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.

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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.

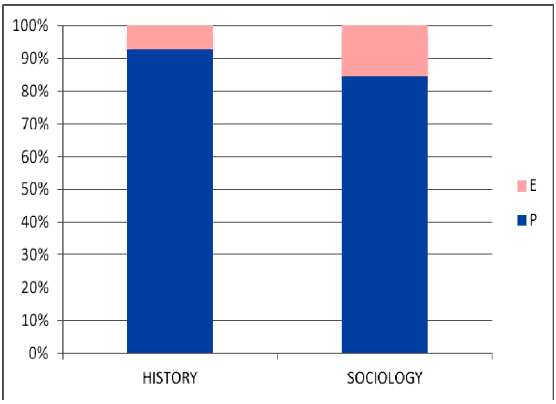

Fig. 1. Information resource format

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

	Information resource referred to students by faculty			**Information resource format preferred by faculty**			**Faculty's opinion regarding the students' preference of format**		
Faculty	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

	Information resource referred to students by faculty			**Information resource format preferred by faculty**			**Faculty's opinion regarding the students' preference of format**		
Faculty	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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