

# 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

ILSE \ ILAS	ILAS	A - finding tools	B- search strategies	C - evaluating and selecting sources	D – ethical practices
ILSE					
Basic ILSE	,279**	,244**	,098	,130*	,131*
Intermediate ILSE	,224**	,197**	,063	,103	,098
Advanced ILSE	,221**	,222**	,047	,114	,104
	,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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