflective & adaptive stance, understanding of unconscious/covert processes, personal vision & proactive stance, interpersonal competencies, personal mastery, Self-authorization & leadership [35],

Beyond the competencies listed above, at first, organizational literacy competencies are described as reading, observation, evaluation, understanding and interpreting skills and it is stated that individual skills are insufficient by themselves and organizations should develop their organizational literacy structures according to their organizational identity and cultures, values and norms [32]. The studies in the literature indicate that organizational learning and learning organization concepts have an important influence on organizational literacy skills and competencies and it is also an administrative concept for organizations. Furthermore, it is possible to say that organizational culture, memory and identity are major components for carrying out organizational literacy competencies in organizational dimensions.

6   Conclusion and Discussion

Learning processes which determine the nature of individuals and organizations emerge as one of the most important skills in today's conditions that are vital to be able to rapidly adopt the changing conditions. Nowadays organizations evaluate learning processes in organizational level for various reasons such as to remain competitive, flexible and innovative and to maintain the consistency as the age requires. In these processes, organizations are influenced by organizational culture, organizational memory and organizational behaviors. When the organizations operating different sectors and located different scales are evaluated basically within the frame of organization concept components they can apply the organizational literacy concept with common learning methodologies. The organizational literacy concept provides several advantages for organizational practices like establishing true collaborations in line with the shared common vision and objectives in organizations. In the context of organizational literacy, usage of information systems is described as strategic component of organizational development and it is strongly related to information literacy skills of employees. Moving from this point, it can be said that the use of information systems also increase organizational literacy level of organization in the wider sense. Plus, the service trainings are considered as an effective activity on the development of individual and organizational phenomenon for adoption of innovations and sustainable organizational functioning.

Shaping the current decisions in management processes is possible through establishing right communication and it correctly analyze the past and current time differences and similarities. Organizational literacy processes managed with the right processes provide advantages in terms of competition and continuity while it enables the development of organizational culture and organizational memory. In general, it is possible to say that information technology solutions have significant effects on formation of organizational literacy processes. Therefore, organizational literacy

processes include the basic information management process which consists of acquisition, storage and processes of information also known as information life cycle. In the light of this information the following factors are influential for the effect of developing literacy skills both individual and organizational sense:

- The creation and revision of the literacy strategy for an organization within the framework of a program according to the organization's purpose and vision,
- Making investments in employees' education in order to improve their levels and adapt to changing circumstances processes
- Increase investments for information systems
- Planning of training programs or encouragement of participation in such programs that will enables to individuals of the organizations basic literacy skills and lifelong learning skills.

In the framework of these components mentioned above, the advantages and benefits of organizational literacy competencies and skills can be listed as: execution of team works, efficient management processes with the integration of individual and organizational competencies and skills, effective change and innovation management with the productivity in management processes, support of team works in order to develop new ideas and opinions by collective intelligence and cooperation, providing cost and time efficiency with the use of common literacy modules instead of using individual learning processes, creation of systematic solutions for data collecting and analyzing, critical thinking and organizational workflows.

   In this context, it can be concluded that although organizational literacy provides many advantages and benefits for organizations, organization learning and literacy competencies, similar to individual learning, may differ from organization to organization. Learning characteristics also varies widely as a result of identity and cultural differences in organizations. In this regard, the differences should be taken into consideration for further studies that will be conducted on organizational literacy skills.

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Towards Adult Information Literacy Assessment in Latvia: UNESCO Media and Information Literacy Competency Matrix in Practice

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Abstract. The study presents conclusions regarding the possibility of adapting the UNESCO MIL Competency Matrix and developing methodology for information literacy assessment of the adult population. During field research in a sample territory (Kekava district) and within an adult population target group, the levels of information literacy are assessed, and information literacy education needs are clarified. The research results can be used for the development of diagnostic instruments for regional growth, planning of adult education, elaboration of information literacy training programmes, as well as for self-evaluation of information literacy competencies. The study has been carried out within the framework of the European Social Fund project "Development of Innovative Diagnostic Instruments for Regional Growth".

Keywords: UNESCO MIL Competency Matrix, livelihood, information literacy, measurement and assessment, performance criteria, Latvia.

1   Introduction

This study is conducted to develop diagnostic instruments for the assessment of information literacy knowledge and skills of the adult population between the ages of 25 and 62. It is characteristic of this target group to be active socially and economically, and to have the need to adapt themselves to the changes caused by technology in an information society. Information is a substantial daily resource for these people, and its aim is to satisfy their need to obtain or to supplement their knowledge. Information can be deemed as one of the livelihood resources.

The theoretical approach of this study is the 'livelihood' concept, broadened by social and cultural dimensions. The concept 'livelihood' defines resources that can be used or shared to satisfy the needs of an individual, family or other social group. "This may involve information, cultural knowledge, social networks and legal rights, as well as tools, land or other physical resources" [1, p. 12]. An 'economically active population' is a social group, that obtains and processes information to increase or change their qualifications based on the labour market, and/or to satisfy their daily interests. The ability to find various sources of information, to evaluate quality and relevancy, to create new information and communicate it to others, is essential to this

population group "in all aspects of their life, including work and lifelong learning, in relation to their personal well-being, and in their participation in civil society" [2]. The aforenamed knowledge and skills form information literacy.

'Information literacy' is one of the central concepts of this study. Since 1974 when Paul G. Zurkowski first presented a definition of this concept [3], it has raised many discussions [4]. In 2013 UNESCO defined 'information literacy' as „a set of competencies that empowers citizens to access, retrieve, understand, evaluate and use, to create as well as share information and media content in all formats, using various tools, in a critical, ethical and effective way, in order to participate and engage in personal, professional and societal activities" [5, p. 29]. This definition corresponds with the theoretical approach in the study, and forms the basis for development of diagnostic instruments of information literacy.

The analysis of previous studies indicates that the attention of researchers was primarily focused on information literacy in formal education – training and assessment at schools or higher education institutions (e.g., [6-8]). In terms of formal education it is relatively easier to develop assessment criteria to determine the level of information literacy because there are appropriate standards available (e.g., the Information Literacy Competency Standards for Higher Education [9]). When it comes to an economically active adult population, there are no such standards available; therefore it is the aim and main challenge of the study to develop a methodology for estimating information literacy levels and education needs in this population group.

The objective of the study is to analyse the implementation methodology of the UNESCO Media and Information Literacy (MIL) Competency Matrix in assessment of adult information literacy, and to characterize the information literacy education needs of the adult population in a sample territory of Latvia (Kekava district). The study was carried out within the framework of the European Social Fund project "Development of Innovative Diagnostic Instruments for Regional Growth".

2   UNESCO MIL Assessment Framework

In order to examine the information literacy levels of the population and what knowledge and skills (competencies) need to be developed or improved, the study is based on the UNESCO MIL Assessment Framework "which leads to the assessment of proficiency level for grading the various information literacy competencies" [5, p. 60]. According to this Framework, the 1st information literacy level (basic) indicates that a respondent has basic skills and knowledge, "but significant improvements are needed for effective application". The 2nd level (intermediate) indicates that "a respondent has a good level of knowledge and skills, but there are gaps in certain areas". The 3rd level (advanced) indicates that "a respondent has a very good level of knowledge and skills" [5, p. 60]. Additionally, in this study, a zero level is introduced, projecting that there are people who do not possess the knowledge and skills needed for the basic level. This proved to be true when assessing the results of practical tasks. The zero level indicates that an individual's information literacy is so low that it can become a serious constraint for obtaining information – a significant livelihood resource.

There are definite indicators structured into three MIL components describing every level of information literacy. The 1st level indicators of the MIL Component 1 (C1: *Access*) are as follows: a respondent can define his information needs, can choose an appropriate source to obtain information, is able to perform a search, and can temporarily save the information found. The 2nd level indicators show that a respondent is aware that the definition of needs can vary, that there can be at least two sources of information, and that there can be different methods of search and storage of the information. The 3rd level means that a respondent can define his information needs according to the search strategy. He is able to select the most relevant sources of information, has good knowledge and ability to select the most appropriate information search method, and can save the information as required under certain conditions. The zero level indicates that a respondent finds it difficult to define his information needs and correspondingly, to find and select the source of information and to store the data found.

The MIL Component 2 (C2: *Evaluation*) indicators according to levels are as follows: there are no clear evaluation criteria for selection of information sources in the 1st level, as often the first one found or the one easier to access is selected. Organization of useful information for storage and repeated use is neither thought-out nor skillful. The 2nd level indicators of this component show that a respondent knows the criteria for a qualitative information source and applies them in practice, and can organize information for storage and repeated use. The 3rd level indicators show that a respondent can evaluate the relevance and quality of an information source according to various criteria, is capable of saving it skillfully, and organizing it thoughtfully. The zero level indicates that a respondent finds it hard to choose a source, having no criteria for that purpose, and often does not know how to organize information sources for storage and repeated use.

The MIL Component 3 (C3: *Creation*) indicators according to levels are as follows: the 1st level means that a respondent can summarize the obtained information, can disseminate the information, pays no attention to considerations of copyright, and knows about e-services and information exchange possibilities through modern ICT. The 2nd level indicates a respondent can create new information and new formats from the obtained information, knows that there are various types and channels for dissemination of information, and knows how to use them. He adds a short disclaimer to a fragment of information about its origin, and knows how to use e-services. The 3rd level indicates that a respondent can analyze, evaluate critically and create new information obtained from various sources, is aware of copyrights, can choose and use the information distribution means according to a particular group of recipients, can disseminate private information on the web being aware of the risks, and uses various e-services. The zero level indicates that a respondent does not have knowledge to summarize the information or can do it poorly, has low computer literacy and information processing skills, and has a low level of copyright awareness regarding the use of information and data.

3   Research Methodology

The empirical basis for the study is a micro model (23 people between the ages of 26 and 62) of the economically active population in the sample territory (Kekava district). This micro model reflects a proportional distribution of age, education, occupation, gender, and computer literacy. There are three data collection methods used in the study: focus group interviews, questionnaires, and practical tasks. There were two groups of people taking part in the study, and the data of each group were obtained, implementing all three methods consecutively during a single meeting. Field studies were conducted in local libraries.

Prior to the focus group discussions, each participant was asked to complete a questionnaire as to their education, occupation, age, income level and self-assessment of computer literacy. This information was used for analysis of the knowledge questionnaire data and selection of the respondents to perform practical tasks.

There were two *focus group discussions* organized to study the participants' daily information practice, main problems in accessing information, and education needs in this respect. The topics were arranged in three categories: 1) importance of information in the respondents' daily life (situations when information is required; sources where to find it); 2) problems that prevented finding the needed information; and 3) knowledge and skills dealing with information (a lack of specific skills and/or education needs). The discussion transcripts were coded according to the specified data sets (the software NVivo was used for data analysis).

In order to assess seeking, evaluation and use of information, respondents completed a *knowledge questionnaire*. The questionnaire consists of 23 questions on various daily life situations (e.g., visiting a doctor, purchasing a washing machine, finding a food recipe, preparing a greeting card), which can be done through searching for information and its use. The first eight questions (Block A: *Access*) were to determine knowledge in accessing information, including the ability to define a request, knowledge of various information sources and search tools, implementation of a database search, access to found sources, and knowledge of options to temporarily save information. The next seven questions (Block B: *Evaluation*) were posed to learn the knowledge of assessing information and information sources. In these questions respondents had to show their knowledge of various reliability criteria, that is, which criteria should be taken into account when selecting an information source (e.g., assessment of a topic, author, publisher, genre, date of publication), and organizing or saving of useful sources of information. The third group of eight questions (Block C: *Creation*) focused on establishing knowledge of use of the information found. There were questions about information analysis and synthesis, ethical aspects for the use of information (e.g., correct references to the information sources used), preparing information for a presentation, sharing information with other people, and about the knowledge needed for use of sensitive data.

The *knowledge questionnaire* consists of three types of closed-ended questions: 1) multiple choice answers where there is only one answer variant to be selected, 2) multiple choice answers where one can select several answers, 3) rating scale questions. The prevailing type of questions is multiple choice, where there is only one

answer to be selected (65%). It has to be noted that the main problems with questionnaire processing are multiple choice answers, where several answer variants can be selected, requiring thinking about coding in terms of different combinations of answer variants, and associating them with the respective levels of information literacy. But questions of this type are developed with the purpose of "enlivening" the questionnaire and making sure that the answers are not too predictable. A correct definition of questions enabling respondents to understand them and to be able to assess the level of information literacy of population is a challenge in development of the quesionnaire. The questions were improved several times, including after a pilot test. Questionnaire developers often discussed definitions of knowledge and skill levels. There were several reasons for differences in opinion: 1) diversity of the best possible action in obtaining and using information; 2) lack of needed information literacy standards for daily life; 3) daily information search patterns observed, which are often based on the principle of least effort, selecting the ease of access information source, and ease of use search tool, and trying to spend as little time as possible on it [10].

In order to establish the population's skills in access, evaluation and creation of information, they were required to complete some *practical tasks*. The *think aloud* method was applied in order to record the activities of participants when performing practical information searches in the Internet environment. This method records the information search process (navigation) most precisely. It includes the respondent's thoughts and motivation for 1) selecting a particular way to search, 2) selecting specific information sources, 3) questioning the credibility of the source, 4) making a final selection, and 5) summarizing the obtained information in a new form. The screenshot recording software *BB Flash Back Express* was used to record the sequence of doing a practical task. This enables precise and qualitative recording of screen activities, including sound, and also furnishes data analysis.

Using the principle of coincidence, each respondent was given the opportunity to select two practical tasks. These were related to daily life situations (e.g., job hunting, planning of trips or visiting cultural events, health issues, shopping. Task example: " 'Spring fatigue' may be caused by lack of iron in the body. Please find in your opinion the three most reliable sources of information and give the three most common herbal products that are recommended for use. Please summarize the information found in the Word file, name it 'Health', and save it on your desktop in a folder called 'Tasks' "). The information found had to be summarized, compared and saved or sent by e-mail.

Only four participants from each group of respondents took part in doing practical tasks. They were selected based on the questionnaires (age, gender, education) completed prior to the focus group discussions. The respondents' computer literacy self-assessment was also taken into account. Every respondent had an observer who followed the process, provided reminders of the conditions of assignments, but was not allowed to interfere or help.

Think aloud results are processed and analyzed according to C1: *Access*, C2: *Evaluation*, C3: *Creation*. All records are transcribed and supplemented with comments on the activities on screens and screenshots. Data are coded according to the subject matter of every component. The information literacy level is assigned to every component and the overall average of all three components is calculated.

4 Information Practice and Information Literacy Education Needs of Adult Population

The information practice and education needs of respondents were examined during focus group discussions. In total 23 participants, whose average age was 45, took part. Participants represented various employment groups (e.g., librarian, lawyer, chemist, teacher, historian), including some unemployed people and homemakers. Two librarians (one in each focus group) were enrolled to examine whether senior age (in the first case) or lack of professional education in librarianship (in the second case) leads to the same information literacy problems as can be observed for other residents of the district.

In order to analyze the opinions of participants, the content of discussions' transcripts was coded in six data sets: 1) subject categories of needed information, 2) information sources, 3) information communication channels, 4) problems in obtaining the information, 5) lack of specific knowledge and skills, 6) information literacy education needs.

The first data set, 'subject categories of needed information', indicates the respondents have a daily need for information in 23 subject categories (53 subjects). The categories refer to entertainment, district life, gardening, housekeeping and domestic animals, music, medicine, sports, and public transport inquiries, etc. The interests of respondents in employment or government information (e.g., submission of income declaration, annual report of a public organization, application for area payments), suggest the economic and social activity of participants. The largest number of references coded refers to district or parish life. This is also the most frequently mentioned subject category in focus groups. This information need would seem to be natural in that a participant would want to manage life in his/her place of residency (in this example, Kekava district).

When analyzing for the second data set. 'information sources', respondents (regardless of their age, education and occupation) prefer websites and Internet search engines (e.g., Google, draugiem.lv, kultura.lv). Another significant group of information sources is people (e.g., colleagues, friends, officials, neighbours, postmen, accquaintances). It is followed by databases and printed sources (books and periodicals). The Internet is also the most significant communication channel in the data set 'information communication channels'. A reference to the prevailing role of the Internet lets us draw a conclusion that both computer literacy skills, and information search and evaluation skills, are important to respondents to ensure the quality and relevance of information obtained.

A vast majority of what was provided in the data set 'problems in obtaining the information' refers to the scope, volume of the information available on the web and usability of sources and software. However, there are some problems that can be eliminated through the improvement of information literacy. The most substantial problem of this group is not having a good command of a foreign language (if there is no information on the Latvian web or it is not sufficiently detailed and specific). This is followed by a lack of software usage skills (e.g., forgot how to do things, or has no understanding of the most recent software versions). This conclusion correlates with the results in the data set, 'lack of specific knowledge and skills'. Poor foreign language

skills were also among the most often mentioned, including the inability to act on the required level with Internet search engines or computers in general.

The last data set, 'information literacy education needs' should be viewed both in the context of problems in obtaining information and a lack of knowledge and skills. Education needs refer to information search (Google options and tools, easiest and shortest ways for finding information), information evaluation (credibility check of information and establishing objectivity), information processing and analysis, presentation of information (creating diagrams or charts). Acquiring technologies was emphasized particularly (e.g., software, usage of Internet multimedia platforms, creation of blog entries). Similarly to the aforesaid, foreign languages were mentioned in this data set too (not only English, but also Russian and German).

Content analysis of the focus group discussions showed training is needed in all three components of the MIL Matrix. Particular attention should be paid to computer literacy when organizing training in any of the components.

5   Assessment of Information Literacy Levels

5.1   Knowledge in Access, Evaluation and Creation of Information

This part of the paper is dedicated to the overview of the survey results in two major cities of Kekava district: Balozi (65 respondents) and Kekava (33 respondents). The survey took place between April 24 and May 17, 2014. The paper questionnaires were distributed primarily through libraries and kindergartens in Balozi. The selection is thus biased towards the visitors of the establishments mentioned. This partly explains why 76% of respondents are females, as well as why 80% of total respondents have higher education (32% − a Bachelor's degree plus 39% − a Master's degree). Moreover, 5 out of 19 respondents without higher education are current students.

The division between the age groups was more even: 37% (25-34 years old); 26% (35-44 y.o.); 17% (45-54 y.o.) and 20% (55-62 y.o.). The majority of respondents (69%) work full time, but the earnings vary significantly. Almost one quarter of persons (23%) receive between EUR 231-400 as monthly net, while others (22%) earn EUR 401-550 per month. 21% earn more, but only 4% receive more than EUR 1000. Approximately 4% earn less than EUR 100 per month.

The knowledge questionnaire was split into four blocks: Access (A), Evaluation (B), and Creation (C) and background demographics (D). The answers and combination of answers from the first three blocks were then leveled to the pre-constructed information literacy level scale. Four levels were defined for each question, from 0-the lowest to 3-the highest, 0-level was most often assigned for "do not know" answers.

Respondents' information literacy levels varied greatly even in one block of questions. Level 2 responses to questions in Block A applied to the majority of participants (Block A considered the choice of different information sources, e.g., finding a good therapist, or short-term storage of data, such as storing a recipe for one-time use). In a search of different kinds/formats of information (e.g., searching for a video from a specific popular event, or a book from any of the libraries) levels 2 or 3 were achieved. 91% achieved level 3 for the question regarding Internet search

tools; but 67% achieved only level 1 on the optimal method for looking for a specific book (with no limitation to the source or format). On 5 out of 8 Block A questions, 10% or fewer achieved level 1; although on 2 of these 8 questions from Block A more than 50% (56% in the first case, and 91% in the second case) achieved level 3. Thus, the average level of the respondents for C1: *Access* is level 2.

Of the Block B questions, one was about the criteria people apply to evaluating information source reliability and accuracy. Six criteria were proposed and leveled separately based on the respondents' frequency of attention to each (author, date, publisher, design/formatting, topic relevancy, annotation/summary/reviews). More than 55% of respondents pay attention to author and topic, and least often to formatting. Close to 70% of respondents know how to assess data reliability and more trustworthy sources, as answers to 3 Block B questions proved. Moreover, 74% of respondents use some logical systematization when saving information for the long-term, and 51% are aware of the newest Cloud storing technologies. Only one question was problematic in this section, slightly spoiling the evident level 3 for the C2: *Evaluation*. This was a more specific question asking about choosing the best source of a modern definition for the word "democracy": 49% of respondents achieved level 2 and only 38% level 3.

The questions from Block C were least homogenous. The first one, ethical uses of images online, resulted in 35% receiving a level 0, with an additional 14% self-selecting "do not know the correct answer". Only 23% got level 3 for this question. The situation improved with the next 3 questions, which showed 65% of respondents know how to process written information from different sources; 59% make correct conclusions based on the data found, and 60% effectively sort different sources of information according to reliability. 46% of respondents are more knowledgeable about sensitive data processing and specifically how to help another person work with Internet banking with no risk to either party; but only 28% fully understand how to share data, such as photos, in the most private way.

The results show C3: *Creation* is the most challenging MIL Component in terms of overall skills and knowledge required. Although respondents got level 2 and even 3 for some of the questions, the lack of understanding about the correct way of doing things is obvious.

This survey could be developed into a self-assessment information literacy tool. It would be improved using the results of more in-depth research provided by different methods (e.g., *think aloud* observed further), and further detailed comparisons of the respondents who took part in all the assessments – focus group, survey, and practical tasks.

5.2   Skills in Access, Evaluation and Creation of Information

Processing of practical tasks is analyzed and assessed in this part of the paper. The data gathered through the *think aloud* method indicates the highest results were obtained for the C1: *Access* (average information literacy level – 2, mod – 3). A vast majority of respondents used Google to search for information. There were no problems in terms of selecting keywords, since wording from the assignment texts was often used as keywords.

It was slightly more difficult to deal with the C2: *Evaluation* (average information literacy level – 2, mod – 2.5). Many respondents selected and viewed only the first or first three search results found from the list of information sources presented.

Most difficult was the C3: *Creation* (average information literacy level – 1, mod – 2). All assignments requested respondents to summarize and compare information from different sources. Most frequently, participants simply copied the information, neither creating their own text nor referencing the copied one. This is a stage when the problems of computer literacy (e.g., ability to copy texts, save files, create a new folder) were most evident. Two respondents experienced problems with using e-mail when dealing with the assignment. Additionally, in some cases e-mail sending etiquette was not observed, lacking text in the message body or signature.

Comparing the results by age groups, the older respondents received the highest assessments. Although they took longer to complete assignments, they assessed the information found more thoroughly and summarized it more skillfully.

The *think aloud* method clearly showed the online problems experienced when seeking daily life information. Although 75.5% of respondents had self evaluated their ability to find needed information online as high, the results of practical tasks showed many shortcomings. This applied to searching for information, its evaluation, and especially further processing – summarization, creation, saving, and sending. In focus group discussions, respondents self-acknowledge their deficiencies (e.g., comparison and evaluation of information sources, usage of an e-mail or software, comparison of prices). However, the *think aloud* method helped to determine additional problems, such as, defining the need for information, summarization, and storage of information.

6   Conclusions

1. The division of competence indicators into four (0-3) levels within three MIL components used in the study provides several benefits: a) it enables more objective assessment of information literacy, b) it allows more specific identification of poor/lacking knowledge and skills that have to be acquired or improved in order to achieve the highest level.
2. Survey analysis showed a questionnaire might be a good self-assessment tool for information literacy if the leveling of questions is constructed carefully and updated according to the evolving IT environment.
3. Although in terms of data collection and processing, practical tasks on searching information on the Internet and use of *think aloud* are time consuming, they provide credible and accurate results about people's information literacy. This method provides a deeper view into the habits of respondents and gives an opportunity to develop a much more precise information literacy self-assessment tool. This method helps determine lack of knowledge and education needs.
4. Application of various methods in the study ensures unbiased results because it compares the opinions expressed in focus groups with questionnaires and the results of practical tasks. Moreover, the education needs established during the target group discussions supplement those recognised through practical tasks.

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Evidence-Based Learning Approach in Evaluation of Information Literacy Education

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Abstract. The main aim of the paper is to present continuing research as a tool for more effective achievement of educational goals defined within information literacy (IL) education. Our primary resource is proven knowledge of the evidence-based learning approach, which we applied to information literacy education. Our article is designed as a series of case studies, each using different research methods inspired by Donald Kirkpatrick's Four-Level Evaluation Model. We focus on this particular model, because it corresponds with our aim to strengthen students' satisfaction and learning results. Each level of the model defines research objectives, achievable by application of different research methods. In our paper we present the practical application of selected research methods (implemented in IL lessons) to address each of the four evaluation levels. The described methods can be flexibly combined in order to obtain a complete picture of the real efficiency of investigated learning activity.

Keywords: Evidence-based learning, information literacy effectiveness, Kirkpatrick's Four-Level model, research.

1 Evidence-Based Learning

Various services labelled as "evidence-based" have been reported for some time and have been discussed with increasing frequency, among them: evidence-based medicine [1], evidence-based practice [2], evidence-based policy [3], but also evidence-based librarianship [4] and evidence-based teaching [5], evidence-based education [6] or evidence-based learning [7]. The origin of the approach is primarily identified with the first-mentioned field (medicine); including medical education [8], but the meaning has gradually shifted to the current delimitation: "the integration of professional wisdom with the best available empirical evidence in making decisions about how to deliver instruction", where professional wisdom is "the judgment individuals acquire through experience", empirical evidence is "scientifically-based research" and "empirical data on performance (is) used to compare, evaluate and monitor progress". [9] It follows from this that a combination of professional wisdom and research is necessary for effective education. If one of them is missing, the potential for effective education is not fully realised.

Even though the notion of evidence-based learning is relatively new as a term, its effects have been felt for much longer and also by those who have never heard of this concept. As pointed out by Davies: "The demands being made upon teachers and others who provide education call out for educational practice to be based on the best available evidence as well as the professional skills, experience, and competence of teachers." [6] Probably everyone who has lectured at several educational events has at least sometimes asked themselves whether they have managed to pass to their audience intended knowledge in such a manner that the audience is able to receive, retain and effectively use it. Asking this question is the first step toward evidenced-based practice. But if we also wish to get answers, we need to take the second step, which is to explore on our own initiative by engaging in research and reflection. This can bring positive effects not only for the teachers who will be able to improve their teaching, but also for the students. This was the central argument for providing nation-wide support for research in education in the USA by the No Child Left Behind Act [10].

The increasing emphasis on implementing student-centred research activities in the learning process points to the fact that the evidence of impact on the learning experience should be collected systematically. According to JISC such methodology "should display at least some of the following characteristics: be naturalistic (focusing on informal as well as formal learning), use more than one source of data, sample purposively (choosing learners who are characterised by behaviours or qualities of particular relevance), be mixed mode (e.g. diaries; observations; interviews; focus groups), employ semi-structured interview schedules and use open-ended methods (allowing unexpected issues to emerge)." [11]

The primary goal of our contribution is to stress the necessity of including cyclic or continual research methods in information literacy (IL) education. It seems that recent IL education may be characterized as specializing in a wide range of study areas. Thus, it is obvious that high-quality empirical data constitutes a precondition for developing effective student-centred lessons. Evidence-based learning in IL education leads to more effective achievement of educational goals.

As in other areas of research, the specific procedure to be applied in education research projects depends on the question that we ask. The approach in situations when we want to find out what the students already know and what we can safely build on without concerns about missing information is very different from a situation when we are interested in finding out whether students are able to put what they have learnt to practice. Each question has its merit, but provides only a partial picture of education. In order to get a more holistic view, various aspects of education evaluation are needed for a complete examination of the effects of education.

2   Kirkpatrick's Four-Level Model

Kirkpatrick's Evaluation Model is a specific approach to evidence-based learning. We focus on this model, because it corresponds with our aim to strength students' satisfaction and learning results. The practical experience with conducting research according to this approach is presented in detail.

Donald Kirkpatrick's model was first introduced in 1959 [18], primarily as a reaction to the demand for proving the effectiveness, value and benefit of education for business. It is presently one of the most widely used models for education evaluation. Its prevalence is also based on the fact that it reflects the current constructivist conception of instruction. Three main reasons for evaluation of education according to Donald Kirkpatrick are [11]:

1. To learn about the ways to improve future educational programmes
2. To decide whether to continue with an educational programme
3. To justify the very existence of an educational programme

The model is comprised of four hierarchically ordered levels revealing, one by one, the levels of effectiveness of the educational process. It thus enables an evaluator to try to answer the following questions: To what extent were the participants satisfied with the educational activity? To what extent did the participants obtain the expected knowledge and skills as a result of attending the educational activity? To what extent do the participants apply the knowledge and skills obtained to their everyday work? To what extent have the planned objectives of a development project and subsequent support activities been achieved? Donald Kirkpatrick's model is based on the assumption that "the desired result of the program is improved behaviour, with positive results to follow. If changes in behaviour result without measuring learning, there is no way to tell whether the change came from the training or from other sources. And if behaviour change is not evaluated, there is no way to tell whether the results came from the training program or from other sources." [12]

Kirkpatrick's model serves primarily as an education evaluation tool. Effective needs assessment is important also before the training [16], so that the content may be adjusted to a particular group (student-centred learning). It may turn out that failure of a lesson need not be caused by its quality in general, but rather by not meeting the participants' requirements. For example, it is evident that a top-quality university lecture on theoretical physics will not be effective for children starting their primary education. A needs analysis makes it possible to identify the characteristics of the students, and to tailor the lesson to their needs. Evaluation then makes it possible to subsequently observe any differences to determine whether they indicate a shift as a result of the education programme. This can be achieved by either a quasi-experimental or an experimental approach. The differences may be identified on all levels of the Four-Level model.

2.1   Immediate Reaction to Education

The first level of measurement tries to evaluate immediate student reactions to an educational activity (such as a seminar, a workshop, an e-learning module). Kirkpatrick conceived reaction as: "how participants feel about the various aspects of a training program." [17] He argued that a positive reaction is not a guarantee of effective learning but that a negative reaction guarantees refusal of (or non-participation in) the educational content.

Measuring the reaction is very easy to do and therefore it is also very often done, but not always in the right way, as when a survey does not meet quality research standards [17]. It is necessary to have a clear research goal, understandable questions, and quantifiable answers, to ensure the anonymity of participants, and it is desirable to include the possibility of respondents adding a comment. The result of level 1 research is a measure of participant satisfaction and motivation to learn about the topic. This level of evaluation is a subjective reaction, and this determines the research methods usually applied. They should be based on quantitative self-report by participants. The immediate reaction must be measured; and therefore it is necessary for respondents to fill in the sheet at the end of the lesson or very shortly after it.

Questions should reflect the defined research goals. For instance, Kirkpatrick includes questions pertinent to needs, ratio of lecture to discussion, 7 questions about the programme leader (e. g. keeping the session alive, using aids and illustrating points) and open questions on how to improve the lesson [17]. The IDEA evaluation is often used at universities for Kirkpatrick's level one evaluation [18].

We assessed students' satisfaction with the study environment, study content and the lecturer. In accordance with the research methods of Kirkpatrick's first level, we used short paper and pencil questionnaires (so called smile-sheets). We tried it both for children and adults. A simple version was prepared for 10–11 year olds. There are three emotion icons (emoticon) (smiling, neutral and sullen) and each child selects one of these emoticon when leaving the lesson to give feedback on how they liked the teacher, teaching methods and content by indicating which facial expression they would make if they should either come to the same lesson again or to evaluate it for a friend. Children expressed their reaction and added an oral comment on the teacher or classmates. This activity helped to convey the reaction of the children to the teacher; otherwise children would leave the lesson without expressing their reaction.

Another type of tool displaying immediate students' response to the educational activity just delivered were smile-sheets designed to be used in one-off information education lessons that took place at Masaryk University and were aimed at a target group comprised of students mainly aged between 20 and 25. The design of the questionnaire was based on an adjusted five-point Likert scale, which, instead of an evaluation reaching from "extremely satisfied" to "not at all satisfied", consisted of five emoticon indicating the level of satisfaction with a particular aspect. The three main aspects evaluated by this questionnaire were: content and organization of the seminar, the instructor and overall assessment of the lesson. A significant component was also an open question allowing participants to freely express their opinion on anything that they consider essential immediately after the lesson.

The purpose of the survey was to identify organizational and content problems which can be reduced to improve the lesson. This can lead to better students reactions and motivation to learn. But good results at this level are not enough – a lesson can be easy and enjoyable but with no learning effect. Therefore, it is necessary to continue to the next level of the model.

2.2   Knowledge Gained

The second of Kirkpatrick's levels explores the change in one or more areas of participants' knowledge, skills or attitudes due to an education activity [17]. This change is expressed by the quantity of knowledge transferred during a lesson, and therefore it should also be measured immediately after the lesson. On the other hand, the knowledge a participant is able to retain can be different. Therefore, the notions of immediate retention and delayed knowledge retention are sometimes employed [19].

On this level, Kirkpatrick [17] again recommends quantitative methods with statistical evaluation when knowledge is measured both prior to and after the lesson for a comparison. Further comparison should be performed with the use of a control group. The measuring should be as objective as possible. These planning and evaluation procedures require knowledge of measurement theory and statistical methods. Pre- and post-tests of various types (sometimes standardized) are applied. The aim of measuring at this level is to find out the amount of knowledge acquired by individual participants.

In order to map the progress of knowledge in the information literacy e-learning course, we assigned a pre-test and a post-test. The tests contained a series of 22 multiple-choice questions [only one answer]. In addition to a choice from three possible answers, the students were offered also the possibility of answering "I don't know", the inclusion of which helps to reduce distortion of test results through guessing. The students were urged to answer only when they knew the right answer; otherwise they were asked to select the "I don't know" option. The tests were fully anonymous. The aim of the tests was to map the initial knowledge of the group of students attending the course and subsequently to get an idea of the knowledge with which they left the semester course. The pre-test and post-test design often includes testing with a control group, ensuring a strong level of internal validity. "The principle behind this design is relatively simple, and involves randomly assigning subjects between two groups, a test group and a control group. Both groups are pre-tested, and both are post-tested." [13] The difference between the groups on the post-test, controlled by the difference on the pre-test will indicate whether the treatment group were more successful in the education process. However, in our case a control group was not used. The need for its employment is also mentioned by Naugle [18]: "The final guideline offered for evaluating training for resulting behavioural change was that a control group, not receiving the training, is to compare the difference between those who received instruction and those who did not. While we obviously cannot let a group of traditional students go a semester or a year without instruction to verify the benefit of instruction, we can utilize other forms of statistical controls." The tests examined the areas of information literacy that are taught on the course – reaching from information search through analysis and evaluation of information through to publishing. The results of the testing showed measurable progress in students' knowledge.

Another method was a didactic test which served the purpose of comparing the knowledge of both LIS students and librarians who took part in the lessons on information safety. The electronic test with a few questions about completed education dealing with the topic was not connected with a concrete lesson, but it was used to gain an overview of the knowledge of respondents concerning information

safety, which was a topic covered in seminars held during several previous terms. It was sent universally to all available librarians and LIS students, not only those who completed some kind of education dealing with the topic, and therefore those who had not complete such education formed a non-random control group. The results were statistically processed. This test confirmed different knowledge in the group that received the instruction and in the control group and identified weak topics which should be taught more extensively. Secondary findings concerned motivation and participants' characteristics connected with better results in the test.

Level 2 evaluation is often the end of the evaluation process [16], but it is still not complete. When someone has knowledge but is not able to use it, we cannot speak about effective learning. That leads us to the next level.

2.3   Long-Term Effects

The subject of the third level of Kirkpatrick's Model is to identify the long-term change in participants' behaviour (e.g. three to six months after the lesson). Not even a first-rate educational programme will ensure that the knowledge gained will have an impact on the results, without being intentionally, continuously and consistently supported and consolidated. Students cannot change their behaviour before they have a chance to do so. It is equally impossible to predict when such behaviour change will occur.

The methods used for third-level measurements usually have a qualitative character. Among other things, this is due to the fact that "it is difficult to define standards that can be used for measuring the application of learning and the question whether any changes in behaviour can be attributed to training (or some other factors) can always be asked" [16]. The methods for measuring the long-term effects usually include an interview to find out the views of students or teachers who work with the person who attended the course. These people can report any change in the behaviour of the trainee using methods such as 360-degree feedback. In addition self-evaluation can be used and observation methods such as mystery 'shopping' or 'calling' techniques.

Qualitative methodology, specifically a focus group aimed at identifying the ability and willingness of the students to utilize the acquired knowledge and skills effectively, was used to evaluate students' attitudes toward an information literacy e-learning course. Another method was the 360-degree feedback realized in the form of six interviews.

The above-mentioned focus group series was carried out as part of an e-learning course called Information Literacy Course. The aim of the series was to find out whether the students have consolidated their knowledge and skills and whether a change in their behaviour has occurred. Given the nature of the course, this element was evaluated in particular with regard to changes in their attitude to searching for scholarly information, its evaluation and sorting, as well as producing scholarly texts and their presentation. A detailed scenario examining all the aspects connected with the passage of students through the course was prepared for the focus groups. The focus groups took place six months after the end of the semester course. This was based on the assumption that it is a sufficient period of time for the students to absorb

the acquired knowledge and skills and to demonstrate using them in practice. There were three groups of students interviewed, each group consisting of 7–10 participants. The discussion was moderated by an experienced moderator whose role consisted primarily in generating and maintaining group dynamics, which is essential for active sharing of information by a focus group. The focus groups showed that the majority of the students who completed the course were satisfied and, most importantly, revealed that students act more cautiously when handling information on an everyday basis, including information search and evaluation practices. Furthermore, students view themselves as more cautious when selecting resources for their term papers and final theses. A change in behaviour was thus apparent in several areas taught on the course.

Six interviews were conducted to obtain 360-degree feedback about an internet safety lesson provided by a library. The lesson was prepared for children in cooperation with their school. In the interviews, a teaching librarian, the director of the library, the deputy director of the school, a teacher, a pupil and her mother were asked about their evaluation of the lesson. The interviews were held 6 weeks to five months after the lesson. Questions were directed at the behaviour of pupils a few days after the lesson and also at the actual time. Interviewers agreed that the pupils spoke a lot about the topic immediately after the lesson. Discussion of the topic then fast decreased and the pupils were not able to repeat what was the concrete content of the lesson, but in problematic situations they remembered parts of it and were able to identify risk behaviour and realize possible consequences of their behaviour.

If data are collected conscientiously and reflect the reality under examination well, they can be: "used to assess students' needs and encourage educators to meet those needs. The data can also be used to evaluate teachers' efforts to meet those needs." [18]

2.4   Results

The fourth level shows the tangible results of a programme and is accepted mainly in the commercial sphere because it is focused on the return on investment in education (in general). This is the only level that has not been performed independently and is therefore presented mainly theoretically.

The fourth level evaluates the overall effectiveness of instruction, the outcome in commercial sphere or the benefit for an institution brought about by a student's improved performance. This process is both time-consuming and financially demanding, but it is useful from a comprehensive point of view. The objective is to show tangible results of a programme. These results may include such factors as quality improvement, cost reduction or return on investment in education. The theory of return on investment in education was developed as an extension of Kirkpatrick's model by Phillips [15]. It is "a comprehensive approach for measuring the effectiveness of training that begins with planning the project, and then goes on [sic] techniques for collecting data and its analysis and finally, ends with a final report. In compares [sic] with the conventional financial ROI, as the ratio of earnings and investments, ROI for learning and development takes into account earnings as net

benefits from education programs (monetary difference between benefits and costs of the program) and investments as the real costs of the program." [14]

The process of evaluating an educational activity at the third and fourth level of Kirkpatrick's Model is best able to explore the educational effects of information education. This concerns not only students' satisfaction with the course or the knowledge and skills they acquire, but also the long-term changes noticeable both at an individual level and on a society wide level. Educational effects can be thus understood as long-term consequences and effects produced as products of educational processes. They affect the lives of individuals as well as the entire society in its economic, political, cultural and other characteristics – such as the impact of education on professional fulfilment and income of individuals, their cultural and political orientation, media preferences, leisure activities, consumer behaviour, labour productivity, and experience of unemployment.

We can also look at the relationship between the third and the fourth level – if the participants change their behaviour and consistently apply the acquired knowledge and skills in practice, productivity of individuals as well as of the whole enterprise increases.

Interviews in the 360-degree feedback mentioned above mapped also the opinion of interviewed managers and a parent (hierarchically higher levels). We consider that this data contributes to research on the fourth level. In order to cover this level, questions concentrating on actual effects of the change on the environment were included. However, in the interviews, these questions were added as a supplement to the semi-structured interview scenario only for half of the respondents, thus providing only a limited measurement of the fourth level. Since it was a lesson for children, it was difficult to identify the effects on the environment. Despite these limitations, some effects were identified. These were described by one interviewee as cultivation of children's online environment experience, including active dealing with problems and possible solutions to them that the child is familiar with, instead of ignoring them. There was also a secondary effect of a moderate increase in reputation of the library in the eyes of all interviewees as a result of helping to address this social problem.

The advantages of the fourth level of measurement are reflected in determining the outcomes of training and its connections with educational goals [14].

3   Conclusion

The evidence-based approach in the field of IL education brings constant feedback about the ongoing education to the lecturer, supplies valuable data revealing the effectiveness of individual forms of IL education and helps to predict the course of further education activities. Data processed to a high standard can be used also as a compelling argument to substantiate the effectiveness of the costs expended or to support a potential application for granting additional resources for development of information education activities. Our contribution stresses the positives of application of Kirkpatrick's model to designing effective IL education. To implement the model, various research activities were conducted. Measuring at each level brings partial results, which when combined assist in developing educational efficiency, but in the

case of getting the results together, new emergent evidence appears. The core goal of our paper is to demonstrate, that the Kirkpatrick's model application to IL education is not only a theoretical concept, but a flexible practical attitude which can bring many positives to both educator and students.

The first level tried to evaluate immediate student reactions to an educational activity (environment, content and the lecturer). Short paper questionnaires (smile-sheets) showed that some aspects of a lesson organization could be rethought (e.g. classroom equipment or air conditioning). The second level explored the change in knowledge and skills, usining a pre- and a post-test and a didactic test. The results showed that themes requiring deeper attention were identified. Qualitative methodology, specifically focus groups and a 360-degree feedback based on six interviews, were used within the third level to identify the long-term change in participants' behaviour. These aspects, which were identified as positive and long-lasting for students' learning, were enriched (e.g. effective multimedia materials, such as videos and audio podcasts, were accomplished by webinars). The fourth level is focused especially on measuring of economical, including financial benefits including reduced costs, higher quality, and lower rates of absenteeism [17]. The transfer of children's knowledge to a productive population (parents) was verified.

Smith [10] emphasizes one of the problems of evidence-based learning is the absence of a platform for researching and sharing of good practice in lessons, as well as for benchmarking and establishing contacts for assistance in introducing research into education.

Although most teaching librarians are not research experts, some are and the field of IL is not so vast and, most importantly, Europe is not so diverse that segmentation is necessary. On the contrary, it would be advisable to join forces and share good practice. Perhaps collaborators for creating an online platform available as and when needed to everyone interested will appear, or this role will be fulfilled by conferences such as ECIL. In any case, it makes sense to build such a database, and to strive for research-based resources with empirical evidence of their effectiveness. This could lead to sharing of good practice in order to achieve what we are all concerned with – improving information literacy in society.

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Diving into Deep Water: Development of an Information Literacy Rubric for Undergraduate Course Syllabi

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Abstract. If one wants to change the pedagogical focus of the educational ocean of a university, there is the need to dip into the profound waters of the curricular structure, a complex task to achieve by libraries. In this paper, the strategy to change academic courses, the basic blocks of curriculum, of undergraduate programs at CETYS University, with a generic information literacy rubric for professors, is described. The rubric generated by a faculty and library committee offers guidelines on how to implement information fluency pedagogical approaches and add quality information resources to their syllabi.

Keywords: Information literacy pedagogy, information literacy syllabus rubric, information instructional design, higher education.

1 Introduction – Curriculum, Course Syllabi, and CETYS

Libraries play significant roles in offering information literacy (IL) programs to their users, especially those that are attached to educational institutions, such as universities that are the focus of this paper. The range of library IL activities to support students to develop the ability to locate, retrieve, evaluate, and use information, is long but most of them are remedial actions that have less impact than IL embedded in the curriculum. When IL is part of the pedagogy practiced by professors, the learning outcome of information-skilled students is assumed to be more effective [1]. However, to reach such an IL pedagogical goal is like diving into the depths of an ocean. It is a complicated task because of the complex organizational structure of universities, especially when it comes to changing the curriculum and its building blocks courses, because they are at the heart of the educational process. Here, a rubric with a set of information literacy guidelines to help faculty in drafting course syllabi is described. This tool was developed at CETYS University (Centro de Enseñanza Técnica y Superior), an institution that has adopted information literacy (Information culture is the official term) as part of the graduates´ profile according to its strategic plan (adopted in 2008). The plan and its implementation were the basis for gaining accreditation by the Western Association of Schools and Colleges (WASC) from the

United States (USA), an organization that in turn requires information literacy outcomes. The course syllabi rubric discussed in this paper is a strategy that follows earlier ones, such as the creation of a library position for each campus library to address information literacy in the curriculum, under the name of Information and Learning Development Librarian (with the acronym DIA in Spanish). These information professionals have the primary role of embedding information literacy in the curriculum by helping professors develop information literacy activities, and facilitating classes, when required, as well as other standard reference instruction roles. CETYS University is also in the process of assessing information literacy outcomes with a locally made instrument and by using a sample iSkills test, as well as being the only institution in Mexico and Latin America to be piloting the SAILS test in its two recent development stages, an experience that is reported in a separate paper at ECIL 2014 [2].

At the heart of CETYS educational goal is the curriculum, a learning plan that refers to the content of the student's study program, and more specifically, to the content organization of what students should learn and the order that it must follow. Gimeno [3] states that it is the curriculum, which avoids arbitrariness in selecting what is taught, while it "channels, models and limits the autonomy of faculty." In this sense, the curriculum defined by universities through their learning plans and syllabi seeks to integrate the best possible forms of understanding and learning to meet the needs and demands of today's society. Courses are, on the other hand, vital blocks that are the responsibility of faculty whose teaching outline materializes by creating a syllabus that in turn becomes the learning facilitation plan. In other words, the curriculum is prescriptive, while course syllabus is descriptive and is the professors' responsibility. The syllabus becomes the backbone of the course and it contains general information about the course, such as who is the professor, his contact data, the learning objectives and outcomes, a description of the topics to be covered in the course, the learning exercises, reading materials, assignments calendars, grading principles, and course ethics. Quality Matters [4], an organization devoted to support online education, has a rubric with a set of 8 general standards and 41 specific ones to evaluate the design of online and blended courses. The critical components of the Quality Matters rubric are: learning objectives, assessment and measurement, instructional materials, learner interaction and engagement, and course technology.

Rubrics, in general, have the added benefit of recording knowledge, skills and attitudes (behavior and values) observed in a product/task or in the process of performing such a task [5]. Most authors agree on defining the scoring rubrics as guides that help describe the extent to which a professor is implementing a process or product to thereby provide feedback. This scoring tool is usually of two types: holistic and analytic. Holistic rubrics establish parameters, four to six, to determine if what is being evaluated has general characteristics of excellence, good, fair or poor. Instead, the analytical ones, that is the case of the CETYS model that will described later, sets out the detail of each criteria of the product or process to observe, according to the objective or goal to reach, as well as the range of attained achievement in each specified criteria. This framework allows the user to set a specific assessment for each of the criteria and thus provide more appropriate feedback. Good examples of learning rubrics and discussion of the concept are provided in the RAILS (Rubric

Assessment of Information Literacy Skills) site, a project and resource clearinghouse for faculty and academic librarians [6]. A Syllabus, the other key concept in this paper, is usually defined as a guideline that "...establishes clear communication between instructor and students and provides the necessary information and resources to promote active, purposeful, and effective learning. Thus, syllabi serve as road maps that define the content and context of learning in our classrooms [7]." The University of Alaska, in a more clearly legal interpretation, states that the "… syllabus is a "learning contract" between you (the instructor) and the students. It sets the ground rules for all the classroom goals, objectives, activities, assessment tools, policies and exceptions. The syllabus serves, in other words, as a planning tool for both instructor and students. In extreme cases, the syllabus can be used to resolve disputes between students and faculty, for example on the number and weight of various assignments. As such, "…the syllabus should contain all the elements students will need to know at the very beginning of the class, and in writing [8]."

In summary, courses and curriculum fuse to create a plan for institutional learning [9], therefore, course syllabus and the curriculum offer the opportunity to indicate and guide what professors facilitate to the benefit of their students, as both instruments are relevant to library information literacy programs in a country like Mexico, where university professors – a term equally applied to junior or senior faculty - have limited research training, and hardly demand information from libraries. There are, for example, 21,359 faculty recognized as researchers by the Mexican National System of Researchers [10], a minimal figure compared to nearly a quarter of a million (241,236) professors that teach across the country [11].

In this context, CETYS University follows a similar national pattern. It is mainly a private teaching institution with limited research, having as a consequence an educational process led by professors who focus on reception and repetition of knowledge rather than on the promotion of inquiry to generate and create new knowledge [12]. Most CETYS professors lack a doctoral degree, and their previous studies were done mostly at Mexican universities, where learning/teaching heavily relies on textbooks and seldom on other information resources, especially those faculty who are mature and worked on their degrees 20 years ago. This means that in most cases, they do not have research skills nor have solid academic reading habits. In addition, in general, they graduated from institutions where libraries were small and without information professionals. This situation may change at CETYS in the medium term, because it has undertaken some organizational steps to overcome these factors. Among the first is the recent requirement that all newly recruited professors need to hold a doctoral degree, and those full time that have already been hired are being motivated to earn such a degree. Along the same lines, publishing incentives and some research support have recently been given to faculty.

2   Faculty Information Literacy Committee

The University started with a campus-wide review process to update undergraduate course syllabi. A decision was taken by the Provost to instruct the Social and Humanities College Dean to appoint an information literacy committee with the charge of identifying curriculum information literacy strategies to impact the

curriculum, so that students would develop solid information skills before graduation. The committee included six professors representing each of the three colleges (Faculties), a representative academic of the computing department and the high school system (CETYS offers education programs at high school, undergraduate and graduate level), plus the three campus librarians, and two information and learning development (reference) librarians as observers. The team was lead by two professors who jointly had published a handbook on how to draft essays and another one on writing paper style, using the APA Manual (American Psychological Association). In addition, a consultant (the first author of this paper) assisted the semester-long process and facilitated the main meetings. The process included a starting document on how to impact the curriculum with information learning techniques, plus some literature on national and international IL standards. The first step of the committee was to define what information literacy meant, and what IL standards could be adopted, adapted or created. Information and communication technology was also a mandate for this committee to explore, but this outcome is not discussed in this paper.

After defining what IL means to CETYS, the next committee decision was to adopt the Mexican Information Literacy Standards [13] as the norm that would guide the institution's information culture goals. The reasoning behind this was that these standards reflected well the local academic and cultural IL needs of a Mexican higher education institution, like CETYS. The decision helped pave the way to have a clear IL goal to look for during the committee strategy identification discussion. After some meetings, the committee came to the conclusion that guidelines were needed to help professors in the development of their teaching programs, that is a syllabus, along with the recommendation to create a six-credit information literacy course for students and a comprehensive IL training program for professors, including research skills development [14]. These last two committee-generated items are not part of this paper either.

The identification of syllabus components took into account that teaching professional competencies of professors are different from those of educationally more mature countries, like the neighboring USA, distant only two miles away from the main CETYS campus, as well as the different teaching workloads, because they normally have heavy teaching loads of around five courses per semester (facilitating lectures for about 20 four hours per week) that limits them from performing extra-academic activities, such as research. So, any information literacy developed tool had to consider such factors. The information literacy guidelines were named and written in rubric format, an instrument that is normally used to assess students´ learning activities and to a lesser extent for professors' work. The foremost specific objective of the so called CETYS rubric was to help faculty self-assess course syllabi and to provide standards to academic curricular bodies that supervise their work, or norm course content according to each discipline/subject, and departments that support faculty, like libraries. The scoring instrument had as well the general goal of pushing/motivating the University to meet the IL adopted standards.

Rubrics are, on the other hand, a recent concept in CETYS; they were first adopted in 2007 as part of the accreditation process required assessing student-learning outcomes. This tool is common in accreditation processes in America, especially to specify the scope of academic goals or learning outcomes whether in institutional or academic programs, but this practice is not true in the case of CETYS that had to

adopt this evaluation strategy to measure, monitor, control, and especially, improve educational processes. Rubrics became an organizational learning step to measure and to demonstrate learning achieved by students through their courses. While rubrics are not the only valid instrument, it has become one of great value to CETYS faculty. In other words, the use of the term rubric for the drafting of course syllabi instructions had the advantage that the concept is familiar to faculty. In addition, there was reluctance to use the word "guidelines" because they have less weight and mainly give directions, in other words they are not binding and are not enforced. Standards was another term that was discarded because they imply higher precision expectations, and because they need measurements or indicators of the desired goal but do semantically coincide with rubrics in the sense that they norm the streamlining of a process. The term rubric although less used for faculty work is also adopted by universities to guide the design of course syllabi, such as Cornell University [15] and other universities already cited in this paper.

3   Undergraduate Course Syllabus IL Rubric

The CETYS course syllabus rubric includes ten elements that generally reflect the Mexican information literacy standards and teaching factors that inhibit IL skills development (See Appendix) to guide professors whose practice differs, as stated, from those of more advanced educational systems, like the American ones. The first element of the rubric encourages professors to promote key information skills in their syllabi. In other words, to create course learning activities that reinforce or develop search, retrieval, evaluation and use of information. The aim behind this guideline was based on the fact that students make limited use of scientific information, because most professors seldom demand such information inputs in their courses. The second rubric element recommends avoiding, as much as possible, the use of textbooks and anthologies. These two basic course bibliography materials tend to be the norm in most courses, in frequent cases the only reading options, creating a barrier to developing proper IL skills. Such bibliographic resources are not completely prohibited, but professors are asked to justify them if they want to include them in their courses. The third rubric element complemented the previous one, suggesting lecturers require different information sources of their students beyond books, so that learners are exposed to reading scientific articles, and other types of publications such as conference papers, videos, podcasts, movies, and even tweets. In the fourth element, there is a suggestion that professors interact with the library, finding out what holdings it offers in their course subject, or missing materials that ought to be ordered for acquisition, if materials are not available. The following element, fifth, focuses on intellectual property, recommending professors verify that basic and optional course bibliography has copyright clearance or open access licenses, such as those legally stewarded by Creative Commons. The sixth rubric item asks faculty to include a minimum of 50% of the course literature in other languages, basically English, besides Spanish. The aim of this guideline was to help students reach their bilingual graduate profile requirement by the end of their undergraduate program. An additional reason was that most of the scientific literature is in English, assuming that the provision of materials in English will broaden reading options. The seventh

element addresses the challenge of an outdated course bibliography, by recommending the inclusion of up-to-date information in at least 50% of the resources included in their programs. This literature obsolescence provision was based on Price´s [16] indicators, stating in the rubric 5 years for science and engineering, 10 years for social sciences and business and management, and 15 years for the humanities. The eight recommended item was the use of ICT (Information and Communication Technologies) whenever possible, plus the use of Blackboard, the learning platform contracted by the University and available but not used by all courses. The argument behind this was that professors have low ICT use, and limited implementation of Blackboard software. The ninth factor, along with the tenth one in the rubric, included the key recommendation of requesting at least one term paper per course to foster writing composition, information skills development, research methods proficiency, and familiarity with formal paper style; an academic task that amalgamates the core information literacy mission. The manual style recommended was APA, but professors can substitute it with any other discipline's relevant style, as long as they adopt one. CETYS has two manuals, one to guide essay drafting, and another on how to write academic papers that includes a summary of the APA style manual [17, 18]. Both are recommended sources in the syllabus rubric.

4   Rubric Testing

After the shaping of the rubric by the committee, the second step has been the pilot test to determine positive or negative reactions of faculty. This phase is still underway and has been linked to another project. The syllabus rubric is pilot tested with online courses that CETYS began designing this semester. The University e-learning project has the goal to offer 10% of undergraduate courses online to prepare students to benefit from the emerging myriad of distance learning options, such as MOOCs (Massive Open Online Courses) and other formal and informal distance learning programs. Eight courses were selected from the different curricula levels of the three undergraduate colleges. Among them, the research methods course was selected as the case that will be aired first, because it is a basic required subject for all undergraduate students, and it is therefore offered in every department of the colleges. This means that at least twelve student groups will take this course in the coming academic year. The research methods course has biased characteristics, because of the nature of the subject where information literacy skills and paper writing are at the core of the inquiry endeavor, so a better acceptance of the rubric has been demonstrated. The leading content creation professor has willingly accepted the overall implementation of the rubric, except for the ICT part and the paper writing, where a compromise has been arranged so far. In the case of ICT, the challenge has been to afford the acquisition of software, so whenever possible free software has been chosen, and in the case of paper writing the challenge was the time it would consume to grade and give proper feedback to students. So, the agreement reached in this important rubric element was that papers would be done by student teams (three members). This may change in the future if the institution assigns student assistants to full time professors, a condition stated by the e-course lead professor. If this

happens, then paper writing could be done on an individual basis that is assumed to be a more meaningful cognitive experience. As a whole, the rubric content has not changed during the pilot case except for format and layout of the components (See Appendix).

The testing of the rubric will continue with the next seven courses during the following semester. This group of courses, including the research methods one, offer great advantages, as they are new learning experiences delivered for the first time via online and with the assistance of a curriculum design team. The fact that the courses are new, at least in the delivery e-mode, gets less resistance to change from faculty and new principles and methodologies can be implemented, like the syllabus rubric, taking advantage of starting from scratch. The following phase will be to get adoption by the rest of faculty and convince them of the rubric's benefits.

5   Rubric Testing is Under Way – Library Role

The two reference/information literacy bilingual skilled DIA (Information and Learning Development) librarians described earlier in the paper had as one of their first tasks to support the design of the online courses. Their duty was to feed courses with the best information sources in terms of relevance and updateness, such as journal articles, books, videos, podcasts, TED talks, MOOCs and websites, among other learning objects within the rubric framework. They focused on the research methods course that was the first pilot case. The DIA librarian who had assigned this case retrieved hundreds of references, therefore, a further time-consuming scan was done to select the most relevant publications for basic and complementary reading for each of the four units of the course; however this task was not enough. A further analysis and more detailed selection was requested of the librarian so that he could assign the proposed literature to each subject of the course (a total of 30 topics). This proved to be a major library task because of the great information literacy push given to the librarian, leaving to professors the final decision of what bibliography items were to remain in the syllabus. The library DIA support has enabled this particular team of professors to have an excellent menu of information sources in accordance to the rubric. The rest of the instructional design support team also has the role of motivating use of the rubric in all the stages of the course syllabus, including the use of ICT. The following stage with the remaining seven online courses will be a good opportunity to test the acceptance of the rubric among a larger number of professors, because for each e-course there will be a team of lecturers. These professors are, in general, the same ones that facilitate face to face undergraduate courses, so the pilot cases will have the indirect benefit of paving the way for inserting the rubric in the rest of the curriculum in the coming semesters. Hopefully, faculty will implement use of the information literacy syllabus rubric as a way to reflect upon what they can do in fostering student information skills in their courses, and even if they do not use it, the institution will know how far or close they are in the information culture pursuit of the CETYS strategic plan that aims to enhance information literacy for all learners.

6   Conclusions

The creation of the CETYS rubric to guide undergraduate course syllabi drafting is a step to go ranges from surface remedial information literacy actions of libraries, to diving into the depths of the academic ocean, which is the curriculum and the courses themselves, by contributing a framework that supports and strengthens development of an institutional oriented-information literacy curriculum. This tool is certainly useful, as it defines concrete and possible actions to be adopted or adapted by professors during their learning encounter with students. The rubric concretely aims to strengthen information literacy compliance across the curriculum with 10 components or criteria that is to be observed in course syllabus designed by professors. The value of the instrument is that it allows for feedback to improve and reach the targets set in relation to information literacy, where the goal is not to set objectives or criteria to achieve, not to record either what is happening in the course planning by professors, but to provide recommendations, suggestions and comments on how they can improve their course information literacy strategies to achieve the curricular information literacy learning outcome of the graduate profile. The pilot testing is underway, and the general adopting dive (step) will be with professors at large, who not all may comply with the rubric, but even if they fail to implement it, there will be parameters to gauge how far they are from the institutional information literacy goals.

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Appendix: Information Literacy Rubric for Undergraduate Course Syllabus

Professor:

Course:

Coordinator-Reviewer:

Element to observe	Meets criteria?			Recomm-endations
	Yes	Not	Partially %	
1. **Promotes Information Skills Development.** The course learning activities promote search, retrieval, evaluation and use of information and media by the student.				
2. **Avoids Textbooks or Anthologies.** The course does not include textbooks or anthologies. Professor allows students to find relevant information by themselves. If a textbook is required, professors need to justify it, and book needs to be in electronic format.				

3. Includes Different Source Types. The course includes varied literature, ideally in the following proportion: • Books 20-40% • Scientific articles 40-50% • Other documents in digital format, for example, *web* sites, databases, Twitter, lectures, videos, *podcasts,* movies, documentaries, and maps, among others. 40-50%				
4. Literature Is Available in the Library. Includes information sources available in CETYS libraries or have been ordered for acquisition.				
5. Relies on Electronic and Copyright Licensed Materials. The electronic sources have either copyright clearance, are open access, or are under scheme such as that of Creative Commons.				
6. Incorporates Foreign Language Readings. It includes a minimum of 50% of material in English or other foreign languages, and the rest is in Spanish, depending on the subject.				
7. Literature Is Current. Bibliography is current, 50% of sources are recent, and the rest may be classics within the discipline. Ideal time span according among disciplines is: • Science and Engineering: 5 years • Social sciences, business & administration:10 years • Humanities: 15 years				
8. Promotes ICT Use. The course requires students to use information and communication technology in its learning activities, besides the implementation of Blackboard (Learning Platform).				
9. Requests a Term Paper. There is a requirement that students ought to write at least one term paper, where they show information skills proficiency (See Appendix of Recommendations).				
10. Applies Research Methodology and Paper Style Standards. The term paper requires research metodology and the use of style standards. CETYS recommends**:** Bonilla, J.L., and Montes, M.E. (2013) *Manual for Submission of Written Works.* Tijuana, BC, Mexico: CETYS University. / Bonilla, J.L., and Montes, M.E. (2012) *Guide to Write Academic Papers.* Tijuana, BC, Mexico: CETYS University.				

Measuring Information and Digital Literacy Activities through Learning Record Store Repository of the National Training Centre for Continuing Education for Librarians in Croatia

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Abstract. The aim of the paper is to present the findings of a quantitative analysis of the learning record data stored in the learning repository of the Croatian Training Centre for Continuing Education for Librarians. Research aim is to measure the information and digital literacy activities of librarians in the national lifelong learning portal, and to test application of an Experience API (xAPI) as an information and a digital literacy assessment instrument. The introductory overview of theories brings umbrella framework for overlapping terms such as digital literacy, information literacy, media literacy and digital competences. Convergence or overlapping of terms largely depends on prospective aim of the assessment process, which could be regarded as normative/pedagogical or instrumental/technical in nature [1-2]. The paper presents a case study of testing an Experience API standard as an information and digital literacy assessment.

Keywords: Information and digital literacy, learning record store, continuing professional development of librarians, assessment.

1   Introduction

We address the information and digital literacy topic from the aspect of instructional design and innovation in training and learning architecture standards.

A decision to build a new learning portal for continuing professional development for librarians in Croatia on a WordPress open platform was initiated to a great extent to enable a greater learning experience for portal users, foster their social participation and collaboration, facilitate learning content sharing and reuse, providing personalized portal interface, real-time event management, and open integration and interoperability with other learning systems. As the former web portal presented static content built on the HTML pages, it did not provide any social or semantic web functionality. After a three-month activity period of the newly created portal, user log files were examined with the aim of identifying the scope and type of user activities. As log files register all sort of user and system activities, special attention is given to

discern those activities that could be regarded as user learning experiences and be transferred into the form of an Experience API in the institutional learning record store.

Since "learning experience" refers to any interaction, course, program or experience in which learning takes place, learning experience that originated from using the web portal or simply being emerged in a digital environment could relate to the level of users' proficiencies in the domain of information and digital literacy. Log file analysis tends to reveal the scope and type of information and digital literacy activities of librarians in Croatia and to test the application of an Experience API (xAPI) as an information and a digital literacy assessment instrument.

2   Information and Digital Literacy

The American Library Association's Digital Literacy Task Force embraced a widely applied definition of digital literacy as "the ability to use information and communication technologies to find, understand, evaluate, create, and communicate digital information, an ability that requires both cognitive and technical skills" [3, pp. 1]. According to Bawden [4] digital and media literacies are newer forms of information literacy focused on those knowledge bases, perceptions and attitudes that are requisites for survival in ever more complex digital surroundings, and which could be distinguished from, although reliant but much simpler, skills-based literacies.

Digital literacy, despite the fact that it was popularized by Paul Glister in early 1997 [5], could have the ability to become "an integrating (but not overarching) concept" [6, pp. 18] of a multitude of literacies essential for coping successfully with digital society. As social life is becoming more and more complex, even new concepts of literacies are expected to emerge, and one "fit them all" solution is hard to be acquired. Mere mastering of IT or ICT technology skills, Raffell [7] considers as not appropriate for raising a successful and functional member of a modern society. Rather, critical thinking, problem-solving abilities and understanding of appropriate ways of using ICT are considered more suitable for overcoming complexities in modern social life. Those abilities are also referred to as digital competence, which in an assessment process would be considered rather "a condition, not a threshold" [6, pp. 20].

Webber and Johnston [8] propose a holistic definition, stating that information literacy is "the adoption of appropriate information behavior to obtain, through whatever channel or medium, information well fitted to information needs, together with critical awareness of the importance of wise and ethical use of information in society" [8, pp. 102]. As the information economy would imply mastering more than a simple information skill sets, the authors stipulated that an information-literate student achieves information literacy competences in accordance with and emerged in information-literate surroundings. Although the authors are referring to information literacy, their scope is even more applicable in the context of the digital economy.

Although information literacy and digital competence are increasingly becoming part of educational curricula at primary, secondary and tertiary levels, it is still hard to distinguish what it means to be an information and digitally literate member of a society. The ever-changing learning, working and social contexts and disruptive

technological innovations are seen as the major reasons for those impediments. While in higher education information literacy proficiencies are measured and aligned according to sets of standards, it is less clear which competencies information literate workers have to acquire to be independent and lifelong learners and to cope efficiently with information in the working environment.

Thus, it would be essential to discern through our learning portal and through user log files those conditions and user behaviors that could be related to information and digital literacy activities. User log files could reveal, among other things, how many librarians have read blog posts or leave comments on the portal, are they proficient in using the online registration and learning event booking process, are they ready to participate in real-time online polls, or adept in editing a user profile and using RSS or ICal functionalities.

2.1   Information and Digital Literacy Assessment

Instruments for information and digital literacy assessment consist broadly of sets of tests, instruments and tools whose aim is to measure the degree of alignment between learning outcomes and competency frameworks or standards. But, it is evident that information and digital literacy skills and competences are not being learned just in school, but rather in performing everyday tasks in non-formal digital environments, such as having fun with online playing, doing online shopping, communicating with peers etc, [Beavis et al. cited in Osterman]. Leu et al. stressed that "the digital divide between school, home, and the workplace is highly problematic, creating a discord between the learning experiences in each environment, [so] educators need to correlate student's digital literacy habits form their personal lives with instructional practice in school." [9, pp. 136]. It is evident that formal assessment methods purely calked on digital environment show certain shortcomings, notably with regard to lack of convergence between informal and formal learning environments.

This distinction between formal and informal or personal approaches to addressing the problem of informational barriers could be seen in Huvila [10] as a distinction between *information services* and *digital literacy.* Huvila sees information services as formal settings within libraries, museums and other knowledge institutions whose aim is to overcome the knowledge barriers of theirs users. Digital literacy is regarded as a personal intent to overcome the same barriers independently. The reasons and scope of digital and information knowledge gap and barriers could be diverse. People could be digitally divided either because of their age or fear of technology, due to the different socio-economic and demographic backgrounds, deprivation of access to digital technology or information.

The assessment process is categorized as diagnostic, summative or formative. Diagnostic assessment attempts to diagnose the learner's current ability or knowledge and identify any potential problem areas, while formative assessment aims to give learners feedback about their performance and to develop their confidence in their abilities. Summative or judgmental assessment proceeds with license to advance in further learning or is aimed at selection [11].

From the aspect of the informal and non-formal learning settings, the information and digital literacy assessment process is seen as a non-linear and dynamic process that would encompass measurement of technical skills, critical thinking, creative practice and social engagement of a digitally literate person as to be incentive to further digital development. The results of information and digital literacy assessment thus would be to diagnose and to identify the level of information and digital literacy and to dynamically help to sustain or to raise the condition of appropriate behaviors. It could not be regarded just in the context of the scholarly or working environment, or as part of summative assessment. It should take into account all available data about personal information and digital behaviors or calculate the risks for information and digital literacy impediments.

3 The National Training Centre for Continuing Education for Librarians in Croatia

The National Training Centre for Continuing Education for Librarians runs an accredited continuing education program for librarians and information specialists in the Republic of Croatia.

It is part of the international network of national centres for the continuing education for librarians in Eastern Europe and Central Asia. The objectives of the Centre are to provide a comprehensive lifelong learning program after the initially acquired academic diploma, to promote information and computer literacy, and to develop and improve professional competency framework in the field of the library and information science.

Since its beginning in 2002, the Centre has been conducting over 300 hours of educational programs annually for more than 1,100 attendees. The program consists of one-day credit courses organized in traditional teaching methods.

In 2009 the Centre developed a professional competency framework and defined the learning outcomes for each course. After completion, each course is anonymously evaluated by the participants. The participants evaluate highly the quality of the courses, the quality of the lecturers and the transferability of acquired knowledge. The evaluation results were used to quantify the program's outputs and to indicate the program's quality indicators.

Despite the fact that the program has clearly stipulated measurable learning outcomes, formal assessment tools for measuring the learning outcomes, such as tests or exams, turned out to be inconvenient in the example of national continuing professional development program, especially in regard to the non-compulsory aspect of the program and the lack of any traditional learning settings that can be used [12]. It is still pretty unclear how efficiently acquired knowledge could be transferred into the working environment and what is the impact of the learning process.

Also, a special concern consists of the potential educational provisions that the Training Centre could provide to its participants to foster the learner experience in independent and lifelong learning perspective, such as the open learning repository, dissemination of information and syndication of data, or building a community of practice. The former learning portal of the Training Centre was based on HTML

pages, providing static content informing merely about upcoming learning events and it did not provide any social or semantic web functionality to its users or provide any digital learning experience. A decision to build a new learning portal for continuing professional development for librarians on a WordPress open platform was initiated to great extent to enable a greater learning experience, foster social participation and collaboration, facilitate learning content sharing and reuse, provide a personalized portal interface, real-time event management, and open integration and interoperability with other learning systems.

According to the theories presented, we assume that information and digital literacies assessment process, especially in the aspect of non-formal and informal learning environments such as the case of the Training Centre, supposes application of a digitally-incentive assessment tools.

To overcome the assessment limitations specific to the informal and non-formal learning environment, an Experience API standard is decided to be tested as a digitally-incentive assessment for measuring information and digital engagements of the portal's users.

Experience API (xAPI) is an Advanced Distributed Learning (ADL) standard that operates based on tracking activity streams. Released officially on April 26, 2013, xAPI is seen as an evolved version of SCORM (Sharable Content Object Reference Model) standard for web-based e-learning, but its application is not being limited to a particular eLearning course or learning management systems. Experience API or xAPI is a model that uses software to track and record things people do in the form of triplets (Actor-Verb-Object). The idea of tracking activity streams emerged from social networking and could be associated with applications such as Facebook Open Graph, Twitter, Google Plus and Mozilla Open Badge. xAPI enables learning content and learning systems to communicate in a manner that records and tracks all types of learning experiences.

4   Research

The research aim is to measure and assess the information and digital literacy of professional librarians based on their activities and engagements through the open learning portal for continuing professional development. The research intends to answer whether the librarians are information and digitally engaged, and what are the major impediments, if any, for the information and digital divide among professional librarians.

An analysis of the learning record data stored in the data repository of the Croatian Training Centre for Continuing Education for Librarians will be made. The learning record data consists of transferred and translated user activity logs which will reveal the information and digital literacy activities of professional librarians through the learning portal of the national lifelong learning program. A quantitative analysis of user activity logs recorded during a three-month period on the Croatian Training Centre web portal (http://cssu.nsk.hr/) will be used also as testing data for prospect xAPI implementation.

The open learning portal is based on WordPress content management system, integrating social media services such as personalization, content rankings and commenting, opinion pools, Facebook and Twitter sharing, event bookings and learning calendar planning, etc.

User activities made through the open learning portal are recorded and transferred into the form of statements, expressing users' learning experiences and engaged digital competences.

To analyze the scope of digital competences an ADL (Advanced Distributed Learning) Experience API (xAPI) and learning record store (http://lrs.nsk.hr:8000/) were implemented for testing purposes.

A learning record store is a type of data store that acts as a repository for learning records and is necessary for using an Experience API – xAPI. xAPI assumes that all statements that are stored in LRS are defined in triplets represented in the form of Actor-Verb-Object. In that way it enables learning content and learning systems to communicate in a manner that records and tracks all types of learning experiences.

Since the Croatian Training Centre web portal is based on WordPress, which does not support integration with LRS we had to either develop a WordPress plugin that transfers user actions to LRS or to do a web server log file analysis to extract the user behavior data.

For preliminary testing purposes we decided to perform the log file transfer to LRS and to analyze its possibilities with non-real-time data. Research findings will reveal the reasons or motives to develop a WordPress plugin that would track user activity in real time and transfer it via xAPI to LRS.

The process of transferring raw data from web server log file to LRS was performed in two steps.

The first step was parsing an input log file in a given timeframe and extracting relevant data such as time of an event, actor, verb and object.

The second step was to establish a link between a parser and an LRS via HTTP protocol.

Having researched digital skill pathways that potentially would lead to digital engagement, Helsper and Eynon [13] discerned four types of skills (namely critical, creative, social and technical) that encompass the most common types of skills correlated with digital inclusion and engagement with ICTs.

While parsing log files, user activities were grouped in those four types of skills (critical, creative, social and technical). To express user activities, ADL xAPI Vocabulary (http://adlnet.gov/expapi/verbs/) was used.

For critical type of skills we extracted user activities described with verbs *answered* (meaning user participation in community polls), *scored* (user feedback on ranking learning materials), and *mastered* (user reading of learning materials).

For creative type of skills we used the verb *imported* for image upload and user profile editing.

In social type of skills the verbs *registered* (user registration on portal), and *attended* (user reservations to attend classes) were used.

In technical type of skills we used the verbs *attempted* (for accessing RSS feeds), and *launched* (for iCal activities).

To overcome merely a instrumental or technical assessment approach, special attention will be given to analysis of user activities within its cognitive and reflective

practice, like "agree", "like", "answered", "scored" etc. A statistical analysis is carried out in R-studio statistical environment.

5   Findings

After excluding web crawlers data from raw log files, findings reveal in total, 8902 semantic statements, created by 1412 unique users (IP addresses).

The statistical mean for observed data is 6.27, with standard deviation equaling 2.16, meaning that every user counted an average of 6.27 digital activities or engagements throughout the open learning portal.

The standard deviation value of 2.16 indicates that the data points are spread out over a large range of values.

For each unique IP user a workflow of statements has been analyzed. Even the number of unique users is not straightforward.

Due to dynamic IP addresses, it is possible that the same user was identified by several different IP addresses during the observable period. Thus, a registered number of portal members will be more adequate for the purpose of the research.

Portal counts in total 217 registered users. That shortcoming could be overcome with xAPI standard, due to the fact that xAPI monitors registered each user identified by her/his e-mail and associates its real-time data with a unique e-mail address as a user name.

Analyzing the user activity statements, the findings reveal that most user activities fall highly in the critical skills category 6398 (72%), followed by technical 1241 (14%) and creative skills 793 (9%), with social skills 470 (5%) at the bottom.

The total number of statements distributed in the four types of skills (critical, creative, social and technical) by particular verbs shows that users engaged most in mastering content, attempted actions, importing data, answering, registering, attending, launching and scoring (Table 1).

Table 1. Number of statements distributed on four types of skills by particular verbs

Type of skills	Critical			Creative	Social		Technical		Total
Verbs	Answered	Scored	Mastered	Import	Registered	Attended	Attempted	Launched	
No.	349	2	6047	793	315	155	1108	133	8902
%	3.92	0.02	67.92	8.90	3.53	1.74	12.44	1.49	100
Mean	0.24	0.001	4.28	0.56	0.22	0.10	0.78	0.09	6.27
Total		6398		793	470		1241		8902

Statistical correlation analysis is used to identify and measure the associations among given sets of data.

Findings revealed that social skills are highly correlated with all types of critical skills (Table 2).

Technical skills, the same as creative skills, have the lowest dependency with other types of skills.

Table 2. Correlation of verbs grouped by types of skills

	Answered	Scored	Mastered	Import	Registered	Attended	Attempted	Launched
Answered	1	0.70	0.87	0.35	0.43	0.99	0.01	0.39
Scored	0.70	1	0.61	0.25	0.29	0.70	0.01	0.27
Mastered	0.87	0.61	1	0.31	0.40	0.87	0.02	0.47
Import	0.35	0.25	0.31	1	0.15	0.35	0.005	0.14
Registered	0.43	0.29	0.40	0.15	1	0.43	-0.003	0.13
Attended	0.99	0.70	0.87	0.35	0.43	1	0.015	0.39
Attempted	0.01	0.01	0.02	0.005	-0.003	0.01	1	0.12
Launched	0.39	0.27	0.47	0.14	0.13	0.39	0.123	1

6   Conclusion

The results of the quantitative analysis of stored learning record data refer to the prospective indicators of information and digital literacy of librarians in a lifelong learning program on a larger national scale, as to its correlation to a further national professional competency framework and learning policy development.

The findings reveal that professional librarians engage regularly in an open learning portal. Our conclusion is based on high value of the mean.

As recommended in major ICT initiatives, information and digital literacy is supposed to consist of both cognitive and technical proficiency. That recommendation could be regarded as achieved in our set of data. It is evident that critical and technical skill sets scored the highest means. Librarians' engagement could be characterized as part of more knowledge consumption than knowledge creation domain, as they are applying more critical and technical skills, rather than creative and social skills.

It is likely to conclude that strengths and depth of digital engagement could be in dependency with diverse socio-demographic differences, thus a larger-scale branching and diagnostic assessment would be recommended. With a lack of complete xAPI implementation, our research expresses shortcomings in regard to users' category analysis. To overcome possible impediments that will lead to digital exclusion, we would agree that skill trainings could certainly be very important, but may only be fully acquired and measurable when immersed in an appropriate digital learning environment. Findings reveal that librarians use technology independently from other types of skills. Our conclusion could lead to the assumption that as more critically skills have been used, as more social skills would be applied.

Our research reveals that standards such as xAPI would be suitable for digital literacy assessment that will nourish critical, creative, social and technical proficiencies equally, be suitable for the creation of personalized learning plans and used for dynamic and adaptive assessment. Such standards enable the development of responsive and more tailored learning programs and policies. Our findings could lead to a conclusion that an xAPI standard could provide a valuable opportunity for application of an adaptive assessment process which would reflect both personal strengths and needs for skills improvement.

The research could be of interest to some further analysis of an Experience API implementation testing and its use as an information and digital literacy assessment for informal learning settlements.

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Synergy of Managerial Competences in Academic Libraries and Information Literacy of Library Users

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Abstract. The competence profile required for academic libraries is based on different types and levels of competences necessary for their managers and librarians to complete various and complex tasks put in front of them by users and the social community. The demands made by users are directed at obtaining the highest quality of services in libraries, and can be met if the level of competences found in library managers and all employed librarians is adequate. Users expect their libraries to keep up with the ongoing changes and therefore it can be said that libraries emerge as places of continuous learning. The aim of this paper is to explore which competences library managers from South-eastern Europe find the most important for information literacy of library users.

Keywords: Delphi method, information literacy, librarian competences, academic libraries, library managers.

1   Introduction

This study aims to make a contribution to the efficiency of academic libraries and librarians regarding information literacy, as well as to gain a better understanding of the complexity and scope of the university library's competence profile. The assumption for this study is the identification of information literacy as an essential competency that managers of university libraries must have. The quality and success of information literacy education of users in university libraries depend upon the competence of the people in charge of the education process, who are library managers in most university libraries. The authors claim: defining the competencies of university library managers who implement information literacy education will enable setting up the competence framework or matrix for information literacy education carried out in university libraries and scaling the manager competencies necessary for information literacy will enable their evaluation and assessment.

2   International Frameworks for Librarian Competences and Information Literacy

In library and information sciences the definition of competence is used: to describe qualifications necessary for libraries and librarians, as a means for estimating the

value of the library and librarians and as a starting point for educational programs. Librarian competence is usually defined by library associations as a set of requirements for professional, generic and personal competences of individual experts. The commonly accepted frameworks for defining competence in librarianship are: ALA's core competences of librarianship [1] that define the professional or competence profile of the American librarian. One of ALA's key sections for the encouragement and support of librarianship is RUSA, which issued the "Professional Competencies for Reference and User Services Librarian" [2]. CILIP [3] provides a competence profile of librarians and information professionals, while SLA published Competencies for Information Professionals of the 21st Century, focused on competences in special libraries [4]. CARL has created a study: Core Competencies for 21st Century librarians [5], while IFLA, through a range of projects and programs, emphasizes the importance of continuous identification of required librarian competences for the purpose of lifelong education, professional development and career advancement. According to the conclusions of the 79 IFLA conference "Future Libraries: Infinite Possibilities", the principle of "change as a constant" in the sense of continuous adjustment and modification of libraries and adjustment of the librarian's competences was given as a response to the emergence of new user and librarianship requirements, especially in terms of information literacy education. [6]

"The most commonly cited and used IL definition is the one adopted by the ALA, 1998: To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information. The information literate individuals are those who have learned how to learn"[7]. IFLA's Section for Information Literacy has created International Guidelines on Information Literacy for Lifelong Education as a practical framework for creating information literacy programs. The guidelines, among other things, state that information literacy should become an integral part of the curriculum since it occurs on all educational levels. In the authors' country, one of the most important projects for librarians was the "CUK", lifelong education of librarians [8], which defined the initial national competence profile of the librarian profession. Mihalea Banek Zorica and Sonja Špiranec have made the biggest contribution in research of information literacy. They state that information literacy has its largest growth and momentum in higher education where the idea of information literacy originated. [9]

3   The Study

3.1   Objectives, Importance and Relevance of the Research

The objective was to present research which would determine the competences required for information literacy education as perceived by the experts in practice, the information literacy program providers. The competence testing in this research was limited to heads of academic libraries and heads of departments for information literacy in academic libraries, depending on the size and organisation of included

universities. The test sample included libraries from South-eastern European countries which did not have a competence profile of academic libraries defined on the national level, nor librarian competence in terms of information literacy education. The relevance of the research lies in the fact that up until now the emphasis of information literacy research was on users, and that there are no significant number of research studies found in the references directed towards information literacy educators.

3.2   Methodology and Sample

The Delphi method was chosen as the primary method, with the support of the questionnaire method and structured interview method. The quality of this method is in the organisation of the expert's knowledge and used for research areas which are hard to quantify. The experts do not affect each other nor do they communicate [10]. The main advantage of the Delphi method is obtaining data regarding the subject of research with organised agreement until reaching a final consensus and ignoring spatial obstacles. The main disadvantages of this method are: the moderator's and participant's subjective element. The most important disadvantage is the length of the research which can lead to the withdrawal of some participants or the absence of their answers in a particular iteration [11].

21 participants from six South-eastern European countries participated: Bosnia and Herzegovina (5), Montenegro (3), Greece (1), Croatia (8), Macedonia (2) and Serbia (2). At the beginning of the research, professionals to be included were selected, in this case heads of university libraries and heads of departments for information literacy in university libraries in South-eastern European countries. The research was mostly conducted online. The research objectives, methodology, estimated number of iterations as well as the timeframe of the research were explained, with an emphasis on anonymity. After that the pre-prepared questionnaire designed by the authors was sent to them. In the initial questionnaire a set of SLA competences important for heads of university libraries that carry out information literacy education, were included [12].

4   Findings and Discussion

Analysis of the participants according to their library work experience showed that 8 participants have been in the library profession between 16 and 20 years; another 8 work experience between 5 and 15 years. Regarding their professional and scientific position, the largest numbers of participants were graduate librarians (8) and senior librarians (6), followed by library advisors (3) as the highest rank in the library profession. Participants also had Master degrees of Information Sciences (3) and one participant was a librarian. The authors concluded that the participants made up a representative group of experts. Masters of Science, senior librarians and library

advisors make more than 70% of the sample. During the initial questionnaire the professionals were asked to choose and evaluate the competences on a scale from 1 to 5 (5 being the most important) and to suggest any other competences which were important in their opinion and to rate them the same way. Most participants chose and rated highly all the listed competences and quickly reached consensus.

4.1   Analysis 1

Table 1 shows a variation of the median, mode and standard deviation of the selected competences, which determined which of the competences were submitted into further iteration. The 1.st quartile was eliminated. Only 2 participants added new competences. Personal competence referring to the ability to maintain a balance between work, family and community obligations was eliminated since it was in the 1.st quartile.

The standard deviation shows great oscillation in responses, however, regarding the median and mode values there were no grounds to remove the competences which the participants rated poorly or did not rate at all.

4.2   Analysis 2

The participants rated the second iteration competences questionnaire using the Likert scale (strongly disagree, I disagree, I have no opinion, I agree, I strongly agree). The ability to add other competences was also offered. The experts were asked to revise their original choice and possibly correct their assessment and submit their opinions along with the corresponding argumentation. The participants were asked to rate each competency according to the scale as it was assumed that it would encourage active thinking rather than automatic evaluation of competences. One of the participants responded only in the first iteration.

The results in Table 2 were also analysed using statistical indicators. Median, mode and standard deviation variation of the selected competences showed that a consensus had been reached, which means that the experts had come to agreement. None of the competences was rated low, which means that in the lower quartile none of the competences were eliminated.

Basic competences were mostly graded as excellent according to the mode frequency. The participants completely agreed that the most important basic competence was understanding the value of upgrading existing knowledge and the willingness to share it with others. Also, most of the participants agreed that planning and executing various information literacy education programs and a high level of information literacy were key competences needed for heads of university library for information literacy. A small number of participants had no opinion on whether competences: intellectual property and copyright understanding (3 participants), developing the library information policies (2) and high ethical values in using information (1) should be included in the list of competences. The standard deviation

shows the highest dispersion for competences regarding pedagogical and psychological knowledge, competences which were also rated the lowest in average.

A smaller number of experts disagreed (3) that these competences were not needed for information literacy education.

Table 1. Questionnaire results after iteration 1

BASIC	MEAN	MED	MOD	1.st QUAR	ST. DEV.
high level of information literacy	4.57	5	5	5	1.2178
planning and executing various information literacy education programs	4.50	5	5	4	1.0911
advertising information services using the web, direct communication, presentations, publications and conversations	4.20	5	5	4	1.3310
understanding the value of upgrading existing knowledge and the willingness to share it with others	4.10	5	5	4	1.5087
high ethical values in using information	4.10	5	5	4	1.7155
developing the library information policies, especially regarding license purchasing for information related products and services	3.90	5	5	4	1.6875
intellectual property and copyright understanding	3.85	4	5	4	1.6410
pedagogical and psychological knowledge	3.60	4	5	3	1.3939
ability to do research work and present its results at conferences, in publications and through different forms of cooperation	3.60	4	5	4	1.8100
PROFESSIONAL					
readiness for continuous learning and improvement	4.50	5	5	5	1.3274
excellence in managing materials and information sources	4.45	5	5	4	1.1741
working with databases, indexing, metadata	4.20	5	5	4	1.4343
using technology to manage information services	4.20	5	5	4	1.4671
knowledge of bibliometrics, scientometrics	3.45	4	4	3	1.6177
knowledge of tools for measuring and analyzing literacy education results	3.40	4	5	3	1.9616
supports distance learning	3.30	4	5	3	1.9543
scientific productivity evaluation	3.20	4	4	3	1.8671
PERSONAL					
establishing effective communication among heads, employees and users	4.80	5	5	5	0.3904
ability to transfer knowledge	4.45	5	5	4	1.1329
team approach	4.45	5	5	4	1.2140
respect for diversity	4.30	5	5	4	1.4508
ability to determine priorities	4.20	5	5	4	1.4343
creativity and innovation	4.15	5	5	4	1.6117
creating partnerships	4.10	5	5	4	1.7155
optimism in change management	4.05	5	5	4	1.4630
willingness to take risks, overcome resistance to change	3.75	4	5	4	1.6584
ability to maintain a balance between work, family and community obligations	3.50	5	5	2	1.9881
career planning	3.45	4	4	3	1.5577

Table 2. Questionnaire results after iteration 2

BASIC	MEAN	MED	MOD	1.st QUAR	ST. DEV.
understanding the value of upgrading existing knowledge and the willingness to share it with others	4.71	5	5	4	0,4518
planning and executing various information literacy education programs	4.57	5	5	4	0.4949
high level of information literacy	4,57	5	5	4	0.5832
intellectual property and copyright understanding	4.43	5	5	4	0.6598
developing the library information policies, especially regarding license purchasing for information related products and services	4.38	4	5	4	0.6529
high ethical values in using information	4.35	4	5	4	0.6538
advertising information services using the web, direct communication, presentations, publications and conversations	4.19	4	5	4	0.8518
ability to do research work and present its results at conferences, in publications and through different forms of cooperation	4.14	4	5	4	0.7737
pedagogical and psychological knowledge	3.95	4	4	3	0.9500
PROFESSIONAL					
readiness for continuous learning and improvement	4.80	5	5	5	0.4000
working with databases, indexing, metadata	4.52	5	5	4	0.5871
using technology to manage information services	4.48	4	4	4	0.4994
excellence in managing materials and information sources	4.43	4	5	4	0.5832
knowledge of tools for measuring and analyzing literacy education results	4.05	4	4	4	0.7222
supports distance learning	4.00	4	4	4	0.8165
knowledge of bibliometrics, scientometrics	3.95	4	4	4	0.7854
scientific productivity evaluation	3.95	4	4	3	0.8438
PERSONAL					
establishing effective communication among heads, employees and users	4.71	5	5	4	0.4518
team approach	4.62	5	5	4	0.4856
ability to transfer knowledge	4.57	5	5	4	0.4949
respect for diversity	4.48	5	5	4	0.5871
creativity and innovation	4.48	5	5	4	0.5871
ability to determine priorities	4.24	4	4	4	0.6835
creating partnerships	4.29	4	4	4	0.5471
willingness to take risks, overcome resistance to change	4.19	4	4	4	0.7315
optimism in change management	4.05	4	4	4	0.7222
career planning	4.05	4	4	4	0.6529

Professional competences showed general agreement and gained high rates. The experts fully agreed that the most important professional competence was readiness for continuous learning and improvement. They also agreed that competences: working with databases, indexing, metadata, using technology to manage information services, excellence in managing materials and information sources and knowledge of tools for measuring and analyzing literacy education results were essential for information literacy education. For competences: knowledge of bibliometrics, scientometrics and scientific productivity evaluation, 5 participants believed they were not needed for information literacy education. This can be explained by the fact that academic librarians mostly work with students who make up the major users of their information literacy education services, and the fact that in some tested countries

librarians do not offer bibliometric services nor do they require expertise in evaluating scientific productivity. Some participants who provide bibliometric service believed that it was a job for scientists and that they should mainly evaluate scientific productivity since they need it more than libraries. Most of the participants still believed that the evaluation of scientific productivity was very important and that it was a way to recognise the quality of competent information experts in libraries.

As far as *personal* competences are concerned, the participants agreed that establishing effective communication among heads, employees and users, teamwork, ability to transfer knowledge, respect for diversity and creativity and innovation were the most important competences in information literacy education. The participants also agreed with other proposed personal competences, although some excluded optimism in change management (2) and career planning (3). This shows that some participants believed that competences directed towards users were more important than those directed towards themselves. On the other hand, we cannot present these results as a lack of interest in improvement and training, since the majority of participants have professional and scientific titles. In the last phase the participants were given a fully compliant list of competences ranked according to mean value obtained by the statistical analysis of the first iteration. They were asked to rate the competences from 1-5 (5 being the most important) regarding their own proficiency, thus performing a self-evaluation. The moderators assigned unrated competences grade 1 assuming that the participants did not possess a competence which they believed was unnecessary.

4.3   Analysis 3

Table 3 shows the results of the participant's self-evaluation in defining the competences list in relation to the conformed list. The number of who believed that some competences should be excluded and did not rate them is also listed participants.

The participants rated their *basic* competences for information literacy education quite high. They believed that they constantly upgraded their existing knowledge and shared it with others. They were aware of the high ethical values in using information; they believed they possessed a high level of information literacy. They used the Internet, direct communication, presentations and publication in advertising their information services. They developed the library's information policies, planned and executed various programs of information literacy education, and they were well aware of intellectual property and copyright. They evaluated their information literacy education programs as very good. According to the self-assessment, it can be concluded that heads of university libraries need to be educated in methodology and encouraged to participate in research and presentation of its results. Pedagogical and psychological knowledge were rated as good, which indicates that there is a need for their improvement.

Regarding their *professional* competences the participants believed they were open to continuous education and improvement. They found that they had a good knowledge of working with databases, using technology to manage information services and had a good knowledge of managing materials and information sources.

Distance learning support was also rated as good, but the knowledge of bibliometrics and scientific productivity evaluation was rated as average, and 5 to 6 people regarded them as unnecessary competences for heads of university libraries responsible for information literacy education. The fact is that librarians in some surveyed countries are not the providers of this type of service.

Personal competences were rated quite high. The experts stated that they were the best with competences of establishing effective communication among heads, employees and users, as well as the ability to transfer knowledge and respect diversity. A team approach, creativity and innovation were also rated high. The lowest rated competence was career planning, which means that heads of academic libraries should be further educated so that they are able to better plan their careers.

Table 3. Participants' self-evaluation results

BASIC	MEAN	MOD	NOT VALID.
understanding the value of upgrading existing knowledge and the willingness to share it with others	4.74	5	
high ethical values in using information	4.50	5	
high level of information literacy	4.29	5	1
advertising information services using the web, direct communication, presentations, publications and conversations	4.24	4	
developing the library information policies, especially regarding license purchasing for information related products and services	4.08	4	2
intellectual property and copyright understanding	4.03	4	3
planning and executing various information literacy education programs	4.03	5	
ability to do research work and present its results at conferences, in publications and through different forms of cooperation	3.84	5	1
pedagogical and psychological knowledge	3.74	5	3
PROFESSIONAL			
readiness for continuous learning and improvement	4.84	5	
working with databases, indexing, metadata	4.55	5	
excellence in managing materials and information sources	4.37	5	
using technology to manage information services	4.08	4	
knowledge of bibliometrics, scientometrics	3.47	4	5
supports distance learning	3.32	4	2
scientific productivity evaluation	3.47	4	6
knowledge of tools for measuring and analyzing literacy education results	3.11	4	1
PERSONAL			
establishing effective communication among heads, employees -and users	4.82	5	
ability to transfer knowledge	4.63	5	
respect for diversity	4.63	5	
team approach	4.58	5	
creativity and innovation	4.29	4	
ability to determine priorities	4.32	5	1
willingness to take risks, overcome resistance to change	4.29	5	2
creating partnerships	4.05	4	1
optimism in change management	4.05	5	2
career planning	3.66	4	3

5   Conclusion

The analyses of international commonly accepted frameworks and documents, various studies and available references show that there is no unanimous opinion regarding education and competence acquisition of librarians and information scientists. It is particularly interesting that neither on the international nor on the national level there are no defined competences of librarians working in higher education and university libraries.

Academic librarians are expected to be actively included in the education process, to have the knowledge and skills necessary for user instruction, knowledge of scientific communication, legislative bases of higher education, regulations on the choice of profession and scientific advancement, knowledge of bibliometrics, organising and managing institutional repositories, to participate in projects, research, analysis of scientific productivity in institutions and there many more demands. Up to now, these competences were not defined as academic librarian competences, nor was it completely clear whether librarians should know how to perform these tasks.

A list of academic librarian competences should serve as a basis for achieving greater efficiency in the information literacy instruction of users, as well as the education of heads of university libraries. It should not be an invariable document, but rather a basis for designing competences according to the needs of the society and institutions within which the libraries operate as well as the user's needs. The participants in the research quickly reached a consensus regarding the necessary competences. The results of the self-evaluation showed that the participants in the research felt most competent regarding personal competences, followed by basic and professional competences.

The importance of defining the competences of information literacy educators in academic libraries is that the results can be used as a starting point for further research resulting in a constant updating of formal and informal education programs, training and lifelong education of librarians. They also can help information literacy carriers to fill gaps in their personal competences and to find ways to improve them. After this preliminary research it is possible to continue the study using the same method, but to focus on scientists and experts from the library and information sciences, members of scientific institutions and heads of central departments of academic libraries. The results of this research could be used to describe the competences necessary for academic librarians and as a starting point for formal education, or at least as a starting point for lifelong education while accepting the environment's dynamics of change.

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What and Why a Research about Reading Promotion on Public Libraries in the Metropolitan Area of Lisbon

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Abstract. Research Practices for Promoting Reading in Libraries in the MLA (Metropolitan Lisbon Area) looks at how we process practices to promote reading (PPR) in public libraries (PL). The reason for this research is the lack of focused qualitative studies or extensive investigations in this area. Against this backdrop, we developed a research to expand the knowledge on the subject, and the reality of what and how that is translated in the PPR's performed in the PL's. We seek to assess concepts and discourses that frame the promotion of reading; identify and characterize dominant or singular developed PPR; know the role of mediation and participants in these PPR; know the assessment given by librarians about the PPR that they promoted. This seems relevant in a time global transformation, where the domain of the practice and uses of reading and skills in various literacies are compelling and cross needs in a culture of information context.

Keywords: Information literacy, literacy promotion, promotion of reading, public libraries, qualitative research.

1   Critical Literature Review

We started our project by conducting a literature review, a structuring stage of the investigative process. We found theoretical and practical literature on the educational and civic role of libraries in dissemination, access and promotion of reading and literacies; bye extensive theoretical and practical literature on reading, information literacy and other literacies. However, the concepts about reading literacy, literacy [1-3], information literacy [4-6] and other related concepts, as some authors warn [7-8], cases of metonymy and semantic differentiation might occur. Noticed there are theoretical and practical studies in these fields on the Portuguese reality, but as regards the PPR in PL, in general, they are monographic or disclosure of specific PPR studies. Extensive studies focus on quantitative research providing general or diffuse information about PPR activities by P.L. Thus, on the PPR in PL of MLA, literature is characterized by a lack of information allowing on this reality.

We argue that consideration of the results of research on the period under review made in the Science Open Access Repository in Portugal,[1] the websites of the universities with science information and documentation, in the minutes of the Congress BAD.[2] Except for special cases, also in internet searches and other documentation [9-12], [2], , we found no studies characterizing what they are and how to process the PPR in Portuguese PL; or the existence of legal framework [13]; or normative guiding[3] to promote reading in PL [14-16],. Annual surveys produced by the official body that oversees the PL[4] and existing quantitative studies on reading [17-24], [10], [12] and on readers [25-28], limited to the quantification of enunciation and typological practices performed[5] and do not address processes of conceptualization and implementation of PPR and literacies. In short, they do not explain what actually are these PPR and literacies in Portuguese PL, or what differentiates them from recreational activities or animation, and that situation is not very clear in IFLA guidelines [29].

While actively promoting reading[6] [30-31] is a recent historical field for contextual perspective views, practices and uses of reading, we found theoretical information about its historical diachrony [32-36]. We also found quantitative historical studies [37] and qualitative and theoretical research addressing sociological meanings of reading [38-39] and changes its course of practices of cultural and social phenomenon

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[1] It is known as RCCAP

[2] BAD - Portuguese Association of Librarians, Archivists and Document. Meeting Minutes from 2001 to 2012 in `http://www.bad.pt/publicacoes/index.php/congressosbad/issue/archive`

[3] In the DGLAB site - General Directorate of the Book, Archives and Libraries, `http://rcbp.dglb.pt/pt/ServProf/Documentacao/Paginas/Linhasorientadoras.aspx`, the official body that coordinates the National Network of Public Reading there are no reference documents guiding practices aimed specifically to promote reading and literacies for Portuguese PL. In its online archive contained some guidelines IFLA and UNESCO Manifesto.

[4] DGLAB - General Directorate of the Book, Archives and Libraries.

[5] A more systematic information on existing libraries of the National Network of Public Reading is the annual surveys produced by the Directorate - General DGLAB Book Archives and Libraries. In them (see the statistical report of 2011 and 2012 at `http://rcbp.dglb.pt/pt/ServProf/Estatistica/Documents/RELATORIO_Estatistico_2011_DGLAB.pdf` and `http://rcbp.dglb.pt/pt/ServProf/ Estatistica/Documents/RELATORIO_Estatistico_2012_DGLAB.pdf` . These surveys, which can be related to PPR are limited to numeric data sessions: Story Time; Meetings With Writers; Reading Clubs / Communities of Readers; Exhibitions about books and authors; Art exhibitions; Conferences lectures; Workshops to promote reading; Other workshops; Training in reading promotion; Training in computer science; Other training; Other activities; Number of on-going projects. Not for concrete information on which promotion are made on information literacy and other literacies, nor on the theoretical and conceptual model that fits these activities, nor on its evaluation exists.

[6] Mediation process and approach, interacting with participants, develops strategies to enable them to think critically about what they read involving them in activities designed to help them better understand, discuss and retain information, seeking to activate their previous knowledge schemes; stimulating assimilation capacity, comparison, evaluation, information processing approaches and content available, and thus contribute to transform the results of participation in these experiences into new knowledge.

of reading [40-43]. We find relevant literature to enroll reading (promotion and uses; transdisciplinary focus of reading; the role of reading on a information culture; educational paradigms and multiple literacies), [44-47]. Issues relating to access and social uses of reading have also been studies [48], [11], highlighting some of the centrality of cultural literacy and information in the information society and emerging challenges [33], [46]. The cultural and social dimension of reading in the reality of time is a relatively common denominator to all authors and similar view is projected on the importance of the social role of libraries in promoting reading [49] and its increased relevance in a culture of information in the digital environment [50-51] and the culture of information involves the scientific, technological and humanities fields.

When meaningful the literature on theoretical and empirical reflections and studies on the social, educational and civic role of libraries in the dissemination and access to culture, information and promotion of reading and literacies [48-49], [3], [52-53], in literature (and in the practice of libraries) there is some conceptual vagueness as to promote reading, promote literacies and recreational activities, an aspect that is directly or laterally reported by several authors [54-55], [14], [22], [47], [1]. PPR fitting what are the sociological context of cultural transmission and reproduction and social significance of reading in the collective consciousness [56-57], some authors [58-63], despite their different theoretical frameworks,[7] consider the current adverse reality the validated reading. Other [38-39], [46] think they cannot be promoted to be the most adjusted approaches of new technological, social and cultural realities. These reflections are relevant and add interest to the development of PPR , taking into account that in national [12]- [64], [28] and international studies on reading and readers [25], [10], [65], Portugal does not occupy a prominent position in reading skills, although this situation has improved over in the last decade [19].

From the examples above, we found that the theoretical frameworks and research reading and literacies in the PPR literature which refer to Portugal, are either predominantly quantitative or qualitative studies, or are limited and occasional. Despite this, the literature provides us with a methodological framework and established the theoretical horizon for research in the context of knowledge on the subject of an *information society*, although some authors prefer to value the concepts of *knowledge society* and *culture information* [50], [46], [60]. However, before the picture of the state of the art it cannot be argued that there is actual research on what they are and how effectively PPR and literacies in Portuguese libraries are processed, even when considering the approaches to the new realities. Several authors stress the need for the current context of uncertainty, change and challenges to deepen reflection and produce knowledge practices for promoting reading in Portuguese PL [66], a relatively unknown reality. For this knowledge it is necessary to collect data accurate, systematic and consistent about PPR and make an analysis and interpretation that better meets the intervention developed by PL Portugal at a time when reading skills

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[7] Guy Debord, thinker, writer and one of the leading theorists of the Situationist International movement. Mario Vargas Llosa is globally known as a novelist, with his ideological background and political positions also gave prominence to this writer awarded with the Nobel Prize in Literature. His teaching career has less media exposure, even though he has developed a solid academic record at Columbia, Florida, Harvard, Princeton and Georgetown (USA) and universities Queen Mary College, King's College and Cambridge (UK).

and literacies are compelling. This should be crossed with needs in the context of a culture of information that must include skills of reading, writing and literacies in the scientific, technological and creative fields and areas of social sciences [46].

2   Research Topic and Questions

The existing gap in the knowledge of reality in PPR PL is a relevant problem in the importance of reading skills, information literacy and other literacies in a culture of information. The other questions of their individual and social value are also central to the mission and purposes of public libraries. Related to our question (what are they and how to process the practices of reading promotion in municipal public libraries in the Metropolitan Area of Lisbon?) emerge: What is the conceptual framework of the public libraries Practices for Promoting Reading in MLA? How are they constructed and operated? How are they viewed by the users? How are they evaluated?

To answer these questions we considered conducting a survey based on interviews and documentary analysis of evidence about PPR carried out between 2009-2013. The objective is to know, not "judge", and thus we can build an awareness of research to improve and determine the situation and so overcome the lack of consistent information and the mere enunciation discourse associated with the promotion of reading. We place the hypothesis so that we may know part of the reality of Portuguese reading promotion practices and give a picture of its eventual dominant model, or singular forms they assume in Metropolitan Lisbon Area. The model will be developed with the knowledge of conceptual and operative expression that informs this practices, associating them also to related concepts (literacy, information literacies, transliteracies) and socio-cultural dimensions that frame these practices. We consider these pertinent issues for the increased need of promoting reading skills and literacies, as we have already stated, there are only occasional studies available do not allow us to characterize this reality and are insufficient for effective knowledge PPR which are promoted in Portuguese public libraries.

3   Research Objectives

The overall goal of our research is to investigate and analyse practices to promote reading (print or digital and textual, visual, hearing or other readings) and literacies in PL MLA and what they are in order to add knowledge to this relatively unknown reality.

We have very specific objectives: to assess the level of understanding in the researched sample on reading promotion; to get to know the content that PL give to its concepts and values that as such give meaning to their possible theoretical and operational grounds; to identify, characterize and describe how PPR and literacies are developed and made available; to know what inspires them; to know how they are conceptualized, operationalized and supported; the signal models underpinning the PPR (animation activities, educational activities); to know what methods are used; to know how PPR mediation is framed; to understand what approach is taken and to develop strategies for stakeholder involvement; to know how they assess the PPR; how PLs are identified as opponents and/or adjuvants to PPR; to assess the

relationship between reading promotion and developed practices; what levels of convergence/divergence exist between concepts, dominant discourses and practices; and to foresee visions of the future that are detected in these libraries for the qualification and development of practices for promoting reading.

Whereas the purpose of this research is to alleviate the gap in knowledge of the reality of PPR, we intend to collect information that provides answers to these questions (Table 1) and that they may raise new hypotheses and questions to allow us to understand why these libraries promote reading and how to operationalize it. We hypothesized[8] that we can be successful in the objective to meet the descriptive framework of the PPR in MLA PL and the analytical objective of knowing how they are processed, which predominate singular instances (paradigmatic, ideological, historical, etc.); assess levels of consonance and dissonance between theoretical framework, objectives and resulting underpinning the PPR and know which librarians consider MLA opponents and adjuvants for operating their PPR and eventually to prefigure its re-design.

Table 1. The procedural framework to develop relationships with the goal of answering questions.

Questions ⟶	*Relationship to develop*
What are the **referential models?**	Identify **references**
What PPR are offered?	To **collect and analyse** PPR
What are the **dimensions** that emerge from the indicators?	Flag **dimensions and indicators**
What **skill levels** are involved?	Flag **evidence**
What **needs do you seek** to redress?	Flag **evidence**
How are **participants framed?**	To **collect and analyse**
What are **the PPR in MLA?**	**Verify relationships between the paradigmatic and the tangible.**

4   Research Methodology

Having considering the research hypothesis and the objectives set in terms of research methodology we decided to opt for a qualitative research based on a questionnaire and interview supplemented by documentary evidence analysis.[9] We focused this

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[8] The possibility of knowing what they are and how to process the PPR from the questions has the potential to frame hypotheses and answer the problem: detecting existing perspectives on reading and literacy; assess any conceptual vagueness and / or artificial dichotomy; verify dimensions of differentiation between and overcoming the mere availability of public access to documentary resources / promotion of social and cultural access ; distinguish dimensions of entertainment activities / educational activities.

[9] The intersection of data and information obtained from the interviews and further investigation with the documentary evidence, materials produced by libraries within their PPR, enable analysis and interpretation allowing a better knowledge of what they are actually PPR and intervention PL of the 18 MLA developed for the promotion of reading and qualification of people in their communities.

exploratory and descriptive study in the period of 2009-2013, based on field research on a sample of 18 libraries in the Metropolitan Area of Lisbon (MLA). It is a restricted but representative geographical area of 2962.4 km ², 2.821.876 inhabitants (28% of the Portuguese population) heterogeneously distributed among 18 counties with diverse sociocultural characteristics (urban and rural communities; cosmopolitan realities and periphery) (Table 2). The sample is representative of MLA since it includes all the libraries of the 18 municipalities and interviews were held with the heads of these libraries.

Table 2. Counties and population of the Metropolitan Lisbon Area

County	km^2	Population (2011)*
Alcochete	132.8	17.565
Almada	70.2	173.298
Amadora	23.8	175.558
Barreiro	32.0	79.042
Cascais	97.2	205.117
Lisboa	84.6	545.245
Loures	169.0	76.749
Mafra	291.5	70.867
Moita	54.6	66.311
Montijo	340.5	58.308
Odivelas	26.6	143.755
Oeiras	45.8	172.063
Palmela	465.9	62.549
Seixal	95.7	157.981
Sesimbra	195.7	52.371
Setubal	193.6	124.459
Sintra	319.4	377.249
Vila Franca de Xira	323.5	136.510
Total	2.962.4	2.815.851

*Provided from the National Institute of Statistics.

As verified by the most current review no study addresses how to process extensively Portuguese practices for promoting reading on public libraries, in seeking to identify which PPR were produced; and what they aim to promote objectively; what are their theoretical frameworks; and guidelines that frame the planning and operation of PPR. Given the existing theoretical framework, the problem of our research cannot be properly confronted with similar previous studies. So we will choose not to continue the existing theoretical framework. As mentioned in Quivy [67], this is another methodological possibility, that we have structured the data collection and reporting, and analysis of PPR actantial scheme in which they express themselves in another epistemological perspective.

Framed by theoretical studies and research, our research is based on a survey whose approach is oriented to the sources and the problems[10] and we intend to obtain

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[10] Developed an oriented sources (interviews and documents) and also to the problems, which 'involves formulating questions by reading secondary sources' approach [68].

information from indicators derived from the analysis of discursive content and documents, available data and evidence produced by the PL, which will allow us to better understand the reality of the PPR in MLA PL[11] and measuring the degree of correspondence between these indicators point and advocated on theoretical concepts and paradigms in dominant discourse on promoting reading and literacies.

We privileged a qualitative methodology [69] using the method of semi-directive inquiry by interviews [70-71]. The various research questions were addressed in a scripted interview[12] encompassing the dimensions and indicators of research (Table 3) and a more detailed questionnaire thus using here a mixed research methodology[13]. Following the interview, later we requested the delivery documentation and the possibility of viewing the materials for survey evidence to submit content analysis [72-73].[14] This will ensure greater usefulness and meaning to the data, additional elements for classification of treatment and interpretation of data and the results of the analysis will be compared with quantitative information obtained in other studies. This will help us better understand the meanings and logical representations that emerge from research and articulate consolidation of the problematic build and analytical model (Figure 1).

We believe that this research will result in greater knowledge aboutpractices for promoting reading in MLA libraries. From it data and information might emerge to

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[11] We use as investigational instruments the following records; the interview guide; Records of sound recordings; notebook records; checklists; critical content analysis of categorical data and statistical results; document content analysis. For the processing of data will do their loading racks and recording instruments. Using techniques of data processing and statistical tools to build tables, graphs and tables needed. The analysis, evaluation and interpretation of information will be made in the size of the phenomenological paradigm. We hope to obtain consistent results to support the hypothesis of the research.

[12] Synopsis of the interview guide questions: What is the framework given to the content of the concept of PPR and literacy? Practices developed highlighted by respondents; Models that these practices shape it (animation activities; educational activities) PPR? What concrete developments and made available? What methods are used for their development? How are conceptualized, planned, operationalized and evaluated? What evidence shows that the activities translate into PPR? What potential developments that are affecting the reading? How is the mediation of PPR and that the instruments fall? That centrality is given to the role and evaluation of participants? What are the concepts, dominant discourses and practices? That adjuvants and opponents faced by PPR? What visions of the future are detected for PPR in the libraries of MLA?

[13] There are investigations such as ours where this intersection may be pertinent to observe a relationship "between qualitative and context of discovery, and (...) the amount and context of the evidence" [69, p. 96]. The mixed option can contribute relativity face a dichotomous engagement. There is also some interaction methods, "even in exact quantitative measures what is measured remains a quality" [71, p.38].

[14] "A set of techniques for communication analysis in order to obtain a systematic and objective description of the contents of indicators (quantitative or otherwise) messages that allow the inference of knowledge concerning the conditions of production / reception (inferred variables) of these messages" [7, p.44].

confirm or refute consistency of existing empirical processes and their convergence / divergence with canons and paradigms to promote reading. The answers given to the questions of this investigation[15] may also contribute to generate new hypotheses questioning the reality measured and pave the way for further research.

5   Developed Work

So far we conducted a significant *review of the literature* and made the *research project* that was approved by the University of Évora. We decided on the *sample*, and completed the *authorization process for participation in the sample* of all municipalities of MLA. We conducted the survey of *indicators* that adequately reflect the concepts and evidence we sought to analyse. A *conceptual glossary* associated with the promotion of literacies was produced, and we built the *interview guide* and *supplementary questionnaire*. We have already *completed the process of conducting interviews* and had excellent reception and collaboration. Librarians felt that their participation gave them the opportunity to reflect on PPR and literacies that develop in their PL; that their input would be useful for the purpose of obtaining an identification reference and descriptive than they are in the PPR and literacies of MLA PL; this could clarify the theoretical framework, conceptualization, content, execution and results of PPR promoted by PL.

Table 3.   Framework for dimensional and sources of indicators

Dimensions ⟶	Sources of indicators
A – Participants (the interviewed)	**A 1 –** Information content of the **interviews**
B – Formats (contents practices documents and offered frameworks)	**B 1 – Evidence** collected and categorizations arising from critical analysis
C – Interactive potential, practical involvement and promotion of the objectives	**C 1 – Triangulation of variables and units of meaning** obtained in interviews with documental and critical analysis of their content and reviews of BP
D – Public **Hearing**	**D 1 –** Statistical **data** collected and compiled by BP reviews
E – Cultural	**E 1 –** Theoretical and conceptual **affiliations**

At the moment we are doing the *transcription of interviews* to then release the appropriate information and data grids for analysis. Then go back to the libraries to observe and collect evidence records of documents produced to support the PPR and subjecting the documentary and content analysis. With this research we hope to produce consistent and sustained information that could increase the knowledge on PPR in PL and what contribution these libraries are making to a reality with a more competent readers. We hope that eventually this research can also stimulate further research with qualitative approach in the promotion of reading.

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[15] *Answers to be obtained by the research*: What do you mean by libraries promote reading; Relationship between PPR and developed practices; Determination of a possible basic structure relatively common to PPR; Gauging the possible absence of a common denominator to the PPR; Singular instances that predominate in PPR (paradigmatic, ideological, historical, etc.); Theoretical and operational grounds that surround the PPR; Processes of articulation and projection of these fundamentals in PPR developed; How is the assessment of the PPR; Obstacles to the development and qualification of PPR; The conceptual framework and the values that give meaning to the PPR.
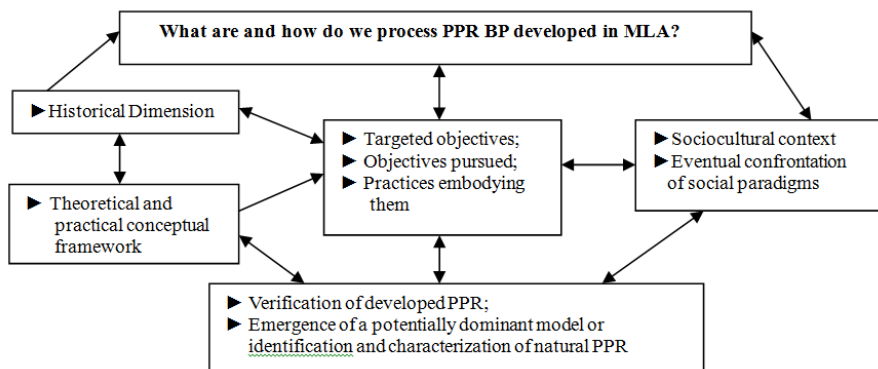
Fig. 1. Diagram of the analysis model[16]

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[16] The analytical model that arises from our problem involves: concepts (around PPR); dimensions (historical practices of reading, social paradigms on PPR; effective practices developed by libraries); indicators (interview data, information obtained through document analysis, conceptual measurement).Research indicators: concept of reading promotion; concept of literacy promotion; practices developed (outstanding practices of PPR performed); tables inspiring references; conceptualization developed for PPR (characterization of practices developed; conceptualization); methods used in PPR; potential targets (developing specific skills and other purposes); perception / information fruition potential; assessment procedures (results achieved; critical factors; adjuvants factors; suggestions for improving PPR); characterization of the respondents.

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The School Library as a Promoter of Multimedia Literacy in Primary Education in Croatia

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Abstract. In this paper, we present and critically view the current state of the multimedia literacy education in Croatia's elementary education. We also offer an approach to promote multimedia literacy in primary education in Croatia encouraging school librarians, elementary school students and teachers to use multimedia in regular classes. The project "Literacy for the 21st Century", launched by the school library of the elementary school Dubovac, is being presented as an example of best practice to encourage exploration and critical thinking about selection and combination of media and the multimedia content.

Keywords: School library, literacy, multimedia literacy, primary education, Croatia.

1   Introduction

The aim of this paper is to evaluate the current role of the school library in multimedia literacy education, describe the potential of such education and examine the possibility of introducing multimedia literacy education programs in the existing curriculum.

The existing curriculum for the primary and secondary education in the Republic of Croatia, *Nacionalni okvirni kurikulum za predškolski odgoj i obrazovanje te opće obvezno i srednjoškolsko obrazovanje* [1], mentions multimedia 10 times: as part of the Music art and culture, Film and media art and culture and Informatics subjects. It is also mentioned as a teaching tool that should serve the development of the student. It is not mentioned in the curriculum of elementary school subjects other than Informatics. The previous curriculum (dating from 2006) emphasized the teacher's obligation to apply audio-visual tools and computer science equipment along with the task of the librarian to purchase multimedia sources of knowledge [2].

At the same time, multimedia literacy education programs around the world are becoming essential in preparing elementary school students for the information requirements that will be more and more challenging to meet in the future.

Today's elementary school students are used to the fast pace of computer games, instantaneity of hypertext, immediate reception of information and its continuous availability, as well as the immediacy of hypertext and instant messaging, which makes them absolutely impatient for the traditional slow systematic transfer of the learning content. Their core competence is multitasking. They look for immediate feedback on their knowledge and prefer the content presented by graphics, sound and video more than text [3-5]. These students tend to learn surrounded by dynamic media with a high level of interactivity, using random access to content rather than the linear one. As soon as they are offered the static text and graphics, they lose interest and their attention drops significantly. Most of them are visual types. Therefore, the verbal or textual content supported by the visual content raises their motivation for learning and capability to memorize details [6]. Since they have grown up with video games, they perceive the learning method of trial and error as a metaphor for learning.

The above described learning habits of students require such design of education materials that allows students to experiment with the content, avoiding lessons with narration and lecturing style, and enabling them to learn concepts and new skills through play [7].

In multimedia literacy education programs, students act as researchers locating and selecting the information needed to understand the topic. They also act as authors who create multimedia for the intended audience and designers who need to select the appropriate media to share the concepts. Finally, they act as writers, finding ways to fit the information to the container linking it for others to retrieve [8].

Despite all known needs of contemporary school children and despite all benefits of multimedia literacy education, primary school children in Croatia are able to acquire it only as part of the Informatics class, which is still an elective school subject. This means that children may finish their elementary with few of the competencies needed for heavy multimedia use.

Teachers of different subjects in primary schools in Croatia list many obstacles when using multimedia [2], the most frequent being: lack of computer science equipment in school (although majority of classrooms are equipped with modern media), lack of time to use multimedia due to the scope of the curriculum and a large number of children in their classes.

Furthermore, more recent research [9] shows that even the majority of the Informatics teachers do not use multimedia regularly in the classroom, leaving it up to students to decide whether they will use multimedia resources independently at home, in an uncontrolled environment. Not surprisingly, the same research reveals that significantly small number of elementary school children in Croatia perceives the library as a place that offers the possibility of finding and using multimedia as well as the creation of multimedia materials in collaboration with the school librarian. The same research point out a statistically significant difference in the acquisition of knowledge between children who use multimedia regularly in school and children who use it only occasionally and / or independently at home.

The same research uncovers that school libraries in Croatia possess adequate multimedia sources and librarians willing to educate students and their fellow teachers

on how to use these sources. Still, when it comes to multimedia literacy education, school libraries in Croatia appear to be a forgotten place.

2   Multimedia Literacy Education

The constant development of media technologies plays a significant role in education, continually adapting to students' needs in the 21st century. Therefore, various terms for "literacy" as well as "literacy education" are being used.

In addition to written literacy, terms such as digital literacy, visual literacy, computer literacy, information literacy, media literacy and critical literacy are increasingly used in order to spread the concept of literacy to visual, electronic and digital forms of expression and communication [10].

Bawden [11] classifies multimedia literacy under the digital literacy that is actually a generic term for a group of literacies: network literacy, Internet literacy, and hyper-literacy. But, digital literacy generally refers to the understanding of information on the web. Computer literacy, which is nowadays taught in primary schools, represents the ability to use computers and understand the tools that allow the user to interact with the technology infrastructure [12]. Information literacy is defined as a set of skills that an individual should have to recognize a need for information, to identify, locate, evaluate, and effectively use that information for the issue or problem at hand [11], while multimedia literacy represents the ability to understand the content presented by a combination of different media [13].

Due to the large consumption of information obtained through the mass media (TV, internet), the notion of media literacy emerged. Media literacy refers to the popular mass media, but also has a major role in education, encouraging children to critically analyze mass media messages and pop culture.

It is important, though, to distinguish the "multimedia literacy" from the "media literacy" pointing out the difference between the "use of mass media" and the "content covered by multimedia". Whichever literacy is mentioned in the literature, the term "literacy" usually represents the ability to read and write, to understand information and express ideas in a concrete and abstract way, often assuming the text as a medium.

Multimedia, as equally as text, allows the development of concepts, abstraction and comparison, simultaneously employing more senses in these processes and offering interactivity as a key factor. Unlike text, which is written and read, multimedia is created, constructed, investigated and managed. Multimedia literate students experience the challenge of creating multimedia documents and become better consumers of multimedia documents produced by others.

The integration of text, images, sound and animation in the multimedia document creates a unique language, which can successfully be implemented in teaching and education. As a consequence, multimedia literacy aims to help users to develop a critical understanding of the nature of multimedia, multimedia techniques and their impact on the end user [14].

3   The Role of the School Library in Multimedia Literacy Education

The latest technologies allow almost ideal forms of learning and education. These forms and applications can be implemented in the school and the school library with the help of technology, making educational institutions and libraries the most appropriate place for teaching multimedia literacy.

Elementary school students should be offered library education programs that help them to develop their literacies. These programs would include autonomy in the use of sources of information and knowledge as well as interaction with library materials. Such education of library users is referred to as library literacy [15] relating to the competent use of libraries, and can be achieved through referencing and teaching about the use of a certain library, its services and resources. Programs for library education include learning in the library and integration of the library in the educational process through the use of computers – e.g. lessons are being held in the library, visiting professor answers questions through online chat, etc. Such programs may promote new approaches to education and offer new forms of learning.

Since today we have direct access to extensive sources of information and knowledge, the objective is that students acquire certain competencies for using information resources through the program. This would make students competent in library usage, they would understand its organization and work (materials, classification principles, catalogs, bibliographies and reference collection). Apart from having reading skills developed to a high degree, they would also possess information search and retrieval skills as well as skills needed to meet the constant changes in that area. That would make them information literates prepared to become future citizens - active, educated humanists, skilled in communication and critical thinking with the developed sense of social responsibility.

Besides providing education and access to knowledge, an important activity of the library is to allow the use of recorded knowledge in various types of media. This involves introducing students to the methods and techniques of research and teaching on the sources of information and knowledge. Through that process it is important to meet the important methodological requirement: create a positive atmosphere to work with information presented in a variety of media.

Teaching methods prevailing in the modern school systems aim to make students active participants in the learning process and contribute to the development of the above mentioned skills. This means that students perform their own multimedia research and their search for information begins in the school library.

The school library as a multimedia center of every school and school librarian as a promoter of multimedia literacy are becoming a vital part of the curriculum as well as extracurricular activities, regardless of the content or the subject [16]. With respect to the computer equipment of the school library and his/her technological knowledge, a school librarian can explore the modern tools that might simply and effectively be used in teaching / learning and present them to both teachers and students. The fact is that all multimedia applications available to teachers and students establish parallels with the traditional medium – the paper. As a consequence, it facilitates students 'and

teacher's first encounter with a new tool. For example, when they engage in design of multimedia online posters, they make comparison with paper posters; when working on multimedia books they can draw parallels with the printed picture books, etc.

Students' existing skills facilitate the mastery of the new media and enable them to move quickly to exploring new possibilities offered by the new tool. They can combine text, images, audio and video (along with numerous effects), but they need to make their own decisions about which media are appropriate for their specific learning task, to learn how to integrate the information coming from multiple sources and in different formats (such as text, music, animation, digital resources and the Internet) and to learn to think critically and thereby acquire new knowledge [14].

In addition to basic computer skills (such as text processing or image editing), students in primary and secondary schools should also acquire skills to use multimedia tools in order to keep up with the growing trend of multimedia. However, it is also necessary to constantly motivate the older generation (teachers, professional staff and librarians) to acquire new skills in order to be able to use multimedia at school.

Not all teachers or librarians tend to be IT experts. Therefore, in schools it is necessary to take into account life-long learning and multidisciplinary approach to multimedia literacy education through new tools, teaching materials and content that enables innovative and interactive approaches to learning and teaching, and, ultimately, better knowledge acquisition.

From the methodical aspect, librarians should create conditions for the development of children's current and potential capabilities and be responsive to the needs of students.

However, today's librarians, as well as teachers were not born into the digital world and must learn to communicate in the language and style of their students. That does not mean the traditional curriculum needs to be changed.

The basic skills: reading, writing, knowledge of mathematics and logical thinking are still important, but the new content and the one that will follow are digitally and technologically dictated.

The new technology and multimedia environment put forward new requirements to librarians and teachers; they are expected to become lifelong learners, but also to be informational, multimedia and IT literate.

On the other hand, the educational system in Croatia is still based on the traditional approach that does not take into account the difference between today's students and their teachers and as such faces a lot of difficulties in reaching today's students [17].

4   Literacy for the 21st Century – A School Library Multimedia Project

The school library of elementary school Dubovac (in Karlovac) has been a multimedia center of the school for years. Apart from the presence of different media available to users as a source of information and knowledge, the recent activities organized by the library represent real multimedia projects, such as "Digital collection

of students' picture books" (2005–2008)[1] and "Fairy Tales - sources of multiculturalism" (2009-2010).[2]

In the school year 2011-2012 the school library launched the project "Literacy for the 21st Century", which includes work with the following multimedia applications: PowerPoint, Glogster, Animoto and Storybird. These applications were selected due to their well-known ease of use and popularity and because the end result tends to be attractive and effective. The project is intended primarily for students from 5th to 8th grade (11-14 years). Due to the limited number of available computers, participants are only students who actually prepare the multimedia material for the school classes. The subject teacher sends students to the library where they take part in the organized practical workshop, learning about a particular application. The school librarian presents students with basic concepts, information and features of the selected application. Afterwards, students work independently – they start in the school library and continue their work at home. The librarian, teacher and student are constantly in touch - either by e-mail, through the selected application or in person (daily at school), so that technical shortcomings do not present any obstacle to the quality work of all participants.

As a consequence, teachers also become involved in this process, directly or indirectly. They are the ones who are willing to give their lecturing space to modern techniques and technology in their class. Furthermore, it is necessary that each teacher, at least theoretically, gets introduced to an application that was recommended by a librarian in order to be able to design assignments for his students.

The significance of teachers (and librarians) in this process is visible through continuous communication with students in the design phase of the project. The teacher is usually responsible for the content, while the librarian provides sources of information and helps with the technical issues. It often happens that, after a teacher gets familiar with the application in such a way, he/she starts using it for teaching purposes in his class.

The final goal of each workshop is to prepare students for a public oral presentation of the content using any application they feel is the most suitable. Generally, they need to understand that how they present is as important as what they present. Only fully prepared students are able to give presentations to their fellow students in class.

Regarding the applications used in the preparation of each lesson, the first one covered by the workshop organized in the school library is PowerPoint. Participants are fifth graders who need to prepare a presentation for the English language class. Most of them interact with this application for the first time, and even if they did work with it before, it was usually just out of curiosity. Therefore, for most of them this workshop represents the first serious work with the application. Even students who attend elective Informatics classes start using this application only in the sixth grade. After the workshop, students work at home, and if necessary, communicate with the librarian or teacher (by e-mail or in person). Before students hold their presentations, they take part in another organized workshop during which they receive reviews and

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[1] http://www.os-dubovac-ka.skole.hr/skola/knjiznica?ms_nav=aam
[2] http://www.os-dubovac-ka.skole.hr/skola/knjiznica/bajke_izvor_
   multikulturalnosti

comments about their presentation and have a chance to rehearse the presentation. Through the process of preparing their presentations, students apply their existing knowledge and build on it throughout the school year, mostly independently. The teacher does not have access to student work until they go through the material together. Also, students have to manage and save the presentation in the correct (newer / older) version and always check if the version of the program that will support the prepared presentation is installed and running.

Another application that is commonly used for presentations is *GlogsterEdu*[3]. Its primary function is to allow students to create online posters (glogs) with the use of multimedia (videos, music, sounds, pictures, text, special effects, animations, etc.).

Regarding the workshop on making *glogs*, the big advantage is that students already have experience with creating "paper posters" and therefore they can draw parallels with the classic poster (e.g., the relationship between the title font size and the body text font size, the ratio of text to images, etc.). Furthermore, "paper posters" serve to highlight the new features and benefits provided by the *glog*, such as the insertion of audio, video, animation, etc. Students start to use this application already in the 5th grade and they continue to use it until the eighth grade. The number of features presented to students in each school year depends on the topic / task, e.g. fifth graders in the English language class create a glog about their favorite food. For this kind of task they do not need knowledge about inserting video or sound, since the emphasis of the glog is to add to their work text, graphics and clip arts. On the other hand, sixth graders are expected to add video to their glog titled "People we admire", and as are the seventh graders making presentations about endangered animal species. Finally, eighth graders are expected to add sound to their glogs (e.g. a song in mp3 format) because their presentation topic is "My favorite singer or band".

The largest number of students participates in the glogster workshop. This is primarily because the 45-minute school hour allows short presentations of many students, but also because fifth graders are still not able to explore all advantages of this application.

Storybird[4] is an application that offers design of digital books or picture books. At the elementary school Dubovac, Storybird is used by fifth graders to create a short story about themselves that they read / present in the English language class. During the workshop on this application, students draw parallels with the printed material and revise terms such as cover page, imprint, illustration, etc. The possibility of storing all the works in the so-called "Storybird library" is particularly interesting for teachers and librarians, since it presents a great opportunity to teach students about the virtual library and compare it with the traditional one.

Finally, both Storybird and GlogsterEdu allow the author to describe his/her work with keywords offered by the application (e.g. language, age) or by entering his/her own keywords. This action enables students to acquire skills of determining keywords related to the specific content, which is especially important and fundamental for the successful information retrieval.

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[3] http://edu.glogster.com/
[4] http://storybird.com/

Animoto[5] is an application that became part of the project in the school year 2013-2014. It is a cloud-based video creation application that produces videos from photos, video clips, and music. Students tend to be skillful in making videos, since most of them have already practiced it using a cell phone, tablet or camera. In the workshop on Animoto eight graders have prepar a video clip presentation about Australia and New Zealand for the English language class. Using photos downloaded from the internet, music background and a few short keywords or bullets, a student that created the video has to challenge his/her peers to guess which country is the topic of his/her video and to get them interested in the topic.

The use of these applications increases the possibilities for the correlation of school subjects, which has been the practice in our schools for a long time. An example of such correlation is sixth graders' glogs prepared for the Croatian language class using the Internet as a glog's topic. In the Croatian language class, the emphasis was placed on reading with comprehension, and the creation of notes that students wrote in these glogs instead of their notebooks. Later on, when the topic of Internet security was covered in the Informatics class, students presented their glogs to each other.

Such correlation was also obtained between the Biology and English language class. Seventh graders created glogs about endangered animal species for their English language class and used the same glogs later in the Biology class when they talked about protecting these species.

Finally, since all students' works are published on the website of the school library, they are accessible not only to their peers, but also to younger students, their teachers and parents. Also, students can place their own work on their websites, Facebook, Twitter, Edmodo, etc., increasing the visibility of their work and efforts.

However, there are applications and tools used only by librarian and teachers in the project. These are online tools: *Kubbu*[6] and *ISSUU*[7]. Using *Kubbu*, students have the opportunity to solve quizzes and online exams prepared by their teachers, which proves to be an extremely interesting, useful and entertaining activity. Since Kubbu instantly provides the student with the success rate at the end of the quiz/exam, it saves teacher's time required for correcting online exams. Finally, using a simple catalog and the newspaper digital publishing tool ISSUU, teachers design their own digital materials, such as summaries of the content covered in school curriculum (e.g. `http://www.os-dubovac-ka.skole.hr/skola/knjiznica/ materijeli`).

5   Conclusion

This paper intended to present and critically view the current state of the multimedia literacy education in Croatia's elementary education. The urgent need for this type of education in elementary schools is stated and discussed, including the consequences this may have for the elementary education in general. In addition to statistical material based on surveys conducted as part of two PhD studies, a field study on the

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[5] `http://animoto.com/`

[6] `http://www.kubbu.com/`

[7] `http://www.issuu.com/`

application of multimedia literacy education program which has been introduced at the elementary school Dubovac in included.

Table 1. The list of applications covered by the project "Literacy for the 21st Century" and skills acquired through the use of such applications

Applications Used by Students	Skills Acquired (Students)
GlogsterEdu	use of search engines
Animoto	information retrieval
Storybird	creation of folders
PowerPoint	copy – paste, save commands
	keyboarding
Applications Used by Teachers	hyperlinking
Kubbu	reading / writing comments
ISSUU	e-mail communication
	embedding digital data into own web pages, Edmodo, FB, Twitter, etc.
	design of notes
	public presentation

During the three school years, about fifty students from grades 5 through 8 participated in the project "Literacy for the 21st Century" at that school. The project is being implemented for the third school year in a row, which is the best indicator of student interest in multimedia education. Tools and applications used in this project can serve both students and teachers: they are easily accessible, simple to use, and make the multimedia materials effective and attractive. Despite all obstacles they face using multimedia in class, teachers of different subjects became involved in multimedia literacy education, educating students for the proper usage of multimedia, choosing suitable multimedia contents compatible with the curriculum and regulating the time of multimedia usage in class together with the school librarian.

At a time when students are constantly looking for something new, interesting and up-to-date, multimedia literacy education represent a tool that encourages exploration of different school subjects and critical thinking about selection and combination of media and the multimedia content. In this way, students become active participants in any class (not only Informatics), because they have a chance to shape the multimedia teaching content that will serve as a source of information and motivation for others to engage in similar activities. Multimedia literate students become creators of the new attractive and accessible content that can serve as educational material for much longer than one school day. Their multimedia creations enrich school classes, increase teacher's productivity and enhance students' motivation to learn.

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Information Literacy and Public Libraries in Peru: An Approach to Its Study

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Abstract. This paper explores the situation of information literacy activities in a sample formed by the public libraries of the five most populous districts of the province of Lima that serve more than three million inhabitants and represent approximately 37% of the population. For the data collection a documentary study was carried out; observations were applied and semi structured interviews were conducted. The results show that, in spite of national regulations and international recommendations, information literacy is still an unfamiliar concept in the public libraries of the sample, and IL activities are not carried out. District governments seem to ignore the potential and the social returns of libraries, particularly in areas where vast sectors of the population are socially excluded. As a consequence of the precarious situation in terms of personnel, collections, budget, and connectivity, public libraries are prevented from being a suitable space for IL activities.

Keywords: Information literacy, public libraries, social exclusion, social inclusion, Peru.

1   Introduction

Information literacy has become one of the essential concepts in the information society. Although the origin dates back to the 1970's it is in the last ten years that publications, academic encounters, online resources, etc. have appeared in large numbers. The Geneva Declaration of Principles states that "each person should have the opportunity to acquire the necessary skills and knowledge in order to understand, participate actively in, and benefit fully from, the Information Society and the knowledge economy". This is a call for capacity building and for IL that challenges librarians and information professionals and demands a more active educational role. Together with lifelong education and social inclusion, IL becomes essential to help citizens connect with information, to bridge the gap between the information rich and the information poor and to participate actively in the democratic life of society. For these purposes public libraries, by their very democratic nature, can play a very important role.

This study explores the situation of literacy activities in a sample of public libraries. Since it is known that most IL activities are carried out in university

libraries, we wanted to find out what was happening in the public libraries of five densely populated districts of Lima where the majority of the population live in difficult conditions. Interviews to personnel in charge of the libraries included: familiarity with the concept of IL, the type of activities, frequency, content, perceptions of user information skills, infrastructure and equipment facilities, problems, and coordination with the National Library of Peru.

The findings of this study will be of interest to information professionals, to municipalities and to the National Library, which is in charge of the National System of Libraries.

2   Literature Review

For many years poverty was considered only from the economic point of view. However, the term "*poverty*" has recently been replaced by "*social exclusion,*" a term that seems to explain more clearly a phenomenon that affects large sectors of the urban or rural population in key areas such as health, education, work, access to information, participation and access to justice. Social exclusion, of a multifactorial nature, places people in a disadvantaged situation which they cannot leave by their own means. Castells [1] defines exclusion as a process by which certain individuals and groups are prevented systematically from access to positions that would allow independent subsistence within social levels determined by institutions and values in a given context.

According to Muddiman [2], social exclusion relates not simply to a lack of material resources, but also to issues like inadequate social participation, lack of cultural and educational capital, inadequate access to services and lack of power. Subirats et.al. [3] distinguish eight aspects of social exclusion: work, education, ethnicity, citizenship, gender, public health, space and housing, and justice. These are compounded by circumstances that intensify the exclusion (age, ethnic group or cultural origin) derived from structural elements as well. Jiménez [4] states that factors such as illiteracy, low education levels, dropping out of the school system without having obtained basic qualifications, academic failure, lack of command of foreign languages, among others, can lead to processes of social exclusion. Hernandez [5] also emphasizes the relevance of the educational dimension in poverty and the social exclusion. He indicates that education is one of the most influential factors in the construction of the life path of the individual. It determines, to a great extent, who is going to be in the position to reach the labor market and other spheres.

The sense of powerlessness of socially excluded people has been related to deprivation of capabilities. This new insight comes from the contribution of Amartya Sen [6] for whom poverty is not due strictly to economic factors but, rather, to the lack of capabilities which prevents people from making decisions and choosing freely. Capabilities are conditions and opportunities associated to basic needs, to economic needs and to political participation.

Governments, institutions of civil society and authorities play a fundamental role in achieving these conditions. Nussbaum [7], who also favors the capability approach, lists ten basic capacities that would have to be assured to each person by virtue of

their human dignity. The approach is related to human rights and the concept of human development. Nussbaum states that at the heart of the capabilities approach since its inception has been the importance of education. Education forms people's existing capacities into developed internal capabilities of many kinds. This formation is valuable in itself and a source of lifelong satisfaction. Britz et.al [8] have considered that the capability approach has important implications for the understanding of information-based rights and policy recommendations.

It is interesting to note that the capabilities approach can also be related to the concept of *information literacy,* because a capacity empowers the individual. Some definitions of information literacy highlight this aspect, as in the case of The Alexandria Proclamation [9] where it says, "IL lies at the core of lifelong learning. It empowers people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals".

Stressing the educational dimension of information literacy, Campal [10] argues that public libraries and lifelong learning have an unavoidable relationship and these libraries are the learning resource centers for the community. In the same line, Lai [11] considers that the public library is a place which supports adult education and lifelong learning and has the capability of narrowing the digital divide by providing free computer and Internet access and offering training courses to improve people's IL skills. Sierra [12] notes that the concept of information literacy has become very important in the field of library science, particularly within the public library because it approaches the integral formation of the individual with respect to the use of information in different fields, including a strongly visible ethical and political dimension.

IL is also associated with the efforts to fight against social exclusion through the development of competencies that allow people to handle and evaluate information efficiently, ethically, in an increasingly complex information society. The Alexandria Proclamation [9] states that IL "is a basic human right in a digital world and promotes social inclusion of all nations". Vincent [13], Dudziak [14], Gehner [15], Stilwell [16], Berrío [17], Oguz and Kurbanoglu [18] have approached the topic from different perspectives, but in association with libraries, particularly with public libraries, which have been identified as one of the most propitious spaces for IL activities in underprivileged sectors of society.

Gómez and Pasadas [19] consider that public libraries are an efficient instrument towards integration, learning and creation of social capital; as long as they can organize activities like training in information there will be an increase in citizen participation, community cohesion and personal and social development. However, Hall [20] warns that "the new literacy studies challenge the assumptions that public library users will become fully engaged and empowered members of a society, or that they will enjoy economic and social goods and privileges, just because they have been given access to the latest tools for storing, retrieving and producing information". She adds that libraries that simply offer classes on how to use new technologies are not doing enough. Hall concurs with Dudziak [14] when both, inspired by works of Paulo Freire, argue that information literacy is a liberating and emancipatory process. Regretting the lack or weaknesses of information literacy activities in European public libraries, Hernández y García [21] comment that with a shortage of economic resources and personnel and shortage of knowledge on methods of IL, public libraries

have been missing the opportunity to become trainers of a vast population of young people and non-university adults.

An interesting view that stresses how far or how close the citizens feel their public library is held by De Faveri [22] who believes that "for many working-class adults the library is as foreign an institution as a university or museum. Even relatively well-off working class people may not have a tradition of library use and so may feel that their lives, their values, and their concerns are not reflected in the culture of the library". For that reason, she considers that breaking barriers to library use is about building relationships and it requires staff prepared to understand the community needs and the library's role is meeting those needs. This is a challenge to librarians in search of a socially inclusive library.

3   The Peruvian Case

As in many parts of Latin America, in Peru *information literacy* is an unfamiliar concept for the general population and it is not a term much used by librarians. Lau [23] indicates that in the region some librarians still use *user education* or *user instruction*, instead of *information literacy,* because for most people illiteracy means the lack of reading and writing skills. He adds that graduates, professors and education administrators refuse to attend workshops where they will be "made literate". Other concepts also used are: *information competencies* and *development of information abilities* or DHI, from its initials in Spanish. Further, the concepts are often used interchangeably; Rendón et.al. [24] admit the existence of many variants of the concept *formation of users* that tend to be confused, such as *user education, bibliographic instruction* and *library instruction.*

In search of testimonies of IL activities in Peru in the past, we found the book by Duarte [25] entitled Introducción Bibliográfica para Estudiantes de Medicina[1] published in 1958 by the National University of San Marcos. We also found the Proceedings of the Second National Congress of Librarianship and Information held in 1981 organized by the Peruvian Association of Librarians [26] where one of the working groups was dedicated to user training. As a result they prepared a training program for higher education users to train to solve problems related to study, education and research, and to familiarize them with the information sources in order to get access to subjects of their interest. The program mentioned various forms of instruction such as conferences, courses, preparation of handbooks and production of didactic materials.

In the last thirty years IL activities in Peru have been very limited in numbers and have been held mostly in university libraries, which seems to be common to Latin American countries, as the Declaration of Lima [27] recognizes. Lau [23] and Uribe [28] also confirm the situation; however, they observe a trend towards an increase in the number of publications, websites and events about information literacy. With

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[1] Bibliographical Introduction for Medicine Students

regard to Peru, Uribe[2], who maintains an active and updated wiki about information literacy in Iberoamerica, finds four articles, thirteen papers offered in national events, one chapter of a book, four presentations, one declaration, two videos, three events, five web resources and one course. Numbers are still low compared to other countries of the Region and to what it is necessary to do, to know, and to share.

IL activities in Peruvian public libraries are not carried out in accordance with recommendations and guidelines. This situation is, among other reasons, a consequence of the level of development achieved by these libraries. Although countless documents from congresses, seminars and meetings emphasize the value of public libraries to society, the reality contradicts the statement. Alejos [29] indicates that they do not have a fixed budget, or modern, safe and comfortable furniture; they do not have audiovisual collections, and technical processes are not of sufficient quality due to the lack of qualified personnel.

According to the Organic Law of Municipalities (Law n. 279722), these must "organize and maintain cultural centers, libraries, theaters, and art workshops in provinces, districts and smaller communities". The law does not specify the basic conditions for proper functioning of libraries, so this is left to the discretion or the political will of the authority.

In addition to municipalities, the National Library of Peru also has responsibilities regarding public libraries. This institution has been the entity in charge of the National System of Libraries since 1983. Public libraries were part of the system. Last year, Law n. 30034 created a new National System of Libraries that aims at improving the operation of libraries nationwide and the rational use of their services and bibliographic resources within the public policy of social inclusion, construction of citizenship and human development. The law also states that public libraries of regional governments, provincial, and district municipalities and smaller communities will be part of the system. The regulation to the law has not yet been enacted, but it is expected that it will have further clarifications on the role and responsibilities of the National Library, the regional, provincial and local governments regarding the destiny of public libraries.

As well as its traditional functions, at present the National Library offers services as the Public Library of Lima in one of its two premises in the downtown area. It also administers five Peripheral Libraries [30] in five districts of the capital city. Among their objectives, peripheral libraries aim to promote the integration of the library with the community, to promote reading habits and to organize and spread programs of library extension services.

In line with the efforts to build an information society, Peru has La Agenda Digital 2.0. [31]. It is the Plan for the Development of the Information Society in Peru and was prepared with the participation of groups of the public and private sector, academia and civil society. Its second objective is: "To integrate, expand and ensure the development of competencies so that the population has access to and can participate in the Information and Knowledge Society". To this end four strategies

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[2] http://alfiniberoamerica.wikispaces.com/Per%C3%BA (Retrieved May 24th 2014)

must be followed: to foster information literacy programs; to educate for the Information and Knowledge Society; to develop applications and contents for education in its different levels and forms, with emphasis on regular basic education; and to improve the quality of educational management through the use of ICT.

The Agenda indicates that, given the advances of ICT and the enormous amount of printed, audio-visual and electronic information that is produced every day, a new disparity is appearing due to the lack of knowledge about how to search, organize and use information as well as how to use ICT. The Agenda states that a progressive reduction of the information gap will be a public policy that will require working in conjunction with regional governments and municipalities. The Agenda considers that telecenters and Internet cafés should be added to this effort.

Internet cafés are public places that give access to Internet at a very low price. In the last fifteen years they have proliferated, particularly in urban areas, as small private businesses in all sectors of society.

4   Methodology

This is an exploratory study with an intentional non-probabilistic sampling. It is applied to public libraries of the five most populous districts in the province of Lima that serve more than three million inhabitants and represent approximately 37% of the population of the province.

Although the district of San Martin de Porres was originally on the selected list because of its 673,149 inhabitants, we were told that the public library was closed two years ago due to infrastructure problems and would probably open at the end of this year. It was therefore decided to study the public library of Villa Maria del Triunfo, the sixth most populous district of Lima. For the data collection a documentary study was carried out; observations were applied and semi-structured interviews were conducted with the people in charge of the libraries.

5   Results

On January 17 2014, the National Institute of Statistics and Data Processing [32] reported that Lima has 8 million 693 thousand inhabitants in its 43 districts. The five libraries selected for this study belong to the following districts:

- San Juan de Lurigancho (1,047,725 inhabitants)
- Ate (592,345 inhabitants)
- Comas (520,403 inhabitants)
- Villa El Salvador (445,189 inhabitants)
- Villa María del Triunfo (433,861 inhabitants)

Large sectors of the population of these five districts live under very difficult socioeconomic conditions, as we see in Table 1 where they are marked in bold. The table applies the socioeconomic criterion, a measure based on education, income and occupation, which means that a significant set of people share economic and social conditions that make them similar to each other. In the table, Villa El Salvador and

Villa Maria del Triunfo, two of the selected districts, have 62.7 % of the population classified in Levels D and E, that means Low inferior and Marginal levels.

Table 1. Socio-economic structure according to APEIM

Areas	Socioeconomic status				
	A: High	B: Middle	C: Upper Low	D: Low	E: Marginal
Puente Piedra, **Comas,** Carabayllo	0.5	11.8	39.2	40.4	8.1
San Juan de Lurigancho	0.8	10.7	37.8	40.9	9.8
Ate, Chaclacayo, Lurigancho, Santa Anita, San Luis, El Agustino	2.1	14.2	35.1	35.7	12.9
Villa el Salvador, **Villa María del Triunfo**, Lurín, Pachacamac	0.7	6.9	29.7	43.6	19.1

Source: Asociación Peruana de Investigación de Mercados (Peruvian Association of Market Research) `http://cpi.pe/images/upload/paginaweb/archivo/26/MR_201311_01.pdf`

Although the Peruvian economic situation has improved in the last twenty years, and there has been a reduction of poverty levels, the economic growth contrasts with the presence of social problems, particularly in the urban areas: poverty, unemployment, low productivity jobs, citizen insecurity, drug addiction, problems that have become a constant concern for the government and population. This situation confirms what a recent UNDP report [33] says, "…income growth does not necessarily translate into gains in other aspects of human development. Growth may generate resources to invest in health and education, but the link is not automatic. Moreover, growth may have little impact on other important human development priorities such as participation and empowerment".

5.1   San Juan de Lurigancho

This is the largest district of Peru and has grown rapidly due to massive migration from the provinces to the capital city during the 1950s using invasions of flat free areas and the foothills. Commercial and manufacturing activities and civil construction are the most important economic activities of the district.

Its library is under the Office of Human Development Management. The person in charge, who is not a librarian, had never heard about IL and he thought it was traditional literacy. He has four years of experience working in the library, but has not so far received any training. He does not necessarily find out about training courses or other library related events because invitations do not reach the library. It is entirely up to the head of the office to send personnel to training courses.

Considering that the district has more than one million inhabitants, the collection is extremely poor and outdated. The library supports itself with private donations, which are limited. The person in charge, who feels that the library is abandoned, indicates that children and youngsters prefer to go to Internet cafés to search for information, because the library does not have all they need, although there are six computers for users, who do not receive any user instruction because, as the person in

charge said, "if they want to use the computer, they are supposed to know how to use it." He just gives the password to the user. He mentioned that they do not have an agreement with the National Library and in recent years they have not received any support from them. The Organic Law of Municipalities states that municipalities can create and maintain libraries, cultural centers and theaters. It is in this line that San Juan de Lurigancho has built The Palace of Youth, a very modern building that offers courses about self-esteem, motivation, leadership, speed reading techniques, reading comprehension and Microsoft Office programs.

5.2   Ate

Founded in 1821, Ate is one of the oldest districts of Lima. Its population is composed mainly of migrants from different parts of the country. The majority are unskilled workers from the service sector, farm laborers and small traders. The Municipal Public Library of Ate is under the Human and Cultural Development Office. It is located within the Cultural Center of the district, which offers workshops on dance, music, theatre and leadership, as well as shows and art exhibitions. The library has nine computers for users but they must be used only for academic searches, not for entertainment. During January and February, the summer months, the library is closed to give space to gym classes and handicraft workshops, due to the fact that these programs are paid and bring profits to the Municipality. This situation annoys users and also the library assistants, who are assigned to help the workshops.

The person in charge of the library, who is a retired school teacher, had never heard about IL. He says that the library does not offer bibliographic instruction or user education. He states that the person he replaced attended training courses by the National Library in the past, but since he started working, six months ago, he has not yet attended any training course. He admits that users know more than he does about computers, so his help to users consists of turning on and turning off the computer, giving them the password and serving the circulation desk. At present they do not have any agreement with the National Library.

5.3   Comas

Comas is the fourth most populous district of the capital city. The majority of the population consists of migrants from different parts of the country. They are mainly traders, small traders and shop keepers. Some have initiated their own small and medium size enterprises. Despite its large population, Comas does not have a public municipal library and currently there are no plans to create one. The only library which is open to the public is a peripheral library that is maintained by the National Library of Peru. Peripheral libraries are located in some of the most densely populated districts of the capital city. The premises belong to the municipalities and are transferred to the National Library so that this institution is responsible for the organization and the provision of library services.

The person in charge of the library during the first shift knew of the concept of IL and indicated that some IL activities have taken place in the library in the form of

short talks for user training. This concept is mentioned in the document that describes staff duties. One of the services provided is the open shelf Reading Room Service. Library staff guides the user to locate books on the shelves and to review them according to the user's information needs. They organize talks for the appropriate use of the library service according to the following guidelines: a) To indicate in a general but clear way what type of materials the library has; b) To explain in general terms how the collection is ordered and classified. c) To make known the library regulations; and d) To explain the sense, objectives and goals of the library.

5.4   Villa El Salvador

Villa El Salvador, an iconic district, was born in 1971 as a self-managed community and emerged in response to the need for housing. It started with an invasion of publicly-owned land. At present the majority of the population is involved in commerce, services and manufacturing industries.

The municipality has created four Houses of Youth in order to prevent antisocial behavior and drug use through the promotion of artistic, cultural and educational activities. Within each House of Youth there is a library which is managed by the head of the House. The library is under the Sub-Office of Education, Culture, Sport and Youth. As in other districts, the House offers music, dance, jewelry, and sewing workshops as well as computer classes. Library staff had not heard about information literacy and do not organize any kind of user instruction or user education. They consider that whoever wants to know how to use computers must take the course that the House of Youth offers periodically, outside the library. Further, there are no computers in the libraries. The municipality has a team to promote the public libraries and, interestingly, the coordinator of the team knew the meaning of IL because he had attended a two-day workshop about IL by the National Library, although they do not have any agreement with this institution. So far, no IL activities have been implemented.

5.5   Villa María del Triunfo

The district was founded in 1961. As in the case of the other districts, it started with massive invasions of public and private land. At present, the majority of the population is involved in commerce, manufacturing industry, transport, storage and communication activities.

The library is under the Sub-Office of Youth, Education, Culture and Sport, which is in turn under the Human Development Office. The person in charge of the library is not a librarian and when she was asked if she had heard about IL, she explained what she knew about literacy campaigns. Later, she said that she had never heard that concept. They do not offer user instruction or user education courses. Library collections come from donations. She states that when a user comes for a consultation, since the library does not have an updated catalog, she suggests titles of books that will help to solve the problems; she also recommends that users read the tables of contents; she says that is the way she helps and educate users. The library,

which is also used as a place of study, does not have computers and the only one that is visible is not operating, because it has been broken for two years. She states that the municipality offers free ICT courses every week. With regard to training, she knows that the National Library offers training courses but does not get the invitations and has never attended a training course in nine years of work.

6   Conclusions

The results of the study demonstrate that the concept of IL is unknown in three out of five cases. IL activities are not carried out; the staff is not prepared to do so and do not have the adequate conditions because of library limitations: lack of qualified personnel, poor collections, lack of sufficient number of computers and connectivity. This situation prevents the libraries from contributing to combatting social exclusion by providing opportunities to improve living conditions, to enhance social capital, to bridge educational gaps in their communities. Social exclusion in many cases forces people to generate self-employment and small enterprises at their own risk, as the only way to survive. Public libraries should take into account the drive and vitality of this population in order to meet their own information needs and interests, through IL activities that empower them, that build capacities to face life and the information society in better conditions.

For centuries libraries have been associated to the written culture; our country is eminently oral, the Quechua language is basically oral. The oral culture of Peruvian population seems to have facilitated a rapid adaptation to Internet. That is why, for many sectors of the population, Internet replaces the deficiency of libraries, particularly of public libraries, which are then perceived not to be essential. The proliferation of Internet cafés and the low prices to get access to information have brought an intense use of Internet even in urban poor communities. This situation has relieved the population of the scarcity of information in public libraries, but at the same time has moved the users away from them. The strong presence of the oral culture must be taken into account when libraries design their IL activities.

It is very difficult to advance these activities in the present conditions of the five libraries that were studied. Municipalities do not perceive the social benefits of public libraries and do not invest in their improvement. The recently enacted law of the National System of Libraries raises expectations; however, it is necessary to specify responsibilities through the regulations which have not yet been implemented. The Agenda Digital 2.0 is an interesting policy document without legal force. We hope that this study will raise the level of awareness and understanding of the problem among library and information professionals, who in the great majority of cases do not work in public libraries.

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The Role of Libraries in Shaping 21st Century Skills in Poland

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Abstract. Media and information literacy (MIL) is one of the key-factors that enable people to learn 21st century skills. In some documents, MIL itself is perceived as one of those 21st century skills. In the Polish governmental documents related to 21st century skills neither the role of libraries in shaping those skills nor the term "information literacy" or "media and information literacy" were identified. This study is the first attempt to respond to the omission of MIL in official documents and to prepare a proposal arguing that libraries should actively participate in shaping 21st century skills since this is not solely the domain of educators and schools. The study proposes a rhetorical analysis, based on Burke's rhetoric and identification theory. The documents related to 21st century skills published to date in Poland were analysed. The objective of this study was to identify the gaps where MIL programmes and practices promoting acquiring and developing those skills could be implemented. The study demonstrates that both in academic and public forums libraries seem to be ignored and not perceived as appropriate spaces for shaping 21st century skills. Hence, libraries must strengthen their position, and therefore advocacy for the role of libraries is needed.

Keywords: 21st century skills, information literacy, libraries, governmental documents, Poland.

1 Introduction

The notion of "21st century skills" has been a recurring theme in the scientific debate since before beginning of the millenium.

These skills have been defined in various ways, and the discussion as to what constitutes a set of 21st century skills can be found in the literature [1-2].

Media and information literacy (MIL) seems to be one of the key-factors that enable people to learn 21st century skills. In some documents, MIL itself is perceived as one of these skills.

The Framework for 21st Century Learning, together with the project Museums, Libraries and 21st Century Skills (both published in the U.S.) provide an exhaustive and coherent vision of what 21st century skills are, and how the institutions and organizations

at the regional and national level should contribute in shaping and developing these skills [3-4].

However, apart from in the U.S. the skills for the 21st century are engaged with by educators and not librarians. This should be a warning to librarians to get more involved in the topic and, as Adeyoyin et al. underline, "to develop and define our [=librarians – *ZW's note*] role before others force their definition upon us"[5].

2   A Glance at 21st Century Skills

21st century skills is a "buzzword" that highlights changes in both technology and in society. In the literature there are hundreds of descriptors of the skills set as well as many definitions. The term seems vague and confusing and it can be discussed from several angles including life skills, workforce skills, interpersonal skills, applied skills, and noncognitive skills [2].

Silva [2] is of opinion that an emphasis on what students can do with knowledge, rather that what units of knowledge they have, is the essence of 21st century skills. Below is presented an outline of the skills crucial from the point of view of libraries and librarians which informs the research presented in this paper.

Language Competencies. Language is a key factor in access to information. Those who speak English have access to a wider pool of information in most fields of knowledge due to the dominance of English, especially in electronic information databases [6].

Intercultural Competencies. This includes culture-general knowledge, cultural self-awareness, curiosity, cognitive flexibility, open-mindedness, behavioral skills (e.g. listening), problem solving, empathy, relationship building skills.

Ways of Thinking. This includes creativity, critical thinking, problem solving, easiness in decisions taking, easiness in learning, learning to learn, self-empowering.

Ways of Working. Communication and cooperation skills, like knowledge sharing and the ability to work within communities of practice.

ICT Competencies. Technology and digital literacy. Use of ICT tools, hardware and software; use of ICT communication and collaboration technologies.

To this list is added *Media and Information competencies (MIL).* According to the IFLA MIL Recommendations, the MIL concept extends beyond communication and information technologies to encompass learning, critical thinking, and interpretative skills across and beyond professional and educational boundaries. Media and Information Literacy includes all types of information resources: oral, print, and digital [7].

Simone C. O. Conceição has suggested "survival" 21st century skills for scholars. These are: information management, knowledge management, and publication management. Conceição explains the need for having these skills by the change of

behaviour from place-bound information access to anytime-anywhere access to information [8].

Several of the skills noted above can be captured under an umbrella term "information fluency". Sometimes information fluency is used as a synonym for information literacy. However, the first concept comprises much more than just finding, using and evaluation of information [9].

3   Methodology

This paper reports a rhetorical analysis based on Burke's rhetoric and identification theory [10].

Kenneth Burke has presented the domain that can be named modern rhetorical studies. His theory of identification and conception of identity as a critical instrument has received significant attention as a theoretical concept and a critical tool [11-12].

In this theory, he defines three stages of identification: 1. the process of naming something (or someone) according to specific properties (i.e. observation); 2. the process of associating with and disassociating from others; 3. the product or end result of identifying [13].

Burke's theory of identification can be applied to provide an additional tool to evaluate or explain certain events or communication processes. For Burke, identification is more a concept than a method. He suggests that while consulting the text, the reader (researcher) begins by asking himself "what equals what in this text?; and next asks, "what follows what in this text?" [14]. Burke names these questions "equations" and suggest charting them in order to discover how each key term in a text reinforces an overall argument, a "guiding idea", or "unitary principle" for the entire document [15]. He shows that the concept of identification is not limited to textual analysis, but is theoretically grounded in textual analysis [16].

The study started by constituting and determining the corpus of documents to be analysed. These were the documents related to libraries and 21st century skills published in Poland by governmental agencies as well as by higher education institutions.

The elements of semiotic analysis were introduced, including organization of text and its style.

Then, the places where IL and MIL were mentioned in these documents were noted and "equations" charted.

The study focused on the following documents:

- Law on Higher Education (Pl. *Ustawa Prawo o szkolnictwie wyższym*)
- Statutes of three prominent, public Polish universities (The University of Warsaw, The Jagiellonian University in Cracow, and The University of Wrocław)
- The Framework for Higher Education Qualifications (Pl. *Krajowe Ramy Kwalifikacji*)
- Ministry of Administration and Digitization Service of Media Education document, named *Media Guidance* (Pl. *Drogowskaz Medialny*), and
- The document, Wide Agreement in Aid of Digital Skills (Pl. *Szerokie Porozumienie na Rzecz Umiejętności Cyfrowych*).

4   Rhetorical Data Analysis

First of all, it must be underlined that in Poland, there exists no document (governmental, NGO, or other) that describes the 21st century skills and competencies, using explicitly this umbrella term. The most common approach is the use of a term describing one or several specific skills and/or competencies, e.g. digital competencies, information competencies, or IT skills. The most "popular" competencies in use, listed in many projects and publications are: media competencies (media education) and digital competencies (digital education).

This section provides a brief summary of the document analysis. Two general tendencies could be observed while analyzing the data. 1. In governmental documents libraries as independent institutions are not mentioned. At best there is reference in the documents to a vague need for establishing the "space where skills can be shaped". However libraries are not explicitly named. These "spaces" exist already! They are named "libraries". 2. The critical analysis of the documents from the higher education sector revealed that, if the library exists, it plays an "optional" role. "May" is a verb often used in all documents (*the library may play the role…, the library may support...*).

Higher Education. In the Higher Education Act, Article 88 is dedicated to libraries. It says that "there is a library-information system at the university and the library constitutes its basis. The statute of the university defines the organization and functioning of this system"[17]. Thus, at once the national law refers to higher education institutions and their independence, and gives them a carte blanche in defining the role and mission of academic libraries.

The rhetorical analysis of the statutes of three prestigious Polish universities enabled the charting of the Burkean "equation" related to a didactic role of university library. The equation showed that the vagueness of library roles arises at the academia level. According to The University of Warsaw Statute, "The library fulfills the scientific, didactic and publishing tasks in the frame of its competencies" [18]. At the University of Wrocław "The library is a basic university unit, considering its scientific and didactic nature as well as services provided to other units" [19]. The Statute of Jagiellonian University in Cracow does not even mention the didactic role of library and indicates a narrow role, by stating "The library-information system's task is, particularly, providing access to library and information collections, necessary for didactic process and scientific research" [20]. This situation is alarming, particularly in the context of Bologna Process and Framework for Higher Education implementation that was to be completed in Poland in academic year 2012/2013. None of the analysed universities has changed or modified its statute in response to the European Higher Education Area. The Bologna Process aims, in general, at the unification of European Union higher education, transfer of knowledge, and the adoption of a qualifications frameworks for the European Higher Education Area [21]. Introducing the Bologna Process seems to be a good opportunity to change and adjust the academic didactics to the needs of current students. It can be also an occasion for the professionalization of the pedagogical role of academic libraries and

librarians. Finally, information skills defined as generic in the Framework, imply the need for realisation of information literacy programmes at the universities [22]. Hence, the university library should be an obvious partner to achieve this goal. However, for the time being, this solution has not been taken into consideration yet by the authorities of Polish universities.

How can academic libraries influence or change the current situation? If librarians want to be perceived as educators and libraries as educational units, then there is an urgent need to enhance promotion of library services and library's educational offer. To do so, the cooperation between librarians and faculties, and common advocacy for the library educational offer at the university administration level is absolutely required. Only an educational offer adjusted to the particular needs of students, to shape 21st century skills can lead to the library's success in the university forums and to the implementation of these skills into university strategy and curriculum.

Government. Going beyond the higher education sector in Poland, the governmental initiatives are described. In November 2011, the Ministry of Administration and Digitization was established. One of the main missions of the Ministry is to promote digital competences among citizens. In July 2013 a service of media education, named *Media Guidance* (Pl. *Drogowskaz Medialny*) was launched [23]. It is an information service dedicated to media education, hosted by the National Broadcasting Council (Pl. *Krajowa Rada Radiofonii i Telewizji*). It serves as a hub for information and materials related to initiatives, projects, publications, and conferences in the domain of media education, both national and international.

Also of July 2013 The Wide Agreement for Digital Skills (Pl. *Szerokie Porozumienie na Rzecz Umiejętności Cyfrowych*) was inaugurated. It is an informal association of institutions, organisations and companies. The aim of The Agreement is to support activities of use to realise the modern ITC technologies potential in Poland. The Agreement is an initiative of the National Digitization Leader and the Ministry of Administration and Digitization, with the patronage of the President of Poland. The Agreements mission is to spread digital education and to adjust it to the labour market that changes dynamically; to inspire and support the activities that aim at common digital education, and the effective use of digital technologies. The Agreements goal is to build the synergy and the network of effective collaboration between representatives of different sectors: public, private, NGO, and academic.

As already noted above, these two initiatives focus on selected skills and provide a vague vision of the results to be achieved.

Both initiatives became an occasion for presentation to a wider Polish public of a ministry vision of skills and competences necessary in the 21st century. In the ministry vision, digital competencies found their place, and the terms "media education" and "digital education" were used; however, neither the role of libraries in shaping those "educations" was signaled, nor were the terms "information literacy" or "media and information literacy" employed, although these terms constitute, as noted before, the core of the 21st century skills framework in the US and worldwide.

Significant was the presentation of the Minister of Administration and Digitization in which he discussed the key-competencies needed in the 21st century. It was the first time that the Polish governmental agenda used this term explicitly. However, the

presentation was based on the report *Future Work Skills 2020* [24]. The term "work" is worth highlighting in order to open a debate about the question: what is the goal of developing the 21st century skills? And what role should academic libraries play in this development? These questions are important as universities are the final step in preparing their students to enter a working environment.

5   Discussion

The questions arise: what kind of competencies should student develop: adaptive or emancipation ones? Should adaptation to the market be a determinant? Poland is still perceived as a market of employees and not employers. It can be postulated that Poles work primarily for foreign corporations. The competencies described in Ministry of Administration and Digitization project seem to respond entirely to the need of the labour market. Is it the right path to follow?

Are there any hidden assumptions in the governmental programmes? The rhetorical analysis shows that there might be. What do they serve? It seems that the answer is for labour market needs. The question is whether the employers should dictate to higher education institutions what competencies should be taught? Should the values of corporations be taken for granted? What is more important: the interest of citizens or the interest of corporations? Should education be provided in the service of the neoliberal economy?

Recently in Poland a discussion between the authorities of universities and representatives of business has been taking place about what kind of knowledge universities should teach in order to respond to the needs of the labour market.

It is worth taking a look at how the labour market perceives the skills and competencies gained by graduates of Polish universities. What is the employers' rhetoric in this domain?

The 6th Citizens' Congress (Pl. *VI Kongres Obywatelski*) discussed the key competencies needed in the 21st century in the context of the economy and business. The representatives of the Ministry of Science and Higher Education, NGOs and Polish think tanks debated what meta-competencies are required in order to develop the Polish economy and to achieve market growth [25]. However, none of the authors considered who can shape these competencies. Again, we face the situation where the need is expressed, but the executors are not indicated.

In 2012, Andrzej Klesyk, the president of the biggest Polish insurance company (PZU S.A.) named universities "factories of unemployed people". According to him, Polish universities do not teach students basic work competencies, so the enterprises are entirely burdened to do so just after the employment of graduate(s). The main problem with Polish undergraduates is perceived to be their inability to select appropriate data and to analyse them, as well as the lack of potential and independent critical thinking.

Klesyk pointed out three key competencies mentioned in Section 2 of this paper: ways of working, ways of thinking, and information competencies (information literacy). The last two are exactly the subject of academic libraries education.

6   Conclusion

It appears that Polish libraries must find for themselves their place and define their role in shaping 21st century skills. The major universities in the country, although being signatories to the Bologna Process, seem to ignore libraries as spaces appropriate for doing so. Again, there is a strong need for applying in practice the term "library advocacy" in order to strengthen librarianship in 21st century and to emphasize its values and services. As accurately noted by the authors of the massive open online course (MOOC) dedicated to library advocacy, *though libraries have been loved for over 3,600 years, their relevance in the digital age is being questioned, and their economic and social impacts are poorly understood* [26].

The role of librarians' associations may be crucial in advocating for strengthening the position and visibility of libraries both in academic and public forums. This advocacy is also needed in business forums which, as showed above, are the strong and influential players. However, the question still remains open, should librarians take part in this *adaptation vs. emancipation* debate, and if so opting for one of those? And will it be possible to remain impartial while advocating for shaping the skills necessary in the 21st century? These seem to be rhetorical questions…

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The Role of Public Libraries in Information Literacy in Turkey: A Study of a Provincial Public Library

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Abstract. Information is an important milestone in individuals' lives during their lifelong learning processes. In an information society and a digitalized world, information gives meaning to the individual's presence and enables the individuals' personal and professional development. However, in a digitalized world where information increases and changes quickly, reaching the most accurate information and using it effectively has become a necessity. Choosing the most reliable information, using and assessing it are functional processes. This function is carried out in an effective way by acquiring information literacy skills. An individual's mastering of information and communication technologies facilitates that individual's mastering in information and managing the information. Public libraries play an important role in having lifelong learning skills, acquiring information literacy and developing it. Lifelong learning centers, public libraries, play an important role in acquisition and development of lifelong learning skills which is information literacy. In this article, lifelong learning, the information literacy concept, the relationship between public libraries and these two concepts, and the role of the public library in information literacy will be discussed

Keywords: Information literacy, lifelong learning, public libraries.

1 Literature Review

1.1 Information Literacy

The concept of information literacy was first used by Paul Zurkowski in 1974 [1]. As Kurbanoğlu [2], stated, while in the definitions made in 1970s mainly finding the information and using skills were mentioned, in definitions made afterwards all of information problem solving stages, such as defining information needs, finding, using, assessing, conveying of information, are mentioned. In 1990s, information literacy gained popularity rapidly, and was discussed by a lot of academicians, professional associations and educational establishments, and it became one of the qualifications expected of grad-students. Some committees were established for this purpose in the universities, and people, institutions, groups and associations that

carried out these studies contributed new definitions to the literature [2], with the world taking on a digital dimension, the information literacy concept developed to show a greater inclusion of technological development.

According to ACRL [3], information literacy is the set of skills needed to find, retrieve, analyze and use information. Before the phase of using information, the individuals who experienced the learning process should integrate the information they found with their current knowledge. They need to make a connection between what they already know and the new knowledge they acquire.

1.2   Lifelong Learning and Information Literacy

Lifelong learning means acquiring new skills, developing available information and engaging in learning activities by setting targets for the future in order to contribute to people's career and personal development throughout their life. It means travelling inside himself, discovering new things in this travel and creating himself again. Lifelong learning is an investment for the future that encourages the creativity of people. As Akkoyunlu [4], stated, lifelong learning means to make more investment in people and information, encouraging the acquisition of primary information and skill including digital literacy, and promoting flexible and innovative learning opportunities. Within the frame of creativity and innovativeness, the lifelong learning process requires people to update their information and skills. In the contrary case, they will not be open to change and be behind the times. For this reason, people should gain awareness and learn to learn. The learning process occurs with the learner's demand. The learners should have thirst for learning, curiosity for learning, enthusiasm for learning, passion and desire for learning; so that they can learn to learn. In a very broad sense, learning is a process in which we live constantly in the ordinary life.

Information literacy is an integral part of lifelong learning. Information literacy and lifelong learning are two inseparable concepts. New information and tools arise through the development of information and communication technologies in this digitalized and developing world. Because of the rapid changes in the fields of science and technology, people continue their lifelong learning process; those who reject learning will be behind the time. For this reason, when lifelong learning and information literacy skills are considered as a whole, it can be said that they provide people with a new creation through enormous cooperation. When they are considered in a broader frame, lifelong learning, information literacy, and learning to learn are inter-locked concepts and they support each other.

1.3   Public Libraries

A public library is an organization established, supported and funded by the community, either through local, regional or national government or through some other form of community organization. It provides access to knowledge, information and works of the imagination through a range of resources and services and is equally available to all members of the community regardless of race, nationality, age,

gender, religion, language, disability, economic and employment status and educational attainment [5].

Public Libraries are institutions contribute to people's education in the frame of lifelong learning, carry out supportive actions for education and play an active role in the inclusion of people into modern society. They offer free and voluntary service to all individuals without any discrimination. As stated in the declaration of UNESCO Public Library, public libraries are local centers that provide all kinds of information and knowledge to public library users voluntarily.

Public libraries, having the characteristic of supporting lifelong learning, are information centers that plan an active role in strengthening the foundation of the society. Strengthening the foundation of society is only possible by forming the society with information. The task of public libraries is to supply the society with information in order to increase society's self-development. Public libraries have a central role in the continuation of societies' existence.

In the UNESCO Public Library Manifesto, duties of the public libraries in terms of information literacy and education are defined below:

1. supporting both individual and self-conducted education as well as formal education at all levels;
2. providing opportunities for personal creative development;
3. ensuring the access for citizens to all sorts of community information;
4. facilitating the development of information and computer literacy skills;
5. supporting and participating in literacy activities and programs for all age groups, and initiating such activities if necessary [5].

Public libraries build an intellectual bridge between the individual and information. They increase people's awareness and knowledge levels throughout their lives thus encouraging people of all ages to join in the society. Public libraries educate people through programs on topics such as Leonardo da Vinci, Grundvig, Comenius, Erasmus, which are co-organized by EU countries and candidate members together with National Agencies in order to promote social contribution and employment [6]. Lifelong learning programs, named Erasmus Plus [6], in October of 2013, are short and long term EU-based projects and programs which encourage individuals to join in the society linguistically and socially, provide individuals multi-cultural, multi-national, , multi-minded, multi-lingual environments, and support non-formal education. These lifelong learning programs build an intercultural bridge enabling individuals to establish an intercultural dialogue and incorporate them into an international atmosphere. Public libraries also play a functional role in encouraging individuals' multiculturalism. They also develop individuals' information skills, enabling them to become a part of information society, and in this way they facilitate catching up with the computerized and digitalized world. They contribute to the development of individuals to help them know their information requirements, reach the required information and use this information in an effective way.

1.4   Relationship between Public Libraries and Information Literacy

There is a strong connection between information literacy, which is a lifelong learning skill, and public libraries which are lifelong learning centers. Merging these two concepts will increase people's competence in transferring into an information society. The public library is a place which supports adult education and lifelong learning and has the capability of narrowing the digital divide by providing free computer and Internet access and offering training courses to improve people's IL skills [7].

The adaptation by public libraries of technology will provide benefit to the society. As Yılmaz [8], stated, public libraries accept that they bear responsibility to the citizens to equip them so that they can play a role in their own society by means of learning new information technology skills, reaching expert opinions presented in different ways and being organized. Moreover, public libraries will play a key role in creating information literacy that would enable citizens to join in the democratic society as knowledgeable individuals. Individuals are going to access e-state services freely through public libraries in a democratic society.

Public libraries, as Fenerci [9] stated, are common sharing environments that will provide social cohesion with their mission of performing services without any discrimination by being in public domain. They are also suitable places for self-learning. Moreover, providing access to the internet, giving users the opportunity to create e-mail accounts, as in the Dublin City Library, making libraries open educational centers and providing self-learning through on-line services can enable information and communication. When considered in this regard, it can be said that public libraries facilitate individuals' lives, provide opportunities and help individuals engage in society.

Individuals raise their knowledge levels by accessing collections about music in public libraries. Reaching the information in a digital environment makes individuals more competent and supports individuals' cultural development in the modern world. Saving music archives in the digital environment will enable people to meet different music cultures in different parts of the world, and public libraries' multi-cultural aspect will become a current issue once again. People who have not been exposed to music different cultures previously will broaden their viewpoint by using their information technology skills in public libraries and by reaching unique and rich music collections in a digital archive.

Public libraries are institutions that play an active role in development of individuals with this developing world by providing them with various information resources, digital environment and virtual world service. They provide people not only information but they also teach them how to use this information. They are information centers that can guide people and illuminate their lives. Public libraries' role in developing information literacy citizens in an information world is vitally important. Public libraries, as lifelong learning centers, modernize people by helping them renew themselves.

2   Methodology

The purpose of this study is to determine the role of Ankara Provincial Public Library in information literacy education and at what rate it fulfils its duty in the digitalized world. The research problem was formulated as "Does Ankara Provincial Public Library play an adequate role in acquisition and development of information literacy skills?" The hypothesis was formulated as "Ankara Provincial Public Library does not play an adequate role in acquisition and development of information literacy skills." Population of the study consists of 10.000 people, the number of Ankara Provincial Public Library's monthly users. One hundred and eleven people were chosen as the sample for the research by using convenience sampling. The scale used in the study was prepared based on the Information Literacy Self-efficacy Scale developed by Kurbanoglu, Akkoyunlu and Umay [10].

The obtained data was analyzed by using Computer Packaged Program SPSS15 (Statistical Package for Social Sciences).

3   Findings

One hundred eleven people participated in the study. 45,9% (51) are women, 54,1 % (60) are men. 5,9 % (7) are between 7-14, 41,5% (49)are between 15-24, 40,7% (48) are between 25-44, 7,6 %(9) are between 45-64 ages, 4,2 % (5) are over 65 years old. It can be said that those who participated in the study are mostly young people and young adults.

In the study, the users' were asked their opinions about the Ankara Provincial Public Library's roles and opportunities to provide access to information, use information and communication technologies, and develop information literacy skills.. Data related to this information is stated in Table 1.

When the measures in Table 1 are assessed, it is understood that the users appreciate most Ankara Provincial Public Library's technological opportunities and the library's' contribution to their learning of information and technology conveniently. Approximately one of three users thinks that the library contribute to technological opportunities and ICT skills significantly. The rate of the users who think that public libraries develop computer skills is a bit more than the half (54.1%). This rate can be considered low. There seems to be a lack of awareness that the public libraries offer technological opportunities free of charge. More than half of the users (52.1%) do not know that the public libraries offer these services free. The contribution of Ankara Provincial Public Library to technical opportunities such as the access to electronic resources, using computers, using internet, web searching, and digital archives, is at the lower levels. It can be said that Ankara Provincial Public Library has some problems to offer sufficient services to the users for the acquisition of information literacy skills and development of these skills due to the lack of technological infrastructure.

The users' opinions about the opportunities that Ankara Provincial Public Library offers in order to do research were taken. The related data is stated in Table 2.

When the measures in Table 2 are assessed, Ankara Provincial Public Library's users have higher satisfaction in using printed resources for their information needs. Users can use and find printed resources more easily. Sixty to seventy percent of users think that they do not have any problems doing their research and assignments with printed resources.

Table 1. Ankara Provincial Public Library's role in the users' information literacy skills

	totally disagree		disagree		no idea		agree		totally agree	
	N	%	N	%	N	%	N	%	N	%
I can reach electronic resources in public library	8	6.7	52	43.7	13	10.9	42	35.3	4	3.4
I can reach the information I need by using the internet in public library	11	9.4	44	37.6	16	13.7	38	32.5	8	6.8
I can use computer in public library	10	8.4	42	35.3	16	13.4	41	34.5	10	8.4
I can discover virtual life through public library	32	26.7	48	40.0	13	10.8	25	20.8	2	1.7
I carry out my e-state works via internet accession in public library	34	28.3	47	39.2	19	15.8	19	15.8	1	0.8
I think that public libraries provide technological opportunities like computer and internet free of charge.	12	10.1	38	31.9	12	10.1	47	39.5	10	8.4
I think that public libraries contribute to e-learning (electronic learning) process	12	10.0	50	41.7	17	14.2	32	26.7	9	7.5
I can learn how to browse web in public library	13	11.1	40	34.2	7	6.0	47	40.2	10	8.5
I think that public library improves my computer using skills	10	8.3	55	45.8	10	8.3	36	30.0	9	7.5
I think public libraries are sufficient about digital archive	35	29.4	46	38.7	18	15.1	17	14.3	3	2.5
I can discover Google's search features in public libraries	14	11.8	49	41.2	12	10.1	34	28.6	10	8.4
I can share the information that I obtain from social networking sites in public library with other people	16	13.3	45	37.5	11	9.2	39	32.5	9	7.5

Table 2. The Opportunities for the users in order to do research

	totally disagree		disagree		no idea		agree		totally agree	
	N	%	N	%	N	%	N	%	N	%
I can reach printed resources (books, periodicals, chronologies etc.) in the public library	5	4.2	31	25.8	5	4.2	68	56.7	11	9.2
I can do my assignments and research by using encyclopedias in the public library	3	2.5	28	23.3	6	5.0	70	58.3	13	10.8
I can do various researches with resources in the public library.	9	7.5	35	29.2	4	3.3	60	50.0	12	10.0
I can find course records form assignments in the public library	7	5.9	37	31.4	4	3.4	59	50,0	11	9.3

Table 3. Ankara Provincial Public Library's role in catalogue usage and information search strategies

	totally disagree		disagree		no idea		agree		totally agree	
	N	%	N	%	N	%	N	%	N	%
I can learn how to scan library catalogue in the public library.	7	5.8	32	26.7	11	9.2	56	46.7	14	11.7
I can reach the resources by using library catalogue in public library.	5	4.2	36	30.0	10	8.3	57	47.5	12	10.0
I can reach the information I want by using key word while catalogue scanning in the public library.	11	9.2	35	29.2	17	14.2	46	38.3	11	9.2
I learn how to limit my researches with language of publish, Publisher, date, source type in the public library.	9	7.5	43	35.8	12	10.0	45	37.5	11	9.2
I think that public libraries develop my information search skills.	10	8.3	47	39.2	5	4.2	44	36.7	14	11.7

Ankara Provincial Public Library's role in the users' catalogue usage and information search strategies are stated on Table 3.

When the measures in Table 3 are considered, it can be said that in order to reach the information, the library catalogue is not used sufficiently. Nearly half of the users (42.5%) do not use library catalogue in their research. The rate of the users who know how to reach the information via key words in catalogue search is under the half (47.5%). Nearly half of the users state that they are unable to search with key words to access information and to limit their researches by using the name of the publisher, date, source type. They also state that they do not learn how to do this in the library. More than half of the users (51.7%) think that Ankara Provincial Public Library has no contribution to the development of information search techniques. This data reveals that the library does not function completely to develop the users' qualifications in terms of information literacy.

In the study, some questions were asked to the users in order to understand the library's contribution to distance learning, preparation of written, visual and oral presentations, access to online and printed dictionaries and current magazines and music archives. The related data is stated below.

When the data in Table 4 is considered, it is understood that positive attitudes about the library's contribution to distance learning, preparation of presentations on the internet, access to dictionaries, magazines and music archives and so personal development is less that the half. The users' rates, especially those among who are not aware of the opportunities to access magazine and music archives, is sufficient can be considered rather high. The same is true for access to online and printed dictionaries. This data indicates insufficiency of the library to develop the users' information literacy skills.

The role of Ankara Provincial Public Library in users' access to information in general is very important in terms of information literacy. The related data is stated in Table 5.

Table 4. Ankara Provincial Public Library's contribution to distance learning and access to library material

	totally disagree		disagree		no idea		agree		totally agree	
	N	%	N	%	N	%	N	%	N	%
I think that public library can be beneficial for distance learning	20	16.8	37	31.1	12	10.1	40	33.6	10	8.4
I can prepare written, visual and oral presentation with the opportunities of public library	13	10.8	52	43.3	10	8.3	37	30.8	8	6.7
I can make contribution to my language development by using online and printed dictionaries in public libraries	17	14.2	47	39.2	18	15.0	35	29.2	3	2.5
I can access to current magazines in the public library	20	16.7	44	36.7	29	24.2	23	19.2	4	3.3
I can access to music archives in the public library	34	28.8	38	32.2	34	28.8	11	9.3	1	0.8

Table 5. The role of Ankara Provincial Public Library in users' access to information

	totally disagree		disagree		no idea		agree		totally agree	
	N	%	N	%	N	%	N	%	N	%
I can find the information I need through public library.	7	5.9	27	22.9	7	5.9	68	57.6	9	7.6
I can learn how to find information I need in the public library.	6	5.1	30	25.6	9	7.7	59	50.4	13	11.1

When the measures in Table 5 are assessed, most of the users can learn how to find the information they need in the public library and it is seen that they can find the information they need through public library. When considered with the rates stated for the other questions, it can be said that users' access to traditional services such as printed documents is faster and more trouble-free.

Learning the general opinions of the users about Ankara Provincial Public Library will give information to understand public library's role in information literacy. The related data is stated below.

Table 6. Opinions of the users about Ankara Provincial Public Library

	totally disagree		disagree		no idea		agree		totally agree	
	N	%	N	%	N	%	N	%	N	%
I think public library is society's information memory.	9	7,5	33	27,5	1	0,8	62	51,7	15	12,5
I can share information with other people in public library.	12	10,0	36	30,0	6	5,0	58	48,3	8	6,7
I think public libraries make contribution to lifelong learning.	7	5,9	34	28,6	0	0,0	53	44,5	25	21,0
I think public libraries make contribution to lifelong learning.	7	5,8	38	31,7	4	3,3	58	48,3	13	10,8

The users' opinions about Ankara Provincial Public Library seem to be positive. Most of the users (65%) think that public library is the society's memory, more than half of the users (60%) state that they share information with the other library users, and an important part of the users (65,5%) think that the library contributes to their lifelong learning process and they can combine their old knowledge with the new information that they learn there.

The scale's average score for the Public Library's role in Study Participants 'Information Literacy was calculated as (x=2.94). If the calculated average is between 1.0-1.8 it is very low; between 1.81-2.60 it is low; between 2.61-3.40 it is medium; between 3.41-4.20 it is high and between 4.21-5.00 it is very high; 2.94 average can be said to be 'medium-level'. Ankara Provincial Public Library can be said to be adequate for traditional services such as books, periodicals, and encyclopedias but inadequate for technological services such as computer, internet, electronic resources, and library catalogue. Public libraries should play an active role in information literacy; however, inadequate technical infrastructure prevents provincial public libraries from playing an effective role in information literacy.

Whether there is a significant difference between men and women about the Public Libraries' Role in information literacy or not was tested with t test for independent samples.

Male participants have higher opinions (x=3.12) about the Public Library's role in Information Literacy. A statistically significant difference was found between the opinions according to participants' gender about the library's role in Information Literacy (p<0.05). Participants who are 65 or over have more positive opinions (x=3.07), about the Role of Public Libraries in Information Literacy. However, a significant difference was not found about the opinions on Public Libraries' Roles in Information Literacy (p>0.05) by age.

4   Conclusions and Recommendations

In this study, the levels of information and communication technology utilization, access to printed and electronic information resources, and the role in terms of developing the information literacy skills for Ankara Provincial Public Library are found "moderately" sufficient by the users and it is understood that the users have a positive perception in general towards the library. Considering the fact that Ankara Provincial Public Library is the most efficient and the biggest public library of Turkey and it is located in the capital where the educational and cultural levels are relatively higher; it is not possible to regard these findings as positive in terms of the role of the library in information literacy.

It is significant for the public library to improve the information literacy skills of its users. To accomplish this, the library has the best and appropriate implementations and applications with the purpose of improving the information literacy of users. It is necessary to improve the technical infrastructure of Ankara Province Public Library in order for it to play a more efficient role in information literacy. Technical infrastructure means the computer and wireless internet connection. The library should also improve such physical conditions as the availability of the library's wide

range of book and material collections, which will enable the user to reach to the sources and find the information he needs. Moreover, it is necessary to improve the information literacy skills of public and to increase the usage of the library by arranging free information literacy courses for the public, especially in the evenings and at the weekends. Furthermore, the public library should act in accordance with the daily life information needs of the users. To achieve this, the library should determine the daily life information needs of the users and as a result of this, the kinds of information needs people have will be known. Therefore, the library should make changes in its service policy, which will have a positive impact on the library services. Through the library services, people will be able to reach information they look for and the will gain and improve their skill to use these services. In that way, public library users will be equipped with the necessary skills of information literacy skills.

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Academics' Use of Scholarly E-Journals: A Case of University of the Punjab

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Abstract. The emergence of electronic information resources has made a profound impact on academic scholars, libraries, publishers and information professionals. The use of e-journals has become common in the developed countries. The awareness and use of e-journals is also growing in the developing countries. University of the Punjab provides access to full text e-journals through University Library E-journal Resources (Higher Education Commission's National Digital Library Programme) for faculty members, students and researchers. However, recent studies have also revealed that our researchers use general internet resources and free scholarly journals more than the subscribed high quality e-journals. This study aims to investigate the patterns of using scholarly e-journals and articles among academics of various disciplines. The study will also seek to determine the barriers academics face while consulting e-journals. This paper is based on an ongoing research project and the researcher will report the results of pre-testing. The design of the research study is 'Quantitative' and survey method has been adopted to accomplish the objectives of the study. Keeping in view the study's findings, a strategy might be made to maximize the utilization of HEC e-journals and improved accessibility to academics.

Keywords: Scholarly communication, e-journals, information seeking, digital literacy.

1   Introduction

Developments in information and communication technologies since the latter half of the 20th century have revolutionized almost all spheres of life such as business, industry, agriculture, health and education. Libraries and information professionals have embraced these advancements with the adoption of various forms of electronic information resources (EIR) - web-based catalogs, bibliographic and full-text databases, electronic journals and electronic books. The technological advancements have significantly transformed traditional libraries to hybrid ones.

EIR have overcome the limitations of physical libraries and provide convenience of time, ease of use and 24/7 access to information. Ball [1] stated that the obligation of librarians is "provide to the user in the electronic environment is a service – access to information - not the physical product itself". He also slightly re-paraphrased Ranganathan's five laws of library science presented in 1931 and stated that they are just as applicable to electronic resources as they were for print resources. The first

paraphrased law 'Resources are for use' demands information professionals to maximize the use among their potential users by creating awareness and providing facilitated access to resources.

Electronic resources have become essential for users and consequently a number of studies on assessing use patterns of electronic information resources have been conducted. Literature reviews reveal a growing trend of studying the use of electronic information resources i.e, e-journals, e-databases, and World Wide Web, among students, researchers and faculty. Tenopir [2] analysed more than 200 research studies which were focused on the use of electronic library resources and made significant findings of user behavior and their preferences regarding e-journals. Wong et al [3] in a research report also exhibited trends of searching techniques and preferences of e-resources among business and economics students with reference to subscribed and free internet resources in three UK Universities. Nicholas et al [4] in a two phase research report investigated the information seeking behavior and use of e-journal articles by UK academic researchers. The study provided significant findings of e-journals use patterns in different subject areas, searching techniques and value for money spent on these resources.

Talja and Maula [5] explored the reasons for both use and non-use of e-journals and databases in four scholarly disciplines in Finland. King et al [6] examined the patterns of e-journals use by faculty at three diverse universities in the United States and demonstrated that electronic journals' use is high when available through library collections. Tenopir and King [7] tracked the information seeking and reading patterns of science, technology, medical and social sciences faculty members to examine the ways faculty members locate, obtain, read and use scholarly articles.

The above studies from the USA and UK exhibit the use of electronic journals among faculty, researchers and students as well as their perceptions, preferences and searching patterns. However, very few studies addressed the reasons for non-use of electronic journals in different disciplines. The studies of e-journals' use were mostly for the disciplines of Sciences, Social Sciences, Medical, Engineering, Social Sciences, Arts and Humanities. However, many other academic disciplines - Management Sciences, Law, Commerce and Oriental languages were not focused by researchers.

Studies conducted in the local scenario: Arif and Ameen [8]; Mirza and Mahmood [9]; Rafiq and Ameen [10]; Tahir, Mahmood and Shafique [11]; Tahira, Alias and Ameen [12]; Tahira and Ameen [13] commonly revealed the increasing trend of using EIR among students and academics. Findings showed that general Internet resources and open access scholarly journals were preferred sources in comparison to the subscribed databases and journals for users' academic and research information needs. The academics' trends of e-journals use and barriers associated with the use in Pakistan were not studied. Scholarly e-journals are an important channel of information communication and researchers make heavy use of them for research and academic tasks. Faculty contributions to research output are a core function of a university. There appears a need to investigate academics' use of e-journals as well as their preferences in this regard.

2   Research Questions

1. How do academic staff access and search e-journal articles?
2. What kinds of barriers do the academics experience while using e-journals?
3. What are the suggestions to maximize the utilization of HEC e-journals?

3   Literature Review

An extensive review of literature on the use of e-journals showed that researchers investigated the use patterns of scholarly e-journals among faculty staff, researchers and students in the disciplines of Sciences, Medicine, Engineering and Social Sciences. Researchers reported the increasing use of e-journals and found that there is a rapid growth in the number of e-journals since its inception from 1990's and users' preferences also going through gradual transition from print format to electronic.

Borrego et al [16] found that the awareness of e-journals was increasing among academic staff and the use of electronic journals increased with time. Researchers exhibited the fact that users' preferred medium was e-journals and their acceptance is gradually increasing especially among students, researchers and faculty (Nicholas and Huntington [17]; Borrego et al [16]; Bar-Ilan, Peritz and Wolman [18]). Tenopir [2] in a comprehensive study found that faculty and students readily adopt electronic resources if they were perceived convenient, relevant and time saving for their natural workflow. She also ascertained that the use of electronic information resources is dependent on users' age, discipline of study and gender.

The factors that affect the patterns of use were examined by Eason, Richardson and Yu [19] and they concluded that "the contents (both coverage and relevance) and ease of use of a system as they were perceived by the user were the most important significant factors affecting patterns of use". Bar-Ilan, Peritz and Wolman [18] also found that disparities were found between the usage patterns in the different disciplines.

Above studies presented findings of electronic journals use patterns in developed countries. Studies were also conducted in developing countries like Taiwan, India, and Bangladesh. Wang [20] conducted a study of Social Scientists' information seeking and use of scholarly journals in Taiwan. He concluded that Social Science faculty relied more on electronic journals than print journals and their main source of accessing e-journals was library database collection.

Studies related to the use of electronic information resources were conducted in Pakistan. Arshad and Ameen [21] depicted in a transactional log analysis study of a University Library web site that free scholarly journals and articles are the predominant reason for using the library website. It was interesting to find that a university library website provided access to both free scholarly journals and subscribed journals through HEC Digital Library Programme had more usage of free scholarly journals as compared to e-journals of HEC. The usage of web site had also significant off-campus use.

More use of general web resources than subscribed HEC e-databases was also reported by Tahira [23] in a study of information needs and seeking behavior of Science and technology faculty members and concluded that users preferred general web sources more than both HEC online subscribed databases and library's print

subscriptions for obtaining information from journals. The reason of lower use of HEC journals than free scholarly journals might be that free scholarly journals can be accessed off-campus and even at home, but full text access to HEC journals is limited to on-campus residents only.

The literature presented significant findings on the use of e-journals and databases in the academic environment. The majority of the studies showed the adoption of e-journals by students, researchers and faculty members and an increasing trend of using electronic journals in comparison to printed journals in both developed and developing countries. The use of electronic journals is dependent on age, discipline, ease of use, relevance and accessibility. Both quantitative and qualitative studies were conducted to investigate the use of e-journals. Many studies were found regarding the use of e-journals and very few studies investigated reasons of non-use of e-journals among researchers and academics.

3.1   Faculty's Access to E-Journals at University of the Punjab

University of the Punjab (PU), established in 1882 at Lahore, is the oldest and largest institution of higher learning in Pakistan. The University has five campuses, ten constituent colleges and over 818 permanent and contractual faculty members. It offers Ph.D., MPhil, MS and BS programmes in 12 different faculties i.e., Sciences, Life Sciences, Engineering & Technology, Social Sciences, Humanities and Oriental Learning [14].

Academics in the University engage in teaching and research. Faculty members have desktops and internet provision in their offices as well as in departmental libraries and the central library of PU. Academics use open access (OA) e-journals accessible through the web; however, University library also provides access to e-journals available through Higher Education Commission's National Digital Library Programme (NDLP) to public and private Universities in Pakistan to meet the scholarly needs of faculty.

HEC National Digital Library Programme (NDLP) was launched in 2003 to provide researchers within public and private sector Universities in Pakistan the high quality, peer-reviewed journals, databases, articles and e-Books across a wide range of disciplines. Usage statistics of HEC's e-journals since the launching of National Digital Library Programme in 2003 till now depict a gradual increase in the use of e-journals in public, private, research and non-profit organizations of Pakistan. HEC provides e-journals in the disciplines of Sciences, Engineering, Computer Technology, Social Sciences and Arts and Humanities [15].

4   Significance of the Study

E-journals are an important channel of scholarly information communication. There is a need to explore the use of e-journals among various faculties in an academic setting. The study's findings will help to know the academics' trends of e-journals' use, reasons of less use of subscribed journals and barriers in the effective utilization of e-journals. While considering the study's findings, a strategy might be made to maximize the utilization of e-journals and arranging instruction programmes for

academics. The study will provide academics' use patterns in different faculties - Sciences, Social Sciences and Arts and Humanities that will help to provide suggestions for the entire community. It will also help to know the various means of accessing, identification and location of e-journal articles. The needs for digital literacy skills to use e-journals will also be identified. The findings will be important for Punjab University librarians particularly, and for other universities' librarians in general. It is expected that the outcome will facilitate academics, researchers and students in their research output.

5   Methodology of the Study

The design of the present study is quantitative and survey method has been employed, as Creswell [23] enumerated that "a survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population". This study will seek to determine trends of e-journals use; therefore the survey method will be most appropriate to achieve the objectives of this study.

Population in the present study is the faculty members of 12 faculties of the University of the Punjab. The faculty of medicine and dentistry has no on-campus academic staff and students; therefore, it will not be included in the study. The total population of academic staff working on permanent, contract and visiting basis is more than 1,000. Targeted population of the study will comprise full time academic staff working on permanent and contract basis in 12 faculties, which total 822 according to the list provided by University administration. Among these 822 staff, 132 faculty members are on leave. The researcher will approach all the academic staff working on regular and contract basis to investigate the use of e-journals among different faculties for comparative analysis.

The research instrument of this study is a self-administered questionnaire.

Content validity is important especially for a new established instrument; therefore the questionnaire was sent to subject experts and Social Science researchers for comments. Minor modifications were suggested regarding content, scale and layout of questionnaire. However, no suggestions were made to delete or add any part to the questionnaire.

5.1   Pretesting of the Questionnaire

The questionnaires were sent to faculty members of Gujranawala amd Jhelum campuses working on permanent and contract basis for pre-testing. Questionnaires were distributed to faculty members of Law, Commerce, Information Technology, Social Science and Humanities disciplines. About 15 questionnaires were returned. The data was entered in SPSS 21and reliability of questionnaire items with Likert scale was measured and established.

6   Data Collection and Data Analysis

The researcher personally visited departments, colleges and institutes of University of the Punjab. Questionnaires were distributed to academics that were found available in their respective departments. Library professionals were mediators in this entire data collection process; they distributed and collected questionnaires to faculty members with whom the researcher could not meet. Data collection is still in process; therefore the results of pre-testing are reported here. Data collected was analysed using SPSS 21 and 'Descriptive' statistics were applied to analyse data. Five point Likert scale categories were combined to three. The responses of [Frequently and Very frequently] were combined to 'More Frequently' while [Never and Rarely] were combined to 'Rarely' to simplify the results.

7   Results of Pre-Testing

7.1   Use of Electronic Information Resources

Respondents were asked about the use of formal and informal information sources for their research and teaching tasks. Table 1 depicts that the majority of respondents (86%) use search engines more frequently than all other sources. Discussion with colleagues and electronic research reports were also found important sources of information by most of respondents (79%). Respondents were also making considerable use (64.3%) of library print sources – books, journals and research reports along with other electronic sources. Among print, electronic and informal sources of information 'E-Journals' use was least among respondents.

Table 1. Use of electronic information resources

Information Sources	Rarely %	Occasionally %	More Frequently %
Search engines (Yahoo, Google, ...)	7	7	86
Search engines (Yahoo, Google, ...)	7	7	86
Discussion with colleagues / peers	21	-	79
Electronic research reports	-	21	71
Library print sources (Books, Journals, …)	14	21	64
Online indexing and abstracting services	7	36	57
Online reference sources (Encyclopedias, Dictionaries, …)	14	29	57
Electronic books	-	43	57
Electronic theses and dissertations	-	29	57
Electronic journals	7	36	50
Any other source (Please specify)	14	-	28

7.2   Accessing E-Journal Articles

Academics were accessing e-journal articles from various sources and Table 2 depicts the means of accessing e-journal articles through the web. It was interesting to find that majority of respondents (86 percent) were accessing e-journal articles through 'Google Scholar' followed by general search engines – Yahoo, Google and Alta Vista

and Open Access E-Journals websites. The use of high quality subscribed e-journals use was less than all sources of e-journals.

Respondents were accessing open access e-journal articles more than Higher Education Commission (HEC) subscribed e-journals. The results of pre-test confirmed that respondents are using sources of e-journal articles that are freely available and are convenient to use.

Table 2. Sources of access to e-journal articles

Sources	Rarely %	Occasionally %	More Frequently %
Articles through Google Scholar	-	7	86
General search engine (Google, Alta Vista….etc.)	-	29	64
Open access e-journals websites	21	14	50
Provided by a colleague	21	29	43
Articles on author's personal website	29	29	36
Journals subscribed by Department	28	29	36
Personal subscription	36	21	36
Full text databases (Medline, PsyInf, ….)	29	21	36
Higher Education Commission e-journal collection	36	21	28
Any other source (Please specify)	21	-	21

7.3   Methods to Become Aware of E-Journal Articles

Respondents become aware of their desired e-journal articles through various approaches such as browsing, searching, e-mail alerts. Table 3 depicts the academics' methods of getting aware of e-journal articles. Picking titles from the reference list of publications and 'Searching' were most used methods. However, the method of e-mail alerts of chosen journal was less used among respondents.

Table 3. Methods to become aware

Methods to become aware of articles	Rarely %	Sometimes %	Very Often %
By picking relevant titles from the reference list of other publications	7	7	64
Searching (i.e. by author or title)	7	21	57
Recommendation by a colleague	21	7	57
Browsing through issues of e-journals	-	36	50
Through e-mail alerts of chosen e-journals	36	29	21

7.4   Web Literacy Skills

Table 5 depicts the academics web literacy skills of respondents particularly while using e-journals. It was found that all respondents were highly aware of search engines and they were quite capable of accessing e-journals through WWW. However, they did not have enough skills to make effective use of 'Advanced Searching Techniques'.

Table 4. Web literacy skills

Web Literacy Skills	Poor %	Satisfactory %	Very Good %
Awareness of search engines to find e-journals and articles			100
Accessing e-journals and articles through WWW effectively	7	14	78
Evaluation of the quality of an e-journal	14	14	71
Familiarity of full text databases of e-journals (Elsevier, JSTOR, Emerald)	7	43	90
Effective use of advanced searching techniques to retrieve relevant articles.	28	29	43

7.5   Searching Strategies

Academics were employing different search strategies to retrieve e-journal articles. They were frequently employ 'Title' words to retrieve e-journal articles, then keyword, and author name was least used.

Table 5. Search strategies

Search features	Rarely %	Sometimes %	Most Often %
Title words	7		79
Keyword searching	7	21	57
Author name	14	43	29

7.6   Barriers to E-Journals Use

Respondents were also asked about the barriers they face while accessing, searching and consulting e-journals. Table 6 shows that 'Payment of e-journal articles not available through HEC' greatly affected these academics. They also felt the need of training and instruction programs for effective use of e-journals. Slow internet speed and difficulty in reading text on computer screens were factors that lead to non-use of e-journals by hindering access to e-journals.

Table 6. Barriers to e-journals use

Barriers	Only a little %	Moderate %	Extremely %
Payment for e-journals and articles which are not available through HEC.	14	7	71
Lack of training and instruction programmes for effective use of e-journals	29	21	50
Difficult to read text on computer screen.	28	29	43
Slow internet speed	36	21	36
Availability of too much information through e-journals is creating information overload for me.	50	14	36
Unaware of reputed e-journals in my field.	57	7	29
It is time consuming to search and find the relevant articles.	29	43	21
Back issues of relevant e-journals are not available.	43	36	21
Lack of technological skills	57	21	21
Lack of searching skills	71	7	21
My subject area is inadequately covered in e-journals.	64	29	7

8   Findings and Discussion

There is a growing trend of using electronic information sources (EIS) among academics of various disciplines – Law, Commerce, Information Technology, Arts and Humanities and Social Sciences. They are using electronic information sources more than library print sources - books, journals, theses, and reference sources for their research and teaching tasks and it shows a transition from print sources to electronic information sources. However, the use of print sources still persists among faculty members.

Academics are quite aware of 'Google Scholar' and other search engines and have enough literacy skills to access and evaluate e-journal articles. However, they are not fully familiar of full text databases of e-journals like Emerald, Elsevier and JSTOR. They also lack enough skills to effectively use advanced searching techniques. They need instruction programmes for searching e-journal articles, especially the use of advanced searching techniques. Academics become aware of e-journal articles by picking titles from reference list of publications and searching. E-mail alerts of chosen journals are not a popular method among academics. They use 'Title words' mostly to retrieve e-journal articles.

Academics are accessing e-journals and articles from open access sources. They are frequently accessing e-journal articles from 'Google Scholar', General Search Engines and Open Access e-journal websites. It indicates that academic staff use sources that are available 24/7 both at home and University departments, and are convenient to use. Hemminger, Lu, Vaughan and Adams [24] also reported that academic scientists use open access sources to meet their information needs. However, the use of Higher Education Commission subscribed e-journals is much less than all other means of accessing e-journals. In fact HEC e-journals have restricted access to on-campus only and academics cannot consult them at home. 'Google Scholar' and other search engines provide users one stop shopping – they get e-journal articles through one interface only. University e-journal collection has databases – Emerald, Elsvier and JSTOR with different interfaces and users may find it difficult to search through different databases.

The barriers affecting academics' effective utilization of e-journals are payment of e-journal articles not available through HEC, lack of instruction and training programmes and slow internet speed. The university's main library and information professionals need to publicize HEC e-journal databases – Emerald, JSTOR, Elsevier etc. and arrange instruction programmes to enhance digital literacy skills of academics. Training and digital literacy programmes should be conducted on a continual basis to familiarize academics of high quality peer reviewed e-journals accessible from the university library e-collection. Assessment studies on learning of digital skills will also help instructors to plan literacy programmes according to academics needs.

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Students of Law and E-Democracy

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Abstract. The purpose of this paper is to present the findings of a small-scale pilot-study conducted among students of law at Osijek University on e-government and e-democracy information. The aim of the research was to find out the degree of the students' information literacy regarding the e-government and e-democracy information. The survey was conducted in May 2014 (paper-survey) on the sample of 171 law students. Students were asked about the usage of ICT technology in their study and everyday lives as well as about the ability to find, evaluate and apply the e-government information. The results of our survey detected a low interest of our sample for information related to local, regional or national governing bodies (e.g. only 3.4% of students used ICT to access the local communal information, 0.5% contacted the representative of local authority regarding administrative or communal issues).

Keywords: E-democracy, e-government, law students, information literacy, University of Osijek.

1   Introduction

E-democracy has become an integral part of the information society. There are various definitions of e-democracy but they all agree that e-democracy involves the usage of information and communication technologies (ICT) to enhance democratic structures and processes [1]. In fact, some think that the most important element of the future democracy is the meeting of information technology and democracy [2]. E-democracy refers to all sectors of democracy, to all democratic institutions and to all levels of government [3]. The importance of e-democracy was recognized by various international institutions such as the United Nations or the Organization for Economic Co-operation and Development (OECD), and the European Union. In 2009 the Council of Europe issued an important document which encompasses 12 recommendations to European Union member states regarding the introduction of e-democracy. This document recognized also the problem of young people's passive attitude toward democratic processes and in one of the principles of e-democracy (P.13) it stressed the potential of e-democracy to, through new technology, attract young people to democracy, democratic institutions and democratic processes.

The term e-democracy is often used together with the term e-government. It is actually closely linked to good governance, which is the efficient, effective, participatory, transparent and accountable democratic exercise of power in electronic form and includes informal politics and non-governmental players [4]. Therefore, these two terms, although related, must not be confused or used as synonyms. In fact, e-government should be considered to be a part of e-democracy, which is much broader and encompassing collection of ideas. Chadwick and May define e-government as the efficient delivery of government/state information to citizens, but the control is still in hands of the government [5]. In fact, e-government is neither good nor bad in itself but can be used or misused to achieve and further the goals of the society in which it operates, or to obstruct pursuit of those goals. Therefore, a democratic and open society may use e-government to become even more open and democratic. On the other hand, a tightly controlled society may use e-government to assert even more control over the lives of its citizens [6]. However, these two terms have rarely been examined separately, although they are discussed in the literature as distinct [7]

In Croatia, the citizens' right to access to information is regulated by the Constitution [8] and the Access to Information Act [9]. The Act governs which information must be available, not only on an individual user request basis, but also published in an appropriate manner, in official gazettes or through electronic media. Another document, The Code of Practice on Consultation with Interested Public in Procedures of Adopting Laws, Other Regulations and Acts [10], also gives clear instructions as to how to make better interaction with citizens and how to encourage them to become active participants of the democratic processes at the local and national level. However, while e-democracy and e-government are topics that were often discussed by government officials and politicians, in our opinion, until now they have been insufficiently implemented and, consequently, underused, especially the elements of e-government[1]. One of the most active government agencies that promotes e-democracy and e-government in Croatia is the Croatian Information-Documentation Referral Agency (HIDRA). The research conducted by HIDRA about the e-democracy at the level of local administration in Croatia revealed that local administration websites in Croatia offer a range of useful information, however, the information is poorly organized. Also, since the Government has not prescribed what type of information must be available at local administration websites and under which category, some pieces of information (such as final financial reports) are 'hidden' and embedded into other documents and therefore invisible for Croatian citizens. As far as two-way communication with citizens is concerned, the usual means are e-mail and online forms. Citizens can get information about the status of their claims and procedures in only 7 Croatian counties (33%)[2] . There are no online

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[1]   Until May 2014 in Croatia it was possible to obtain online only the certificate about your real estate from the land-registry. In May 2014 Croatian Ministry of Public Administration launched the portal entitled E-Citizens where the citizens of the Republic of Croatia can get access to information about public services and political activities at one place. The services are personalized and at this portal citizens can find out about the status of their documents and/or print out necessary documents and certificates (e.g. birth certificates, ID cards, passports, academic status of their children, etc.) [11].

[2] There are 21 counties in Croatia.

discussion forms regarding various acts and laws, which leads to the conclusion that the citizens at the local community level have no way of expressing their views and participating in local government, or influencing local government decisions. In addition, local administration websites do not offer any e-services [3].

In Croatia, information literacy has gained popularity and become a 'hot' topic in the Croatian library and information science community. There are a number of papers on information literacy of various user groups, but the most researched user groups are university students [12-14]. However, no research has been conducted on information literacy in connection to e-democracy or e-government yet. This paper presents the findings of a small-scale pilot-study conducted among students of law at Osijek University on e-government and e-democracy information, but also on media literacy. Students of law as a group were identified as those who are professionally directed to such information and have to be able to find, evaluate and apply it where necessary.

2   Research

2.1   Instrument, Methodology and Sample

The research was conducted in May 2014 on the sample of 171 law students (in our sample there were 118 or 69.0% of 1st year students and 53 or 30.9% of 4th year students). There were 49 or 28.7% male and 122 or 71.3% female respondents. The research reached 59.0% of students enrolled in the first year (118 students out of the total of 200 students enrolled in the first year at the Faculty of Law in Osijek) and 64% of students enrolled in the fourth year of study (53 out of the total of 83 students enrolled in the fourth year).

The instrument used was a paper survey and was administered to the respondents, in agreement with the course instructors, during their classes. The survey consisted of 15 open-ended and multiple-choice questions and statements on media literacy and e-democracy. In the section on e-democracy we asked our respondents about the level of participation in the processes of decision-making and administration at the levels of national and/or local government or at the level of legal personalities with public jurisdiction[3] such as a law school. Also, we asked about the type of official information our respondents usually access online, as well as about their level of satisfaction with the clarity, simplicity of use, and user-friendliness of national or local administration websites.

This paper presents selected findings of our research with the emphasis on results connected with e-democracy. The paper also offers data about the students' media literacy since we wanted to find out how confident they are in usage of the internet and other media and contrast those findings with the findings about e-democracy.

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[3] Legal personalities with public jurisdiction are institutions that have the right to, within their jurisdiction, decide about rights and obligations of citizens (e.g. educational institutions, social welfare institutions, etc.) [15]

2.2   Results

Respondents in our sample were asked to state what sort of online activities they perform. The data for all 18 activities can be found in Table 1.

The three most represented activities in the sample are social networking, e-mailing, and watching films online or downloading them. On the other hand, three least represented activities are: contacting local government representatives regarding some administrative or communal issues, contacting a student representative at the University Student Board regarding student issues and an active participation in forums or writing blogs.

Table 1. Online activities in the sample

Activity	Whole sample N (%)	1st year N (%)	4th year N (%)
Social networking sites (Facebook, Twitter, etc.)	166 (97.1)	115 (97.5)	51 (96.2)
E-mails	143 (83.6)	95 (80.5)	48 (90.6)
Watch online or download of films	141 (82.5)	98 (83.1)	43 (81.1)
Information about scholarships, exams, final papers, student rights, etc.	135 (78.9)	92 (78.0)	43 (81.1)
Transfer photos (from a digital camera or mobile phone) to a computer	116 (67.8)	77 (65.3)	39 (73.6)
Information on hobbies and interests	109 (63.7)	69 (58.5)	40 (75.5)
Make phone calls over the Internet for free (Skype)	101 (59.1)	69 (58.5)	34 (64.2)
Find out about local services (cinemas, restaurants, etc.)	94 (54.9)	60 (50.8)	34 (64.2)
Send text messages	72 (42.1)	50 (42.4)	22 (41.5)
Fill out online forms (e.g. for scholarship)	53 (30.9)	35 (29.7)	18 (34.0)
Buy things online	51 (29.8)	30 (25.4)	21 (39.6)
Local government information (health services, library, recycling, etc.)	46 (26.9)	20 (16.9)	26 (49.1)
E-banking	35 (20.5)	17 (14.4)	18 (34.0)
Use price comparison websites	30 (17.5)	14 (11.9)	16 (30.2)
Sign online petitions	24 (14.0)	10 (8.5)	14 (26.4)
Active participation in forums; blogs	18 (10.5)	8 (6.8)	10 (18.9)
Contact your student representative at the Student Board	11 (6.4)	4 (3.4)	7 (13.2)
Contact your local government representative regarding administrative or communal issues	7 (4.1)	3 (2.5)	4 (7.5)

Our respondents were asked about their participation in e-democracy at the level of national, regional, local government, or at the level of a legal personality with public jurisdiction. Table 2 reveals that the majority of our respondents, regardless of the study year, do not, as a rule, chose to actively participate in any online form of democracy.

In our sample, 7 respondents (3.8%) tried to influence decision-making processes using the ICT at the national level, 6 respondents (3.3%) at the county level, 9 respondents (4.9%) at the town level, 7 respondents (3.8%) at the town district level, and 12 respondents (6.6%) at the level of legal entities with public jurisdiction. 142 respondents (77.6%) did not try to influence decision-making processes at any level.

Only 2 respondents (1.2%) in our sample feel that they have some influence on the actions of public servants. There were 122 respondents (71.3%) who were convinced that they have no influence, while 47 respondents (27.5%) were undecided.

Table 2. Active participation in e-democracy activities at various levels

Activity	National level N (%)		Regional level N (%)		Local level N (%)		Legal entity* N (%)		No activity N (%)	
	1st year	4th year	1st year	4th year	1st year	4th year	1st year	4th year	1st year	4th year
Exercise of democratic rights**	8 (6.8)	5 (9.4)	5 (4.2)	2 (3.8)	8 (6.8)	5 (9.4)	13 (11.0)	14 (26.4)	94 (79.7)	37 (69.8)
Public policy modification	5 (4.3)	-	3 (2.6)	-	6 (5.1)	6 (11.3)	1 (0.9)	2 (3.8)	108 (92.3)	47 (88.7)
E-consultation	1 (0.8)	-	2 (1.7)	-	5 (4.2)	1 (1.9)	2 (1.7)	1 (1.9)	111 (94.1)	51 (96.2)

* Legal entity with public jurisdiction
**Exercise of democratic rights in decision-making processes (issues of public interest)

When our respondents look for official information needed for their study, work, and life in a local community,. they usually go to the official website of the Faculty of Law in Osijek (166 respondents or 25.2%), the University in Osijek (129 respondents or 19.6%) and various libraries' websites (academic or public libraries) (99 respondents or 15.0%). Table 3 illustrates the patterns of official information seeking habits in our sample.

Table 3. Patterns of official information seeking habits

Source	N (%)
The Faculty of Law in Osijek	166 (25.2)
The University in Osijek	129 (19.6)
Libraries (academic and public)	99 (15.0)
Croatian Government	64 (9.7)
Croatian Parliament	52 (7.9)
Croatian Ministry of Justice	35 (5.3)
European Union	27 (4.1)
Local government	27 (4.1)
Local county	24 (3.6)
Some other Croatian ministry	24 (3.6)
HIDRA	9 (1.4)
Other source	2 (0.3)

Table 4. Level of trust out of a maximum of 5

Statement	Mean*
I trust completely the information found in online newspapers and magazines	2.46
I trust completely the information found at social network websites (Facebook, Twitter, etc.)	2.05
I trust completely the information found at official webpages of the national, regional, or local government	3.77
I feel secure in leaving my personal data at official pages of the national, regional, or local government because they guarantee a high level of security and data protection	2.50

*5-item Likert skale 5 being the highest value

Students were also asked about their level of trust in various sources of information (i.e. the power of those websites to inspire belief) as well as about their belief that government websites protect their privacy. Table 4 gives mean values of their agreement with statements regarding these issues.

Furthermore, our respondents were asked to rate their level of satisfaction with various features of official websites. The results (mean values) are presented in Table 5. Among 1st year students 23 (19.5%) and a further 4 (7.8%) 4th year students confessed not to have had any experience in online official information retrieval.

Table 5. Satisfaction with information found at the official websites

Element	Mean*
Ease of access to information	3.2
Accuracy	2.9
Usefulness	3.5
Stability of access to data	3.4

*5-item Likert scale 5 being the highest value

We were wondering whether this questionnaire made our respondents think more about the importance and power of personal engagement in e-democracy and e-government and 105 respondents (61.4%) thought that it did.

3   Discussion and Conclusions

This paper presents selected results of the small-scale pilot-study on e-democracy conducted with 1st and 4th year students of law. As already mentioned, students of law were chosen for this study because as future lawyers, judges and/or legal system workers, they will be professionally oriented toward such content. At the present stage (being students) we expected our respondents to demonstrate their level of frequency and usage of e-democracy and e-government content. At the same time, we also looked into activities connected with their everyday searching for information in electronic environment (media literacy) with the intention to find out what they usually do/look for when they go online. We chose students at the initial stage (1st year) and those at the end of their studies (4th year) expecting to find the differences in their familiarization and usage of e-democracy.

We asked our sample about their online activities and learned that the majority dedicate their online time to various activities connected with informal communication, leisure and entertainment such as social networking, e-mailing, watching films, and transferring photos to a computer. No significant differences in online activities were spotted for the 1st and 4th year students. The most frequent online activities in both groups are the same, with some slight variations in their order of frequency. Activities connected with e-government or e-democracy are underrepresented, to say the least. Even though we did not expect those activities to be as frequent as the activities connected with leisure or informal communication, we were still surprised to find such little interest in these issues in our sample. Out of 18 activities that were listed, the only frequent activity that has some connection with e-democracy (4th place in order of frequency) is 'looking for information about scholarships, exams, final papers, and student rights'. All the other e-democracy activities are rarely performed: including filling out online forms (e. g. for scholarship) (10th place), looking for a local

government information (e.g. health services, library, recycling) (12th place), contacting a student representative at the Student Board (17th place), contacting a local government representative regarding administrative or communal issues (18th place). It is evident that our respondents' activities e-democracy activities are motivated purely by their immediate needs when they look for information necessary to successfully finish their studies. On the other hand, they underutilize other e-democracy tools such as the possibility to influence the faculty or university policy or regulations through their (student) representatives or to do the same at the level of the local government. Even though the results show that the 4th year students are slightly more active in e-democracy activities, the values are still not at the level we would expect for that level of university education or for the law students. More questions about e-democracy activities reveal that the law students in our sample, as a rule, do not exercise any of their rights either as citizens of the Republic of Croatia or as future legal system workers. It is not clear whether the reasons for such a behavior is their ignorance or the pure lack of interest in those matters, but only a few of our respondents indicated that they exercised their democratic rights in decision-making processes regarding issues of public interest at some level of government, or tried to modify public policy, and very few of them took part in e-consultations. Again, no significant difference was spotted for the 1st and 4th year, although the 4th year students seem to be slightly more involved but again, not to the degree we would expect. One of the possible reasons for such a passive attitude towards the issues of e-democracy is the feeling of the majority of our sample (71.3%) that they have no influence on the activities of public servants. Most of the remaining 30 percent of our respondents are undecided on this matter, which indicates that they have not actually given this issue much thought. In addition, one of the reasons for such a situation is the present curriculum which does not dedicate enough space to the issues of e-democracy. This leads us to the speculation that the higher-level activities connected with the e-democracy should obviously be motivated from the outside – and for the student population, this means that they should first get guidance and instruction from their teachers before they develop the habit of using e-democracy information more frequently. It is true that this sort of information will never be used as frequently as informal communication or leisure activities, but still it should be at a higher level of usage than it is now, especially for this population (law students). A stronger emphasis in the curriculum on e-democracy issues is a good way to achieve that outcome.

The preferred online sources of official information in our sample are again the webpages of institutions that are closely related to our respondents' academic work: the faculty and the university or a library. Other official sources that would indicate interest in the democratic processes (such as Croatian government, or the Ministry of Justice) are further down on the list of the preferred sources.

Since the internet provides an easily accessible forum to disseminate both accurate and inaccurate information, we asked our respondents about their level of trust to some of the information sources on the internet. The results show that our respondents are quite cautious about the information found online. The least level of trust is recorded for the information found on social networks (mean value 2.05), followed by online newspapers and magazines (mean value 2.46) and the most trusted (although,

not completely) sources are the official webpages of the national, regional or local government (mean value 3.77). Interestingly, although our respondents tend to trust information found at the government webpages, they do not feel that their personal information is secure there and that those webpages can protect their privacy. Our respondents think that the information found at the official sources of information are rather useful (mean value 3.5), with a relatively stable access to this data (mean value 3.4). Ease of access to information is rated with mean 3.2 which indicates that our respondents are not able to find what they are looking for easily. The reason for this maybe either or a combination of the students' poor information literacy skills, or the poor information architecture of official webpages. Earlier HIDRA research revealed that official information in Croatia is frequently hidden and difficult to find at official websites. The accuracy of information at the official webpages is rated the lowest (mean value 2.9). Since the accuracy is one of the main features of credibility [16] in the online environment, this perception definitely does not help official websites become more popular sources of information for our sample.

Since we expected that a part of our sample would probably not have had any experience in e-democracy activities, one of the ideas of this survey was to entice and motivate them to realize the importance of self-engagement in democratic processes. We seemed to have partially succeeded because 61.4% of our respondents thought that the survey fulfilled this purpose. Another outcome of this survey was that the law teachers, the instructors of the courses during which the students were surveyed, also became more aware of the importance of these issues and aware of the gaps in the curriculum which did not address the issues of e-democracy and e-government to a satisfactory degree. Those instructors decided to dedicate more space to these issues within their courses, starting with the academic year 2014/2015.

This small pilot-study revealed that our respondents do not show interest, and/or are unaware of the possibilities and the power of personal engagement in the processes of e-democracy and e-government. Almost 20% of the 1st year students, and slightly less than 5% of the 4th year students had not retrieved official online information for any purpose at all. Their information literacy skills are probably low since they do not seem to find information at government websites when they try to retrieve it. We spotted no significant differences between the behavior of the 1st and the 4th year students. However, the 4th year students seem to be slightly more engaged in these issues than the 1st year studentsI although still to disappointing small degree. This survey motivated the authors to research this topic further – with another group of students, not necessarily students of law – and to see whether students of other disciplines behave similarly. However, we must bear in mind that things will change as e-democracy elements become more and more integrated into Croatian society. As already mentioned, in May 2014 the Croatian government launched the portal E-Citizens, which will definitely promote and encourage, at least at the level of e-government, stronger presence and integration of e-democracy into the lives of Croatian citizens.

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What is the Employers Stand on Information Literacy – Researching Employers on Expected Generic Outcomes of Their Future Employees

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Abstract. The concept of generic information competences is based on the fact that there is a heavy overlapping of the generic competences and information literacy competences identified in the body of literature and research. The individual researches, learns, solves problems, collaborates and makes decisions based on the information gathered from various sources. The key skills of 21 century workers include knowledge of different resources as well as the various ways to access them, setting up and applying efficient research strategies, interpreting found results, synthesizing new knowledge and present knowledge in an ethically correct way taking in the all aspects of the ease of use of digital information (in the sense of copy, transfer, ignoring copyright. Employment sector and workplace research show that there are different generic competences expected from the employees. By interviewing Croatian employers about the generic competences authors have identified generic competences required for the workplace environment which are than mapped with the information literacy competence in order to build a foundation for the development of the taxonomy of generic information competences.

Keywords: Employability, generic competences, information literacy.

1 Introduction

Relevant research, experience and strategies used internationally show that information competencies present a backbone for the development of generic competences. Information literacy prepares learners to connect, interact with, and utilize the accessible wealth of information. Correlation between information use and generic competences [1] is based on the fact that information is the building element of learning, problem solving and decision making. The individual researches, learns, solves problems, collaborates and makes decisions based on the information gathered from various sources. The key skills of 21 century workers [2] include knowledge of different resources as well as the various ways to access them, setting up and applying efficient research strategies, interpreting found results, synthesizing new knowledge

and present knowledge in an ethically correct way taking in the all aspects of the ease of use of digital information (in the sense of copy, transfer, ignoring copyright).

Modern universities have recognized learning outcomes as a starting point in the enhancement of the curriculum quality and their orientation towards social relevance and employability. As opposite to professional competences which are easy to define, primarily due to their connection to the scientific field and related profession, the generic competences are transferable, multifunctional, un-specific (in the domain sense) and thus hard to define and measure. The employers are interested in generic competences in the employment process and therefore more research should be oriented towards strengthening the generic competences. The generic approach to the defining of the competences is related to the development of highly transferable generic competences required in the professional environments and distinctive from subject-specific or work-related knowledge. Relevant research, experience and strategies of the international universities show that the information competences present a backbone of the development for the generic competences. Information literacy prepares learners to connect, interact and utilize the accessible wealth of information. [3]

Correlation between information and generic competences is based on the fact that information is the building element of learning, problem solving and decision making. The individual researches, learns, solves problems, collaborate and makes decisions based on the information gathered from various sources. Therefore, knowledge of different resources as well as the various ways to access them, development and application of efficient research strategies, interpreting the results, synthesizing new knowledge and present knowledge in an ethically correct way present various aspects of the use of information regardless of media (traditional, digital or newly emerging). Contemporary development of information environments is marked with the growing complexity in both quantitative and qualitative sense which demands additional research of information competences necessary for the successful transformation of individuals from tertiary educational sector to the employment market.

2   Generic Competences Viewed Thorough Different Lenses

The generic qualifications themselves often have descriptors that define the learning outcomes associated with them; these are normally generic in nature and can be applied across subject disciplines and modes of learning. In higher education they are primarily used by: course designers (developing learning outcomes and assessment criteria); those involved in quality assurance (validating, reviewing and approving programs of learning); credential evaluators (nationally and internationally, as reference points to help make accurate recognition judgments) [4]. The term 'generic' conveys the inherent nature of the competence: they are not specific to either the education sector or to a particular discipline. The alternative term 'transferable' is more a characteristic of generic competences therefore term generic i.e. generic information competences will be used later in the text.

One of the most comprehensive and most frequently quoted approaches to the development of learning outcomes and competences has been designed within the

European project Tuning Educational Structures in Europe [5] whose central assumption is that general and specific competences i.e., learning outcomes should be the central element in the structuring of educational programs. According to the research studies of the project, learning outcomes of undergraduate study should be more related to general competences, while learning outcomes of graduate study should be more related to subject-specific competences.

Croatian qualification framework [6] relates to the EU legislative [7] and incorporates key competences for lifelong learning in the educational standard. These competences are:

- Communication in the mother tongue,
- Communication in foreign languages,
- Mathematical competence and basic competences in science and technology,
- Digital competence,
- Learning to learn,
- Social and civic competences,
- Sense of initiative and entrepreneurship,
- Cultural awareness and expression.

These key competences are all interdependent, and the emphasis in each case is on critical thinking, creativity, initiative, problem solving, risk assessment, decision taking and constructive management of feelings. Generic competences by their nature are transferable and should be considered as ones that are not specific to any subject field but could and should be applied in any fields equally. [3]

Boundaries between occupational categories are becoming more blurred and thus increasing the role of the generic competences in enhancement of future graduates employability. The discipline oriented or specific competences are currently receiving major attention while the generic competences are lacking in study programs integration. When looking at the generic competences and information literacy competences we see an overlap. The generic competences cannot be developed without including information literacy in the curriculum. The employment sector and workplace research show that there are different generic competences expected from the employees. Moy [8] defines key competences as collecting, analyzing and organizing information, communicating ideas and information, planning and organizing activities, working with others and in teams, using mathematical ideas and techniques, problem solving, using technology. Furthermore, Bartram et al. [2] define eight great competences from the employer's point of view:

- Leading and Deciding,
- Supporting and Co-operating,
- Interacting and Presenting,
- Analyzing and Interpreting,
- Creating and Conceptualizing,
- Organizing and Executing,
- Enterprising and Performing.

The National Association of Colleges and Employers [9] investigated relative importance of skills of new recruits offering ranking of 10 skills: ability to work in team structure, ability to verbally communicate with people inside and outside the organization, ability to make decisions and solve problems, ability to obtain and process information, ability to plan, organize and prioritize work, ability to analyses quantitate data, possession of technical knowledge related to the job, proficiency with computer software programs, ability to create and/or edit written reports, and the ability to persuade or influence others.

The research on communication about the competences between the education and economy is presented in the project Higher Education as a Generator of Strategic Competences [10]. In 2009 the project researched the employability of graduate students and their job transitions based on the competences acquired during their study. The have conducted the comprehensive graduate employability surveys in Europe addressing the needs of the main groups of higher education (HE) stakeholders who are interested in the employability of graduates. Higher education graduates learnt and reflected on their higher education learning experiences and the importance of other determinants of their career success. Employers have been provided with evidence how skills, qualifications and job descriptions are developed, identified, interpreted, adapted, transferred, selected and rewarded. The research has shown in what way the characteristics of jobs and organizations affect the demand for graduates' competences. The results have showed that there is a need for competences of those working in tertiary level jobs in the NCMS (new and candidate member states). These are (importance is in descending order):

- Ability to use computers/Internet,
- Ability to use time efficiently,
- Ability to work produce with others,
- Ability to make meaning clear to others,
- Ability to perform under pressure,
- Mastery of own field or discipline,
- Ability to coordinate activities,
- Ability to rapidly acquire new knowledge,
- Ability to write reports, etc.,
- Ability to come up with ideas/solutions,
- Analytical thinking,
- Ability to assert your authority,
- Alertness to new opportunities,
- Ability to negotiate effectively,
- Ability to mobilize capacities others,
- Ability to present to an audience,
- Willingness to question ideas,
- Ability to write/speak in foreign language,
- Knowledge of other fields/disciplines

Comparing these aforementioned generic competences with the information literacy competences brings a grid of overlapping competences which are named differently but defined in the similar way. Therefore, demonstrating the necessity of information

literacy as a set of generic competences which can be learned and further developed even after the formal education needs to be done in the employers' mindset. Researching information literacy competences in the workplace environment has recently become more popular after the pioneer work from researchers such as highly cited Bruce [11], Lloyd [12] etc. Recent trend in identifying information literacy skills and competences by the employer is result of the growing trend of graduates' employability issues. Projects, such as the iKnow project [13] have tried to identify core information literacy skills areas as relevant to the workplace. The result is 6 core information literacy skills:

- The ability to conduct effective searches for information;
- An understanding of how to locate information quickly and effectively;
- Knowledge of how to measure the quality of the information found;
- The ability to deal with large amounts of information;
- Knowledge of how to manage information in the workplace, in accordance with legislation;
- Knowledge of how to keep up-to-date with information.

From the previously mentioned competences frameworks both from the higher education point of view or the labor market point of view one can see the growing importance of integrating generic competences in study programs. Several new clusters of skills and competencies have emerged with the assumed potential to influence learning processes in diverse environments; Information literacy (IL) is one of them. What becomes common to all the defined generic competences is the information literacy ingredient. Therefore we can conclude that generic competences cannot be developed without including information literacy in the curriculum.

Only an information literate employee is a critical thinker capable to solve problem due to development of competences such as informed decision making based in analysis and synthesis of various information acquired through interaction with different analog and digital items (including objects, documents and people) in the information space.

3   Methodology

Qualitative research was conducted during 2-months period in 2014 among 6 top companies from the private sector. The companies' professional background financial, IT and marketing branch and they were chosen based on their employability record of hiring new workforce. The major criteria in choosing companies for interview were their visibility on international level, regional collaboration and ability to hire new graduates. This enabled us to investigate the importance of the generic competences of current and future employees from the employers stand. Research tried to investigate if generic skills are recognized as a key element of effective working practice in workplace and if employees are demonstrating their competence in generic information skills.

Goal of the research was to investigate employers' perception of information literacy and its relation with generic competences. Recent study by Head et al. [14] on information literacy competences at the workplace and its results were used as a starting point. Intention was to compare the findings and identify competences that employers need and expect from graduates. The problem that we assumed would arise is the lack of understanding of the term information literacy competences by employers outside of the field of information science. Due to the fact that usually information competences are misinterpreted with computer skills research was based on investigating generic competences. By mapping the generic competences with information competences we developed a set of generic information competences to be further explored and promoted as a solution of the current misunderstandings.

The interviews were semi-structured, consisting of set of open-ended questions divided into three subsets: identification of generic competences, evaluation of current employees' generic competences and assessment of job applicants' generic competences. In recorded sessions via skype, interviews were held with company representatives were from the management level or human resource management sector.

4   Discussion

What our research showed is the general misunderstanding of the term generic competences between body of research and literature and employers. Although, they are thought to be crucial for the employability in the end some of the generic competences were associated with the specific work description. Even the employers have identified competences such as leading, deciding, enterprise, management as competences necessary for managerial level and not the entrance level.

Employers were asked to identify the generic competences necessary for their employees. The following competences were identified as generic competences expected in their current and future employees: Computer literacy, Communication and presentation skills, Professional development and acquirement of new knowledge and skills, Team work, Independence, Problem solving.

When further asked what they expect from their employees the following were identified: efficacy, curiosity, creativity and positive thinking. Furthermore, two employers emphasized that there is a growing need for skills of the ethical conduct in the work environment as well as with business procedures and information. On the other hand, one employer named specific competences such as math skills and expertise as required generic competences which bring out the question of setting the clear boundaries and definition of what generic competences are.

What seem indicative is that computer literacy is an unquestionable prerequisite. The majority of the companies were white collar companies involved with marketing, investment or IT and therefore the excellence in computer literacy is for them a compulsory. Still, one of the employers, when asked about the competences of job applicants, said that "competences stated in the job application need to be checked thoroughly" as practice and experience have shown that this is not the case. When asked to elaborate on this Employer gave an example of job applicant stating his

excellence in using office package while when offered an opportunity to show his skills applicant showed lack of deeper knowledge of connecting software options with the work task". Although this is not strongly connected with the information literacy competences it gives an example of the problem educational environment is currently facing. Focus in today's education system is on subject specific competences while generic competences such as information literacy are often ignored. On the other hand these competences are actually crucial for graduates' employability

4.1   Generic Competences of Current Employees

Competency of independent information retrieval and decision making based on data and information retrieved is among all the participant priority competency of their employees. One participant even emphasized that there is a huge demand for "bringing quality information based on processed data and not pure factual information" The other stated that it is crucial that individual "gathers information independently and not by dragging others".

When asked to evaluate generic competences of their current employees all the interviewed participants agreed that even if these were not acquired prior to the employment time these need to be developed very fast. Only one company stated that they are currently defining system of competences on which they will base their professional development and therefore are currently not monitoring generic competences of their employees nor using them as a employability prerequisite. Still, they are experiencing disproportion among different department and teams in generic competencies.

When rating the priority of generic competences they expect from their employees on the scale of 1-5, where 1 was the least important and 5 was crucial, as crucial were identified the following: adaptability and readiness for change, creativity, vision and innovation, customer relation and time management. The less important competences still marked as most important were the: decision making and risk taking (based on data, information knowledge), Personal development, communication skills, problem solving and information management. One of the employers felt the need to emphasize that for information management competence is "something that very few employees have knowledge of".

Although information skills are in the foundation of aforementioned competences it is interesting that when asked to enumerate skills by their importance only one employer felt that the information retrieval and processing skill is the top skill. This can be correlated with the results from The National Association of Colleges and Employers study from 2013 (according [14]) which reports that employers ranked "obtaining and processing information" fifth out of ten skills they considered important during the recruiting process.

4.2   Generic Competences of Job Applicants

When discussing the ways to develop the generic competences and the employers vision on when these should be developed, during or after educational period all the participants answered that it should definitely be acquired during educational period. The majority felt that these should be acquired during secondary or tertiary education while two felt that these should be developed on the primary education level. The general remark is the education is oriented towards subject specific knowledge and competences while generic competences necessary for the smooth transition from educational environment towards workplace and later in the workplace are often ignored due to various reasons.

The employers were unanimous in stating that there is a decline in job applicants emphasizing their generic competences in their application. They are often ignored and in some cases if stated usually hidden and not emphasized as a comparative advantage in the job application. In the words of one employer "We are witnessing decrease in the generic competences on annual level in the last 10 years". The only solution is for employers to try to look and find generic competence from applicant CV or to investigate them during the job interview. One of the employers even commented that in his experience with young graduates "More education brings more subject specific competences and less generic competences"

The recent trend is that some job applicants only emphasize their ability to work in team as their only non-subject specific competence.

5   Development of Generic Information Competences

Information literacy competences when mapped with the generic competences show a huge overlap. When looking historically in the term information literacy the term (coined by Zurkowski in 1974) it originates from the business sector as a response to the urgent need of information handling and distinction between information literate and illiterate professionals. Even after so many years of the original formulation we are still struggling with the recognition of the concept in developing educational policies, curricula and study programs.

The occurring problem today is the mixture of terms in use concerning digital, media and information literacy. This position shows that there is a lack of concept understanding and narrow looking at the concept of information literacy. The change in the information space has created a new viewpoint in the information literacy field incorporating the philosophy and changing anomalies of the web 2.0 environments thus creating the information literacy 2.0 phenomenon. The universe of scholarly information went through a tremendous change in the last decade which has brought changes in how researchers discover and gain access to information resources relevant to their research and how they create and manage information resources of new kinds. It is necessary to focus IL programs on specific aspects such as [15]: Issues of trust and authority, Understanding novel/alternative forms of disseminating information, Managing and communicating research information and data, Alternative forms of

evaluating and pre- reviewing scientific works, Building reputation and research prestige online.

The often ignored part of research on the generic competences is the assessment of these skills. As they are not subject specific and do not relate to discipline-specific set of assessment criteria they are often ignored and incorporated in the study programs to satisfy the theoretical part of curriculum development. Marzal [16] points out that evaluation as a process of improvement and betterment must be linked to quality. It must also have the necessary tools to measure the process of qualification. These tools need to be effective, objective, and useful for statistical processing purposes, enabling results to be effectively interpreted for decision-making processes. The problem arises when evaluation has to be transferred to an object like information literacy, which is generic and competency-based, and does not refer to a knowledge area.

Until we develop a clear set of assessment criteria the generic competences will not be given a required attention during the teaching process and curriculum development. Therefore, building a detailed taxonomy of both competences and its learning outcomes could serve as a viable solution to the explicit assessment of generic skills. A discipline-embedded approach to developing generic skills is favoured, but with explicit assessment and reporting of the outcomes.

6   Conclusion

As the skills boundaries between occupational categories are increasingly blurred creating a framework of generic information competences could enhance the enable future graduates employability. The discipline oriented or specific competences are currently receiving major attention while the generic competences are lacking in study programs integration. When looking at the generic competences and information literacy competences we see an overlap. The generic competences cannot be developed without including information literacy in the curriculum.

By interviewing employers and gathering their insight into the problem we received better scan of the field and employers viewpoint of the emerging problems. We see a growing segment of content analysis applied in the research of competences emerging in the job descriptions. Still, this brings to the problem of lack of communication between educational and work sector. In-depth research of the employers viewpoints of the generic competences, raising awareness of the necessity of generic information competences in both sectors are foundations for improvements of graduate employability.

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A Domain-Specific Test of Procedural Knowledge about Information Searching for Students of Computer Science

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Abstract. In three studies we constructed a standardized test of procedural knowledge about information searching tailored to the domain of computer science, the PIKE-CS (Procedural information literacy knowledge test for computer science students). A skill decomposition was used to identify nine sub skills which can be classified into two broader categories: Development of search strategies and Application of search strategies. Based on the ratings of experts (N=7), a scoring key was developed. In a pilot study the test was administered to a sample of computer science students (N=18). The scale reached an internal consistency (Cronbach's alpha) of α=.78. Finally, the items were administered to N=89 first-year computer science students. The mean difference between subjects with vs. without programming experience in a professional context – which can be interpreted as a proxy for search experience – is significant, pointing to the validity of the test.

Keywords: Information-seeking behavior, situational judgment test, procedural knowledge, computer science.

1　Introduction

The Association of College and Research Libraries (ACRL) defines information literacy as "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" [1, p.2]. The importance of information literacy cannot be overstated due to the steadily increasing amount of available information, the further development of information technology [2], and given that it may be considered a "basic skill set of the 21st century" [3, p. 39]. Therefore, students as well as professionals must be information literate. Taking a closer look at the construct, information literacy is a set of abilities or skills which may be divided into several independent sub-skills. The ACRL consequently defines five information literacy standards for higher education with a variety of performance indicators and outcomes.

In the present article we focus on skills associated with planning, conducting and evaluating information searches because they may be considered as crucial in student's achievement as well as lifelong learning [4]. To achieve this, we introduce a new standardized test to assess the search skills of computer science students based on a situational judgment format and we discuss the reliability of the new instrument.

There are several different approaches to assess information literacy. A popular method in Germany is tests relying on self-reported data [5-6]. In this way, the tests are able to investigate the subjective issues of the construct like self-efficacy [7]. Unfortunately, this type of test is prone to produce overestimated test scores due to social desirability bias and it is prone to an overestimation of the own abilities in such "simple" tasks, resulting in inaccurate self-assessments [8].

Internationally, particularly in the United States of America, both the Information Literacy Test (ILT) [9] and the inventory developed by the SAILS project [10] have proven to be reliable and objective instruments to assess the information-seeking behavior of students. Unfortunately, the scope of these tests is limited to local circumstances and is not readily transferable.

Furthermore, most standardized instruments are multiple-choice tests solely measuring declarative knowledge about information search and evaluation [11-12] instead of procedural knowledge about search processes and the skills needed to perform successful searches. Declarative knowledge may be understood as "knowing what" and is defined as the knowledge about certain events and facts, e.g. different publication types and search tools used during literature search, whereas procedural knowledge is the knowledge concerning the behavior in certain situations or to solve a given problem ("knowing how"). To satisfy an information need, it is important to know *how* to find and retrieve information. Thus, information literacy exhibits a procedural aspect [13-14], and may be described as a set of high-order skills which cannot be assessed solely based on declarative knowledge [15]. The second ACRL standard (locate and access) reflects this fact, too, because it often relates to knowledge about how to solve an information problem [1], e.g. extraction and rewording of search terms. Based on these considerations, we chose a procedural approach to assess information literacy.

In order to assess procedural knowledge about information literacy, specific information search tasks have been used, for example tasks that instruct the subjects to find a scientific article about a certain topic [16-17]. Search tasks, however, are difficult to evaluate objectively and they tend to be time-consuming, so that the reasonable number of items has to be reduced because of time restrictions. This results in a potential loss of test reliability. Furthermore, test results are influenced by contextual factors, e.g. access to a certain bibliographic database. Therefore, we have to find an alternative approach to assess the procedural knowledge.

Alternatively to the formulation of search tasks, we formulate the items in a situational judgment format (SJT) [18-19]. This format has proven to be effective in work and organizational psychology. An item consists of a description of a situation (scenario) followed by questions on the subject's behavior in that specific situation. The questions are usually presented in a multiple-choice format, so that the administrative effort is reduced while the test's objectivity will be maximized. The test

construction, however, is more elaborate than the formulation of simple search tasks. The scenarios describing an information need and the necessary skills to solve the specific problem have to be identified. To achieve this, a skill decomposition was conducted based on the information problem solving mode (IPS) by Brand-Gruwel et al. [14]. In this process nine sub-skills were identified which can be classified into two broader categories: Development of Search Strategies and Application of Search Strategies.

1.1   Development of Search Strategies

Before the actual search begins, the search strategies have to be carefully developed. This process is a compound of several different sub-skills and describes a planned and goal-oriented approach to satisfy an information need, e.g. defining a realistic plan and timeline to solve the information problem. The category is divided into the following four sub-skills:

- Planning behavior involves the definition and articulation of the need for information by activating relevant prior knowledge.
- Pearl Growing means the selection of appropriate information based on a relevant publication, the "pearl".
- Selection of search tools denotes the ability to select adequate instruments (e.g. bibliographic databases or search engines) to conduct the search. Computer science students as well as professionals prefer the usage of search engines [20]. That's an explanation why this instrument is of high importance in this domain.
- Selection of publication types involves the choice of the correct publication type for a given information need (e.g. survey article, technical report).

1.2   Application of Search Strategies

The second category of sub skills deals with the actual search process. The focus is on the information search behavior, more precisely the utilization of search engines (e.g. Google[TM]), bibliographic databases (e.g. DBLP[1]), and library services for full text acquisition (e.g. library online catalog). The process of searching and finding information is subdivided into the following five sub-skills:

- Extraction of search terms, e.g. the identification of key concepts describing the information need.
- Rewording of search terms, e.g. finding synonyms or related terms.
- Use of Boolean operators, like AND, OR and NOT
- Full text acquisition, e.g. utilization of the online library catalog.
- Recognition of the publication type for a reference, (e.g. book, technical report).

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[1] `http://dblp.uni-trier.de`

According to these considerations we constructed a standardized test of procedural knowledge about information searching tailored to the computer science domain, the PIKE-CS (Procedural information literacy knowledge test for computer science students).

2   Method

2.1   Overview

Based on our skill decomposition and focusing on information-seeking behavior an initial pool of 33 items was created. We opted for a situational judgment test format [18]: Each item comprises a short problem description of a situation typical for information searches followed by four responses varying in their appropriateness to solve the problem. Each response could be rated on a five-point Likert scale ranging from "not useful at all" to "very useful". The 33 items were administered to a sample of N=7 experts (computer scientists with several years of experience in information searching). Applying a method introduced by Artelt et al. [21], a scoring key focusing on pairs of response alternatives was developed. For each of these pairs it is checked if the more appropriate alternative is rated higher on the Likert scale than the other. If this is the case, the subject scores a point. The final scoring key consists of 85 such pairwise comparisons. The items were administered to a sample of N=18 computer science students in the context of a pilot study. Finally, the final 22 item-version of the test was administered to a sample of N=89 freshmen of computer science at three German universities.

2.2   Item Development

A group of four researchers who were familiar with the ACRL standards [1], the information problems solving model by Brand-Gruwel et al. [14], and the skill decomposition as well created an initial pool of 33 items. For each item a scenario that represents a typical situation in a professional information search was described. This was a complex and sensitive process to ensure the compatibility of items with our skill decomposition. The wording was changed several times until all researchers agreed with the appropriateness. Finally, four response alternatives to solve the specified information problem were approved. Each response could be rated on a five-point Likert scale ranging from "not useful at all" to "very useful". Due to the fact that many information problems can be solved in different ways, the response alternatives vary in their appropriateness to solve the problem presented; some could be considered as very useful, others as moderately useful, whereas some were not useful at all. Thus, multiple response alternatives per scenario could be considered as "correct". A sample item is given in table 1.

While formulating the items and the corresponding response alternatives we had to take into account some domain specific characteristics. A lot of computer science students use the Google search engine [20]. Therefore, we emphasize the sub-skill extraction of search terms in PIKE-CS.

Table 1. Sample item of sub-skill 8 – full text acquisition

You need the following book: "Michael Sipser – Introduction to the theory of computation". How do you proceed?	Not useful at all				very useful
	1	2	3	4	5
A) I enter "Sipser introduction theory computation" into the search field of the library catalog.					
B) I search a reference database for "Sipser introduction theory computation", because many books are stored online in these databases.					
C) I look up the ISBN-Number of the book and enter it into the library catalog.					
D) I try to locate and download a .pdf of the book using a web search engine.					

Alternatives A and C of the sample item are the best choices to solve the information problem. Trying to locate and download a .pdf (D) is in most cases ineffective because in most cases books are not freely available on the web (but still is an option). The response B is inappropriate because existing reference databases do not contain full texts of books. Nevertheless, some reference databases maintain abstracts or provide at least references (e.g. doi) to access the full texts of some publication types.

2.3   Expert Study

The resulting pool of 33 items was administered to a sample of *N*=7 experts. These experts were computer scientists with several years of experience in information searching who are involved in research and teaching. The participants were asked to answer an online version of the pilot test under exactly the same conditions than all further participants. The only exception was that the experts were encouraged to make remarks on the item phrases in a commentary field, which we took up to make minor improvements with regard to the wording of the items. We used the data from the expert sample in combination with our own preliminary considerations to develop an initial scoring key based on a method introduced by Artelt et al. [21]. The scoring key focuses on pairs of response alternatives. For each of these pairs it is checked if the more appropriate alternative is rated higher on the Likert scale than the other. If this is the case, the subject scores a point. Every item offers four response alternatives (A to D). Thus, there are six possible pairwise comparisons between two alternatives (namely AB, AC, AD, BC, BD, CD). For each pair we determined whether one alternative is rated higher or lower than the other on the five-point Likert scale. E.g. in the sample item presented in table 1, six out of seven experts preferred alternative A (searching via the library catalog) over B (searching in a reference database) resulting in an addition of the pair A > B to the scoring key. Hence a participant scores a point if she or he prefers response A over B. Due to variation of agreement between experts concerning the usefulness of response alternatives we had to determine a cut-off

criterion: If for a given pairwise comparison AB six or more out of seven experts agreed that A is better or at least equally suitable than B, we added AB to the scoring key. Five items were eliminated from the pilot version of the test due to the heterogeneous and partly conflicting evaluations of the experts. A conflict occurs when the responses cannot be ordered: If, for example experts rated alternative A higher than B and B higher than C, but for whatever reasons C higher than A, their ratings are inconsistent and they do not agree with the appropriateness of the response alternatives to solve the information problem in the specific situation.

This type of scoring key was developed because it avoids using the absolute values thereby reducing the impact of response biases. Subjects with a general tendency to use absolute values (not useful at all = 1 or very useful = 5) do not necessarily score higher than subjects who favor middle scale categories (2, 3, 4). The test is also more robust with respect to further technical developments, e.g. new search tools or functions in referential databases, because the scoring key is based on pairwise comparisons and not on absolute values. Even if more appropriate solutions to the search problem are introduced, the *relative* appropriateness of the solutions presented in the test will remain unchanged. After this step of development the scoring key consisted of 110 pairwise comparisons for the remaining 28 items comprising three to five comparisons per item.

2.4   Pilot Study

Due to the small number of experts the next phase of scale development was aiming at adjusting the scoring key. An electronic version of the remaining 28 items was administered to a sample of N=18 computer science students in a pilot study. Subjects were paid for their participation. About 78% of the subjects were enrolled in a Bachelor's degree, 6 % in a Master's degree and the remaining 16% were high school graduates who intended to start their studies a month later. Mean age was M = 20.22 years (SD = 2.74). About two third (66%) were students in the first semester. Data collection was conducted in groups of 3 to 10 students. Two students were female and 16 male students.

The subjects completed a demographic questionnaire and were asked to indicate their experience concerning information search. These data clearly shows that search engines like Google are the most popular tools for scholarly information searches. About 50% of the participants rarely use reference databases and only 11% are frequent users of reference databases whereas about 83% often use search engines for their search.

The initial scoring key was used to evaluate the data from the pilot study. An initial test score was computed and served as a starting point to adjust the scoring key. Part-whole-corrected correlations between pairwise comparisons and the total test score were calculated to examine which alternatives were preferred by subjects with a high test score. Thereby we were able to detect how much a specific pairwise comparison contributes to students' success. Sophisticated minor refinements of the scoring key were be made, especially in those cases where two response alternatives are rated equally or just slightly different. Rather than only rewarding the preference of the

slightly better alternative, the participants also gain a point when both alternatives are rated as equally useful. During an iterative adjustment process six test items were eliminated. The final test consists of 22 items with a scoring key comprising three to five pairwise comparisons per item and a maximum score of 85 points.

2.5   Main Study

Finally, the electronic 22 item-version of the test was administered to a sample of N=89 freshmen of computer science at three German universities who were paid for their participation. About three quarters (77%) of the subjects were male, a typical distribution at German universities in computer science. Their mean age was M = 20.8 years (SD = 2.96) ranging from 17 to 32 years. About one third (33%) of the participants have work experience, i.e. have finished some kind of professional education prior to their studies. In addition to the test three self-report questions about prior information search knowledge had to be answered. The reported data confirmed the high importance of search engines compared to reference databases in computer science: No subject knows the reference databases by name. One reason may be that a lot of them were indexed by search engines like Google.

3   Results

The refined scoring key was used to evaluate the datasets of the pilot and the main study. Table 2 summarizes means, standard deviation, range, skewness and kurtosis of the test scores. Due to the high number of first semester students in the pilot study, participants in both studies achieved comparable means. As expected, students with more search experience scored much higher (all in the top quarter) than the others. In the pilot study the scale achieved an internal consistency (Cronbach's alpha) of α=.78 and a Spearman-Brown split-half-reliability coefficient (odd-even method) of r_{xy}=.78 with corrected item-total correlations ranging from r_{itc}=.03 to .62. The reliability coefficient was lower in the final study (α=.54) which is supposedly due to the restricted variance of test scores in this relatively homogeneous sample of first-year students and the multi-faceted nature of information literacy [22]. The corrected item-total correlations are ranging from r_{itc}=.04 to .28. The mean difference between subjects with vs. without programming experience in a professional context – which can be interpreted as a proxy for search experience - is highly significant, pointing to the validity of the test. A t-test for independent samples showed a significant difference between the two groups (t = 2.80; df 87; p < .01).

The item difficulties indicate neither floor nor ceiling effects so that the test items are well designed. Furthermore, the items associated with the sub skill use of Boolean operators have, as expected, low difficulties (69%-73% correct answers) even for freshmen of computer science. The simplest and the most difficult items (83% respectively 27% correct answers) were part of the sub skill extraction of search terms due to the close linking of expertise and information literacy [1]. It is not possible to determine appropriate search terms without the knowledge of the technical terms and their synonyms.

Table 2. Descriptive statistics of the final scale (22 items)

	N	M	SD	Range	Skewness	Kurtosis	Alpha
Pilot study	18	47.78	11.46	32-69	.27	-1.2	.78
Main study	89	47.66	7.1	29-65	-.21	-.14	.54

N = number of subjects; M = Mean; SD = standard deviation; Range: maximum score = 85

The subjects achieved low scores in items associated with the selection of an appropriate search tool (34% - 43% correct answers) because, as expected, all of them did not know the functions of the bibliographic databases or Google Scholar. Unfortunately, due to the homogeneity of the samples in both studies, we could not detect further significant differences or correlations between self-reported search experience or age.

4   Conclusions

We introduce a new standardized test PIKE-CS (Procedural information literacy knowledge test for computer science students) to measure the procedural component of information searching skills in a simple and economic way. A skill decomposition was used to formulate items in the situational judgment test format composed of a scenario and four multiple-choice response alternatives per situation. The final test consists of 22 items. As far as we know, it is the first attempt to develop an information searching skill test focusing on the procedural aspect tailored to the domain of computer science. Several domain-specific aspects were taken into account while developing the inventory, e.g. the importance of conference papers as a publication medium in computer science and the high relevance of the sub skill extraction of search terms due to the high popularity of search engines.

In sum, the scale reliability in terms of internal consistency is satisfactory in the pilot study (α=.78). The items were carefully chosen based on the expert study so that they were able of distinguish between correct and incorrect response alternatives. Thus, moderate reliability results most likely from the multi-faceted nature of information literacy [22]. It is expected that some students know how to extract search terms others how to select an appropriate search tool but only a few have comprehensive knowledge about information literacy.

The scoring of the PIKE-CS does not rely on absolute values and is easy and efficient compared to the somewhat complex and costly scoring process for "real" information search tasks. In addition, test administration is independent of contextual factors such as the access to bibliographic databases or the availability of a specific database interface. It is hence not a test about certain features of specific databases or their common functions.

In the future we will use the PIKE-CS to explore changes of information literacy and its relations with the knowledge development of computer science students in a longitudinal study across the first four semesters.

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Professors' Influence on Students' Choice of Format for Their Research Materials: Are There Differences Between the Academic Disciplines?

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Abstract. The aim of this research is to determine professors' influence on university students' choice when it comes to the type and format of research materials the students use, as well as to determine possible differences between humanities and sociology students with regard to the materials they use in their master theses. The results of the previous research of younger generations' information behaviour indicate their preference for digital sources. However, a study of humanities students indicates their inclination toward print sources. This leads to a possible contradiction – the *net* generation information behaviour and usage of print sources. The transition of the information source format used, from print to digital, also differs for each discipline. The results of this research indicate that information behaviour and information literacy competencies of students should be observed through the prism of disciplinary differences and also professors' expectations regarding the materials used by the students.

Keywords: Format of information sources, humanities students, social science students, information behavior, information literacy.

1   Introduction

Information literacy is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information [1]. In recent years information seeking and information use are increasingly associated with information and communication technologies. Information technologies have enabled the rapid improvement of access to information sources, and it now gives students massive capabilities to search diverse information sources - from the contents of a library to databases to information in sources with open access to content for collaborative knowledge sharing. Using information technologies affects not only the way information sources are searched, but it also has a deeper impact on what is being done with the found information, therefore, on the way to put the information to use and on the very process of learning.

The experiences of using information and communication technologies will determine the technologies and their place in future use and research. As C. Bruce states: "we can focus on the manual and the skills we think that people need, encouraging technically competent application of skills, or we can orient ourselves to the experiences of the people we serve, and recognize skills as serving those experiences" [2]. Bruce believes experiences influence skills or behaviour. Experiences are deeper and more powerful; they contextualize skills. [2] While research on recent generations of students indicates their orientation towards digital sources [3-4], humanities students seem to be more inclined toward print sources [5]. The choice and use of information resources is dependent on which scientific discipline one studies [6]. Faculty in the institutions of higher learning transfer their knowledge and experiences to their students. Faculty's influence on the choice of format for information sources is exceptionally strong in humanities. Humanities students emphasize the importance of their mentors who often lend students their own rare books, manuscripts or old documents [7]. Integrating information and communication technology in the educational process depends on the faculty experience and their attitude towards it. If the faculty have not developed a positive attitude towards the use of digital resources, they will transmit this attitude to the students and, in some cases, restrict or disallow the use of digital resources. There are also contrary examples when an individual faculty member's professional interest and enthusiasm encourage meaningful integration of technology into the curriculum [8].

Research on younger generations of students indicates that they greatly rely on electronic information sources. There is a difference between undergraduate students, who when looking for information first go to the web, and graduate students who rely on library resources. Documents that students find in electronic formats always, or almost always, are printed out when used for studying [3].

Google generation students show a preference for visual information over text, have shifted to digital forms of communication, prefer quick information in the form of easily digested short chunks rather than full text, multitask, are impatient and have zero tolerance for delay, find their peers more credible as sources of information than authority figures, need to feel constantly connected to the web, and learn by doing rather than knowing [4]. On the other hand, studies of humanities students indicate those students use books more than journals, use older materials, work alone, relay on study materials and mentors who they find to be invaluable, are interested in primary sources and are willing to travel to remote locations in order to gain access to them and regularly use information technology [5].

The research presented in this paper will offer answers to the following research questions: What format do faculty suggest students should use? What format do faculty prefer? Are faculty aware of the students' preference for digital formats? We will compare the results from the humanities faculty members with the ones from the social science faculty members and determine if there are any differences. So, in this research we will analyse the format and the type of research materials history and sociology students used in writing their master theses. We will determine what materials were used and if there is a difference between the materials used by the students of humanities and social sciences. This is a pilot study, a part of a larger study of humanities students' information behaviour and their information literacy

competencies. These students are reportedly directed toward print format during the course of their education but their information behavior in general indicates a preference for electronic materials which is in line with the behavior of their *net* generation. Hence, the additional purpose of this pilot study is to test the methodology which is to be used in the above mentioned larger study.

2   Information Literacy and Differences in Academic Disciplines: Literature Review

Information literacy is perceived differently by the different user groups, therefore, even though the basic framework is broadly set and common for all, it will reflect differently in different professions and academic disciplines. When researching information literacy various user groups should be considered. In information literacy research the largest part of the research refers to the impact of information and communication technology. It, however, is not equally represented in all academic disciplines and thus it does not have the same impact on them. When looking for information a user always searches within a context and has a goal in mind, therefore, information literacy is dependent on the goal and the context. The same information will not have the same meaning and will be perceived differently in different societies and cultures. Siebenberg, Galbraith, and Brady at Washington State University researched the student and researcher's usage of print and electronic journals in various academic disciplines: chemistry, physics and mechanical and materials engineering [6]. They concluded that the change from using print journals to electronic journals is not the same across the board and that it appears the usage of electronic journals provides greater access to print journals. Vakkari and Talja in Finnish National Electronic Library analysed how academic status and discipline influence the major search methods used by the university academic staff for obtaining electronic articles for teaching, research and keeping up to date in their field [9]. Their research indicated that in humanities keyword searching was significantly more common than other methods, although there are other methods previously thought typical for this discipline such as chaining and using colleagues as sources of access to information. Donna Gardiner et al. investigated British university academics' information behaviour and concluded that among the three researched disciplines, computer and information sciences, business /management, and English literature, the academics in the latter one are the least enthusiastic regarding the use of information and communication technology and are the most prone to using the print materials [10]. A citation analysis of 28 monographs published by University of Colorado's humanities faculty indicated that overall 69% of the citations collected were to books, while 31% were to journal articles [11]. Georg and her team explored a sample of 100 graduate students and their information behaviour related to their scholarly activities. The research indicated that students' information behaviour differed depending on academic disciplines. Humanities students used Google the least of all other students, while browsing the Internet was in second to last place. They also demonstrated the most scrutiny toward the Internet resources. Nearly all graduate students (96%) reported that academic staff (e.g., advisers, professors and committee members) influenced their research and information seeking [12].

Based on survey data from 1222 undergraduate students studying in the UK, Selwyn concluded that there were differences in the use of the Internet as a source of academic information between students of different subjects of study. Students studying medicine, social sciences, law and business all reported higher levels of educational Internet use than their counterparts in creative arts, architecture/planning and the humanities [13]. Analysis of citations in the theses of 20 humanities graduate students at National Taiwan University indicated that the students cited more print materials than electronic resources. The cited electronic resources were mostly from electronic journals. Print materials were still the primary information resource [7]. Head examined the ways in which students majoring in humanities and social sciences conceptualised and operationalised course-related research and she found that students first use course readings and library resources for academic research and then rely on public Internet sites later in their research process [14]. Delgadillo and Lynch examined how history graduate students seek information. They concluded that history graduate students are guided by their faculty advisors and their professors, not only within the content of the courses they take but also within the context of how they do their work. What the faculty member does is what the student does. The faculty's attitudes toward the library, collections, specialists, and generalists on the library staff become the student's attitudes [15]. This study as well as other studies emphasize that faculty members' influence students' choices of information materials and was motivation for our research. We conclude that the context of scientific disciplines, the set goal and the methods used all influence the choice of format and type of research material. Print materials are used in the humanities more than in other disciplines and books have remained the main and most important source of information. Despite the adoption of information technology, personal networks are still an important factor in the transmission of information. It is, therefore, not surprising that the influence of faculty members on students is very pronounced.

3   Method

This paper represents part of a larger study that will be conducted on this issue. The purpose of this pilot study is to determine the faculty's influence on the students' choice of the format and type of materials they use in their master theses and if there are differences in information behavior between the students of humanities and social sciences. An additional purpose of this study is to test the methodology, which is to be used in the larger study of the humanities students' information needs and behaviour.

The research was conducted on a small sample of 30 master theses in History (humanities) and 30 master theses in Sociology (social sciences) defended at the University of Split, Croatia, during the years 2012 and 2013. Content analysis method was used in order to determine possible differences in the choice of the format and type of materials used by the humanities students and social sciences students. The faculty was given the survey in February of 2014. The survey questionnaire contained the following questions: Which format of information resource do faculty suggests students should use and why? Which format do faculty prefer when there is a choice of both print and electronic formats and why? Are professors aware of the students'

preference for electronic formats or do they believe their students (of humanities or social sciences) are different? This survey was given to 16 social science faculty members and 16 humanities faculty members.

4   Results

4.1   Results of the Master Theses Content Analysis

The lists of sociology theses references contain the total of 1944 units, out of which 1640 are print and 304 are electronic. The lists of history theses references contain the total of 1014 units, out of which 942 are print and 72 are electronic (Figure 1). In total 2958 units were surveyed. It was determined that there is a statistically significant difference ($x^2 = 43,8$, df $= 1$, p$> 0,05$) (Table 1) between the usage of print materials and electronic materials, in other words that the history majors use print materials significantly more than do the sociology majors. Both history and sociology students use print materials significantly more than electronic materials. In history majors the percentage of print materials used is 93% and in sociology this figure is 84%.

Table 1. Print and electronic materials usage by history and sociology students

	f_0	f_t	f_0-f_t	$(f_0$-$f_t)^2$	$(f_0$- $f_t)^2/f_t$
Sociology: electronic sources	304	247,1	56,9	3236,7	13,1
Sociology: print sources	1640	1696,9	-56,9	3236,7	1,9
History: electronic sources	72	128,9	-56,9	3236,7	25,1
History: print sources	942	885,1	56,9	3236,7	3,7

df=1, p>0,05, x^2=43,8

Regarding the material type the study has shown that the top three choices of materials for history students are print books, followed by articles from print journals and print newspapers, while for the sociology students the order is identical for the first two choices, however, the third place is held by the web pages.
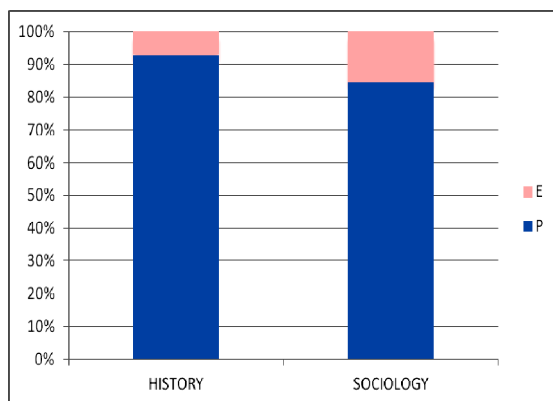
Fig. 1. Information resource format

4.2   Survey Questionnaire Results

The survey questionnaire for humanities and social sciences faculty provided the answers about the format of information resource(s) they suggest to students, about their personal preference of the format, and about their awareness of the students' preferences regarding the format of the resources. The results for humanities faculty are shown in Table 2, and the results for social science faculty are shown in Table 3.

Table 2. Information resource format – humanities faculty

Faculty	Information resource referred to students by faculty			Information resource format preferred by faculty			Faculty's opinion regarding the students' preference of format		
	Print	Electronic	Both	Print	Electronic	Both	Print	Electronic	Both
H 1	x			x				x	
H 2	x					x		x	
H 3	x			x				x	
H 4	x				x			x	
H 5	x			x				x	
H 6	x			x			x		
H 7	x			x			x		
H 8	x				x		x		
H 9			x	x				x	
H 10	x			x					x
H 11	x				x			x	
H 12		x		x				x	
H 13			x		x		x		
H 14	x					x			x
H 15	x					x			x
H 16			x			x		x	
Total	12	1	3	8	4	4	4	9	3

Table 3. Information resource format – social science faculty

Faculty	Information resource referred to students by faculty			Information resource format preferred by faculty			Faculty's opinion regarding the students' preference of format		
	Print	Electronic	Both	Print	Electronic	Both	Print	Electronic	Both
D 1			x	x				x	
D 2	x				x		x		
D 3			x		x			x	
D 4			x	x				x	
D 5			x	x				x	
D 6			x	x					x
D 7	x			x				x	
D 8	x			x				x	
D 9	x			x				x	
D 10			x		x				x
D 11			x		x			x	
D 12			x			x		x	
D 13			x	x					x
D 14		x		x	x			x	
D 15			x		x			x	
D 16			x		x			x	
Total	4	1	11	8	7	1	1	12	3

Out of the three questions the answer to the first one (Which format of information resource do faculty suggest students should use and why?) is the only one with statistically significant difference between the history faculty and the social sciences faculty ($x^2 = 7,06$, df = 2, p > 0,05). Humanities faculty refer their students to print resources mostly, whereas social sciences faculty refer their students to both print and electronic resources.

The top three reasons why faculty refer students to print materials are: availability, depth of focus, and suitability (standardization, verification).

Twenty-two faculty members state availability as the reason for their choice of material: print (13 faculty members), electronic (5 faculty members) or both (4 faculty members). Faculty often explain that the materials are available in the library or that they are not available in a different format. Some believe the students will gain wider perspective of the subject matter if they use both formats.

Six faculty members state depth of focus as a reason for suggesting their students to use print materials. A humanities faculty member states: "*As far as I am concerned a book has a better layout, this is especially the case with my subject matter where deep thought is required. The Internet and electronic format are fine for a quick overview, but subjects that I teach require deeper insight.*" Another humanities faculty member considers that "*book is the book. What we call a book in its classical form is something that a student needs to learn to understand thoroughly.*"

Suitability (standardization, verification) is also stated as a reason. Humanities professors believe: "*Everything digital, e.g. Wikipedia like format, should be taken very carefully. This open form media allows for non-scientific issues to be "smuggled" as scientific.*"

Other reasons for the material format choice are: coordination with the students' preferences, coordination with their own preferences, ability to read print materials everywhere, avoidance of electronic materials due to plagiarism and noncritical resource selection, and the advantage of electronic resources for the reasons of quick access and lower prices.

In the second question (Which format do faculty prefer when there is a choice of both, print and electronic and why?) there was no significant difference in the faculty members' answers. Both the humanities and social sciences faculty prefer print material format, when both, print and electronic, are available. Reasons they state for preferring print format are: ease of reading, ease of keeping, presentation of content in a wholesome way, reliability, liking the feeling of the book in hand, more serious attitude toward the book, and availability of information resources from the curriculum being mostly in print. Some faculty point out that the choice of format depends on how much time they have and for what content they are looking. A humanities faculty member states: "*For in-depth studying I would always choose print format. But when I look for a dictionary I always choose electronic format for its practicality.*" The reasons for choosing electronic format are primarily ease and quickness of access, ability to find newer materials, ability to search by author, keyword or subject, links to other articles for further research, ease of translation, ability to print, simplicity, relevance, space saving, ease of citing, and not needing to carry a book.

When asked the third question (Are faculty aware of the students' preference of the electronic format or do they believe their students [of humanities or social sciences]

are different?) the great majority of both humanities and social sciences faculty members notice students' preference for the electronic format, but there is a greater number of social sciences faculty members who notice this. Faculty believe that the students choose electronic format for the ease of access, availability, because they are the digital generation, are looking for short information, speed of access, liking to have the information "served" to them, not having to go to the library, simplicity, and convenience. Humanities faculty strongly disagree with such behaviour and state: "*Like all young generations of postmodern sensibility they too are inclined toward electronic. What doesn't exist on the Internet is like it doesn't exist at all. This is one great drawback of humanistic discipline. When you study something you have to know what was previously written about your subject. And that is where you turn to bibliographies… Young people do not like that.*"

5   Discussion

By analysing the format and type of materials listed in the bibliographies of students' master theses we determined there are significant differences between history students (humanities) and sociology students (social sciences) in their choice of literature used for writing their master theses. For all students, in both humanities and social sciences, the most often used information source is print books followed by print journal articles. For history students the third most often used source are newspaper articles. History students use print sources significantly more than do social science students. Although this is a fairly small sample that does not allow for generalization, based on the analysis of the students' theses we can determine the difference between the format and the type of information resource materials used by the humanities students and those used by social science students. The choice of print resources can partly be explained by the faculty's influence. As many as three fourths of humanities faculty refer their students to print resources, as opposed to one fourth of social sciences faculty who refer their students toward print resources. Faculty equate the print information resource format to focused work. When speaking about print resources great numbers of humanities faculty members use a phrase "book is the book", alluding to the irreplaceability of a printed book. Faculty are acquainted with the library's collection and they know that students can find the recommended materials in the library, and that takes care of the issue of availability, the reason most often stated for choosing a material format. Social sciences faculty generally direct students toward both formats, print and electronic, a fact reflected in students' choices of materials used for their master theses. Although faculty of both, humanities and social sciences, prefer print materials, as the second choice of format for a great number of professors of social sciences is electronic format, while in humanities the number of professors whose second choice is electronic format is significantly smaller. Most faculty members in social sciences and humanities acknowledge students' preference of electronic material format. However this fact is acknowledged by a larger number of social science faculty members (three fourths) than humanities faculty members (barely more than a half).

Faculty basically perceive the young generation as a "digital generation". They agree with the statement that students prefer the electronic format of communication to the degree that "*what is not on the Internet, for them it's like it doesn't exist*"; that they want quick information in short chunks rather than the full text so that "*if I give them the choice between a book and a journal they will choose the journal*", or " *they look for abbreviated, short and such versions"* and that they are impatient and have no tolerance for delay since "*no students go to the archives, that is horrible.* " Future research should explore the students' perception and their reasons for using certain formats as well as to contrast them with the faculty's opinions.

6   Conclusion

Considering the information behaviour of today's generation of students who are more focused on electronic information resources while keeping in mind the differences between the scholarly disciplines we set out to explore whether there is a difference between the information behaviour of humanities students and the social science students in regards to the choice of type and format of information resources used in their work. This study found that there is a significant difference in terms of choice of material format, and that the students of humanities use print materials significantly more than do students of social sciences. Such results can in part be explained by the fact that humanities faculty direct their students to use more print resources. For development of information literacy in academic institutions, cooperation between faculty and librarians is of great importance. As Anita Cannon highlights: "In particular, since it is widely acknowledged that faculty cooperation is essential to a successful library instruction program, the needs, attitudes, and preferences of the faculty concerned should be well known and taken into consideration before embarking on any new plan of action in this area" [16]. The faculty attitudes toward information resources formats are also important. While planning the information literacy programs the starting point should be to determine the basic information resources. Librarians' adaptability and flexibility in implementing information literacy programs will ensure a good starting point in work with the students. Considering that different disciplines value different skills it is not advisable to approach faculty with a "one size fits all" information literacy plan or package [17]. The same can be said about the usage of the format and type of resources.

With respect to different characteristics of academic disciplines and faculty attitudes toward information resources which they recommend to students, there is a room for improving the collaboration between the librarians and the faculty, as the librarians are the ones whose role is to ensure the availability of information resources to be used by students. This allows for the possibility of establishing the partner relationship between the faculty and the librarians who are responsible for establishing the equilibrium between the demand for information resources and the access to the resources, and related to this, for the information literacy education. In future studies, aside from selecting a larger sample for the large scale study it is necessary to involve the humanities and social studies students in order to explore their personal preferences and reasons for choosing certain information resources.

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Six Views on Information Safety Education in Libraries

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Abstract. Information safety should be included among the topics for education in libraries. This text focuses on children as a target group of this education. There can be different types of barriers preventing realization of information safety lessons in a library, be it on the part of the library, the school or children and their families, or, from another perspective, issues arising due to inappropriate content. The aim of this paper is to show that these barriers may exist, but that they are not insurmountable. On the basis of six interviews with the representatives of all the above-mentioned groups, I will present their views on the idea that the library should provide information safety education to children, but also to other target groups.

Keywords: Education, information safety, Internet, libraries, research.

1 Libraries, Education, Children

Education has always been one of the basic functions of libraries. It was one of the reasons libraries were making books and subsequently other types of information resources available. A library user used them to gain new knowledge and the role of the librarian was to deliver appropriate information resources. Presently, access to information resources is no longer a problem even without libraries; the Internet provides to people directly in their homes access to a greater amount of information than any library. However, what remains the librarian's role and what a person can otherwise struggle with is the selection of appropriate resources. Assistance may be provided on a case-by-case basis, or the librarian can teach the user how to find and process information in resources as determined by their quality, in particular their trustworthiness.

Information safety is a topic at the intersection of media and information literacy. Therefore, it is not left out in several accepted information literacy models (e.g. [1-3]). The joining of education in a library and information safety is the subject of this paper. Given the breadth of the topic and the need to address individual target groups differently, I focused on children. There are several reasons behind this focus. I have a long-standing interest in the issue of children on the Internet with focus on etiquette. I find this limitation logical also with regard to children's vulnerability on the Internet. It is more convenient to start with education at a time when attitudes in behavior are easier to form; children then grow up with them and the knowledge can be deepened.

Another reason for this focus is the possibility of addressing the entire target group and subsequent education provided by the school cooperating with the library.

The orientation of the paper follows up on already described empirical findings that only touch upon the issue of connecting of all of the topics of education, libraries, children and information safety, but address the closely connected areas that may be further developed. They may be used to illustrate the reasons why the library should include information safety in its educational activities.

The purpose can be derived from risk communication and disclosure of abusable information and attacks using it [4-7]. Children relatively often engage in risk behavior. Livingstone et al. [4] state that 12% of European 9-16 year olds admit that they have come to some kind of harm on the Internet, while other victims may hide their problem for various reasons. The most common issues of children on the Internet include dissemination of pornography or other content inappropriate for children, cyberbullying, sexting, cybergrooming and identity theft.

Education to increase Internet safety is proving crucial but with limited options of software and legal measures ([8-9]). Legal restrictions must be known in order to fulfill their preventive function consisting of fear of committing an offence; without education they play only a limited role in repression which is difficult to enforce. Technical restrictions may be circumvented, e.g. due to unawareness of what they are protecting against, but also since what is forbidden is tempting. This circumvention can also take the form of using the Internet at a friend's place or in a library. Yet, issues such as grooming can only be prevented by consciously behaving in a safe way. An awareness of Internet threats and countermeasures is therefore vital.

Martin and Rice [9] rank the library as one of the elements cooperating with the school, and activities of directors, teachers and librarians are considered essential to increase Internet safety. The library was ranked eighth among the sources of advice on online safety for children [4]. Its importance grows when we consider the willingness of libraries to engage in lifelong learning in the local community, with focus on Internet safety. It can be seen in publications from the USA [10], where information safety is included in the information literacy ([11] in Digital and information literacy edition).

2   Research Methods

When discussing the options for addressing the topic of information safety in libraries, concerns directed at different aspects of realization may arise. Barriers may be encountered on the level of all subjects – library, school or the target group of education. Using 360-degree feedback in the form of semi-structured interviews, the aim of the research was to determine how these problems are actually perceived by a selected sample of all the groups that can encounter barriers and what possible solutions are identified by them. The research was conducted in the environment of a small town with a population of about 9,000 people. The library cooperates, among others, with three local elementary and three secondary schools and also with schools in neighboring villages.

There have been six interviews, in each case with two representatives of the groups mentioned above, i.e. a teaching librarian, the director of the library, deputy principal

of the school where all 4th- and 5th-grade classes participated in an information safety lesson in the library, the teacher who attended the lesson with her class, a pupil who took part in the lesson and her mother. Experiencing the lesson played a crucial role since the interviews were primarily directed at general views on the issues under consideration, i.e. the role of the library in providing information safety education to children, and, in order to place them in context, attention was also paid to identification of the turning points and reasons for these views as well as evaluation of the lesson, i.e. the actual solution of the proposed topic in practice. The paper focuses on opportunities and threats. And the strengths and weaknesses of including information safety in library lessons described by the interviewees.

The interviews were conducted in summer and autumn 2013, i.e. several weeks to months after the lesson. The reason for this gap is elimination of immediate impressions in favor of long-term impact (Kirkpatrick [12] recommends a 3-month interval). Basically, each category is represented by a direct participant in the lesson and a representative of a superior position. Thus, these interviews may be seen as a summary of the results of the 3rd and 4th levels of Kirkpatrick's four-level model. The 4th level should be addressed with an even greater interval, but with regard to the necessary date for completion of data collection, the interval was reduced to the same length for all interviewees. The interviews represent the last stage of a more extensive research; the preceding parts (action research of the lesson including participative observation and smile sheets, and analysis of documents produced in the lesson) do not form part of this paper, but are just mentioned to clarify that the 1st and 2nd level of the model were also examined.

3   Barriers and Their Resolution

The groups from which representatives for the interviews were selected were determined on the basis of the persons most significantly affected during implementation of the lesson, thus representing junctions where barriers for implementation of the lesson may appear. Firstly, it is on the level of librarians themselves who need to have sufficient resources in order to realize this education, in particular in terms of knowledge and time. And this also concerns the requirement to have support of library management so that the librarian can rely on operational and material securing of the lesson. If the library is already biased in favor of the topic, the other side, i.e. the school, comes into play. There are also two levels to be identified here. School management must support cooperation with the library and thus guarantee that classes attend such lessons on a global scale, or at least not limit the teachers and allow them to decide whether they want to participate in a lesson like this. In turn, the teacher must be willing to come to the lesson and connect it with their own teaching to stimulate interest among children. Children can come to the lesson in the library motivated by the teacher, but regardless of that, it is the quality of the lesson that plays a primary role and, if well prepared, can even grab the attention of a child who believes that there is nothing new that a librarian can say about the Internet. The conviction of the child is in turn a major factor in persuading the parents, or other people who are close to the child, that a library has a say in

information safety and can help with gaining knowledge, but also tackling issues on the Internet that anybody can face, be it a child or an adult.

Naturally, we cannot assert that any of these barriers will or will not appear since education is still about people deciding on various motives, some of which can even be the cause of these barriers. For instance, personal conflicts between school and library management can impede cooperation, even if others would welcome it. At the same time, we cannot assume that these barriers necessarily exist or that they cannot be removed, e.g. by replacing the person in the conflict position, or by examples of good practice with benefits for all parties showing that there is no reason for not trying it in one's own institution and taking advantage of the benefits that cooperation in education can bring. The arguments of different subjects as to what works and why, what concerns, issues and solutions were encountered will follow.

3.1   Libraries

The library that was the subject of the interview had been offering debates for many years, but about four years ago a librarian was hired for a part-time job consisting in providing education, primarily in cooperation with schools. Cooperation was immediately initiated by negotiation with school leaders and teachers. In some cases it was quickly established, in other cases only after verification of the results achieved with schools already participating in the scheme. All respondents agree that hiring of the librarian and establishing of the cooperation proved very beneficial.

The respondents stressed the choice of a person with both pedagogical and librarianship education which enabled her to prepare, with relative ease, information literacy lessons of appropriate content and, in particular, in a form capable of catching the attention of the target group and at the same time of passing along defined knowledge. Mastering the pedagogical aspect was stressed by the teaching librarian and the school representatives; however, in their opinion, it need not be based on formal pedagogical education. On the other hand, the director of the library thinks that information safety is a topic that only a person with sufficient knowledge can talk about; otherwise, only the basics of information safety for children can be taught.

All respondents agreed that the topic is inseparably linked with information that is a domain of the library and thus it is logical that the library will deal with it. It is no doubt a local organization most specialized in working with information and thus also information safety. They can address it at the level of lessons, or they should be ready to assist their users with Internet issues when they mediate access to the Internet. Therefore, there should be at least one person knowledgeable about information safety in the library. Such person may or may not be an instructor at the same time.

Readiness of librarians to address this topic is currently at a turning point. According to interviewees from the library, the older generation of librarians is not ready to deal with the topic and is afraid of it. Therefore, they do not want to engage in the topic and cannot imagine appearing before children to tell them how to behave on the Internet when they know much more about it than the librarians. However, the librarians realize how important the topic is, but they want to leave it to other organizations to provide a solution. The younger generation and students of librarianship already have an idea of the topic and, most importantly, are ready to learn new topics, find the necessary information and prepare a lesson on it.

Generation-related readiness has been also mentioned by school representatives. Blended learning that would deal both with information safety and its pedagogical conception has been suggested as a solution. Samples of proven lessons and the option to consult an information safety expert would also be welcome, to give the librarian the confidence to start.

Librarians may be professionally trained to deal with the topic, but even when additional knowledge is not required, preparing a lesson for a new topic or adjusting a lesson prepared by somebody else is relatively time consuming. The time matters not only in preparation, but also in the realization strongly felt by the school, as well, when arranging dates suitable both for the institutions and the people. Information safety lessons must be prepared in an office. They can also be demanding materially and even though IT equipment is not always necessary, the simulation can require resources such as paper and traditional teaching aids. These are all resources that a librarian is accountable to the superior for efficient use.

Support of library management is necessary for a systematic approach not only to this topic; information safety is only one of the topics of information literacy. The first step that library management must be clear about is whether it will promote the educational function of the library and will provide part of its resources. This is why a librarian must substantiate the meaningfulness of the lesson, through research-based achievement of educational goals or also by social demand addressed by the library. This was the crucial argument of the library director. If the lessons are effective, the library obtains high added value. The fact that the library will be able to cover the topic of information safety in a high-quality manner and will thus build, not weaken, its position in cultivation of information behavior in the locality thus strongly contributes to the decision of the library to address the topic. Effectiveness of the lesson is an argument not only for library management but also for the authority.

However, the respondents said that they would be interested in a lesson even if the quality were lower, because they consider the topic essential and the library is currently the only institution in the area providing education about it. This is not always the case, but it is common outside the biggest cities, or less frequently also in municipalities where another organization already addresses these issues. If the library decides to take advantage of this opportunity and delivers quality, it will create a positive image of an institution providing a solution to a crucial social issue in the eyes of the authorities and the public. In the opinion of the library director, information safety represents one of the topics of information literacy that is easiest to imagine for anyone to whom the library matters, with implications for practical life of every citizen. The advantage of the library is mainly its local character and availability for a solution that is already proven by practice in the survey.

3.2   Schools

The school is perceived as one of potential providers of solution in the field of information safety, but both its representatives think that its primary role lies in intermediation and not provision of a solution from own resources. The school can procure education realized by the library, which was mentioned in the first place by the school principal, and only if the library is not interested, other local institution or an invited expert from outside the community can be used. Respondents from the

school are satisfied with the way information safety is addressed by the library, and therefore support it and actively strive to maintain and expand the existing standard in terms of frequency and target groups of information literacy education, including information safety. The school also welcomes the effect that, thanks to the lessons, the library is perceived as a contact point for addressing internet issues of varying gravity and that the victims of attacks have a physical contact point where they can come to seek advice. The school representatives showed interest in mediation of this direction of education provided by the library by offering its premises as well as contact with parents to meet their own educational needs.

As has already been said, in order to set up cooperation, communication and explanation of what it will bring to the school and the library were necessary. This communication phase is viewed as crucial by library and school management alike, emphasizing the importance of a clear explication and giving teachers information about the content to be taught to children in the library. An important element of communication is explaining how the lesson links to school instruction. All parties that took part in the negotiations in the past realize that this can be achieved with the help of various school documents with which the librarian should be familiar. This impulse must come from the library; an opposite direction cannot be expected. The motivation of the school to initiate the topic is based on children's behavior leading to the importance of information safety. The fact that the topic is included in grant projects undertaken by the school also played into its role in the willingness of the school to accept the library's offer.

It is necessary that the teachers at least partly engage in voluntary training that will boost their confidence so that they will be able to (and based on the reactions from the school this is what they want) build on the lesson for children as part of their own instruction. According to the teacher, the training needs to be effected face-to-face as materials are read by hardly anybody and their content is only superficially shared among teachers. Current teachers and also graduates of pedagogical faculties, unless they specialize in informatics, do not have many opportunities to develop their knowledge in the field of information safety. This education is usually limited to lectures without any practical component. Exceptional work with case studies showed that this form is much more effective. Even teachers specialized in informatics sometimes know only various kinds of software, but not the principles of safe behavior when working with IT. The smaller the school, the less chance that there will be someone knowledgeable about information safety. The respondents indicate that they expect this to change but at present the limited knowledge of teachers must be reflected. School representatives ascribe to it also the fact that teachers do not often show initiative in this field and deal with information safety only when some issue arises. Limited knowledge of teachers is also confirmed by the experience of the library. On the other hand, teachers have didactic knowledge that can help adjust the lesson professionally prepared by the librarian.

The form is also crucial. This has been stressed by the librarian and the teacher who say that it needs to be tried out first, otherwise it cannot be assessed. Teachers have expressed during the information safety lesson their concern that children might learn bad things that they have not learned yet. Despite that, they came to the lesson to try it and subsequently positively evaluated its set-up, which brought them to the idea of repeating the topic with other grades and also continuing in more depth with

the grade that attended the first lesson. Quality is an obvious requirement, since classes visit the library for education and not a leisure activity. On the other hand, an approach when the school management orders teachers to attend is not appropriate; the school should provide support, but not commandments. According to the teacher, the fact that children were captivated by the lesson and wanted to engage in the topic in greater detail at school or in their families was a decisive factor for the teachers.

3.3 Children and Family

All respondents regard as positive for children not only cooperation with the school, but also instruction in the library, giving a chance to clear it of certain limitations of formal education, e.g. the pervasive feeling that performance is being evaluated instead of an effort to understand when it is appropriate to express uncertainty in order to obtain clarification. The school represents a place of control rather than trust to confide bad experiences, all the less non-anonymously to a person in everyday contact. These limitations contributing to use of the library are known not only to representatives of the library, but also to school and family representatives.

Pupils, with a few exceptions, attended the information safety lesson full of enthusiasm and expectation. The form of active teaching contributed to the fact that even pupils with lower motivation got involved and vividly debated the topic during the lesson and afterwards, and during the lesson asked about the possibility of follow-up education at school. The lesson showed that some children have a relatively good knowledge of information safety, while others have practically no idea about it and the lesson opened for them a topic to think about. The pupil interviewed was interested in a lesson offered by the library also outside school but only if it does not collide with her leisure time priorities.

Parents' interest in their child is at present often limited only to certain aspects of their child's life; not all parents show interest in what the child does at school and still fewer parents care about what their child does on the Internet [4]. Some parents even pose a threat to the child themselves, since mothers of small children, in particular, are too open about sharing information on the Internet, as the librarian pointed out. Some parents try to address online safety by limiting the time that their child spends on the computer, but do not focus on what the child uses it for. Even parents with some information safety awareness seldom feel confident in this field so when they try to speak with the child, their guidance is limited to cases from the news or partial topics, which is also the case of the interviewed mother. For this reason, she welcomes a lesson for children at school and in library, which may be illustrated by her comment: "Whatever I might say at home a hundred times won't have the same effect as if it is said somewhere else." The interviewees repeated the view that the Internet and materials on the topic are a great but not sufficient resource and that it is necessary to guide children (but also parents and teachers) to think about the topic and provide opportunities to discuss it with somebody in person, both during a lesson and thereafter, as and when they feel the need.

On the other hand, the library director, who promotes the topic of information safety locally, said that he had encountered requests for advice from children and teachers but never from parents. Thus, we cannot expect from parents any special activity pursuing their development in this respect with the help of the library. Yet,

parents can form a positive view of the library as an educator in cooperation with the school. School representatives believe that the passive attitude is due to the fact that parents cannot imagine possible implications of their children's behavior on the Internet. Until such issue appears, parents believe that they know enough to meet the needs of their child. This is the case not only with information safety, but also other children's issues. Based on their experience with parents, the school representatives said that some negative reactions to information safety education in the library from parents may be encountered, but they should be rather rare.

However, after the lesson, children showed interest both at school and in the families in discussing the topic with their relatives. This can result in a secondary transfer of knowledge to parents who may also realize that the library is available for this topic. This was experienced by the interviewed mother also thanks to the material for the lesson given to her child to facilitate communication with parents. If the lesson has good quality, the respondents believe that in particular in a small town, the information will spread, through children or in some other way, and will influence parents' views, regardless of what views they originally held.

4   Aim of Education

The respondents saw the possibility of expanding education in different directions, but they agreed that it is good to start with children at elementary school, mainly at the first stage until third grade at the latest. Young children have a fairly good knowledge of the Internet and at the same time their habits are being formed, which are more difficult to change at a later age, e.g. in teenagers.

At this level, even opening a debate on this topic that will make the children think about what they know theoretically and what they do in fact, can have a positive effect. This is not self-evident; on the contrary, respondents understand a simple connection as something that can help the children greatly. The objective is not so much to transfer specialized knowledge, such as definitions of terms or precepts, but rather attitudes and thinking about possible consequences, which forms in the opinion of the director of the library and the teacher an educational basis or civic awareness, analogous to looking around before crossing the street or offering a seat on public transport to a senior.

The content should build on general lessons of information literacy where children learn how to work with information. In particular with older children, it is necessary to deepen their knowledge of information safety by connecting it to information literacy. Respondents agree that the basis of content is comprised of information on resolving Internet issues, in particular on preventive level of behavior, and to a lesser degree of technical issues. The views differ as to the degree to which the issues should be dealt with. School representatives would direct case studies at educating adults; the mother was on the other hand convinced that a particular level of these practical examples would be the best way to persuade a child about engaging in the topic. From the perspective of thematic orientation, conscious safe behavior and thinking about what is entered in the electronic environment were regarded as crucial. This should not be on the level of dealing with individual issues, but rather in forming attitudes to the Internet. Greater attention should be paid to sharing of personal

information, esp. pictures and videos, netiquette, identity theft and cyberbullying. As pointed out by the library director and school representatives, information safety is by far not limited to its link to informatics, but to social sciences too.

5   Conclusion: Overcoming Barriers

The research presented determines different views of stakeholders on the involvement of libraries in education about Internet safety. It was conducted through semi-structured interviews with six representatives of library, school and family between March to November in 2013. Interviewees identified weaknesses of realization of information safety education in a library and at the same time pointed out possible solutions that have already been tested. They have thus defined arguments that may be used in a debate about barriers precluding on different levels learning the lesson elsewhere.

The topics highlighted by the respondents for education in a library, aimed at children, correspond with the most common issues in practice [4]. Similarly, focus on the principles of safe behavior, rather than the technical or legal aspects of information safety, is in accordance with specialists' recommendations [8-9]. The research confirmed that children perceive the library as one of the sources of help, whereas it is not so much used for this purpose by parents [4]. All respondents think, in accordance with the literature [9], that the cooperation of schools and libraries in information safety education can have positive impacts on all stakeholders.

The interviews brought positive as well as negative findings, but the positive ones prevailed, e.g. the lesson led to opening of a discussion of the topic, and teachers and parents also thought about the topic afterwards. Problems of librarians were identified as lack of knowledge of pedagogy and Internet safety, and lack of time to learn and teach a new topic. Both the library and the school insisted on long-term realization of the lesson by a library employee. All interviewees agreed that the library has a place in Internet safety education. They welcome alternative approaches to dealing with the topic and they think that the education should be repeated and extended to other groups, also outside cooperation with schools.

From the perspective of the barriers presented, respondents provided hints for possible solutions to all of them. Knowledge barriers of librarians should be addressed through blended learning, and subsequently, with the assistance of an information safety expert available for consultation. Library management must secure time, operational and material conditions for realization of the lessons, and can in return obtain empirical data showing the effectiveness of education to be presented to the relevant authority when requesting support for this type of activity. Another argument towards the authority and the public may be the fact that the library addresses a pressing social issue that no other institution has addressed. Barriers on the part of the school can be eliminated by the very same arguments, but in this case good communication and explaining the benefits of the lessons, including adjustment to the educational goals of the school prescribed in school documents, is essential. This is a key factor also for teachers, who, in addition, request that the lesson be beneficial to children and attract their attention. The quality of both content and form that will capture children's attention is also a solution to some of the barriers at this level, as

children are interested in the Internet and thus motivation is relatively high. The key element is to respond to it adequately. Even when motivation is weaker, it can be increased by a suitable set-up and swaying of the child by the interest of others. If a child leaves a lesson satisfied, it is the best disseminator of the connection between education in a library and information safety, not only among peers, but in particular in the family, where it can prompt discussion among children and parents and possibly persuade parents to take lessons in the library too.

As has been shown in the paper, it is desirable to realize where problems can arise in information safety education provided by the library. These barriers may appear, but need not. Even if they do, they can be resolved and have already been overcome in practice. Similar cases of good practice can be pointed out. Realization of these lessons can bring numerous positive effects for all stakeholders, which is once again an argument in favor of their further dissemination.

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Unravelling the Literature Review: Helping Graduate Students in Education Re-conceptualize the Research Process

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Abstract. A mixed methods study examined how visualization and dialogue extended and deepened students' understanding of the research process, especially the purpose of the literature review. Five graduate students in a Faculty of Education independently produced a visual map of their thesis topic before engaging in a collaborative dialogue with a librarian-faculty team. Transcripts were coded, identifying the types of prompts that elicited changes to the map. Initial maps were compared to maps resulting from dialogue. Changes to the collaborative map were categorized using stages of the research process. Study design and methods accounted for 50 percent of changes, 36 percent related to the literature review and identification of information, and 14 percent pertained to research purpose and study questions. Student comments were categorized for instances of sequential knowledge-building stages. Collaborative dialogue and visual mapping broadened students' understanding of information literacy and highlighted the literature review as a 'genre'.

Keywords: Information literacy, graduate students, literature review, research process, librarian-faculty collaboration, visual mapping, dialogue.

1   Introduction

Graduate students in many disciplines struggle with research study design, developing a research question, and the scope of the literature review [1]. This paper describes a study using visualization and collaborative dialogue among a librarian, faculty supervisor, and student to extend graduate students' thinking about the research journey, including the literature review. Bailey [2] identified librarians as an underutilized support for students and supervisors in the thesis process and proposed a three-way partnership. Librarians can help students shape the research journey, especially during the literature review process where students may have little guidance [3-6]. The challenge for librarians is helping students understand that a literature review involves "… constructing meaning rather than a process of accumulating" [7]. Students are still developing the information literacy skills that encompass finding, evaluating, and synthesizing sources, which is the core of the

literature review process [8]. Information literacy education at the graduate level seeks to help students shift their perspective on information literacy. Bruce [4] described this as a shift from a 'topical' to a 'psychological' perspective where information is evaluated and selected based on its relationship to the research questions. This study examined how a collaborative dialogue between a graduate student and a librarian-faculty team extends student thinking while the student constructs a visual map of his or her thesis topic.

2   Literature Review

The literature review is central to the work of academics. It acts to situate new research within an existing body of scholarly writing and serves as a foundation for new research [9]. This involves the critical evaluation and synthesis of ideas from the historical and current literature to develop a new understanding of the topic. The analysis of the research methods used in the cited studies is an important part of being able to critique research and determine whether it contributes to the field. Boote and Beile remark that "… a good literature review is the basis of both theoretical and methodological sophistication, thereby improving the quality and usefulness of subsequent research" [10, p. 4].

Many graduate students encounter difficulty in writing a literature review but there is limited research addressing this challenge [11-13]. They may have little guidance in understanding the goal of a review and the processes needed to reach it [3-6]. Students receive varying amounts of support from their supervisors. Traditionally it is provided in the form of feedback to written drafts of proposals.

Hsiao and Yu [1] argue that the difficulties in writing a literature review are the consequence of not considering it a genre. A literature review is a specific genre within academic writing that involves sophisticated search strategies and the interplay of these with critical reading and complex writing processes. Genre analysis of a text uncovers the rhetorical structures allowing the writer to understand the relationships between form and function in the specific genre of text [5]. As a genre, the literature review has distinct features; understanding it as a genre helps to explain why particular features are required within this structure. However, guides on writing the literature review do not cast it as a unique genre with a specific rhetorical structure; rather it is more frequently described as a process of collecting, collating, and citing information [14-15]. Writing a literature review requires sophisticated information literacy skills and knowledge, beyond the strategic search capabilities. We hypothesize that without an understanding of the literature review as a distinct genre, students conceive of it as a summary of work, or a "knowledge-telling" task as described by Bereiter and Scardamalia [16].

Bereiter and Scardamalia [16] argue that an individual can conceptualize an intellectual task in two different ways. In one, the task is understood as one of knowledge-telling in which the individual provides whatever information she has on a topic whereas in knowledge-building the intellectual task is understood as one involving the selection and synthesis of this information for a purpose. They argued that knowledge-telling is not a conscious strategy and suggest that this type of knowledge is inert as it is not being applied to solve problems [17]. More recently,

Bereiter [18] has recast knowledge-building as knowledge transforming. Successfully writing a literature review requires engaging in knowledge-building. Olson [19] states that writing plays a particular role in knowledge-building as it is the external permanent record of thought 'on paper' that affords the reconsideration of ideas across time and place. Graduate students, as novice researchers, frequently approach writing a literature review without a clear understanding of the purpose and complexity of the task, of the 'genre'.

This study explored how to expose these relationships so that students can see the 'big picture' of the literature review. Writing a literature review is frequently described as a linear process but is in reality an interactive 'journey'. As new knowledge is acquired, the individual constructs a network of interconnected ideas – a mental model [20] and this in turn forms the infrastructure for the rhetoric of the literature review. The search and analysis process is an ongoing feedback loop that helps the writer clarify the research question and study design. We suggest that one method for exploring how to evoke knowledge-building during the literature review process with students is through using visual mapping accompanied by dialogue.

Various systems that visually represent information, such as graphic organizers, flow charts and concept maps, have demonstrated their benefit in supporting writing and learning. Concept maps represent ideas in multiple ways with images as well as words, illustrating the conceptual links that underpin complex topics and serving as "… a scaffold to help organize knowledge and structure it" [21]. Concept mapping also allows for the sharing of 'expert' knowledge and understanding among teachers and learners [22]. Maps can be thought of as a representation of the individual's mental model of the topic. We used a free form of visual mapping rather than a traditional concept map which has a hierarchical structure and requires formal naming of relationships. Our purpose was to focus on the visual representation of ideas while engaging in a naturalistic dialogue as it would take place during a librarian-faculty and student consultation.

Collaborative dialogue allows individuals to engage in reciprocal meaning-making through a focussed discussion of a topic that can result in the co-construction of knowledge. Wells [23] argued that dialogue is a form of collaborative knowledge-building in which the participants contribute differing pieces of information relevant to the topic under discussion. This dialogue allows for the co-construction of a common understanding that extends each participants' understanding; "learning is the 'internal' counterpart of participation in 'external' dialogue with others'' [23]. Wells argued that engaging in a discussion contributes to an individual's working out of meaning in the same manner that writing helps clarify the writer's understanding of a topic. Adesope and Nesbit [24] also found in a review of the literature that the co-construction of a concept map led to a cognitively productive interaction among group members. Our study proposed that collaborative dialogue and visual mapping provides a scaffold that encourages the revision of ideas.

3   Methodology for the Study on Dialogic Mapping

Graduate students typically take a research methods course early on in their program with a final assignment of writing a thesis proposal. The researchers, a librarian-faculty team in a Faculty of Education, theorized that the co-construction of a visual map would

enhance the initial conceptualization of the research topic and help focus the literature review.

Five graduate students in education (four females and one male) participated in a mixed methods study. The first author was the thesis supervisor for these students. All had completed their coursework in a Master's program but were at different stages in developing their thesis proposal at the time of data collection. Each graduate student was individually audio- and video-taped while constructing a map of their research topic. Students were initially asked to draw a visual map of their research topic independently, while thinking aloud to explain their ideas to us. Thinking aloud, in which individuals speak aloud the thoughts going through their mind while engaging in a task, allows access to their working memory, that is, what they are thinking about at that moment [25]. This technique been used extensively in research about problem solving through the analysis of verbal protocols [26]. We then began a dialogue in which we prompted each student to explain and expand the map through questioning and commenting on the map. These prompts led to a variety of additions and changes being made to the map in response to the dialogue. Sessions were videotaped to record the dynamic evolution of the map. We used an iterative process to develop and refine a coding scheme [27].

Analysis of the data had several stages. The audio was transcribed and changes to the map as seen on the video were annotated on the transcript. Through repeated reading of the transcripts, we developed coding categories that described the types of prompts that elicited a change to the map. Changes to the collaborative map were categorized using stages of the research process. Initial student maps were compared to maps resulting from dialogue with the researchers. After the mapping experience, students were asked to respond by email to a short survey on the value of the mapping exercise.

4   Findings

To provide context for the findings Figure 1 shows an initial independently constructed map and the map that resulted from the collaborative dialogue.
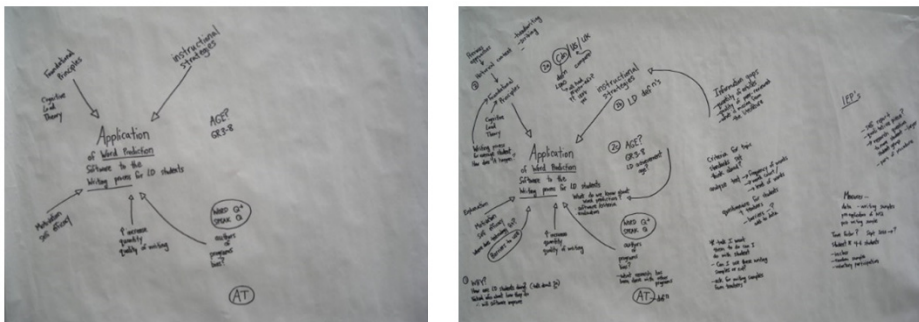
Fig. 1. Example of student A's initial and co-constructed visual map

Two types of prompts triggered changes to the map. Clarifying prompts occurred when researchers asked questions to unravel the verbal description or visual representation given by the student. Knowledge prompts occurred when researchers offered information to extend student thinking. Table 1 provides examples of clarifying and knowledge prompts.

Table 1. Examples of clarifying and knowledge prompts

Examples of clarifying prompts	Examples of knowledge prompts
What are your research questions?	Is X also one of your research questions?
What is the context for this study?	Would knowing more about X help with the context of the study?
What is a suitable research method?	Did you think of gathering data on X?
What do you know about this research method?	Did you think of connecting X and Y?
What terms are used to identify X?	Did you think of including X in the literature review?
How does concept X relate to concept Y?	Did you think of gathering information or data on this aspect?
What is the relationship between X and Y?	You need to include X in the ethical review process.
How will you include this in the literature review?	Did you think of comparing information from other disciplines?
What other types of information do you need for the literature review?	
How will you order sections in the literature review?	

Table 2. Key topics, sub-topics, and links in the visual maps

	Individual map			Collaborative map		
Student	Key topics	Sub-topics	Links	New key topics	New sub-topics	New links
Student A	8	3	5	15	26	8
Student B	4	2	0	6	19	8
Student C	4	11	15	9	23	32
Student D	5	3	9	13	15	12
Student E	8	0	2	7	10	3

Clarifying prompts accounted for 37 percent and knowledge prompts for 63 percent of the total prompts from the researchers that led to a change on the map. It should be noted that not all changes to the maps were the result of a prompt. The collaborative maps demonstrated a sizable increase in the number of topics, sub-topics, and relationships that link key concepts that are the components of the literature review (Table 2). On average, the number of topics increased by 61 percent, the links increased by 69 percent, and sub-topics increased by 78 percent. The resulting changes on the collaborative map were broadly matched to stages of the research process. Study design and methods accounted for 50 percent of changes, 36 percent related to the literature review and identification of information, and 14 percent pertained to research purpose and study questions. There was no relationship between the number or scope of responses and the number of months that students were enrolled in the graduate program.

As discussed earlier, the research process can be characterized as a process of knowledge-building and is an essential component of a literature review. We carried out a qualitative analysis of the dialogue for instances of knowledge-building using three sequential stages. The following examples from 30-35 page transcripts of each session illustrate the different stages.

4.1   Stage One

This stage involved clarification of ideas around the research topic including definitions of words, principles, or concepts.

- Example 1: In response to a clarifying prompt, Student A added *Learning Disabilities-definition* to the map.
- Example 2: Student C in response to this clarifying prompt, *"But what about the term duration, that you used?"* replied *"Well there's two different kinds of it. There's time span maybe in terms of number of months…"* and added the term *length* to the map.
- Example 3: Student A while writing terms on the map said *"So cognitive goes in here. That's one of the ones I want to talk about below theory."*

4.2   Stage Two

This stage involved the connection of ideas including addition of topics, subtopics, and links demonstrating new relationships and organization of ideas.

- Example 1: In response to the prompt, *"What are you going to talk about in the literature review?* Student E connected the word *"engagement"* with the word *"resilience"* on the map, to show the connection that she will highlight. She also said, *"Why don't we look at it from a positive view and we can talk about resilience."*
- Example 2*:* Student B in response to the knowledge prompt from a researcher, *"a general lack of parenting skills"* added that phrase to the map and then generated more specific terms*: lack of role modelling … physical and sexual abuse … alcohol and drug* abuse underneath on the map.
- Example 3: Student D said, *"I'll probably do AT [assistive technology] for that and then early writers. And the reason … I'm going to put them in the middle"* writing the terms on the map *"but I think for the literature review there's going to be two sections, one that relates to the technology and the other that relates more to early writers, (*pointing to the terms) *and then some of them will interact because of how the assistive technology affects early writers or if there's been any research in that field."*

4.3   Stage Three

This stage involved the extension of ideas, when more information was needed to fill in gaps in the literature review, "aha" statements, and big-picture thinking.

- Example 1: Student A wrote, *"What research has been done with other programs?"*
- Example 2: Student B, while viewing the map with the terms *incarceration* and *intergenerational trauma* made an extension by saying, *"Looking at this … these are the negative aspects you get from the residential schools"* that situated the terms as consequences of a historical institution. Later in the dialogue Student B, had an insight into how the individual components of the map could come together to form a model: *"But when you look at all this, I like the idea of it being a model …"*
- Example 3: Student E, in response to a knowledge prompt about research design, *"In order to be a study what you have to do is you have to have questions that are answerable"* wrote *"Answerable?"* and *"What will I ask them to do to give me the answer?"* on the map. She also added, *"Test ideas?"* underneath *"what engagement means"* and then made a box around the question and drew an arrow from it to the term *"Authentic/relevant"* and then highlighted *"software Photovoice"*. This was an 'aha' moment for this student in understanding the research process.

Students were also surveyed for their impressions of the mapping experience. Some examples of comments were: "The visualization helped me to group major concepts, and finally create an outline of how the research should feed into my literature review." Another student wrote, "It also helped in generating new search criteria to find literature I had previously had trouble finding." Answering the following question about the dialogue, "If you found it helpful, what aspect of the dialogue was helpful?" participants stated it was the questioning that was most beneficial. One participant wrote, "The part of the dialogue that helped me the most was the persistent questioning about issues against which I had dug my heels in. . . I think it'll be important for me to be able to justify the choices I have made and to help me anticipate questions in the future." Another student wrote: "Thinking through the possible research questions out loud. Answering the questions posed to me from both of you was helpful in forcing me to be concise, something I struggle with often in my thought processes. De-mystified the [literature review] process and made it seem attainable rather than a mammoth task!" Dialogue and visual mapping helped students unravel relationships among concepts, giving context and meaning to the literature review.

5   Discussion

The literature review is frequently described in terms of information gathering with emphasis on topicality, comprehensiveness, breadth, exclusion, relevance, currency, availability, and authority [4]. While these aspects of information literacy are important, they neither address the core purpose of the literature review, the synthesis of information, nor do they situate the literature review as a specific genre. The 'genre' of the literature review involves an analytical argument developed through knowledge-building around the research question. By engaging in collaborative knowledge-building using a visual map, students began to understand what the

literature review encompassed as a genre. The map made the discussion concrete by capturing the ephemeral dialogue. The act of gathering information for a literature review can be viewed as a discrete information retrieval process or as a knowledge-building process. We argue that the ultimate goal of information literacy is to enable individuals to build knowledge to arrive at deeper understandings.

We believe that collaborative conversations around a research topic supported by visual mapping could provide graduate students with direction and the opportunity to take a more conceptual approach to developing their research topic and literature review.

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Research Dimensions in Information Seeking of Music:
A Plea for the Socio-technical Perspective

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Abstract. This paper presents an analytical matrix for the purpose of integrating findings from different disciplines in information science related to everyday life information seeking behavior. The matrix is based on already available theoretical models and it's anchored in the emerging socio technical perspective on information behavior and information literacy research. The Proposed matrix provides a systemic view of five different dimensions: Socio Cognitive Information Experience, Information Seeking Process, Information Retrieval and Content Consumption and Analysis. Such a merged view of different research strings is essential to develop IS which will not determine human behavior but support it in an organic way.

Keywords: Information literacy, information behavior, everyday life information seeking, MIR, socio technical systems.

> *"...here are signs of a change as new and powerful instrumentalities come into use…"*
>
> Vannevar Bush

1   Introduction

According to Hjørland [1] the term *information science* (IS) goes back to Jason Farradane in 1955, and is related to the development of concepts such as *information technology*, *information processing* and *information storage and retrieval*, all of which owe their appearance to the *information theory* which is part of a family of fields such as cybernetics, systems science and chaos theory. Cybernetics deals with learning through feedback [2] and dynamic systems based on patterns of goal seeking behaviors [3]. Prigogine and Stengers [4] proposed convergence of science and humanities based on Chaos theory and Boulding [5] pointed to the need for general system theory in social science, particularly in the study of knowledge-creating phenomena. Borko [6, p. 3] defined IS as "a discipline that investigates the properties and behavior of information, the forces that governing the flow of information, and the means of processing information for optimum accessibility and usability." To retrieve, store and process information, we use technical instruments and people

should be literate in using those instruments. Usage of such instruments and their technical properties will define how people behave in their information seeking, allowing social patterns to emerge and creating dynamic social systems. The above mentioned writings illustrate the multitude of perspectives that come into play when analyzing theoretical frames of information seeking. The sociotechnical perspective as proposed by [7] or [8] offers in our opinion the frame that has the potential to bridge disciplinary divides and the multitude of angles relevant in information seeking.

We propose the sociotechnical non-dualist approach, which helps to overcome epistemological polarities imported from system theory; i.e. unity vs diversity, holism vs atomism and model vs reality [7]. Savolainen [9] proposed another polarity in his *Way of Life* concept. Such a concept is based on the theory of habitus, which refers to the system of thinking, perception and evaluation internalized by an individual. The habitus has a dual structure, objectively classifiable judgments and classification of these practices. In other words, habitus manifests the incorporation of norms and social expectations within an individual; it's not just about personal dispositions but also about socially and culturally intermediated systems. Thus, attention may be paid to both objective and subjective elements in the constitution of everyday life. Based on this framework, Savolainen has defined *Everyday Life Information Seeking* (*ELIS)* as the "acquisition of various informational (both cognitive and expressive) elements which people employ to orient themselves in daily life or to solve problems not directly connected with the performance of occupational tasks. The ways by which the individual monitors daily events and seek information to solve specific problems are determined by values, attitudes, and interests characteristic of their way of life. ELIS receives its meaning through these values, attitudes and interests" [9].

We believe that the sociotechnical perspective is a relevant frame for investigating information seeking behavior, including information seeking of music, which represents a distinct type of ELIS. In order to support such a claim, it is important to analyze the context in music information seeking, i.e. the music industry. In the music industry information sources are becoming adaptive, according to users interactions by applying recommendations algorithms [10]. At the same time, behavior of the IS system could actually shape the emotional state of the user without the user knowing about such action.[1] The experiment on Facebook users provides evidence that emotional contagion occurs without direct interaction between people and in the complete absence of nonverbal cues. Emotional states can be transferred to others via emotional contagion, leading people to experience emotions without their awareness [11]. Today people are having daily interaction with machines using their smartphones, creating information in cognitive, communication and co-operation processes [12]. Information behavior data from such interactions are asymmetrically collected and processed by a few agents who influence production and meaning

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[1] In 2014 such a research was published, based on Facebook users which raised ethical considerations. More insight into the case: can be found here
`http://www.forbes.com/sites/kashmirhill/2014/07/07/ex-`
`facebook-data-scientist-every-facebook-user-is-part-of-an-`
`experiment-at-some-point/`

generation processes [13], influencing system performance by imposing goals which create benefit for these agents, not for society.

We will argue that the technology and the user could be analyzed as variables dependent from the environment and the goals defined by this particular environment. Such a non-dual view of these two variables could open up a new research perspective in all sub-disciplines of information science, including information behavior and information literacy. Phenomena to be observed then are patterns as manifestation of behavior, where the patterns are quantitative and behavior is qualitative. The most important difference between behavior and patterns is that patterns as a quantitative attribute could be recognized by machines. Goals are related to behavior that results in patterns of information seeking. It is necessary to understand that for the first time in human history a new phenomenon emerges, where emotions are artificially produced by machines while users are not aware of such a change in their reality of everyday life information seeking. At the same time data collected from user information seeking are used by few agents (such as Facebook or Google) with interest in achieving only their individual/commercial goals.

To structure the PhD research of the author, it was necessary to develop an analytical matrix of different research related to consumption, recommendation, information retrieval, seeking behavior and socio-cognitive aspects of users related to music information behavior. The research is aimed at the empirical study of music seeking information. The paper is organized as follows; in the next section we give a short overview of information behavior and literacy theories development by focusing on socio-technical aspects, followed by a proposal of an analytical framework that supports a generic view of different research perspectives, and finishes with concluding remarks.

2   Information Behavior, Information Literacy and Technical Instruments

Information seeking behavior stands in close relation to the information literacy (IL) concept. As Limberg and Sundin have put it: "An understanding of information literacy would benefit from being based on an understanding of information seeking: information seeking and information literacy are two sides of the same coin" [14]. Technical and social dimensions of the IL phenomenon are evident in nearly every conceptualization of IL. For example, the Oxford dictionary [15] defines literacy as the ability to read and write, or competence in specific area. And information comes from the Latin verb *informare*, which means to give form. Hence, in a very simple and rudimentary way, we could define information literacy as a competence *to give form to something*, in specific area or domain. The domain or area implies the importance of both the *social* aspect and the use of technical instruments, as proposed by Tuominen, Savolainen and Talja [8, p. 341], who argue that "literacies cannot be separated from the domain specific sociotechnical practices".

Bruce [16] recognized five dimensions of emerging information literacy research; the sectorial location of the research, ways of seeing information literacy, what is being investigated, 'how' the object is being investigated and disciplinary influences. Adding the sixth dimension of technical related factors could expand proposed research practices.

Behrens in [17] cited Zurkowski as one of the first to mention information literacy in a LIS back in 1974, defining as information literates those people who learned techniques and skills for utilizing a wide range of information tools. In Zurkowski's definition, information resources are applied in a work situation, techniques and skills are needed for using information tools and primary sources, and information is used in problem solving. In this definition we evidence deficiency of social aspects influencing users and a feedback loop from usage patterns to the tools used.

The American Library Association defines Information Literacy [18] as the ability of individuals to recognize information need and locate, evaluate and use needed information. Such abilities become more important in the rapid technology changing environment resulting in multi-channel access to information, different platforms for user to user communication and different technical instruments to produce new information resources. Such a change without competence of the user to use these newly available tools and access newly created information will not result in improved quality of the information society in which we live now. In this definition there is no significant acknowledgment of the relationship between social structures and competences.

Limberg, Sundin and Talja [19] have analyzed three different theoretical perspectives of IL. Perspectives presented are phenomenography, a sociocultural perspective and Foucauldian discourse analysis. The sociocultural perspective, which is increasingly used in information literacy research, has brought into view how people's use of information cannot be meaningfully separated from the tools that are an integral part of social practices. A phenomenography approach is basically directed at studying variation in people's ways of experiencing different phenomena, for instance information literacy. A discourse analytic perspective on information literacy aims to capture the socially and culturally shaped ways of understanding information competences and information practices. Information literacy extends from just technical skill to the ability to think critically and challenge dominant ideologies, taking part in contemporary society in which access to information is limitless and where information practices in digital environments shape and constitute important elements in most people's lives. Beside the technical skills, critical thinking and deep understanding of people's information experience, we would claim an important focus in IL research should be the effect of IL findings on the design of technical instruments. Hereto the common approach was to change conceptions in IL as a result of technological developments. [20-21]. An implication of the sociotechnical perspective would be to go the other way around, i.e. to change technical developments and designs based on IL conceptions. The competence to access and use information influence our ability to think critically, while conclusions from such a process could be used to design better technical instruments that support more efficient information use. When such a loop is in place, we could talk about evolutionary design, one without constraints and reductionist approaches. Such a proposal was elaborated by Špiranec and Banek Zorica [21] pointing out the necessity for creating IL programs that will meet the demands of the real world and will address a real audience.

IL theories and practices are based on user studies, or, more specifically, on studies of information seeking behavior.

Wilson [22, p. 6] proposed a shift in user studies from information need to information seeking behavior, as information need is based on physiological, affective and cognitive needs, and "as part of the search for the satisfaction of these needs, an individual may engage in information-seeking behavior". Two years later, in 1983, Dervin [23, p. 5] proposed sense making approach, stating *that* "that all information is simply the sense made by individuals at specific moments in time-space." Bates [24, p. 2381] defined information behavior as "term used to describe the many ways in which human beings interact with information, in particular, the ways in which people seek and utilize information." Dodig Crnković [25] wrote that reality for an observer is informational and information is relational.

Lakshminarayanan [26] proposed an integrated model of information behavior, which is based on tensions between streams of experience and streams of information. Such a model could be related to the above proposed habitus theory of relation between personally structured structures and socially structuring structures. According to this study, a person has a lived experience behind them, which serves as their own personal information store, based on a complex combination of memory, experience, aspirations, socio-cognitive and sensorimotor abilities. Simultaneously, people are also conscious of their environment and exposed to a constant stream of information, whether it be new patterns created in their own mind (voluntarily or involuntarily) or information and information tasks emerging from the world around them from their daily lives. Wilson's shift toward cognitive and affective needs is still the focus of research after more than 30 years. Savolainen's [27] research concentrates on the cognitive and affective attributes of information need and uncertainty and their relation to information searching and information retrieval. Cognitive components are the ability to perform an information seeking task and beliefs about its importance, while the affective component is defined as the actor's emotions about the information seeking task. Information need and uncertainty as motivators for information seeking can be better understood by examining the relationship of cognitive and affective attributes.

In current information behavior or IL research, it is hard to identify situations in which we could seek for information without technical artifacts. More precisely, without technical artifacts there is no sense from information, there is no interaction with information, there is no informational reality, there is no human experience and consciousness and there are no cognitive and affective attributes of information need. The competence to seek and construct sense out of information, by satisfying social, physiological, affective and cognitive needs could be understand as an area of study of IL. Hence, IL is about sociotechnical competencies of information seeking. Or, how Shapiro and Hughes [28, p. 33] have put it commenting on the development of the information society: "information literacy is essential to the future of democracy, in which humans are intelligent shapers instead of pawns, in which information is to be part of a meaningful existence rather than a routine of production and consumption".

3   Analytical Matrix for Evaluating Music Information Behavior Research

We will try to apply our speculations about theoretical frames and perspectives in information seeking behavior and information literacy to the specific problem of

information behavior related to music. Above we have provided evidence that information seeking behavior and IL conceptions at one side of the spectrum have an object, which is the target of seeking while at the opposite side there is a subject, a human or group of humans, whose behavior is related to their socially-, physiologically-, cognitive- or affective-based information needs. Between those two sides of the spectrum there are patterns by which the subject is related to the object(s) with associated dynamics, which are related to properties of objects and the subject.[2] Such a spectrum should be analyzed from the sociotechnical perspective of looking into feedback and emerging goal seeking behavior patterns from complex relationships. In such a system, technical artifacts define domain knowledge and social behavior, and domain knowledge and social behavior define technical artifacts.

Lee and Cunningham [29] pointed out that understanding users is a fundamental step in developing successful Music Information Retrieval (MIR) systems and services (which in our vocabulary are technical artifacts). Based on an analysis of 198 music user studies, they conclude that there is a need for closer collaboration between MIR and user study researchers, with better access, circulation of research and interaction between two sides. Inskip, Butterworth and MacFarlane [30] and Cunningham, Jones and Jones [31] provided a similar conclusion. At the same time, we see evidence that more and more technical artifacts are used in user studies providing a better insight into empirical studies [32-38]. Better insight into empirical user studies provides better understanding of phenomena, but to do so we have to be information literate. Simultaneously advancement in research will change requirements towards technical instruments needed to execute research. To propose an Analytical Matrix, let us first consider a scenario of music search. After a stressful day a user wants to relax by listening to music. He/she will start to seek for relaxing music. First he might use YouTube, which will provide him with some recommendations before he starts to consume a particular piece of music. After listening to a particular song, he decides that he could share the song with a close friend who is also under stress and recommends that song to him via his Facebook wall. He will access it using his FB account, after he was seeking music content (browsing post on his FB wall) when he was with friends on the beach. This scenario illustrates that music information behavior is determined by five interrelated steps; socio cognitive information experience, information seeking process, information retrieval, information recommendation and content consumption and analysis. Each of these steps could be understood as a single research dimension with related theories and empirical research. To research higher order dimensions we have to have an understanding of lower order dimensions. We cannot research recommendation algorithms without understanding how machines execute content analysis; we cannot research retrieval without understanding how a system recommends and selects a particular document; we cannot research information seeking processes without knowing how information is retrieved; and, we cannot research socio-cognitive information experiences without knowing how user(s) seek information. Knowledge generated in such a process then could be used in reverse, where knowledge about user information experience, could provide us with new hypothesis for information seeking research, and new knowledge generated could lead us to better design of IR,

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[2] This is the initial hypothesis of the author's PhD research.

which will request new recommendation algorithms providing requirements for development of new techniques for content analysis. And those research dimensions could be researched from technical, individual, social or sociotechnical perspectives. Such research dimensions and their interrelations are presented in Figure 1.
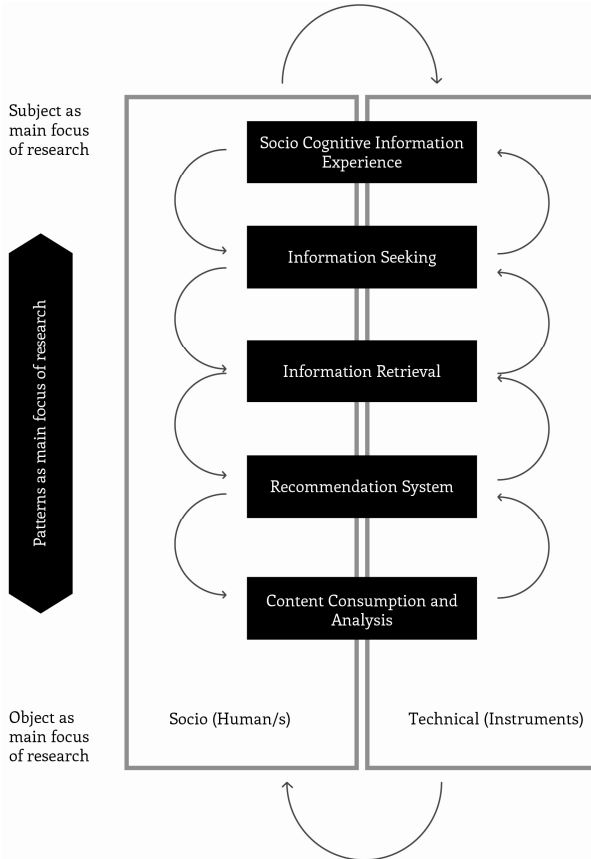
Fig. 1. Research dimensions in information behavior and information literacy research

We believe that the analytical matrix could provide a framework for supporting the above proposed steps. We would like to relate the proposed framework to two theoretical papers, Järvelin & Ingwersen [39] and Saracevic [40]. Järvelin and Ingwersen underlined nine dimensions found in many theoretical models and frameworks which have been proposed for information seeking research, covering phenomena from information systems and their design, through information access by various processes to work tasks. Saracevic in his analysis proposed five frameworks of research; *systems, communication, situational, psychological* and *interactive* framework. In Table 1, we synthetize the proposed analytical matrix, with 9 dimensions from Järvelin and Ingwersen and 5 frameworks from Saracevic.

Table 1. Synthesis of different research dimensions and frameworks

	Järvelin & Ingwersen *Nine* Dimensions	Saracevic Five relevance frameworks
Socio Cognitive Information Experience	**Actor dimension** covers the actor's declarative knowledge and procedural skill;, perceived work task dimension covers the actor's perception of the work task; perceived search task dimension covers the actor's perception of the search task	**Psychological relevance** is viewed as a dynamic, ever changing interpretation of information need in relation to presented texts.
Information Seeking process	**Work task dimension** covers the work task set by the organization, the social organization of work, collaboration between actors and the physical and system environment; **Search task dimension** covers necessary seeking and retrieval practices	**Communication Framework**: I considered communication in terms of exchange of messages between a source and a destination, with possible interference of noise and inclusion of feedback
Information Retrieval	**Algorithmic search engine dimension** covers the representation of documents or information and information needs; **algorithmic interface dimension** covers tools for visualization and presentation of information objects, collections and their organization	**Situational framework** in which relevance is "… a dynamic concept that depends on users' judgment of the quality of the relationship between information and information need at a certain point in time"
Recommendation	**Access and interaction dimension** covers strategies of information access, interaction between the actor and the interface	**Interactive Framework:** interactive processes are highly dynamic, involving a simultaneous poly-representation - multiple representations and models constructed by various elements. Relevance, while not directly addressed in this model is strongly implied.
Content Consumption and Analysis	**Document dimension** covers document contents and genres and collections in various languages and media	**System Framework**: involves documents/texts that are represented in a given way, then organized in a file, and made ready for matching to a query which is accomplished by a given algorithm incorporated in the system

The proposed analytical matrix provides a tool for analyzing different empirical studies in a systematic way, by representing findings from different research in five separate dimensions. As we already mentioned, the two main research paradigms analyzed, MIR and user studies, overlap in some of the proposed dimensions. For example, some user studies could deal with the type of the content consumed, while some MIR research could deal with cognitive competence of the user. By putting the research findings into the proposed matrix we get a meta-view of larger amounts of research papers synthesizing findings into particular dimensions. By selecting a particular dimension, we could gain insight into socio-technical variables and their relationship with the environment.

4   Conclusion

We conclude that technological and social factors have impact on both, personal structured structures and social structuring structures of individual in ELIS. To gain a full understanding of the researched phenomena we have to consider social, individual (cognitive and affective) and technical factors. It is important to underline the shortcomings of research activities in which user studies follow development of technical artifacts or technical artifacts are designed without considering user research. Such a shortcoming will result in weak, descriptive and normative scientific contributions. The Proposed analytical matrix emerged through research of existing music user studies and MIR, recommendation and content analysis. It helps to structure findings in a way to support sociotechnical non-dualist approach, representing them in a way to support social and technical perspectives with associated research methodologies and data gathering techniques. We believe that the focus on relations between social, individual (cognitive and affective) and technological factors could be used to understand changes in every one of them and relationships between them, providing insight into different variables and their relationships. As music information seeking can be considered everyday life information seeking, such approaches will also enrich understandings of information literacy in real and every-day life situations and widen the focus from common research of task-related information literacy contexts such as education.

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Online or Print: Which Do Students Prefer?

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Abstract. Many studies indicate that the format of a text, electronic or print, impacts comprehension and depth of learning, both of which are essential skills for information literacy. How cognizant are college students of this effect? When they need to read a text for academic purposes, do they express a preference for print or digital? This paper discusses a survey of reading format preferences and behaviors of 390 undergraduates at the University of California, Los Angeles (UCLA), a large public university. Results will interest librarians, educators, and technology policymakers. The simplicity of the questionnaire makes it a viable instrument for use by researchers in other language communities and cultures.

Keywords: Print reading, electronic reading, academic reading, reading format preferences, college students.

1   Introduction

Among the indicators of information literacy is the ability to synthesize information and construct new concepts. Reading comprehension – the ability to process and understand a text's meaning – is vital to this skill. Research into the cognitive process of reading indicates that the format of a text, electronic or print, can impact comprehension. Browsing and scanning are effective strategies for cursory and defined information needs, making them ideal for many online tasks such as sorting through email, reviewing headlines, and fact checking. But researchers are now discovering how the process of linear reading in print format is more effective for deeper learning and comprehension.

College students in the United States are expected to purchase the books and materials required for their classes. This can include textbooks and course readers – customized selections of chapters and articles assembled for a particular course – and cost students up to $1,000 or more annually. Some required material may be available on reserve in the campus library for limited use. Today's electronic technologies also enable instructors to post significant portions of class readings on course webpages, allowing free and convenient access to enrolled students and relieving them of a major expense.

But what do the students think about the different reading formats and what factors influence their actual behaviors? This paper presents findings from a recent study

which investigates students' format preferences when engaging with their coursework, and the factors that impact their preferences and behaviors.

2   Review of the Literature

Since the advent of electronic books and readers, discussions in popular culture tend to assume that paper-based media will be replaced by digital versions, much like clay tablets, papyrus, and parchment in their time. Public, academic, and school librarians recognize the unique qualities of electronic resources and the need to integrate them into their collections. Many, however, face pressure from administrators and others to replace entire print collections with electronic versions, and supplant print books with dedicated e-readers and tablets.   Adherents see this as a progressive development rather than following a "19th century mode of learning and teaching that is doomed and increasingly irrelevant" [1]. But there is a growing body of evidence showing how the brain processes information differently depending on the presentation format. Readers employ different levels and types of reading according to the purpose and desired outcome of a reading task, and reading efficiency varies according to format.

In summarizing several studies on this issue, Eshet-Alkalai and Geri write "online reading creates a higher cognitive load on the reader compared to reading from print," resulting in readers remembering information more from print than from digital display [2]. Disorientation and difficulties with knowledge-construction are more common when reading electronically, as well as readers' "lower sense of ownership, engagement and willingness to learn." Ackerman and Goldsmith [3] report in their study of untimed reading that performance was lower for the on-screen learners (OSL) than the on-print learners (OPL). The OSL group also demonstrated a significant difference of overconfidence when predicting their performance than the OPL group, reflecting a distorted sense of their own proficiency.

Mangen, et.al [4] conducted a study in which 72 Norwegian tenth graders were divided into two groups. Pre-tests determined any existing differences in reading abilities and these were factored into the final analysis. All the students were given the same text, but one group read it in print and the other as a PDF electronically. Results from comprehension tests showed that students who read the text in print scored significantly higher than those who read the PDF. Considering that the subjects in this study are all teenagers, it appears that the impact of format on deep reading effectiveness is not determined by generational differences of habit but is an actual cognitive phenomenon.

The popular press is beginning to bring these studies to a broader audience. Both the *Washington Post* and *Wired Magazine* discuss the impact of online reading on deep reading skills in articles titled "Serious reading takes a hit from online scanning and skimming, researchers say" [5]; and "Why the Smart Reading Device of the Future May Be…Paper," [6]. Educated adults discuss their own difficulties transitioning from online scanning mode to the deeper focusing skills needed to read novels and classic literature, and some note that university students today seem unable to read works which require sustained focus and concentration.

In 2010 the University of California (UC) conducted a survey of its students, staff, faculty, and researchers across all ten campuses on academic e-book usage [7]. A total of 2,561 responses were analyzed, of which 498 were from undergraduates. When a respondent answered 'yes' to the question "Do you use e-books for your academic work?" they were asked the follow-up "When doing your academic work, do you generally prefer print books or e-books?" Of the total responses to this question (2410), 49 percent stated a preference for print books, 34 percent for electronic, and 17 percent answered no preference or that it depends on the context of the usage. Analysis of preference by university status showed that undergraduates held the least preference for using electronic books for their academic work. "Undergraduate students indicated the highest preference for print books (53 percent); many undergraduate respondents commented on the difficulty they have learning, retaining, and concentrating while in front of a computer." Comments by students also mention the price factor, "If they were the same cost I would prefer the paper version because reading on the computer makes it harder for me to understand the information."

The current research is based on a finding from this author's earlier ethnographic study of undergraduates' academic information management behaviors at UCLA [10]. Thirty of forty-one participants expressed preference for print academic material, but many admitted that they like having the option of electronic texts because of the convenience and often, the lower cost of access. Reasons for print preference include eyestrain from electronic screens and too many online distractions, but the most common comment is that they learn better when they read in print. Often their actual behaviors depend on the context of the reading – if it is long, in-depth, central to the topic of their class, they prefer print. If it is short or supplementary, then electronic is fine. Data gathering was conducted in Fall 2009, just before iPads and tablets entered the general market and before the current ubiquity of smartphones.

3   Methodology

3.1   Research Questions and Instrument

The main research question of this study is: *What are undergraduates' format preferences when engaging with their academic readings?* Secondary questions ask: a) *What factors impact their preferences and behaviors;* and *b) How do these factors impact their behaviors?*

The Academic Reading Questionnaire (ARQ) is an online survey of 22 questions based on student comments and findings from earlier studies. The instrument consists of 14 Likert-style statements regarding students' preferences, behaviors and attitudes towards reading academic texts in electronic and print formats. Students can answer: Strongly agree, Agree, Depends, Disagree, or Strongly Disagree. Space is included with each question for respondents' comments, which are encouraged but not required.

Six additional questions ask demographic information: Strongest language, age, cumulative grade point average (GPA), year of study, major of study, and whether the respondent has a visual or other limitation that influences format preference. One

question asks about devices used to read electronic texts, and a final open-ended question asks: What else would you like us to know about your academic reading format preferences?

3.2   Sample Population

About 28,000 undergraduates are currently registered at UCLA. Recruitment emails for this study were sent to a random list of 5,000 students through the Office of the Registrar in April and May 2014. A total of 390 responses were received, a response rate of about 8 percent.

Ages of participants range from 18-60 years, with the average at 20.55 years. Students in their first and third year of study are the largest groups of respondents (29.7 percent and 27.9 percent respectively); second and fourth year students are 21.7 and 18.6 percent of respondents, and 2.07 percent reported 5th year or other. Over 90 percent agree or strongly agree that English is their strongest language, and most students (84 percent) say their grade point average is at least 3.0 out of a maximum 4.0 (equal to a 'B' grade or better). Using UCLA's Academic Divisions to categorize the participants' fields of study into general disciplines (some students list double majors), the distribution shows more science students (53 percent), than arts, humanities, or social sciences students (46 percent). Almost 10 percent of the respondents report visual or other limitations that influence their reading format preferences.

4   Results

All fourteen questions that focus on students' preferences and reading behaviors require a response. Therefore each statement received 390 responses (100 percent). The purposes of these statements can be divided into two general categories – those that investigate students' reading preferences and their behaviors that reflect reading preferences, and those that focus on learning engagement. Results below are discussed within the context of these two categories.

4.1   Reading Preferences and Behaviors that Reflect Reading Preferences

Nine questions in this instrument refer to reading preferences or behaviors that reflect reading preferences. Overall, students show a clear preference for reading their course readings in print format over electronic, but often the higher cost of print material and the convenience of electronic access determine their actual behaviors. Context and lengths of the readings are also considerations frequently noted; students are more likely to read, or prefer to read, shorter and 'lighter' texts electronically – information that is supplementary or not core to the class discussion or assignment. When they feel a reading is essential, students express an overwhelming preference for print, stating that they find it more effective for deep engagement and learning. Several comments throughout the survey also mention eyestrain and fatigue as

reasons to prefer print format over electronic. Results and selected comments are detailed below.

Survey questions 3 and 14: *"I prefer to have all my course materials in print format (e.g. book, course reader, handouts),"* and *"I prefer to read my course readings electronically,"* ask about academic reading format preferences in general. Question 5: *"I prefer to print out my course readings rather than read them electronically;"* refers to a behavior that reflects a format preference. Question 6: *"I like to make digital copies of my printed course materials,"* is meant to discover if students engage in the mirror practice of question 5, although it is possible that students prefer to read in print but make digital copies for reference and archival purposes. These four statements do not specify any length, topic or context of the readings, and the purpose is to get a general sense of the students' overall inclinations.

Results show a clear preference for reading in print. The 212 comments generated by these four questions help explain and qualify the answers. Comments are coded into categories including: the high cost of print material; better learning with print; preference depends on context (e.g. length of reading, importance to course, and personal interest); eyestrain caused by reading on electronic devices; convenience and ecological advantages of electronic format. Selected comments are listed below. Figures 1 and 2 illustrate responses to questions 3 and 14 by percentage.

- "It just depends on what I need the material for. Do I need it for an assignment or paper? I will want print. Do I just need to read it? I prefer electronic. Electronic readings make my life a little easier because instead of lugging around several books or a bunch of paper, I just need my laptop."
- "Takes too long and costs too much to print out all my readings. Just too much of a hassle."
- "I like to have a digital copy as well for backup but I learn better with print."
- "I like cheaper versions of readings, but I prefer to have the materials physically. Reading on the computer is distracting."
- "Depends on the difficulty of the class. If I need to interact with the text, e.g. highlight, annotate, in order to understand the material, I prefer print format. Otherwise, digital material is easier to carry and saves paper."
- "[Print is] completely un-ecological and unnecessary."
- "[Print is] easier on the eye than it is to read using a laptop."

Three questions ask for format preference depending upon the length of the reading: under five pages (Question 8), over five pages (Question 4), and over ten pages (Question 10). Over 47 percent (n=186) agree or strongly agree that they prefer to read a shorter reading electronically (Figure 3).   Almost 75 percent (n=292) agree or strongly agree that they prefer to read longer readings in print. Distinct differences are found between shorter and longer texts, but consistent whether the reading is longer than five or ten pages.

Question 11: *"I prefer electronic textbooks over print textbooks,"* is the only question in this survey that refers to a specific type of academic source. Just under 20 percent agree or strongly agree with this (n=75), and almost 68 percent disagree (n=265). Among the 62 comments, students who favored e-textbooks note the heavy weight and cost of print: "I only prefer electronic textbooks if I have to carry them

around." Many commented on the positive aspects of both formats: "Electronic textbooks provide easier access for looking up something, but print textbooks are easier for understanding."

Perceived convenience of electronic material is the focus of Question 2: *"It is more convenient to read my assigned readings electronically than to read them in print."* Responses are almost split evenly: 41.0 percent (n=160) agree or strongly agree, and 40.8 percent (n=159) disagree or strongly disagree. Over 18 percent (n=71) replied 'depends.' Eighty-five comments are recorded, the most from any single behavioral and preference question. They echo the sentiments found throughout this study: "Depending on the importance of the reading;" "If there is a lot of material, I would prefer printed pages so I don't get a headache from staring at the computer screen for too long. However, I tend to have my laptop everywhere I go and can access my readings everywhere, too;" "It is more convenient economically-wise, but not as helpful for remembering and highlighting/annotating;" "Electronic readings allow me to read them from any device and allow me to search for phrases and topics that would otherwise take me forever to find."
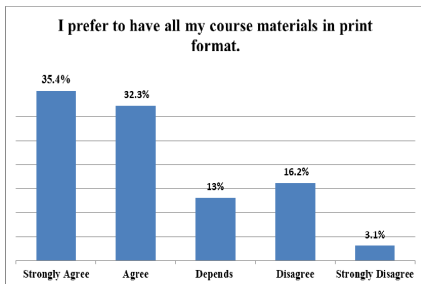
Fig. 1. Responses to question 3
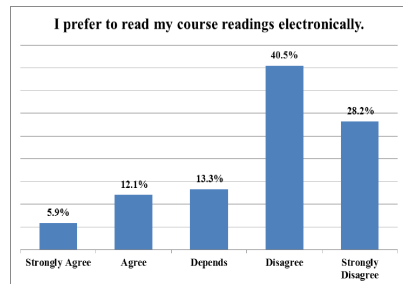
Fig. 2. Responses to question 14
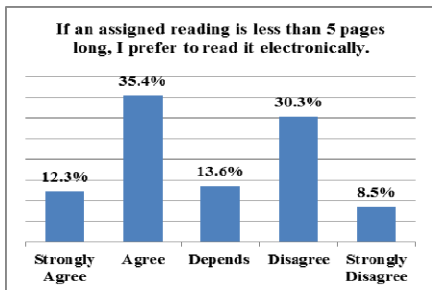
Fig. 3. Responses to question 8
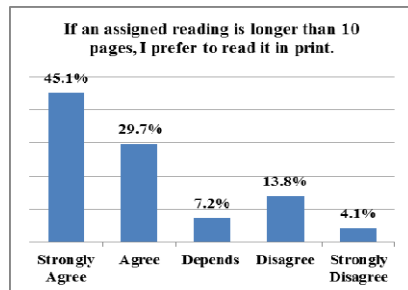
Fig. 4. Responses to question 10

4.2   Learning Engagement

Responses to the five questions on learning factors and behaviors that reflect learning engagement again show preferences for print materials. Figures 5 and 6 illustrate results from Questions 1: *I remember information from my course readings best when I read them from printed pages*; and 13: *I can focus on the material better when I read*

it in print. In both, over 80 percent (n=320, n=319 respectively) agree or strongly agree with the statements.

In the 78 comments from these two statements, students expound upon this idea by again stating that it could depend on the context of the readings, such as importance to the course, length of the reading or personal interest. Five students write in clear favor of electronic format, e.g.: "What helps me remember things is if I can write comments on the text, which most electronic copies will let me do."
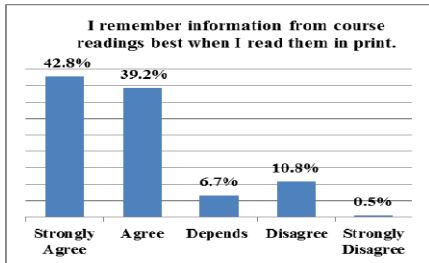
Fig. 5. Remembering best   **Fig. 6.** Focus on material
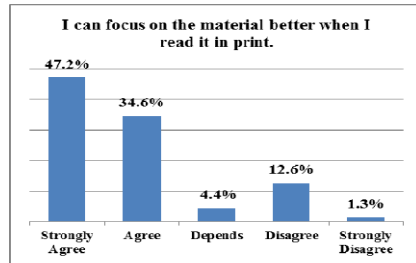
Over 80 percent of respondents (n=316) agree or strongly agree with Question 7: *"I usually highlight and annotate my print course readings."* Highlighting and annotating while reading is a behavior that demonstrates active engagement with the material in an effort to learn and absorb the information. However, only one third of the respondents (33.6   percent, n=131) agree or strongly agree with the same statement in electronic circumstances: *"I usually highlight and annotate my electronic readings"* (Question 12). Nearly two-thirds (61 percent, n=238) disagree or strongly disagree. Many of the 35 comments indicate that more students would do so if this were possible or they knew how. Often PDFs and other electronic formats do not allow such engagement, or students do not have convenient access to the technologies that enable electronic highlighting and annotating. This circumstance may change as technologies improve.

Question 9: *"I am more likely to review my course readings (after I've read them at least once) when they are in print,"* concerns another behavior that reflects learning engagement. Over 75   percent of the students (n=295) agree or strongly agree with this statement. Some of the 26 comments discuss context and circumstances: "It depends on the length of the reading, how busy I am, and how many other readings I have to do;" or that format did not matter: "I read through both electronic & print, regardless." Others favor one format or the other: "The lack of a find function makes this task harder;" "This [statement] is extremely true for some reason."

4.3   Devices for E-course Readings

All 390 respondents answered Question 16: *"I read my electronic course readings on a ___ (please check all that apply)."* As can be seen in Figure 7 below, almost 90 percent use a laptop for this, followed by phones and iPads/Tablets (27.9 and 26.4 percent).
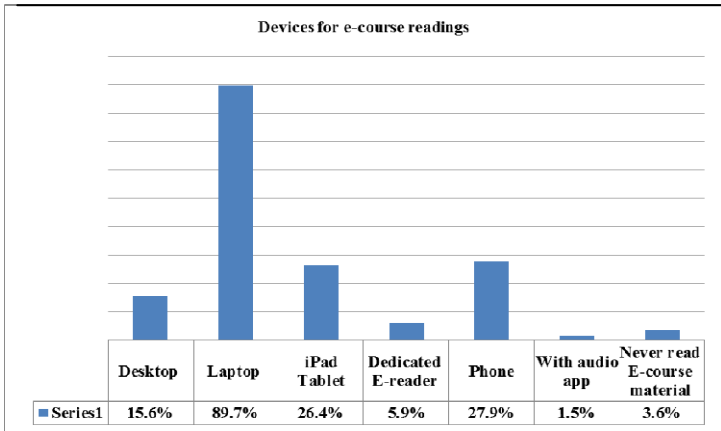
Fig. 7. Devices used for electronic course readings (could be more than one)

The final question is open-ended and generated 112 responses: *"What else would you like us to know about your academic reading format preferences?"* Ninety-three comments (83.04 percent) were coded into one or a combination of the following categories: Both (advantages for both formats); Convenience (of one or the other); Cost (of print); Depends (on context, purpose); Eco (Environment); Eyes (strained by electronic); Prefer Electronic; Prefer print; Tech (comments or issues). The largest category (41.96 percent, n=47) affirms a preference for print but many include the impact of other circumstances, such as cost, convenience, and context in their considerations. Almost 20 percent of the commentators (n=22) affirm a preference for electronic, and 12.5 percent (n=14) mentioned positive aspects of both.

5   Discussion

The majority of the 390 undergraduates in this study, students primarily in their late teens and early twenties, still prefer reading their academic texts in print format when they want to achieve a deep learning outcome. They acknowledge that they comprehend material better when they learn in print format, especially more complex material. Even with technological advances and greater electronic options, students find that print works best for deep learning needs. Reasons for preferring print include:

- tactile aspects of holding, flipping and thumbing through a printed work;
- linear progression as opposed to vertical scrolling;
- better memory cues on printed pages;
- greater inclination to highlight and annotate their printed readings,
- less eyestrain and fatigue

Many instances of format preference however, are driven by the context and circumstance of the material. Clearly the high cost of purchasing books or printing out electronic readings impacts students' behaviors. Many acknowledge that they learn best and prefer print but cannot afford the associated expenses. The importance of a particular reading to the course is another prominent contextual factor – the more important the material, the more likely a student will print it out or prefer it in print, especially if it is dense or complex and demands greater focus. Students also prefer their longer readings in print, especially if it is more than ten pages long. But behaviors vary for shorter texts; some students are okay with reading them online. Others state they are more likely to print the shorter texts than long ones because of cost and environmental reasons.

Students' comments do include reasons for favoring electronic format over print. A small group claims that they do not believe their learning is affected by reading format and they can focus and engage just as well using either. Technological features that allow electronic highlighting and notating lessen the interactive advantage of print, and this factor will likely increase as they become more integrated in e-formats and platforms. Students also describe the electronic find-feature as helpful in their studies. This enables specific word and phrase searches, aiding them with 'pinpoint' reading. But, besides the lower cost, the most prominent theme is the greater convenience of accessing and archiving materials online. Students comment on how much easier it is to have all of the readings for each course on one site, accessible anywhere, than to have to find and assemble or buy the readings on their own. Many also mention the additional drawback of carrying heavy books: "I commute to campus and having physical copies of all the materials is too much weight to carry around all day."

These results not only confirm and enhance the earlier studies described above [7], [8]; they expand upon our current understanding of the concerns and unique considerations our college students face – quality of learning versus convenience and cost of access. These results from a large number of students at a prestigious public university, the currency of this study, and the nature of the information garnered from the responses are also unique among the literature. With the exception of one question about electronic textbooks, the instrument does not ask about specific types of readings – monographs, journal articles, course readers, etc., because with today's technology that distinction is almost artificial to the end user. More distinct is the length, complexity and importance of a text. Readings that are not born digitally can be scanned and posted on a course webpage for easy and free access. Electronic textbooks are becoming more common. Yet there remains an undercurrent of unease with the quality of their learning in electronic formats as expressed by students throughout this study.

This unease appears under-acknowledged today by too many educators, administrators, and even librarians. Studies of the cognitive process of reading, the differences in the various types of reading, and the impact on comprehension of reading electronically or in print must feature more prominently in our decisions to create an educationally and economically feasible balance. It is possible that we are in the midst of an evolutionary transition. As more students who have been e-reading since grade school enter college, and as technology advances, it is possible that the brain's elasticity will enable the development of the necessary deep learning skills in

both formats equally. How will we know if or when the balance of this transition has shifted?

This study looks at a student population in just one North American university, and while the sample distribution by age, majors and years of study is very representative of the UCLA undergraduate population[1], the low response rate could make generalizations problematic. A study of format preferences and behaviors among lower achieving students may generate different results. Much more research is also needed to confirm these findings among students in different types of institutions and learning environments. Students enrolled in online courses face their own unique circumstances, as do their faculty and the librarians trying to support their needs. Continuing to trace the attitudes and behaviors of students as often as every three to five years will help librarians and educators keep up with attitude changes and transitions. The simplicity of the ARQ makes it an ideal instrument for periodical and longitudinal use in institutions and communities and this author invites collaboration on translations for use in other language communities, populations, and environments. Building a network of comparable data will strengthen intelligent decision-making for the ultimate goal of providing the best services to our students and institutions.

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[1] `http://www.aim.ucla.edu/home.aspx`

Information Literacy in Brazil

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Abstract. The Brazilian government focuses on the economy, thus national education policy is on the back burner, receiving less financial resources. This increases educational problems. Economic development occurs when information literacy is considered important; however we must consider multiple factors such as human and social development which is the outcome of building knowledge. This paper aims to investigate how information literacy is treated in Brazil by means of an in-depth literature review about this topic in the education and policy field and to discuss the current situation regarding initiatives that stimulate learning and effective citizenship. Afterwards, there is a description of the historical and theoretical aspects of information literacy studies between 2000 and 2013. The article contributes to the elaboration of that topic and it develops the building and dissemination of knowledge around the country.

Keywords: Information literacy, learning, nation development.

1   Introduction

Economic, political and social development is connected with learning because education makes creativity and innovation possible and both are a boost for information. Learning and politics are connected: a good education is responsible for a conscious citizen, so citizenship is a result of effective learning. Education requires students to develop the ability to learn in order to empower knowledge not only at school but in every environment or situation of their lives. Information literacy allows students to learn by themselves by searching for information in different sources. That is especially necessary for citizenship because voters need to deal with information that isn't reliable.

All individuals must know what is going on with policy to participate in a democracy. So members of a society should know how to search, access, and use information. Research creates concepts that empower theory about information literacy in Brazil [1]. This paper demonstrates the concepts already developed to improve education and citizenship.

Information allows individuals to develop, but mere information in books or in thoughts isn't enough to implement knowledge. Human knowledge must be expressed in practical actions to improve people's lives. As a consequence, people must search for knowledge because that is an important factor in education and personal

development. This search requires strategies which allow the acquisition of reliable information in order to create productive knowledge. When mental activity identifies problems, solutions or goal achievements, we can say that thoughts take on a logic form: a process by which objectives lead to conclusions based on principles and evidences, inferring from knowledge, new possibilities and checking the results obtained. This is directly related to Information Literacy. Remember that literacy in general includes two distinct aspects: first, the knowledge of several abilities which allows practical intervention in reality and second, a critical vision of actions and commitment with concrete needs which emerge and characterize the modern social context [2].

The term information literacy has been introduced in different contexts with various terminology: for example in Spain it is 'alfabetización informacional' (ALFIN) and in Portugal, 'literacia da informação'. In Brazil, several articles were published in 2000 that used expressions like 'information literacy', 'competência em informação', 'letramento informacional', 'alfabetização informacional', 'habilidade informacional' and 'competência informacional' to refer, in general, to the same idea or group of ideas [3]. With that said, it is important to mention that Horton (2013), in a paper edited by the United Nations Educational, Scientific and Cultural Organization (UNESCO) called 'Overview of Information Literacy Resources Worldwide', determined "competência em informação' is the designation to be considered in Brazil, including a logo that publicizes an international movement involving this theme [4].

In an international context, there are policies and programs which stimulate information literacy in different countries. For example a program called Connecting Canadians has several goals including expanding access to the internet in Canada [5]. These initiatives enhance the learning of citizens with programs which support libraries and distribute computers to encourage internet access.

This paper addresses the following research problem: what are the initiatives in information literacy in Brazil? The objective is to show how information literacy is treated in Brazil by means of an in-depth literature review about the theories and the information literacy history. It also shows the policy initiatives of the country. The article expands knowledge on that topic and develops the dissemination of knowledge around the country. It has been observed that the Brazilian government focuses its efforts on the economy and, because of that, there are education problems in the country, especially concerning underfunded public teaching, policy which doesn't value the interests of the population, and has resulted in a reduction in the importance given to reading and learning attainment [6].

This paper also has a bibliographical review based on Brazilians authors who are introduced to explain the theories and ideas of information literacy in the country. The authors research information literacy in the field of education and policy.

2   Methodology and Procedures

This article is based on an in-depth literature review because it describes the situation of information literacy in Brazil. It introduces national authors by means of a bibliographical review focused on information literacy in the period of 2000 to 2013.

The criterion for inclusion in this review is authors who study information literacy mainly in education and policy fields.

Firstly, we intend to research in books, articles published in magazines, theses, and also dissertations about Information Science in Brazil. Afterwards, there is a description of the historical and theoretical aspects of information literacy studies in the country and a discussion of the current situation of information literacy in government policy. There are some mentions of international researchers because the term 'information literacy' first appeared in the United States, and then spread to many different countries. We also note that there are some critical points of view related to the current situation in Brazil.

3   Evolution of Information Literacy in Brazil

The term Information Literacy was coined in 1974 in a report written by Paul Zurkowski. The title was 'the information service environment relationships and priorities'. In this document the researcher described services and products produced by private organizations and wrote about the relationship between information literacy and libraries. In addition, he argued that a national movement for information literacy was necessary because resources should be considered in the context of work, for problem solving by learning how to use information tools [7].

In Latin America, information literacy had become recognized as important by the late 1990s; however, there wasn't a unified terminology in use among those countries. They referred to Information Literacy that came from English or even Maîtrise d'information used in francophone countries. This indeterminacy of terms led to much research about information literacy in Latin America [8]. The first papers about information literacy were published meaningfully in the 21st century with the publications of Belluzzo, Dudziak , and Hatschbach [8].

Beyond those three authors, UNESCO documents also introduced others such as Feres, Campello, Passos, Fialho, Lecardelli, Schoffen and Silva. Each of these authors contributes to the theme in a specific way, and hence are crucial to a national understanding of information literacy. The precursors of the formal study of Information Literacy in Brazil are the librarians who produced studies related to the education of users [9]. The first action related to users' education was a course organized in 1955 by Terezine Arantes Ferraz.

The initial research occurred because of a national concern with the knowledge of individuals, a factor responsible for the development of a Brazilian information society. In addition, education of citizens is delayed and it is always criticized by researchers from different fields of knowledge. An information literate society is able to put citizenship into practice using national political education. Information literacy is a term which can be understand as a field which demands ongoing learning, absorption of concepts, abilities of information comprehension (abilities that help the creation of new knowledge) as well as the practical implementation of this knowledge in one's routine [2].

Across definitions of information literacy there is agreement that this term is closely linked with knowledge gained in an individual's life. In the beginning, the study of information literacy was inside the context of Information Society definitions and there was an important increase of studies focused on libraries. However, the conclusions of early research influenced not only information professionals, but also a group of individuals who worked in different fields as businessmen, journalists and politicians. Hence information literacy became a multidisciplinary factor used around the world. [10].

Hamelink and Owens were some of the first authors to relate information literacy with government policy, and concluded that this literacy is a factor that allows political emancipation. [7]. Information literacy also contributes to the participation of individuals, thus contributing to democracy. The government has a fundamental role to stimulate and develop policy and social programs to answer the public's demands in the country. An individual who develops this literacy by means of an aptitude as well as absorption of information will be capable of contributing in their personal and professional lives and will be able to put into practice autonomous citizenship.

4   Information Literacy Initiatives

A policy should consider different sectors of society and should aim to advance in a deliberate direction. It represents a consistent implementation of measures to change a situation. The success of a policy is measured by sustainability and by enabling different fields to achieve positive results. A policy ensures that the problems won't be chronic, by avoiding the repetition of failed practices [11].

Likewise, educational policy should ensure that schools have an information literacy goal that can't be postponed, in the same sense that school creation could not be delayed a century ago. A school should be a place that gives incentives, facilitates knowledge, and makes students feel like active members of a literate culture. It should create an environment conducive to critical citizenship. In this manner, information society brought new challenges to learning and to the role of written language in education. Although we live with electronic devices which allow access to and storage of information, the book is still the main means of dissemination of information, and libraries are places to preserve society's information and memory.

Furthermore, access alone isn't enough; individuals must be stimulated to read for their intellectual development. If someone doesn't follow this practice, they won't develop the abilities necessary to learn and then use that knowledge. To build knowledge in the modern age people need to access and use information in an effective way, since both information and knowledge are aspects created by humans [12].

To be able to manage information and knowledge it is fundamental to consider people as creators. In Brazil there is a government Reading and Library Program which aims to contribute by incorporating reading and writing as a priority in policy and by actions that demonstrate its social, cultural and educational importance to the information and knowledge society. This program is focused on these dimensions:

- Analyses and Reflections: an exploration of possible models of intervention on search and ways to mobilize new ideas,
- Access: stimulating studies and researches,
- Innovation: by supporting innovative practices that add value to good work practices and stimulate agreements and cooperation among countries, and
- Diffusion and dissemination: supporting actions that stimulate community participation.

Another initiative which had support from the Bureau of Culture of the state of São Paulo and the Brazilian Federation of Librarians, Information Scientists and Institutions Association (FEBAB) invited librarians and professors to jointly develop information literacy activities. These professionals were from different regions of São Paulo state, São Paulo City, and other state capitals of Brazil. This led to the creation of the Assessor Group of Information Literacy which FEBAB has promoted since 2004. They publicize this theme by, for example, giving speeches, organizing workshops and seminars, and offering e-learning courses as an integral part of knowledge.

Some of those conferences can be considered as an initial template for discussions and reflection among professionals of several knowledge fields in Brazil as well as experts from other countries. This contributes by publicizing and consolidating the situation of information literacy. Among the conferences organized was the Information Literacy First Workshop created in 2005, in the city of Curitiba, during the 21st Brazilian Conference of Library and Documentation and Information Science (CBBD-FEBAB).

The Mexican researcher Jesus Lau was invited as a special guest. He is an international researcher on information literacy and represents the International Federation of Library Associations and Institutions (IFLA). His explanation concentrated on the central aspects of information literacy which included questions about the function of libraries in teaching, concepts about information literacy in education; abilities and competences; the definitions from the American Library Association and from IFLA about information literacy; the planning challenges of librarians, and accomplishment programs that aim to encourage information literacy in modern society.

One of the recommendations originating from this conference was that organizations should propose an inclusion of information literacy and others connected with education in courses of library and information science. Since then, there have been attempts to form partnerships to increase such collaborations. One of these experiences is the partnership between FEBAB, University of Brasília (UNB) and the Brazilian Institute of Information in Science and Technology (IBICT) that made possible the development of the "Information Literacy Seminar: scenery and tendency." It occurred in parallel with the 24th Brazilian Conference of Library, Documentation and Information Science in 2011.

The goal was to introduce information literacy scenery into modern society to encourage reflection, discussion and sharing of experiences and practices between researchers and professionals in Libraries and Information Services. In addition, it was intended to offer information to elaborate policy to be used as a parameter model

to successfully access and use information to build knowledge and apply it in different contexts.

As a result, the document "Declaração de Maceió sobre Competência em Informação" [13] was created and published, a declaration which has been cited in national and international conferences. This document has helped with the recognition that Brazil is one of the countries that is engaged in the information literacy cause, although the process is still slow.

Another possible contribution to discussions about information literacy in Brazil is the organization of "Atelier: Social Function of School Library in Information Society Context", which occurred in October 2011, in São Paulo City during the 2nd International Forum of School Libraries. This was created for a Regional Council of Library, 8th Region and for the Regional Administration of the International Association of School Librarianship (IASL) in Latin America and the Caribbean. The context was the Mobilize Program for School Libraries of an information network in public teaching.

The purpose of Atelier was to promote integration among various actors in favor of actions which contribute to an overall change of Brazilian school libraries. It also encourages an exchange of ideas and experiences as well as a rationalization and dissemination of initiatives and projects of information literacy to improve school libraries.

One of the biggest challenges of public administration is to respond to the demands of information literate individuals. Those citizens demand transparency, quality, and speed in government services, which involves inspection of politicians' decision making [14]. Because of that, E-gov was created, which is a union of information and communication websites to inform citizens. The information literate society has information about rights and responsibilities; in addition, citizens participate in the democratic process.

Therefore, government focuses its efforts on guaranteeing citizen safety and allows individuals to obtain different kinds of information which satisfy their needs. The workings of those systems influence the economic development of the country [14].

The Florianópolis Manifesto [15] about Information Literacy and the Population of Vulnerable and Minority peoples was created with the goal of upholding minority interests, which frequently suffer from discrimination, intolerance, and weak access to information. This manifesto is a result of the 2nd seminar of "Information Literacy: scenery and perspectives" that occurred in July, 2013, in the city of Florianópolis, Santa Catarina.

This manifesto (2013) introduced four items that are supposed to be part of public/ government responsibilities:

1. Creation and implementation of public policies focused on Information Literacy.
2. Professor valorization for public functionalism in fields like education, health and public security.
3. Creation of specific laws to libraries, Access and information use that allow information literacy development.

4. Union of different specialties' volunteers to inform a multicultural population about problems and important questions in all fields including health, education, public policy, work, and safety.

However, the inefficient public management of resources has affected Brazil, since policies focused on information literacy has not been put into practice. The info centers haven't been opened in several regions around the country and because of this, citizens don't yet know how to use a computer or access the internet.

There are problems related with the implementation of a policy. The country also accepted in 2011 a law of political transparency, which allows citizens to get information about public finance.

Among those who do access the internet, less than half visit public transparency websites and those who want information about their government have difficulty because the governments don't publicize information with enough transparency. In these terms there is a discussion about the truth of information provided by government.

Furthermore, these websites aren't advertised by the media. For example, there is a website called "planalto" [16] where one can get information or news about the actions of the President. This website refers to Brazil's Presidential Palace and publicizes information about the current government, as well as social programs, the President's actions, and current government policy. There is also a link that sends citizens to E-SIC [17] (Electronic System of Information Service to Citizenship) whose goal is to facilitate access to the information of the Federal Executive. However, this website has some obstacles such as the need to read a 33-page user handbook before registering.

According to this user handbook, citizens have to wait twenty days to get information and there is a possibility that information will be postponed for ten more days. So, it is necessary to ask for information, and users have to know which organization is appropriate to provide this information. Even then not all requests are answered.

There is another website which provides information about information access [18]. On the first page there is an electronic graphic indicating how many people have demanded government information. In 2013 there was registration of 86.661 requests. It means that only a small portion of Brazilians demand government information.

Therefore it is observed that information literacy is a developing process in Brazil, because the concerns are recent. Furthermore, citizens, information professionals and researchers must demand targeted public policies to construct real knowledge for the inhabitants of Brazil.

5   Conclusions

The history of information literacy in Brazil is still new, and it needs further research in this area. Information literacy has become significant and relevant since the 1990s, so researchers have made considerable efforts to publicize its concepts and definitions in society and to demonstrate its importance to building a better country.

This reflection on information literacy in Brazil also allows us to understand what kind of efforts Brazilian researchers have been making to advocate its importance to society. To exercise citizenship, people need information literacy because citizens should have the capability to analyze and judge a policy.

Individuals should also participate in democratic discussions for the development of the country. A website by itself isn't capable of providing information; a person who knows how to obtain data and use it to construct a political point of view is also necessary.

Therefore in Brazil the current social reality isn't close to information literacy concepts which are proposed for researchers in the field. A national concern for information literacy is a fundamental factor for effective citizenship. So, conferences are initiatives aimed at improving learning and constructing a democratic society in Brazil.

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Information Literacy Skills of Portuguese LIS Students: Some Topics on Evaluation of Resources Credibility

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Abstract. This paper focuses on the Portuguese results from an international survey on LIS students' information literacy skills. The results' analysis will be grounded on a literature review on the criteria application to evaluate information and determine the credibility by undergraduate students. The guidelines for the information evaluation, especially regarding credibility aspect, on three main information literacy frameworks will be presented. After an overall presentation of the main results, the analysis of the Portuguese survey results will focus on issues related to information evaluation skills, namely on criteria to assess information credibility and on difficulties to apply them.

Keywords: Information literacy, information evaluation, information credibility, LIS students, Portugal.

1   Information Evaluation Criteria Used by Undergraduates

Studies about undergraduate students' information-seeking behaviour provide an interesting image about the methods, criteria and processes to choose sources and information to perform course-related assignments. This brief literature review will focus on evaluation criteria, specially related to credibility. This concept, nowadays mainly associated with web credibility, has been extensively discussed. However, in this study, the Tseng's and Fogg's definition was adopted, which defines credibility as a perceived quality, as an human perception, that results from evaluating multiple dimensions simultaneously, including trustworthiness and expertise as two key components [1].

Results from a focus group about how web users make judgments of Web sites show that 12 categories emerged as factors of web credibility, namely: authority, page layout, site motive, URL, cross-check ability, user motive, content, date, professionalism, site familiarity, process and personal beliefs [2]. All these aspects can be taken into account to create Web sites or to promote lessons on web resources' assessment. One interesting finding is that page layout is a negative criterion for evaluation because if the page has a good layout that did not make information more believable but if the layout is poor information is perceived as less believable. This study involved 24 participants, some of them undergraduates but other studies focus only on undergraduates.

Twait [3] conducted a qualitative study, with 13 undergraduates, to identify their source selection criteria, when working on an academic research project, and to understand their preferences for print, electronic and human sources. Results show that content, including topicality of sources, is the most important criteria ranked above the other criteria. Reputation/credibility was the third most frequently mentioned criterion but with a low average of 10%. Accuracy/validity is also an undervalued criterion with 3%. So it seems that undergraduates from this sample do not prize credibility or dimensions of it. This study also highlights that undergraduates do not use human sources, e.g. faculty experts or librarians, for recommending other information content. On the contrary, students prefer resources they used previously, prizing familiarity, as the second most chosen option.

The scarce use of evaluating criteria applied to information sources is stressed in some researches. A study of five web page evaluations, made by 35 undergraduates students, shows that they only use one or two judgments about the surface features of web pages, and ignore the content of the documents themselves [4]. Source coverage, accuracy, authority, presentation and objectivity were the five most ranked criteria. Additionally, participants tended to employ only one or two criteria and repeatedly use them. This behaviour is in line with the findings of another study where undergraduates did not use the necessary criteria for evaluating sources for a research paper, having difficulties to identify scholarly sources. Despite the fact that students indicated that they were looking for credible sources, they were unable to list specific criteria to determine if the source is credible or not [5]. These criteria are well defined in some information literacy frameworks and three of them will be analysed next.

2   Evaluation Competencies in Information Literacy Frameworks

The Information Literacy Competency Standards for Higher Education [6] presents five standards, twenty-two performance indicators and a wide range of outcomes. Standard three is about critical evaluation of information and its sources; furthermore it addresses the ability to incorporate selected information in previous knowledge. It includes in performance indicator number 2, which states that information literate students must be able to articulate and apply initial criteria in order to evaluate information and its sources. This implies the following outcomes: examine and compare information from various sources to evaluate items such as reliability, validity, accuracy, authority, timeliness and bias. To analyse the structure and logic of the content and recognize prejudice, deception or manipulation are also presented as suitable outcomes. Information assessment is also part of the performance indicator 4, as it emphasizes the comparison between prior and new knowledge to find added value or content contradictions. This implies outcomes such as: consciously use criteria to determine whether the information contradicts or verifies information used from other sources and select information that provides evidences for the topic. Since 2013, this document is under revision with a new title and structure proposal. In June 2014, a draft of the *Framework for Information Literacy for Higher Education* [7] was released based upon six threshold concepts that are: scholarship is a conversation,

research as inquiry, authority is contextual and constructed, format as a process, searching as exploration and information has value. Threshold concepts are illustrated by knowledge practices (demonstrations of ways in which learners can increase their understanding of these information literacy concepts) and dispositions (ways in which the affective, attitudinal or valuing dimensions of learning can be addressed). In this version, evaluation/credibility is mainly present on the concept of authority as contextual and constructed and the terms critical/critically appear 17 times. The framework states that "authority of information resources depends upon the resources' origins, the information need, and the context in which the information will be used. This authority is viewed with an attitude of informed skepticism and an openness to new perspectives, additional voices, and changes in schools of thought". Some similarities can be found between the knowledge practices and the dispositions and the performance indicators and outcomes of the standard three from the 2000 version. Anyway, a more accurate study is needed to compare the perspective about evaluation/credibility of the two documents.

Australian and New Zealand Information Literacy Framework: Principles, Standards and Practice [8] recognizes six core standards which underpin information literacy acquisition, understanding and application by an individual, to develop lifelong learners through undergraduate studies. These core standards are the following: the information literate person recognises the need for information and determines the nature and extent of the information needed; the information literate person finds needed information effectively and efficiently; the information literate person critically evaluates information and the information seeking process; the information literate person manages information collected or generated; the information literate person applies prior and new information to construct new concepts or create new understandings; and, at last, the information literate person uses information with understanding and acknowledges cultural, ethical, legal, and social issues surrounding the use of information. Regarding standard three about evaluation, it is interesting to verify that it includes assessment of the information access tools, the inherent characteristics of information and also information seeking process and search strategies.

The SCONUL Seven Pillars of Information Literacy: Core Model For Higher Education [9] underpins a broad understanding of information literacy as an umbrella which encompasses concepts as digital, visual and media literacies, information handling, information skills or data management, among others. The model includes seven pillars of information literacy and each pillar includes a series of statements relating to a set of skills/competencies and a set of attitudes/understandings. Within each pillar an individual can develop from novice to expert, but it is also possible to move down a pillar. The seven pillars are: identify (ability to identify a personal need for information); scope (can assess current knowledge and identify gaps); plan (can construct strategies for locating information and data); gather (can locate and access the information and data they need); evaluate (can review the research process and compare and evaluate information and data); manage (can organise information professionally and ethically); and present (can apply the knowledge gained). Evaluation understandings include issues of quality data, accuracy, relevance, bias, reputation and inherent aspects to information/data sources credibility. But evaluation

should also focus on knowing the process by which information is evaluated and published, in order to help inform personal evaluation. Abilities related to these understandings are: distinguish between different information sources and the content they can provide, apply appropriate criteria to choose suitable material on a search topic, assess the quality, accuracy, relevance, bias, reputation and credibility of information sources, assess credibility of the data gathered, critically read, appraise and evaluate personal findings and those of others.

The concepts from these information literacy standards will support the understanding and analysis of the results from the survey, presented in the next topic.

3 Main Results Presentation

This paper presents the Portuguese results from an international survey on LIS students' information literacy skills, with a focus on issues regarding credibility. First the main results will be presented and compared with data from other countries that participate in the study. Secondly, questions regarding assessment of information credibility issues will be stressed.

The international Information Literacy Survey was supervised by the Department of Information Science at Hacettepe University of Ankara and the Portuguese study was conducted by the Information Science Department at the School of Industrial Studies and Management from Polytechnic Institute of Porto. This survey was carried out in Australia, Bulgaria, Croatia, Finland, France, Hungary, Japan, Lithuania, Malta, the Netherlands, Poland, Romania, Russia, Singapore, Switzerland, Turkey, United Kingdom, and the USA.

The Portuguese survey was sent by e-mail to all the 65 undergraduate students of our department. Fifty-three responses were collected, of which five were incomplete. Only the 48 complete questionnaires were analysed for this paper. Data were collected through an online questionnaire available between March and May 2013. This data collection instrument had 16 closed questions and one open for comments. Generic data to characterize the respondents and specific data about their information practices were collected. Thus, self-reported data were collected among LIS students regarding their research experience, information behaviour and information literacy skills. The 48 complete questionnaires were answered by 60% of female and 40% of male. First year students' responses predominate with 50%, followed by third year (31%) and then second year (19%). About an half (52%) of the students are between 18 and 20 years old and 27% are between 21 and 23 years old. The remaining 21% of the students are divided into several categories among 24 years old and over 35 years old.

3.1 Information Processes for Course-Related Assignments

With regard to students' perceptions about the various tasks related to starting and searching information for course-related assignments (Q6a), it appears that 63 percent agree or strongly agree that getting started on the assignment is difficult. This tendency is also visible in the data results from USA, where for 84% the most

difficult step of course-related research process is getting started [10]. It should also be stressed that on the options saying that narrowing down the topic is difficult, finding articles in the library's database is difficult (e.g. LISA, Wos, EBSCO, JSTOR) and figuring out where to find sources in the library is difficult, one third of respondents (33 %, 33% and 31%) choose indicating neither agree nor disagree. In other cases, nearly a quarter of respondents selected the same option (getting started on the assignment is difficult - 21%, defining the topic for the assignment is difficult - 23%, building up the search strategy is difficult - 29%, deciding which database to use is difficult - 23% and finding "gray literature" is difficult - 25%). It is possible to consider that these percentages mean that students prefer not to report their difficulties or that they are unaware of them.

3.2   Information Resources Used for Course-Related Assignments

Regarding the resources most used in course-related assignments (Q7a), respondents could choose from 15 options. It appears that most of the respondents chose the option search engines, including Google, (98%). This result is in line with data obtained in Croatia [12] where this option also ranked first. It also seems to follow the trend of the data presented by Project Information Literacy [10], where in 2010 this option collected 95%. So it seems that search engines represent the gateway to the search path for almost all undergraduate students, regardless of their geographic location.

Secondly, in this Portuguese study, it appears that the highest percentage of 88% corresponds to three options: course readings, personal collection and Wikipedia. Here, there are similarities and differences with USA and Croatia. The Portuguese use of course readings is close to the USA value, where the option got 96%, as the most chosen [10]. The rank of Wikipedia in the Portuguese study also approaches USA results from 2009 (85%). However, the results differ markedly with regard to use of personal collection, where in USA, in 2010, it ranks in eighth with 56%. Distinctively in Croatia [12], course readings were only the fourth most chosen option and Wikipedia the sixth option. Note that in this country, the use of library shelves and of library catalog stands out occupying the second and third most chosen options. Thus, in Croatia, LIS students do a more intense use of the library resources than in Portugal, since those options here occupy the seventh and eighth preferences. Another significant difference between Portugal and Croatia is related to the use of blogs by Portuguese students that choose this option in seventh place, with 73%, while for the Croatian students it is the fourteenth option. As for the use of social networking sites, e.g. Facebook, Portuguese and Croatian choices are aligned as it lies in the last place. Another interesting difference between Croatia and Portugal is that, in the former, Encyclopedias occupy the fourth place (before Wikipedia) but in Portugal this option ranks last (46%). It also appears that the Portuguese students do a very intense use of video-sharing (81%) and slide-sharing (79%) sites. In contrast, the use of grey literature (63%) and research databases through the library Web site (58%) is lower.

3.3   Study Practices to Complete Course-Related Assignments

Regarding the use of tools for preparing and sharing course-related assignments (Q11), almost all the students (92%) use spell checkers and presentation tools. Track-changes feature of word processors (77%) and video sharing sites (73%) are also popular. Document sharing programs, blogs, social networking sites and wikis all have an average of 63% of use. Alerting services (46%) and social bookmarking (40%), which help to deal with the information overload on the Internet, have a low range of use.

The three most valued aspects when working on a course-related assignment (Q12), all ranked first as very important with 83%, are getting a good grade from the instructor, passing the course and getting the paper finished. Moreover, no one indicated that these factors are not important. Impressing family and friends with the grade received is not important for 10% and it is the option with the lower average on very important, with 33%. These Portuguese results are quite similar to results from Lithuania [13]. It seems students focus on getting the paper finished and not really on improving their skills and knowledge. The options improving my writing skills (52%), learning something new (50%) and improving analytical skills (48%) have lower averages. It is also interesting to stress that the option integrating my own perspective into the paper ranks only 46%, but on Q10 the similar option, I work my own perspective into the assignment, so that the instructor knows what I think, ranks 98%.

Regarding the used devices for accessing information like databases, library catalogs and Web sites (Q13), Portuguese students use laptops almost always (79%) and never tablets (77%) nor cell phones (50%). Finally, to communicate with teachers, mentors or librarians (Q14), 67% of students almost always use email via desktop or laptop and only 2% said that they never use this option. The same average of 67% states they never use instant messaging via desktop or laptop.

4   Results on Information Evaluation Skills: A Focus on Credibility

After this brief presentation of the main results, the analysis will focus on issues related to information evaluation skills, namely on criteria to assess information credibility and on difficulties to apply them. The applied questionnaire addressed generically various aspects related to information evaluation, especially regarding credibility.

In Q6a, when asked about statements on starting and searching information for course-related assignments, 43% of students agree or strongly agree that determining whether a Web site is credible or not is difficult and 34% did not feel any problem regarding this aspect as they disagree or strongly disagree with the statement. Of them 23% neither agreed nor disagreed. Overall, it seems that the majority should be quite comfortable on determining credibility. In this same question, Portuguese students did not express great difficulties in sorting irrelevant results and find what they need: only 33% agree that is difficult, 48% disagree and 31% have no opinion. The results in

Q6b confirm that tendency since only 44% find difficult to evaluate the information sources they found.

These statements have to be related to the feeling of students' self-confidence in the ability to search web resources. This feeling is very high because 81% disagree or strongly disagree with the option that finding sources to use "out on the web" is difficult (e.g. Google, Wikipedia, government sites). In what concerns library resources, students show to be less confident because only 60% disagree or strongly disagree with the option that indicates difficulty associated with this task. Students did not express problems with information searching, presenting themselves as experts especially in web environment, as they think they know and apply all the adequate techniques to find and filter information. With this personal point of view it is not easy to recognise competencies problems regarding information credibility assessment, especially on web resources.

Competencies in information credibility assessment involve not only abilities to search and retrieve credible resources but also the ability to use them in order to create credible information. This second perspective is crucial for undergraduate students when they have to prepare course-related assignments. This involves issues as re-phrasing, make citations, know when to cite a source, taking notes or integrate different points of view in their own assignments. For tasks involved in preparing course-related assignments (Q6b), Portuguese students' biggest problem is re-phrasing what is already well expressed in the source because 63% agree or strongly agree that it is difficult. This ability is related to the lexical field and the components of understanding, assimilation and appropriation of reading in a personal perspective. This result is quite different from that found in Poland because only 36.84% consider this task difficult [11]. Knowing how to cite the source in the right format is difficult for 48% of the respondents who agree or strongly agree with the statement. Thus, it appears that nearly half of the students have not mastered the basic techniques of citation, even though these are formally included in the curriculum of the course plan. The same percentage of students (48%) expresses relative difficulty to know when they should cite a source, indicating that they do not realize the importance and value of consulted information sources citation, which may be related to the frequent practice of plagiarism. Students show quite confident with regard to their ability to taking notes, as 58% disagree or strongly disagree that it is a difficult task. For the option integrating different sources from my research into my assignment is difficult, only 29% agree or strongly agree with the statement, while 46% disagree or strongly disagree. So it seems that almost an half of the students have no difficulties to combine different points of view, which is really important in academic discourse in order to produce credible papers. In the basic tasks of reading through the material and writing, only 42% of the students disagree that is difficult for the first one and 27% for the second one. However, 31% neither agree nor disagree that reading is difficult and 38% feel the same about writing. So students seem to be more comfortable with reading than with writing, which is natural, but as they are in an university context they should really be competent in these tasks because they are the foundation of all academic work, and namely to assess credibility resources or to produce credible course-related assignments.

One important way to make acceptable academic papers is to have adequate study practices. So results from Q10, about students' research techniques and styles, will be analysed to understand if these LIS Portuguese undergraduates are on track to make credible academic work. In this question the two most ranked options (98 percent) are I work my own perspective into the assignment, so that the instructor knows what I think, and I come up with a thesis statement early on (hypothesis). It seems that students value the construction of their own idea, with the hypothesis construction, and then explain it on the assignment so that the instructor can gauge it. Yet, it seems that students have their own way to organize their research, to the extent that 90 percent said that one of the first things they do is to figure out what search terms to use, 88 percent said they develop an overall research plan to guide the research process and 81 percent develop an outline for how to proceed with the assignment. The majority of the students indicate that they make an effort to have a global approach to the assignment, valuating the construction of their own perspective, using initial hypothesis, which seems to be an adequate option to produce credible papers. In contrast, 50 percent indicate that they just sit down and start writing without much of a plan for what they are going to say, working without a pre-established plan. As to the effort expended, a very significant part of students are trying to save it, since 85 percent tend to use the same set of research resources from one assignment to the next, 65 percent tend to write about the same topic from one assignment to the next, 63 percent said that once they find the number of citations the instructor expects, they end the research process, and 48 percent recognize that they tend to spend as little time as possible on assignments. The ability to persist in finding relevant/credible information is reduced to 38 percent who say that they start over with a brand new topic if they do not find something in one or two searches. On contrary, all these choices seem not to be the most adequate to fit credibility criteria, as time to evaluate information resources, diversity of resources and adequacy between information resources and study topic are key elements.

These Portuguese results are a bit different from the Croatia [12] and Lithuania [13] results. In these countries, the most common practices are to develop an outline for how to proceed with the assignment, choose adequate search terms and develop an overall research plan.

Valued aspects regarding library and web resources were checked in Q8 and Q9. For the purpose of this section, the analysis will focus on options related to information evaluation, especially on criteria that can be considered related to credibility.

In Q8, nine options are related to criteria that helps to assess information credibility, namely: how current the Web site is, author's credentials (e.g. where he/she works); whether the website content acknowledges different viewpoints (i.e. not biased); whether the website gives credit for using someone else's ideas (e.g. footnotes, references); what the URL (i.e. Web site address) is and what it may mean; whether the website has links to other resources on the Web; whether the website has bibliography/reference list; if there are charts - whether vital information is added (i.e. not just attractive graphics); whether a librarian mentioned using the Web site and whether an instructor mentioned using the Web site.

The most important aspect students point out when considering library resources is that the instructor recommended them (94%). It is a quite interesting rank for this option because library resources were already evaluated by editor, publishers, librarians and others but students need a direct recommendation to use them. Possibly it is a question related to the "marketing" of library resources and not a perception about a problem related to the source evaluation. In Lithuania students also give the first place to the instructor's advice regarding library resources [13].

In second place, students value (92%) sources where the author gives credit for using someone else's ideas (e.g. footnotes, references), understanding that every work is based on previous ideas, from concrete people, that have to be recognized. This option can be related to the one asking whether the source has a bibliography/reference list (83%) and to the one that   contains acknowledgement of different viewpoints (i.e. not biased), which ranks 77%.

How current the source is ranks in third place (90%) and seems to be an important issue for students when they evaluate information to use in course-related assignments. On contrary, author's credentials are important only for 75% of the students, which means that one quarter did not care about the author's affiliation and his/her previous work. The same happens to the publisher of the source, which is important only for 56% of the students.

Information design and presentation is not enough for 79% of the students who believe that if there are charts they must contain vital information. Another interesting and preoccupying aspect is that librarians are the least important factor motivating students to use library resources, but it seems to be a tendency in other countries like Lithuania [13], Croatia [11] and the USA [10].

It is also interesting to compare the results regarding library resource evaluation and web content. On the web almost all the students (98 percent) report that they evaluate whether the Web site gives credit for using someone else's ideas. So it seems that they are aware of plagiarism on the Internet and that they use credibility criteria to avoid the use of this kind of resources. This idea is complemented by the fact that 92% value the Web site because it has links to other resources on the Web, 88% because the Web site content acknowledges different viewpoints and 81% because it has a bibliography or a reference list. Here the design and presentation are valuated as credibility criteria because 90% use design to evaluate the legitimacy of the site and 85% assess if the charts present vital information. The fact that the Web site is current is also of great importance because 96% use the option to assess web resources. A specificity of web, the URL, is used by 81% of the students to know the origin of the source and it ranked very close to the author's credential with 83%. For web resources the role of the instructor (88%) is not as important as for the library resources, but the fact that a librarian recommended the source is equally valuated by 52%.

Portuguese results are a bit different from Croatia because in Croatia students mostly value three top options: how current the Web site is, whether the Web site has links to other resources on the web and whether the Web site has bibliography/reference list [12].

5   Conclusions

These results from Portugal show an image of the information activities and preferences from a sample of LIS undergraduates, information professionals of the future and by now representatives of the Google generation. In fact, they exhibit information behaviour typical of their generation with direct implications on the approach to information credibility issues: great confidence in their abilities to deal with information, especially in Web environment. In a library context, they do not feel so comfortable. However, when presented with some difficulties, the most frequent option is to neither agree nor disagree, meaning they are not conscious of their skill limitations or that they do not want to formally express them. On the credibility assessment, students report evaluating important criteria to assess the information source, whether in a library context or in web environment. Further studies should confirm its real application. As information professionals of the future, they should have high competences related to all information literacy dimensions. LIS curriculum and teaching/learning practices should support and improve this.

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Content Analysis of the Croatian Tourism Library Websites in Relation to the Information Literacy

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Abstract. Information literacy is a precondition for users to independently access, understand and critically question the information in complex information environments. Since the process of learning is not limited to formal education, but is extended to a professional life and leisure time, this article aims to explore how tourism libraries in Croatia, with their contents offered online, respond not only to changes in information literacy of users, but also to changes of user education needs and changes in lifelong learning. Tourism has been selected as the area of research because of its great importance for the economy of Croatia. Tourism is an interdisciplinary phenomenon and its efficacy in the economic industry lies to a large degree on scientific research, which, itself, rests on the basis of high quality information. Libraries that organize and offer information and theoretical support emerge as indispensable infrastructures to scientists and researchers of tourism, students, and others who seek tourism information.

Keywords: information literacy, user education, tourism libraries websites, content analysis, Croatia.

1 Introduction

The impact of tourism on the worldwide economy can be proved by statistical data of total receipts from tourism, i.e., international tourism receipts recorded in 2012 a total of EURO 837 billion, while international tourist arrivals (overnight visitors) amounted to 1035 million [1].

Tourism is very important for the economy of Croatia as well. Croatia recorded in 2012 a total of EURO 6.8 billion, and the number of tourist arrivals amounted 62,743,000 [2], while the share of tourism in national GDP amounted to 15.4 per cent [3]. Tourism is a multidisciplinary phenomenon and encompasses a range of activities, services and industries that provide tourist experiences. Its success is largely the result of previous scientific research for which a basis of quality information is indispensable. In this sense, the libraries, organizing and offering information support, constitute a necessary infrastructure to scientists.

Considering how big a part tourism plays in the economy of Croatia and also the fact that its efficacy is in large part the result of previous scientific research, which demands high quality basis in information and theory, the subject of this paper is libraries of scientific institutions dealing with tourism in the Republic of Croatia.

Today, "in a digital world, information literacy requires users to have the skills to use information and communication technologies and their applications to access and create information. For example, the ability to navigate in cyberspace and negotiate hypertext multimedia documents requires both the technical skills to use the Internet as well as the literacy skills to interpret the information" [4]. Studies showed the connection between lack of information literacy and the difficulties in using websites [5-6]. Furthermore, one of the roles of library websites is to help users develop information literacy [7], which enables real and potential library users find the information they need. Therefore, the research questions of this paper are, have Croatian tourism library websites changed with time, and how have any changes affected the quality of the contents regarding a better context for information literacy. The goal is to determine the changes in Croatian tourism libraries' websites after a period of a decade.

1.1   The Relationship between Libraries and Tourism

Tourism as an interdisciplinary phenomenon is emerging at the intersection of needs, interests, wishes, possibilities and abilities of tourists to actualize their own experiences related to vacations away from their place of residence, but also for hosts to produce profit for themselves and for the local community using local resources to serve and accommodate the tourists. For this interaction even to occur, there is a need for harmonization of different political, financial, industrial, cultural, educational, traffic and all sorts of activities, both in the places tourists are coming from and the places tourists are going to, as well as all the places in between.

Considering the complexity of different interactions allowing the existence and development of different kinds of tourism, and observing the role of libraries in tourism, we start from the fact that general parameters in defining tourism include the tourist or a traveler, the travel, the destination out of the place of residence, satisfying physiological or spiritual needs or wishes, physical or psychological experience, the supply of goods and services, and spending of material and non-material goods and services [8-11] etc. The need for information or other content which is mediated by libraries is connected with most of these parameters.

D'Angelo [12] suggests that libraries are the basic institutions of democratic responsibility and are, as such, opposed to the capital market, which, unlike them, cannot secure access to information resources. As such, libraries are also a support for the information society. The main challenge to cultural policy of the digital age is securing the premise that information-communication technologies are being implemented in a such a way as to encourage and improve public education, creativity and intellectual freedoms.

There are several forms of involvement of libraries in tourism [13]:

Information role relates primarily to informational support for scientific research which is the foundation for further economic growth and the importance of tourism. However, the library can also meet the information needs of specific user groups, such as tourists.

Educational role is achieved by providing access to the stored knowledge to local customers as well as visitors and tourists. The fact is that the educational context today is present not only in formal educational systems, but extends to the area of

professional life and leisure time [14]. Therefore libraries participate in activities that promote the general and information literacy of local users and tourists.

The library's *cultural function* in tourism refers to the fact that the library is an area of intercultural interaction between visitors and locals. It testifies to the cultural heritage of their place, allowing access to works of art and promotes awareness of local cultural identity, and on the other hand, in the library, the local community meets the global cultural achievements.

The library can be a tourist attraction in several forms: the library as a historically valuable site (e.g., monastery library), and the library as a point of tourist routes (itineraries), such as memorial libraries. And the library building itself may appear as an attraction because of its architectural, monumental, artistic, historical or other characteristics. Also there are libraries that are attractive because of their recognized importance to the overall cultural, scientific and educational levels. The analysis in this paper is related to the first two functions of the library in tourism.

2   Literature Review

In this chapter the literature review regarding library website usage as well as literacy education will be considered.

2.1   Library Website Usage

The first analyses of websites of individual libraries dealt with their design [15-18], and some authors conclude that it is "the home page to become an important navigational tool for organizing information of each site." Content analysis has been implemented since the occurrence of the World Wide Web, so one of the first studies was conducted in 1996 by Clyde [19] on public and school libraries. This was followed by Burt [20] study in 1997 at public libraries, and King [21] 1998 analyzed the sites of ARL members. In 2004 Clyde [22] conducted repeated research on the same sample as in 1996, and compared the changes that occurred in that time span. That same year, Jurkowski [23] carried out research on school libraries' websites.

Some studies have dealt with the more specific segments of website content, such as Bao [24] which analyzes links to commercial databases, Kuchi [25] which deals with the mission of the library, then the analysis of virtual referral collections [26], and system management libraries [27].

In Croatia, Stojanovski and Pažur [28] conducted research on libraries' websites according to eight elements that would have to include: catalog, contact address, general information, business hours, lending opportunities, news, information on the responsibilities and date of last change.

Detlor and Lewis [29] highlight 26 elements that are essential for a library website: an online catalog, access to e-journals, a special place for digital sources, a separate list of e-journals and e-resources, a separate list of e-books, e-indices -articles, indices, available online teaching materials, teaching materials as part of the online catalog, web search engine on the home page of the search window on the home page, description of the home search, the possibility of a distributed search window to

search a network location, window to search the catalog, window to search digital sources, index, drop down menus, digital reference services, FAQ, online instruction, information services via e-mail, link to interlibrary loans, a request link for the materials from the catalog, contact information, the mission, about us / history.

In her doctoral dissertation, Stojanovski [30] developed a taxonomy of features. According to her, the content list of library websites can be classified in three peak categories: i) general information about the library, library management, administration and other information that are aimed at the library as an entity; ii) library collections in the context of different types of publications, media, format, context, carriers and product / publisher; iii) library services.

The author [31] of this study, in 2003, conducted a content analysis of the websites of academic libraries in the field of tourism based on 18 elements, and the results of the analysis is presented in the sequel. The data of this survey will be compared with data obtained in the study and will identify changes that occurred after a period of 11 years.

2.2   Literacy and Education

Until recently, the term literacy applied only to traditional reading and writing skills, i.e., thought to be the most necessary skills needed to be able to access information presented in printed form or via other analogue media [14]. Today, knowledge is stored in other media as well, so when we talk about literacy we must bear in mind different environments, as those that already exist, as well as those that are yet to be developed. Literacy can therefore be defined as a set of skills that must be available in order to reach information and thus survive in society [32]. The same author cites several types of literacy: digital, media, library, computer, and multimedia information. According to Drotner [33], information literacy is a necessary competency for the progress of society, and ALA [34] defined it as a set of skills that a person must have in order to recognize when information is needed, how to find it, evaluate and use it. To avoid misunderstandings, it should be noted that information literacy is different from computer literacy, which is the ability to use computers, as well as understanding the tools and the supporting technology infrastructure [35]. And UNESCO [36] as well warns against over-emphasizing the technological paradigm, and today we are aware of the fact that learning is actually explained by the constructivist paradigm. This means that learning does not only mean communicating information and knowledge to those who learn, but that it is an active process of constant expansion and reorganization of their own knowledge, or knowledge construction process. It involves the interaction of the individual with information sources for which he/she needs the skills of search and retrieval of information sources, their selection and analysis; thus he/she should therefore be information literate [14].

In addition to information literacy, many authors use the concepts of visual literacy, critical literacy and multimedia literacy. It should also be emphasized that there are differences between multimedia and media literacy. Multimedia literacy ranks in digital literacy [32], which is a generic term for a group of literacies such as

network, Internet and hyper-literacy. Media literacy aims to increase user knowledge of how the media works, how to organize it, create it, and how to create your own multimedia material. Since multimedia information is transmitted via computer, mastery of multimedia literacy requires basic computer literacy.

For users, it is essential to be information literate, so that they can independently and competently determine needs for information, finding information, evaluating information, analysis, and integration of information into existing knowledge. As this is an interactive process, in addition to information literacy of users, the literacy of the provider of information is also vital, in this case the library staff.

Specifically, since the educational context extending beyond the boundaries of institutions of formal education to professional life, leisure, and therefore to lifelong education, libraries play an important role as an information support for all forms of education. It is, therefore, the essential way to submit their content and services and provide access to information. The level of awareness will depend on this, as well as the need for user training, because Line [37] stated that "if only librarians would spend the time and effort to ensure that their libraries are more user friendly then they wouldn't have to spend so much time doing user education"..

3   Method

The paper presents an evaluation of the Croatian academic tourism library websites' content in 2003 and 2014. The obtained results will be compared to identify differences in terms of information literacy and user education that occurred after a period of 11 years. The method of longitudinal studies and methods of comparison were applied. Data were collected by desktop research, explanations and conclusions based on the results will be given by descriptive method.

The sample to be analyzed in this paper is substantially determined by belonging to academic institutions in the field of tourism (the universities, colleges and research institutes). The volume of the sample relates to libraries in Croatia, and the time the study determined were 2003 and 2014. The sample covers the following libraries:

Those that were analyzed in 2003 and 2014: Faculty of Economics, Zagreb, Faculty of economics, Split, Faculty of Economics and Tourism «Dr Mijo Mirković», Pula, Faculty of Hotel Management, Opatija, Economics and Business Economics, University of Dubrovnik, The Faculty of Philosophy, Zadar, Institute for Tourism, Zagreb, Institute of Agriculture and Tourism, Poreč, Polytechnic of Šibenik – Tourism management, Šibenik, VERN – Department of Tourism, Zagreb.

Those that are newly formed, and therefore analyzed only in 2014: Polytechnic of Međimurje in Čakovec, Private Business College in Višnjan, College for Management in Tourism and Informatics in Virovitica, Libertas Business School, University College of Sports Management ASPIRA - Tourist destination manager, Split, Karlovac University of Applied Sciences – Professional study of Hospitality.

4   Results

As website home pages have become an important navigational tool in the organization of information of each website [15], the paper's attention is focused primarily on the library websites' home pages.

After 11 years that have passed since the previous analysis, the sample is increased by 6 libraries, so that the current pattern has 16 libraries in contrast to the then observed 10. Therefore the analysis will be divided into three phases: a) comparing the results of the 10 libraries that were analyzed in 2003 with the analysis results of 2014 of these same libraries (Table 1), b) analysis of the six newly established libraries (Table 2) and c) at the end, comparing the results of the 2003 analysis and 2014 at the whole sample (Table 3).

a) *Comparative Analysis of Contents of the Libraries' Websites in 2003 and 2014.* Comparative analysis of the website content of 10 academic libraries in the field of tourism in 2003 and 2014 showed that for 13 criteria the percentage of representation has increased, the percentage of representation of two criteria dropped, and according to three of the criteria the representation percentage remained the same (Table 1).

Table 1. Comparative content analysis of 10 academic tourism libraries 2003: 2014

Contents	2003	%	2014	%	diff.%
own web site	7	70.00	8	80.00	+10.00
conspicuous library site	5	50.00	5	50.00	0.00
general information about library	7	70.00	8	80.00	+10.00
contact (e-mail)	7	70.00	8	80.00	+10.00
search of periodicals	4	40.00	7	70.00	+30.00
search of books	4	40.00	7	70.00	+30.00
list of periodicals	5	50.00	3	30.00	-20.00
list of books	2	20.00	2	20.00	0.00
other kinds of library collections	7	70.00	7	70.00	0.00
loan conditions	5	50.00	6	60.00	+10.00
FAQ	1	10.00	2	20.00	+10.00
links to other related libraries	4	40.00	7	70.00	+30.00
link to interesting institutions	6	60.00	2	20.00	-40.00
links to information sources	2	20.00	8	80.00	+60.00
education online	2	20.00	3	30.00	+10.00
some contents about tourism	0	0.00	1	10.00	+10.00
information about services	5	50.00	6	60.00	+10.00
other (useful links, statistics…)	4	40.00	6	60.00	+20.00

b) *The Website Content Analysis of Six Newly Established Academic Libraries.* The analysis among newly established academic libraries shows relatively low representation of criteria in these libraries. Six of the criteria (list of periodicals and books, loan terms, links to institutions, online education and other facilities or social networks) were not represented at all in libraries' websites. Seven of the criteria (link on the library home page, general information about the library, other library

materials, FAQ, information sources, online training and information services) are present in only one of the libraries' websites. Four of the criteria (contact, search journals and books, links to other libraries) are offered by two libraries, and three libraries have their own websites (Table 2).

Table 2. Content analysis of 6 newly established academic tourism libraries 2014

Contents	2014	%
own web site	3	50.00
conspicuous library site	1	16.67
general information about library	1	16.67
contact (e-mail)	2	33.33
search of periodicals	2	33.33
search of books	2	33.33
list of periodicals	0	0.00
list of books	0	0.00
other kinds of library collections	1	16.67
loan conditions	0	0.00
FAQ	1	16.67
links to other related libraries	2	33.33
link to interesting institutions	0	0.00
links to information sources	1	16.67
education online	1	16.67
some contents about tourism	0	0.00
information about services	1	16.67
other (useful links, statistics…)	0	0.00

c) *Longitudinal Website Content Analysis of Academic Tourism Libraries at the Whole Sample 2003 : 2014.* By comparing the whole sample in 2003 and 2014 (Table 3) it is clear that in 11 years the rate of participation has increased by seven of the criteria, namely with regard to the search of periodicals and books by 16.25%, FAQ by 8.75%, links to other libraries by 16.25%, as well as on the "some contents about tourism" criteria by 6.25%. In particular, we want to highlight the significant increase of libraries that offer search capabilities of information sources by 36.25%.

The remaining 11 of the criteria showed a lower rate of participation in the previous period (own website, conspicuous library site, general information about the library, contact, list of periodicals, list of books, other collections, loan conditions, links to institutions, information about services and other).

Eleven years ago, social networks had not yet been developed, so various other facilities were present in 40% of the library, and now the representation of this criterion is even less, i.e., it now generally refers to social networks that are represented in six libraries (37.50%).

The research results revealed that libraries with longer traditions have developed websites with more content offered and information retrieval capabilities that are more aligned with contemporary information needs and habits of users.

Table 3. Longitudinal content analysis of academic tourism libraries 2003 and 2014

Contents	2003 (10libr)	%	2014 (16libr)	%	diff.%
own web site	7	70.00	11	68.75	-1.25
conspicuous library site	5	50.00	6	37.50	-12.50
general information about library	7	70.00	9	56.25	-13.75
contact (e-mail)	7	70.00	10	62.50	-7.50
search of periodicals	4	40.00	9	56.25	+16.25
search of books	4	40.00	9	56.25	+16.25
list of periodicals	5	50.00	3	18.75	-31.25
list of books	2	20.00	2	12.50	-7.50
other kinds of library collections	7	70.00	7	43.75	-26.25
loan conditions	5	50.00	6	37.50	-12.50
FAQ	1	10.00	3	18.75	+8.75
links to other related libraries	4	40.00	9	56.25	+16.25
link to interesting institutions	6	60.00	2	12.50	-47.50
links to information sources	2	20.00	9	56.25	+36.25
education online	2	20.00	4	25.00	+5.00
some contents about tourism	0	0.00	1	6.25	+6.25
information about services	5	50.00	7	43.75	-6.25
other (useful links, statistics…)	4	40.00	6	37.50	-2.50

5   Conclusions

Research has shown that the libraries that existed prior to 2003 made progress in relation to 2014 regarding the substantiality of their websites. It is a significant fact, if we remember that today's academic library users are mainly scientists, researchers, professors and students, with a smaller share of other users who are looking for specific information. It is therefore users who are accustomed to the information environment, i.e., from the information point of view of relatively literate users.

Therefore, it is especially an pronounced positive shift regarding the search capabilities of periodicals and books, library interconnectedness and search capabilities of information sources. Also, it should be noted that 11 years ago social networks were not developed, so 40% of libraries offer some other facilities like various statistics and likewise. It should be noted that today, in the era of widespread social networks, 60% of the observed libraries offer the possibility of access through Facebook, and some of these through some other social networks (Twitter and Google+) as well. With this, libraries enable their users with interactive access to their online content, and we can conclude that better websites provide a better context for information literacy.

At this moment of the decade, the changes that occurred on the libraries' websites have led to an expansion of offered contents. However, despite these changes, there is room for improvement. Since the mission of the library, among other things, is encouraging information literacy and lifelong learning, in terms of users, it would be desirable that analyzed libraries achieve greater representation, at least those of the criteria which are now represented with 50% or less (link on the home page of

libraries' home institutions, list of journals and books, FAQ, links with relevant institutions and online education). More libraries should include educational online contents which would enable improvement of their users' information literacy and search skills. Also, given the relatively large group of users among students, it would be necessary, in as many cases as possible, to allow availability of libraries through social networks.

It was noted that libraries of newly established institutions are significantly behind in the representation of content they offer to their users than previously established libraries. The reasons for this can be varied (from being established relatively recently, and they have not "had time" to develop content, so that it was perhaps due to private institutions that have no interest in investing in something that will not make profit). Determining the reason for this is not the subject of this study, so it is left for future research. For now, it can be claimed that these libraries, with their relatively poorly developed contents on their websites, contributed most to the result of the comparison of total samples in 2003 and 2014, where on average there was a weaker representation of the contents on the websites of academic libraries in the field of tourism. If we look only at those libraries which are analyzed a decade ago, it is evident that they continue to develop their information offerings in accordance with the development of information literacy of the general population of users.

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Supporting Ethical, Independent Learning Behavior among University Students in the Arabian Gulf

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Abstract. Students in the Arabian Gulf region and the world over confront plagiarism temptations wittingly or unwittingly due to the multitude of free and easily available electronic sources of information. Rather than develop independent learning skills and academic integrity, students are often taken advantage of by essay mills that sell readymade essays. Instructors at times compound the problem by repeatedly recycling course assignments and tasks. Furthermore, there have been reports of the use of social networking sites for outsourcing and contract cheating in student assignments. This paper discusses how educators in an institution of higher learning in the UAE assist students to develop good academic skills. Data collection is with the use of an online survey questionnaire. Concurring with Wheeler and Anderson (2010) who call for appropriate and comprehensive institutional policies and guidelines for dealing with plagiarism, practical examples of the processes and procedures used at these institutions are provided.

Keywords: Academic integrity, independent learning skills, information literacy.

1 Introduction

In academia it is paramount that students, researchers and faculty practice ethical, independent learning behavior to provide reliable and trustworthy written assignments and research. Unfortunately with technology and the availability of information at one's fingertips through the Internet, the result is the inclination and tendency for some to assume a culture of academic dishonesty in institutions of higher learning all over the world [1-2]. Various reasons have been given to explain why students plagiarize and additional but different reasons have been given by students studying in environments where the medium of instruction is other than their mother tongue such as English as a Second Language (ESL) [3]. With a fast changing information environment, new ways of academic dishonesty have developed and faculty are debating on how to handle the cases.

The paper discusses faculty and librarians' perspectives on ethical behavior including academic integrity and how instances of plagiarism in the classrooms are handled. It is based on a pilot study, motivated by the need to establish the scope of the academic environment prevailing in the university, and procedures used to handle the cases. Educators and researchers believe that academic honesty is a culture that requires introduction, support, and reinforcement. Students have to be guided in order

for them to become academically literate and grow into active participants in the knowledge economy.

The population of the study includes faculty and librarians from a tertiary institution in the Middle East. Results of the study are presented and include actual voices of faculty and librarians.

1.1   Academically Ethical Behavior

When discussions concerning ethics in an academic environment arise, there is a tendency to point towards avoiding plagiarism. It in fact is broad and includes cheating, plagiarism, falsification or fabrication of data or information, copying without acknowledging, submitting outsourced assignments. Norvaiša [4, p. 127] points out that "in addition to plagiarism, fabrication and falsification there is a huge area of misconduct, which is sometimes referred to as questionable research practice…This practice includes improper authorship, dual submission, salami slicing, redundant publication, improper citation and many other related actions".

Then again, major challenges arise when members of faculty are not sure about academic integrity, citation and referencing conventions, and respect for intellectual property since that affects the way they guide students. The debate involves the entire academic community and not just students and their assignments, but extends to faculty productivity too.

1.2   Independent Learning

When academic honesty features in teaching and learning, the ideal that all educators strive to achieve is to have students with skills to learn independently without too much hand-holding. Meyer, Haywood, Sachdev and Faraday [5] define independent learning as autonomous learning, independent study, self-directed learning, student initiated learning, project orientation, discovery and inquiry, teaching for thinking, learning to learn, self-instruction and life-long learning. If any of these skills are adopted and used in an academically ethical manner, then the panacea that academic institutions strive for will have been attained. But then human nature has its shortcomings even in academic environments, hence the need for reinforcements.

Independent learning, when it is the target result of the efforts of an academic institution, includes an understanding of its key elements, clarity on the intended student benefits of it so that it is meaningful, a clear vision of what students need and how to apply the approach. Additionally, as with any approach that educators use, institutional support and promotion of it are contributory to its success. Librarians play a key role in assisting learners to become independent through Information Literacy (IL) instruction whereby learners are taught how to recognize an information need, identify information sources, access information, evaluate and use it ethically [6], while giving credit to original source.

2   Literature Review

Academic integrity covers several facets. Among them are the reality of an internet dominated world that brings habits that are not necessarily conducive to independent learning and objective thinking especially at the fingertips of the inexperienced. Khan and Balasubramanian [7] have discussed the topic of students e-cheating and using technology for doing so. That tendency is not limited to students, but a concern in the academic environment in general. Lancaster and Clarke [8] and Walker and Townley [9] bring in the phenomena of contract cheating whereby student plagiarism in an online world is prevalent. McCabe, Feghali, and Abdullah [2] studied a Lebanese context and examined academic dishonesty in the Middle East relating to individual and contextual factors with results that suggest cultural/ societal and individual characteristics as being relevant in the debate.

Sometimes there is a tendency for researchers to consider academic dishonesty as an unintended result of language challenges. The assumption is that this happens from the use of English language material only. However, the research of Menai [10] concerning the detection of plagiarism in Arabic documents suggests that there are other reasons that come into play in the academic and research environment. Wheeler and Anderson [11] whose UAE study about dealing with plagiarism in a complex information society suggests human values as significant in this topic too. A study conducted in the United Arab Emirates by AlMahri, AlShehhi, AlShehhi, AlBusaeed and AlBusaeed [12], who examined three institutions of higher learning in Abu Dhabi corroborate previously discussed studies explaining the reasons for students cheating and plagiarism. The reasons include: peer pressure, heavy workloads, lack of time, social pressure from friends and families to achieve higher grades. Faculty interviewed emphasized the need to achieve higher grades was a key reason for plagiarizing and cheating in addition to peer pressure, and the fact that when everyone is cheating it seems logical to join the band wagon.

Coren [13] and Nadelson [14] reported that a good number of faculty did not report suspected cases of plagiarism. Various reasons were given, including lack of sufficient evidence, shortage of time to follow through and also seeing incidents as trivial. Coren further added that the majority of faculty who did not report cheating incidences, did so to avoid emotional confrontation. AlMahri *et al.*'s [12] study added that as a result of contracts that are due for renewal, some members of faculty fear poor evaluation from students about their performance and therefore turn a blind eye on their plagiarism. Nadelson's [14] revealed that faculty in her study however preferred to guide their students on how to cite and reference appropriately as a means of preventing plagiarism, while others used informal counseling.

3   Research Design

The exploratory case study design was used in this instance. The rationale was to discover the extent to which academic integrity is a topical issue in an institution of higher education in the UAE, what is involved in enhancing the quality of academic products, including awareness and coping or remedial strategies. The intention is to

solve a practical concern within the UAE academic environment, as well as generate new knowledge and understanding of academic honesty processes in institutions of higher education. Researchers decided to conduct a pilot study first, and findings presented and discussed in this paper are from the pilot study. Data collection is with the use of a web-based survey questionnaire on the Select Survey platform and semi-structured interviews. Select Survey was used primarily because it is available to researchers at the authors' place of work and allowed data collection anonymously. The survey questionnaire is made up of a total of 27 items including closed and open-ended questions. Semi-structured interviews were conducted with a randomly selected faculty to allow for data triangulation. Both open ended questions and interviews helped in understanding the perceptions of faculty in their own words. Most of the websites of institutions of higher learning in the UAE have information about academic integrity and honor codes posted, but the question that this process helps unravel is the practical applications of the information available. Face to face interviews were conducted with six members of faculty in an agreeable quiet location in the library and were recorded with the participants permission allowing the researchers to capture the participants responses. The interviews lasted between 30 to 40 minutes. Participants were guaranteed privacy, promised confidentiality and anonymity, and that recordings will be destroyed at the end of the study.

The themes that are central to the study around which the questions were based are:

1. Faculty involvement with institutional academic integrity issues
2. Faculty perceptions of student involvement with academic integrity issues
3. Faculty management of academic integrity issues
4. Faculty opinions and suggestions

The population of the study was faculty and librarians from higher education institutions in UAE, the researchers then narrowed down to Abu Dhabi and picked one institution randomly as a case study in the hope of extending the study to other institutions in future. A total of 12 members of faculty participated in the study, with six responding to the survey and another six participating in interviews.

4   Limitations of the Study

The study was conducted with a small population in one institution as a pilot study, therefore results may not be generalized, but can act as a step to inform future research in the region.

5   Findings

Out of 12 survey participants, 6 responded in full. The other 6 opened the survey but did not participate. All survey respondents were teaching undergraduate courses in English, with all students whose mother language is Arabic. Their primary teaching responsibilities were distributed among four subject areas, viz: one each in science,

humanities, social science, and three were defined as "other". The primary sources from which faculty learned about academic integrity are one from the faculty orientation program, two from the faculty handbook, one from the Department chairperson, four from other faculty, and another four from the university catalog, one from the university website, three from faculty staff meetings, four from word of mouth, but one indicate that she/he did not know anything about academic integrity policies at the institution. All respondents were clear about the meaning of the academic integrity term.

While four of the respondents did not agree that the severity of penalties for academic dishonesty at this workplace encourage academic honesty, two of them were not sure. As far as faculty members typically understanding academic honesty policies is concerned, two gave an affirmative response, while one did not agree, and two were not sure. Individually, two members of faculty perceived themselves as understanding institutional academic honesty policies, and four indicating that they understand only some of them.

Concerning the question of academic honesty policies being supportive of faculty teaching efforts, two of the respondents gave affirmative answers, while three expressed that this happened sometimes, and one was sure that this never happened. When it comes to faculty suspecting that their students copied and pasted information, all six the respondents responded in the affirmative; and five confirmed incidents when they became aware that a student had requested someone else to write up their assignment; two were sure that there were instances of purchased assignments; while other two confirmed cases of fabricated results. Relating to faculty members being vigilant in discovering and reporting suspected cases of academic dishonesty, four were not sure if that is the case, while two disagreed that this ever happened. The open-ended questions provided insight into the recommendations from faculty members that are suitable in enhancing an enabling environment for academic integrity.

Interview participants taught students in levels starting with freshmen to those in majors. This expressed faculty members perceptions as informed by the habits they noticed in their student groups as far academic integrity issues are concerned. A concern that was unanimously expressed is the lack of skill transference from the academic integrity sessions that students are exposed to as they start their studies, and their habits as reflected in the assignments they submit in their majors.

Admittedly, discipline- specific requirements also come into play in the sense that, for example, the expectations of science assignments are not necessarily identical to those in other areas such as humanities, social sciences and general university programs. Because of that, the extent of the problem is variable. Findings from the interview corroborate faculty members reasons given for student dishonesty in the surveys indicating limited language skills, laziness and sheer ease of accessing information on the Internet. Faculty members also acknowledged the fact that the majority of students who plagiarize do not know other ways of representing the information as indicated below in the words of an interview participant:

" … Yeah the first instance that I dealt with, there was a project where a student needed to interview someone and then write about their experience and so they had to turn in that summary about that interview was like. So they turned in the interview to me. And the words used in the students summary sounded like it was from "About

us" section on a Website and just because of something along the lines of "…at this company we do…. And this is important to us at such and such a company…" so it was clear a cut and paste job … and … with the student I could see that this could be a regular habit, and I wanted to be able to stop her from repeating this behavior. I wanted to make it for her more of a teachable moment …and it wasn't about having to discipline… because I think it was really an innocent mistake. And she was just doing what she thought was right… So, my concern was not for her to be reprimanded. My concern for her was to be able to stop and give her an opportunity to change her behavior". Another faculty response to students copying in her class assignments was that "there will be a group of students who cut and paste because their English is not good enough... and they do not mean to be doing that but they do not know how else to get through that class..."

Faculty further indicated that they mostly handled plagiarism cases themselves and preferred to warn students and/or fail them in order to give them an opportunity to improve themselves rather than report or punish them as they believed that punitive measures do not have any benefits for the students or the institution. Two of the interviewed faculty ignored the instances when they did not have sufficient evidence. All interviewees acknowledge that managing academic integrity is a demanding task which needs commitment and tact when confronting suspect students as the repercussions may become ugly. One faculty reiterated that: in a strong Middle Eastern culture, saving face and shaming are important aspects to take into consideration when dealing with academic honesty. As expressed by one faculty interviewee: "I pursued it by asking [the student] to come to my office, because within this culture face saving and shaming are two things that you have to be aware of if you want to continue having a constructive relationship with a student. If you embarrass them, then they will shut down and the chances are you will never see them again; they will disappear..."

6   Interpretation of Results

The results of both the questionnaire and the interviews are indicative of an awareness of the existence of academic integrity policies at the university studied. While some members of faculty feel that they understand them, others are not so sure. This is reflected by the questionnaire respondents who were not unanimous in their awareness, as well as interviewees who admitted to selectively paying attention to university provisions. The reason for this phenomenon is that while for some the teaching of academic integrity is a requirement and is included in their syllabus, for others it is solely an expectation with no obvious repercussions for not adhering. This suggests a need for consistency, support, reinforcement and enhanced efforts at making sure that the entire university community is introduced to the policies, and that there is follow-through between levels of student groups.

The fact that faculty are using English to teach students who use ESL does not seem to matter so much as university support for their efforts at instilling the academic honesty culture in students. This is demonstrated by one respondent suggesting that academic honesty policies are not supportive of faculty teaching

efforts, while two put it at "sometimes", even if another two perceive that there is support. This lack of unanimity in responses may be because of the university's lack of support, but may very well be a result of faculty members themselves not realizing that the onus is on them too to study, discover and understand what policies are in existence, and how they benefit their teaching efforts. Interviewees, on the other hand, were unanimous in their expression of ESL as one of the challenges that students had, resulting in many instances of copying and pasting as well as outsourcing. In fact, all interviewees expressed that sometimes unrestrained motivation to get excellent grades may be a strong reason to cheat, overshadowing any considerations towards good academic behavior.

There is the feeling that academic honesty policies in this case are not effective as reflected by four participants sharing this opinion. However, given the lack of or inadequate understanding of academic honesty policies by four of them, the perception of the latter group concerning policies' effectiveness is questionable. Suggestions from survey and interview participants as expressed in response to the open-ended questions and interview sessions can be summarized as follows:

- Introduction of mandatory academic integrity quizzes to all students
- Introduction of regular academic integrity workshops or tutorials for various groups within the university community (for both faculty and students)
- Concerted effort to help students with note-taking and paraphrasing capabilities
- Consistent use of Safeassign or Turnitin
- Faculty reinforcement of good academic behavior, including alerting students to the repercussions of dishonest/ unacceptable academic behavior
- Institutional approach to dealing with academic integrity because faculty and students do not seem to have the same understanding of it
- Positive rather than punitive approach to educating everyone about academic integrity
- Consistency in the approach that the entire university uses to teach, remedy, and deal with academic integrity

7   Discussion

There have been debates relating to the likelihood of people from some cultures being more likely to plagiarize than others, but especially those who are non-native English speakers (NNES). While this may be discussible, Wheeler and Anderson [11, p. 171] point out that "plagiarism may indicate a deficit in appropriate skills and not intentional academic dishonesty". In interpreting faculty perceptions, they mention the use of ESL to be contributory to plagiarism. They see a need to give consistent guidance on what academic honesty means throughout university studies. They further suggested teaching students paraphrasing and citation skills to equip them with skills for avoiding plagiarism.

Wheeler and Anderson [11] have concluded from their study that in the UAE there is room for improvement in the schools so that the culture of academic integrity can be reinforced as students pursue further studies and enter university. Menzel [15]

believes in ethical behavior being learned behavior that can be re-learned and modified. In this instance, some of the interviewees highlighted the need for clarity among students about the difference between being helpful to friends/ colleagues, and enabling academically unacceptable habits (such as allowing a friend to copy in order to avoid seeing them go through the shame of failing, or making use of outsourcing businesses that write assignments). University strategies to enhance ethically correct behavior may not necessarily transform unethical individuals who are inherently dishonest, but they can facilitate decisions that reflect institutional values and purpose. This very discussion suggests institutions of higher learning putting as much academic integrity emphasis on student and academic groups in the UAE as anywhere else worldwide.

Ready and easy access to the internet is a major influence on the tendency to copy and paste, though not necessarily the most compelling reason for academic dishonesty. Some interview participants pointed out that from knowing the way that their students present and express themselves in written assignments that are original to them, it becomes easy to discover instances of copying and pasting because of the sudden digression in language use. However, once pointed out to them, the instances of repeat offenses become significantly reduced. Though internet connectivity in the UAE is high, Hensley [16, p. 23] actually points out that "cheating existed prior to the digital age and, further, not all students who could cheat choose to do so." In fact, it is useful and practical for academic institutions to review their academic integrity policies so that teaching practices and outcomes are tailored to suit specific environments, especially with the support of institutional leadership. Swan [17], for example, cites the provost of Zayed University as having "promised to tackle claims of plagiarism, lowering of standards and bullying made by disgruntled lecturers and students". A report by Swan wide   [18] about Abu Dhabi University on the other hand appeared in the *National* claiming that instances of plagiarism were reduced when an office of academic integrity was established and honor code promoted university.

While this questionnaire does not indicate a direct link between academic integrity and independent learning, interviewees expressed that designing learning that fosters academically honest practices has to be the core of the teaching approach at the point of student entry into higher education. This student initiation into the scholarly practices of the academic community is partially made possible through IL sessions provided by librarians. Towards this goal, IL is best if embedded in the curriculum so that every student is accorded an opportunity to also receive instruction on several occasions. With that background, matching the learning outcomes with independent learning for students is what teaching and learning focusses on. Faculty suggestions, in this survey, of giving mandatory academic integrity quizzes reflect a step in the right direction because they seem to be prepared to implement it. What this boils down to is the importance of a university policy that provides clear faculty and student responsibilities relating to this topic. Faculty have the added responsibility to mentor students with their academically honest practices as suggested by Gray and Jordan [19] who view professors as major players in shaping student ethical behavior. However, this responsibility extends to parents, administrators, advisors, librarians and everyone who touches or is involved in a students' life to instill academic integrity/ academic honesty behavior or culture.

The survey is expressive of the stance of faculty who see themselves as professionals available to give guidance to students. What is lacking is their own clear admission of the need to receive academic integrity training or workshops. What seems to readily come out is that academic dishonesty is a student weakness when in fact it includes the entire academic community – and even more so on faculty. In fact, it is furthermore necessary to make sure that academically honest/ dishonest habits are universally understood by both faculty and students in diverse social, educational, technological, linguistic, and cultural environments. This is brought forward by Thomas, Raynor and McKinnon [20] who, for example, point out that "it is important to appreciate the possibility that cheating will be defined differently within differing cultural contexts". With the ever-changing information access possibilities, it is hard to imagine any single individual mastering the way to navigate and maneuver without the support of other colleagues and many more opportunities for workshops and tutorials.

8   Conclusion and Recommendations

Academic integrity concerns have become more elaborate and require more educated approaches by both librarians and faculty. It is important to create an academic integrity awareness inventory to help in developing appropriate institution-wide policies and practices for proper and well informed good academic behavior, to prepare students for the business environment they join when they complete their studies.

The suggestions from interview and questionnaire participants provided a useful guide to what is needed, therefore can be functional in the case where an institution decides to investigate its academic environment status, enhancing the quality of graduating students, and hence its status.

Finally, findings of this pilot study indicate that there is a need to conduct an extended study with a large population to establish the state of academic integrity in institutions in the UAE. An in-depth study will be pursued and will include students to establish their views.

Researchers as librarians feel that as a part of an academic institution, the library should be championing and strengthening the academic integrity initiatives and guidance. Ripple effects include an enhanced quality of student projects, recognition for the university – highlighting its corporate image, and the likelihood of the university attracting high caliber faculty and researchers, and the plausibility of industry's willingness to partner – enhancing student chances of good careers. The efforts could very well be applicable to any university and any library in the world, suggesting the commonality of the concerns involved with academic institutions in the UAE and elsewhere. What varies is how different places cope with the academic integrity challenges.

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