

Predictors of lifelong learning: Information literacy and academic self-efficacy

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Abstract

The aim of this study is to determine whether the prospective teachers' information literacy levels and academic self-efficacy perceptions predict their lifelong learning tendencies. This research was conducted with 500 prospective teachers studying at Van Yuzuncu Yil University, Faculty of Education. In this study, 'Lifelong Learning Tendencies Scale' developed by Gur-Erdogan and Aarsal (2016), 'Information Literacy Scale' developed by Adiguzel (2011) and 'Academic Self-efficacy Scale' adapted into Turkish by Yilmaz, Gurcay and Ekici (2007) were used for data collection. The data were analysed with descriptive statistics (mean and standard deviation), Pearson Product Moments Correlation Coefficient and stepwise regression analysis. As a result, it was concluded that prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy were at a high level, and there is a moderate, positive and significant relationship between prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy. Furthermore, it was concluded that prospective teachers' information literacy and academic self-efficacy are significant predictors of their lifelong learning tendencies and they can explain 41% of the variance in lifelong learning tendencies.

Keywords: Lifelong learning, information literacy, academic self-efficacy, prospective teachers.

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1. Introduction

Information is vital for humanity. The source of science and technology that we benefit in every aspect of our life is knowledge. All kinds of products that meet human needs can be done thanks to the knowledge. In the recovery of human life, in the progress of medicine and science and in the efforts of mankind to understand the universe, the element in the basic focal point is again the knowledge. Thanks to the knowledge, mankind has been able to solve many unknowns in centuries. With the facilitation of access to the knowledge in the 21st century and the widespread use of internet technology, every individual has the opportunity to acquire and disseminate the knowledge. For this reason, today, which is called 'information age', it has become extremely important not only to reach the knowledge but also to inquire the source of the knowledge, to use and to develop it. It has become one of the goals of the educational systems to educate the individuals so that the flow of the knowledge can be traced and the information obtained is used correctly. In this respect, it is of utmost importance that the teachers who will lead the individuals are trained in accordance with the requirements of the information age. This kind of intensive production, dissemination and sharing of the knowledge has led to the transformation of effective teachers to the ones who can teach the students how to use and access to the knowledge rather than knowing and transferring the content of the lesson (Adıguzel, 2011).

One of the most important elements that knowledge contributes to human life is technology. The combination of individuals' innovation and change perceptions with the increase in knowledge has led to the development of technology unlimitedly in the last century. Eisenberg, Spitze and Lowe (1998) stated that being successful in all areas of life necessitates being a conscious information consumer (cited in Onal and Cetin, 2014). This conscious information consumption skill, which individuals have to gain from early ages, has been called 'information literacy' over time.

1.1. Information literacy

In today's differentiated society along with the rapid change in globalisation, information and technology, characteristics of the individuals have changed and the physical power has given place to have knowledge and skills in more than one field. In addition, nowadays, the concept of 'qualified person' has started to be defined as a person who can continuously update his/her knowledge and skills. Constantly updating knowledge and skills and following the flow of the information have enabled the concept of 'information literacy', which defines this ability, to be used frequently. Paul Zurkowski, president of the American Information Industry Association, is the first to use this concept. In a report published by Zurkowski in 1974, information literacy was defined as 'individuals who know how to use various sources of information in their work and who can benefit from more than one source to solve the problems they face are the ones with information literacy. These individuals are the ones who have resolved to use information tools effectively in various areas of their lives, especially in the work they do' (Badke, 2010).

The first detailed description of information literacy was included in a report written by the American Library Association Presidency Committee in 1989. In this report, it was stated that an individual or society must possess information literacy in order to be effective and successful in the information age. In order to gain information literacy, it was stated that one needs to be aware of the need for information and should access and use that information. In this report, the individuals who possess information literacy were described as 'the individuals who have learned to learn and are ready for lifelong learning as they know how the knowledge form, how to find and use their knowledge' (American Library Association, 1989). On the other hand, Gurbuzturk and Koc (2012) list the characteristics of the individuals who possess information literacy as being able to choose information, learn to learn, use computers and other technological facilities for information, and renew themselves in accordance with changing information flow. In this case, the characteristics of the individuals with information literacy can be listed as defining his/her information needs, knowing

the ways of reaching the knowledge, using the knowledge effectively, benefiting from the technological opportunities and having lifelong learning habits.

There are a number of factors that affect the level of information literacy among individuals. These factors are listed by Liao and Chang as the environment in which the individual lives, the possibilities of technological tools such as computers and access to the internet, the differences among the regions (education and material possibilities) and the educational background of the individual (cited in Onal and Cetin, 2014). Within these possibilities, the individuals living in the information society can follow the constantly changing information flow, and they can take part in a continuous learning process without being limited to the school and being influenced by factors such as age. Individuals and societies that have developed themselves in the field of information literacy can continue to learn and practice what they learn. This continuity also allows individuals to develop 'lifelong learning skills', one of the core objectives of education systems.

1.2. Lifelong learning

One of the most obvious elements shaping human life is undoubtedly *learning*. The concept of learning has to be in harmony with human development, renewal and changing living conditions. Today, learning has become more effective, and the need for individuals to follow increasing knowledge at a fast rate has necessitated the need for ongoing learning. Thus, the necessity of a non-age-related learning process that is not limited to the school is emphasised. This learning process is a learning understanding that spreads throughout human life and aims for the individual to continuously renew himself. This idea of continuous learning, called as 'lifelong learning', is defined by Uzunboylu and Hursen (2011) as 'the activities which enable the individuals to constantly improve themselves in the personalities, professions and socio-cultural life through a planned or unplanned training', is defined by Demirel (2012) as 'a lifelong process that ensures that everyone gets what they need with the time and opportunities they want', and is defined by Kozikoglu (2014) as 'processes and learning activities continuing throughout the lifetime that enable the individuals to acquire the knowledge, skills and competencies they need'.

The first important step in the concept of lifelong learning was taken at the UNESCO conference in 1970 by Paul Lengrand, with the study titled as 'Introduction to Lifelong Learning'. In this presentation, it was stated that lifelong learning is a process that enables the individuals to transfer experiences, insights and perspectives they have acquired throughout their lives to real life. In the report 'Today and Tomorrow of World Education' published in 1972, it was emphasised that more importance should be attached to lifelong learning in order to prepare the individuals for future societies. In this report, presented by the International Education Development Commission, various suggestions were made emphasizing that education on the implementation of lifelong learning is not only limited to a school system, it does not cover a certain age range, it does not only consist of education in the school but also all educational activities outside of the school, and all educational activities should be flexible. Following these reports, especially the European Union's taking the lifelong learning process seriously, has helped both the education itself and lifelong learning to come to the forefront. Later on, the studies on lifelong learning have continued and the year of 1996 was considered as 'lifelong learning year' in Europe. In 2000, at the Council of Europe meeting, one of the main issues was considered as lifelong learning in the 10-year plans signed by EU member state leaders (Polat & Odabas, 2008).

The concept of lifelong learning in Turkey started to come up in the 2000s. The Ministry of National Education has realised the importance of lifelong learning and has set up a unit called 'Lifelong Learning' within its scope and aimed to carry out the studies related to this topic from one hand (Gulec, Celik & Demirhan, 2012). 'The 8th Five Year Development Plan' prepared in this direction has been the most important work on lifelong learning. In the 'Lifelong Education and Non-Formal Specialization Commission Report' prepared in 2001, it was emphasised to increase educational opportunities and the expenditures for education by the government. In the '9th Development Plan' prepared for the years 2014–2018, strengthening the infrastructure of information and

communication technologies and equality of opportunity issues were emphasised and it was stated that lifelong learning activities would be improved (Mollaibrahimoglu, 2016).

In the literature, it is stated that individuals who are lifelong learners have various characteristics. It is seen that these characteristics are listed as adapting to changing living conditions and improving themselves continuously (Demiralay & Karadeniz, 2008), having self-regulation skills and accessing information from different sources of knowledge (Knapper & Cropley, 2000), taking responsibility for learning and possessing information literacy (Adams, 2007, Polat & Odabas, 2008). In this case, it can be said that lifelong learners have features such as planning, implementing and evaluating their own learning processes, knowing the ways of accessing information and constantly developing themselves. It is also seen that information literacy is associated with lifelong learning and it is a necessity for lifelong learning. As a matter of fact, Polat and Odabas (2008) define lifelong learning as a process that requires the use of active knowledge and is based on information literacy. Another important concept that may be related to individuals' information literacy levels and lifelong learning skills may be seen as 'academic self-efficacy'.

1.3. Academic self-efficacy

The concept of self-efficacy, defined for the first time by Albert Bandura (1977) as belief in an individual's ability to implement and achieve by listing what needs to be done in order to achieve success in a specific subject/field, emphasises the importance of individuals' confidence in various issues. In this respect, academic self-efficacy can be described as self-perception of the individual concerning his/her being successful academically. Individuals' academic self-efficacy beliefs play a crucial role in achieving academic success. The individual's belief in his talent and capacity affects the effort he can spend, the ideas he will produce and the skills he will have because the individuals' self-efficacy levels increase or decrease their motivation for doing a job. For this reason, individuals' academic self-efficacy perceptions are very important in terms of achieving efficiency in learning experiences and success in the academic field.

There are a number of factors that affect individuals' self-efficacy. These factors are listed as emotional process, cognitive process, motivation process and selection process. Emotional process refers to the attitudes and behaviours that individuals display in their experiences. Cognitive process refers to the individuals' perceptions of whether or not they will succeed in their endeavours. This process is closely related to the results of an individual's previous efforts and achievements. The motivation process explains the effort and the degree of willingness that the individuals will spend to achieve their goals. The election process is the situation of individuals' acceptance or rejection of what they have to do by recognizing his/her talents, tendencies and capacities (Aydinler, 2011).

Bandura (1977) stated that self-efficacy consists of four basic elements interacting with each other. These elements are mastery experiences, vicarious experiences, verbal persuasion and emotional states. *Mastery experiences* emphasise that achievements of the individual in the areas he endeavours positively affect his subsequent efforts. The reason for this is the reward effect created by a sense of success. The accomplishments achieved motivate the individual to strive in a similar way in the future. *Vicarious experiences* indicate that individuals are not only inspired by their own success, but also by the achievements of others. Vicarious experiences are the factors that allow the individual to focus on success by being influenced by the success he or she does not experience but observes from the others. According to the *verbal persuasion*, encouraging conversation of the people around the individual, especially during childhood, affects the success of the individual. Because, thanks to this support, the individual has positive thoughts about himself and his belief in his achievement. According to the *emotional states*, while concentrating on a target, the mood of the individual directly affects the motivation of the individual and the effort to be spent. The emotional well-being of the individual will lead to positive thinking and greater self-confidence (Bandura, 1977). It can be said that the experiences of the individuals in the past, the achievements they have gained, the observations they have experienced from their surroundings and the support they have received affect their

self-efficacy perceptions. It is also believed that the students' academic self-efficacy perceptions affect lifelong learning tendencies.

As noted earlier, the relationship among information literacy, academic self-efficacy and lifelong learning concepts is based on the ability of the individuals to make personal development and achievement through these three elements. The concept of information literacy expresses the individual's ability to access and use the knowledge, the concept of lifelong learning expresses the individual's learning to learn and spreading it to all life, and the concept of academic self-efficacy expresses the individual's belief in his/her academic achievement. Moving from the literature, it is thought that these concepts are related to each other and the information literacy and academic self-efficacy perceptions affect the individual's lifelong learning tendencies.

1.4. The aim and importance of the study

The aim of this study is to determine whether prospective teachers' information literacy levels and academic self-efficacy perceptions predict their lifelong learning tendencies. In response to this general objective, the following questions are sought in this research:

1. At what level are the prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy?
2. Is there a significant difference in prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy according to gender and the desire for postgraduate education?
3. Is there a significant relationship between prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy?
4. Do prospective teachers' information literacy and academic self-efficacy predict their lifelong learning tendencies significantly?

Lifelong learning tendencies, information literacy and academic self-efficacy of the individuals which have an important place in contemporary educational understanding have been analysed in numerous researches (Alemdag, Oncu and Yilmaz, 2014; Ayra & Kosterelioglu, 2015; Basaran, 2005; Demirel, 2012; Dombayci & Ercan, 2017; Iscan, Sevim & Varisoglu, 2012; Konokman and Yelken, 2014; Korkut & Akkoyunlu, 2008; Korucu and Cinar, 2017; Ozciftci & Cakir, 2015; Ozgur, 2016; Palavan and Acar, 2016; Seker, 2017; Unsal, 2015). When these researches are examined, it is found that there are a number of studies on these three variables, but no research has been conducted to examine their relations with each other. Only two of the studies have examined the relationship between lifelong learning and information literacy (Demiralay & Karadeniz, 2008; Ozgur, 2016).

As mentioned earlier, it is a necessity for individuals to possess information literacy for being lifelong learners. The relationship between the concepts of information literacy and lifelong learning is basically based on this need. Because continuous learning and self-renewal, which are necessary for lifelong learning, make the individuals possess information literacy in an age in which information flow is provided by technology. The limited number of studies on this current issue has led to the need for further researches on the subject. In this respect, it is considered important to examine the relationship between these two elements. Academic self-efficacy, another factor that is thought to influence the lifelong learning tendencies of individuals, is considered to be effective to be included in this research, because it is an element that influences all learning and achievement in the individual's life. Therefore, it is thought that this research will contribute to the literature in determining predictive levels of information literacy and academic self-efficacy as variables thought to be influential on the lifelong learning tendencies of university students.

2. Method

2.1. Research model

In this study, correlational survey model was used as one of the survey methods. In correlational survey model, the relationships and links between situations or events are examined (Serin & Buluc, 2014). As the relationship between the lifelong learning tendencies, information literacy and academic self-efficacy of prospective teachers are examined in this study; it is thought that correlational survey model will be suitable for the purpose of this study.

2.2. Population and sample

The population of the research constitutes a total of 2,920 prospective teachers who are studying at the Faculty of Education, Yüzüncü Yıl University, in the academic year of 2016–2017. Stratified sampling method was used in determining the sample. In the stratified sample method, the population is divided into subgroups and random samples are taken from certain groups (Padem, Goksu & Konakli, 2012). In this study, the strata were determined according to the departments and grade level of the students, and the number of students was determined to take into consideration the ratio in each department and grade level. A total of 500 prospective teachers constitute a sample of the study. Demographic characteristics of the prospective teachers in the sample are presented in Table 1.

Table 1. Demographic characteristics of the prospective teachers

Demographic characteristics	Category	Number (N)	Percentage (%)
Gender	Female	299	59.8
	Male	201	40.2
Grade level	1. grade	90	18.0
	2. grade	162	32.4
	3. grade	215	43.0
	4. grade	33	6.6
Department	Basic Education	188	37.6
	Turkish and Social Sciences	119	23.8
	Foreign Languages	32	6.4
	Computer Sciences	32	6.4
	Mathematics and Science	82	16.4
	Fine Arts	47	9.4
The desire for postgraduate education	Yes	301	60.2
	No	199	39.8

As shown in Table 1, 299 participants (59.8%) are female and 201 (40.2%) are male. 90 (18%) of the participants are first-grade, 162 (32.4%) are second-grade, 215 (43%) are third-grade and 33 (6.6%) are fourth-grade level students. And 18% (37.6%) of the participants are from the Basic Education Department, 119 (23.8%) from Turkish and Social Sciences Department, 32 (6.4%) from Foreign Languages Department, 32 (6.4%) from the Computer Sciences Department, 82 (16.4%) from Mathematics and Science Department, and 47 (9.4%) from Fine Arts Department. In addition, while most of the participants (60.2%) want to do postgraduate education, 199 (39.8%) of them do not want.

2.3. Data collection tools

In this study, ‘Lifelong Learning Tendencies Scale’ was used to determine lifelong learning tendencies of prospective teachers, ‘Information Literacy Scale’ was used to determine information

literacy levels and 'Academic Self-efficacy Scale' was used to determine academic self-efficacy levels. Information about data collection tools is given below:

Lifelong learning tendencies scale: A five-point Likert-type scale developed by Gur-Erdogan and Arsal (2016) consists of 17 items and two sub-dimensions that are 'willingness to learn' and 'openness to development'. The Cronbach's alpha internal consistency coefficient of the scale was 0.86, which was found to be 0.85 in this study. These values indicate that the scale is a reliable measurement tool.

Information literacy scale: A five-point Likert-type scale developed by Adiguzel (2011) consists of 29 items and four sub-dimensions, namely, 'defining information need', 'accessing information', 'using knowledge' and 'ethical and legal regulations in using knowledge'. The Cronbach Alpha internal consistency coefficient of the scale was 0.93, which was found to be 0.92 in this study. These values indicate that the scale is a reliable measurement tool.

Academic self-efficacy scale: A five-point Likert-type scale developed by Jerusalem and Schwarzer (1981) and adapted into Turkish by Yilmaz et al. (2007) consists of seven items and one dimension. The Cronbach Alpha internal consistency coefficient of the scale was 0.79, which was found to be 0.71 in this study. These values indicate that the scale is a reliable measurement tool.

2.4. Data analysis

In this study, mean and standard deviation values of the scale scores were examined in order to determine the lifelong learning tendencies, information literacy and academic self-efficacy of the prospective teachers. These values are interpreted as 'very low level' between '1–1.79', 'low level' between '1.80–2.59', 'moderate level' between '2.60–3.39', 'high level' between '3.40–4.19' and 'very high level' between '4.20–5.00'. In order to determine whether the means obtained from the scale scores differ according to gender and desire for postgraduate education, *t*-test was used because the data showed normal distribution. The Pearson Product Moments Correlation Coefficients were examined to determine the relationship between the scales' scores of the prospective teachers. In addition, stepwise regression analysis was used to determine the extent to which prospective teachers' information literacy levels and academic self-efficacy perceptions predicted lifelong learning tendencies. Before the analysis, the basic assumptions of the stepwise regression analysis were examined and it was found that there were a multivariate normality and linearity and no multicollinearity problem. In stepwise regression analysis, independent variables that do not significantly predict dependent variables are excluded from the regression model and independent variables that significantly predict dependent variables are modelled in the order of significance (Buyukozturk, 2012; Cohen, Cohen, West & Aiken, 2003). In this study, by using stepwise regression analysis, significant variables that predict the lifelong learning tendencies of prospective teachers are expected to be determined according to the significance level.

3. Results

3.1. Results concerning the first sub-problem

The mean and standard deviation values calculated based on prospective teachers' answers to the scales concerning first sub-problem of the research, 'At what level are the prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy?' is shown in Table 2:

Table 2. The mean and standard deviation values calculated based on prospective teachers' answers to the scales

Scales	\bar{X}	S
Lifelong learning tendencies	4.12	0.50
Information literacy	3.71	0.54
Academic self-efficacy	3.65	0.63

When Table 2 is examined, it is seen that prospective teachers' lifelong learning tendencies ($\bar{X} = 4.12$), information literacy ($\bar{X} = 3.70$) and academic self-efficacy ($\bar{X} = 3.65$) are at a high level.

3.2. Results concerning the second sub-problem

The second sub-problem of the study is determined as 'Is there a significant difference in prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy according to gender and the desire for postgraduate education?'. Table 3 shows the *t*-test results on whether prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy differ significantly according to gender.

Table 3. T-test results concerning prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy according to gender

Scales	Gender	N	\bar{X}	s	sd	t	p
Lifelong learning tendencies	Female	299	4.17	0.45	498	2.996	0.003
	Male	201	4.03	0.56			
Information literacy	Female	299	3.70	0.52	498	-0.470	0.638
	Male	201	3.72	0.57			
Academic self-efficacy	Female	299	3.65	0.64	498	0.043	0.965
	Male	201	3.65	0.61			

As seen in Table 3, the lifelong learning tendencies of prospective teachers show a significant difference in favour of female prospective teachers ($t_{(498)} = 2.996, p < 0.05$). It was found that the information literacy levels ($t_{(498)} = -0.470, p > 0.05$) and academic self-efficacy perceptions ($t_{(500)} = 0.043, p > 0.05$) of prospective teachers do not show any significant difference according to gender.

The *t*-test results on whether prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy differ significantly according to the desire for postgraduate education is shown in Table 4.

Table 4. T-test results concerning prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy according to the desire for postgraduate education

Scales	Desire for postgraduate education	N	\bar{X}	s	sd	t	p
Lifelong Learning Tendencies	Yes	301	4.18	0.50	498	3.273	.001
	No	199	4.03	0.50			
Information Literacy	Yes	301	3.78	0.53	498	3.554	.000
	No	199	3.60	0.52			
Academic Self-efficacy	Yes	301	3.69	0.63	498	1.805	0.072
	No	199	3.59	0.61			

As seen in Table 4, prospective teachers' lifelong learning tendencies ($t_{(498)} = 3.273, p < 0.05$) and information literacy levels ($t_{(498)} = 3.554, p < 0.05$) show a significant difference in favour of prospective teachers who want to do postgraduate education. It was found that prospective teachers' academic self-efficacy ($t_{(498)} = 1.805, p > 0.05$) do not show any significant difference according to the desire for postgraduate education.

3.3. Results concerning the third sub-problem

The third sub-problem of the study is determined as 'Is there a significant relationship between prospective teachers' lifelong learning tendencies, information literacy and academic self-efficacy?'. The Pearson Product Moment Correlation Coefficients calculated for examining the relationship

between prospective teachers' scores on the 'Lifelong Learning Tendencies', 'Information Literacy' and 'Academic Self-efficacy' scales are presented in Table 5:

Table 5. Pearson's product moment correlation coefficients related to the variables included in the study

Variables	(1)	(2)	(3)
1. Lifelong Learning Tendencies	1.00		
2. Information Literacy	0.572**	1.00	
3. Academic Self-efficacy	0.476**	0.360**	0.1.00

$p < 0.05$ *, $p < 0.01$ **

According to the data in Table 5, there is a moderate, positive and significant relationship between prospective teachers' lifelong learning tendencies and information literacy ($r = 0.572$; $p < 0.01$) and academic self-efficacy ($r = 0.476$; $p < 0.01$). Similarly, there is a moderate, positive and significant relationship between prospective teachers' information literacy and academic self-efficacy ($r = 0.360$; $p < 0.01$).

3.4. Results concerning the fourth sub-problem

The fourth sub-problem of the study is determined as 'Do prospective teachers' information literacy and academic self-efficacy predict their lifelong learning tendencies significantly?'. Regression analysis results for the lifelong learning tendencies of the prospective teachers are presented in Table 6:

Table 6. Regression analysis results for the lifelong learning tendencies of the prospective teachers

Steps	Predictive variables	β	Predictive power (R)	Variance explained (R ²)
1	Information literacy	0.572	0.572	0.327
2	Academic self-efficacy	0.310	0.641	0.411

As seen in Table 6, prospective teachers' information literacy levels predict 32.7% of lifelong learning tendencies and academic self-efficacy predicts 8.4% of lifelong learning tendencies. The variance analysis results on the predictions of prospective teachers' lifelong learning tendencies are presented in Table 7:

Table 7. The variance analysis results on the predictions of prospective teachers' lifelong learning tendencies

Model	Sum of squares	sd	Mean square	F	p
Regression	52.217	2	26.109	173.208	0.000
Residual	74.915	497	0.151		

When Table 7 is examined, it is seen that the predictive power obtained in the stepwise regression analysis presented in Table 6 is significant ($F_{(2,497)} = 173.208$, $p < 0.000$). The regression analysis of the predictions of prospective teachers' lifelong learning tendencies was carried out in two steps and two variables were found to be significant predictors. The results of the analysis showed that information literacy and academic self-efficacy, which are important predictors of regression equality, can explain 41% of the variance in prospective teachers' lifelong learning tendencies.

4. Discussion, conclusion and suggestions

In this study examining the extent to which prospective teachers' information literacy and academic self-efficacy predict lifelong learning tendencies, it was concluded that prospective teachers' information literacy, academic self-efficacy and lifelong learning tendencies are at a high level. These results support similar research results. In many studies in the literature, it has been determined that the lifelong learning tendencies (Ayra & Kosterelioglu, 2015; Evin-Gencil, 2013; Karakus, 2013; Kirby, Knapper, Lamon & Egnatoff, 2010; Konokman and Yelken, 2014; Kozikoglu, 2014; Ozciftci & Cakir,

2015; Ozgur, 2016; Sahin, Akbasli & Yanpar-Yelken, 2010), information literacy (Basaran, 2005; Dombayci & Ercan, 2017; Dunn, 2002; Iscan, Sevim & Varisoglu, 2012; Korkut & Akkoyunlu, 2008; Maughan, 2001; Ozgur, 2016; Singh, 2005; Unsal, 2015) and academic self-efficacy perceptions (Alemdag et al., 2014; De Fatima Goulao, 2014; Gurbuzoglu-Yalmanci & Aydin, 2014; Jackson, 2012; Oguz, 2012; Tabancali & Celik, 2013) of teachers or students are at moderate or high level. Based on these results, it can be said that prospective teachers' information literacy, academic self-efficacy and lifelong learning tendencies are at a sufficient level to carry out the requirements of the millennium age. Considering the importance of producing, using and sharing information nowadays, it is understood how important it is for the individuals to have these competencies (Gomleksiz, Kan & Bozpolat, 2012). Therefore, the development of individuals who know the ways of accessing knowledge, who can effectively use the knowledge they receive, who have a high level of belief that they can succeed, and who have lifelong learning habits are promising in terms of 21st century understanding of education and society.

In this study, it was concluded that female teachers' lifelong tendencies are higher than that of males. Similarly, Kazu and Erten (2016) have found that female teachers are more likely to be able to use the information and digital resources in their research in which they investigate lifelong learning competencies according to various sub-dimensions. However, in many studies, lifelong learning competencies of the students did not show any significant difference according to gender (Evin-Gencel, 2013; Kirby et al., 2010; Kozikoglu, 2014; Sahin et al., 2010). In this case, along with the different research results in the literature, it can be said that female prospective teachers are more open and willing to learn, and they feel more responsibility for self-regulation and self-development. In addition, it was determined that female and male prospective teachers had similar levels of information literacy and academic self-efficacy perceptions. Similarly, in the study conducted by Onal and Cetin (2014), it was concluded that there is no significant difference between the information literacy levels of male and female prospective teachers. Unlike this research, Dombayci and Ercan (2017) found that female teachers' information literacy levels are higher. In some studies (Durdukoca, 2010; Ergur, 2016), male students/teachers were found to have higher academic self-efficacy levels than female ones. In this case, it can be said that there are different research results concerning individuals' information literacy and academic self-efficacy perceptions according to gender. Based on the results of this research, it can be said that gender has no significant effect on individuals' information literacy and academic self-efficacy perceptions. Individuals' information literacy and academic self-efficacy are thought to be influenced by factors such as life experiences, living environment, education life, personal tendencies, family and teacher behaviours, and technological opportunities rather than the gender (Demirel, 2012; Senemoglu, 2015; Yildiz, 2016).

As a result of the research, it was determined that information literacy and lifelong learning tendencies of prospective teachers who want to do postgraduate education are higher than the ones who do not want. Similarly, in the studies conducted by Diker-Coskun (2009) and Kozikoglu (2014), it was found out that the students who want to do postgraduate education have a higher level of lifelong learning tendencies. When considering that postgraduate education is the preferences of the individuals with their own wishes, it would not be wrong to say that they are more prone to information, learning, and thus lifelong learning and information literacy as a necessity for lifelong learning. In addition, as postgraduate education requires access to information from different sources, structuring knowledge and a continuous learning effort, prospective teachers, who want to do postgraduate education, having a higher level of lifelong learning tendencies and information literacy can be evaluated as an expected outcome. On the other hand, it was determined that prospective teachers' academic self-efficacy perceptions do not differ according to the desire for postgraduate education. Therefore, it can be said that prospective teachers who want to and do not want to do postgraduate education have similar perceptions about their academic success.

In this research, it was concluded that there is a moderate, positive and significant relationship between prospective teachers' lifelong learning tendencies and information literacy, academic self-efficacy. In addition, the results of this study showed that prospective teachers' information literacy

levels predict 32.7% of lifelong learning tendencies and academic self-efficacy predicts 8.4% of lifelong learning tendencies, thus prospective teachers' information literacy and academic self-efficacy can explain 41% of the variance in lifelong learning tendencies. Similarly, in Ozgur's (2016) study, it was determined that there is a moderate and positive relationship between prospective teachers' lifelong learning tendencies and information literacy levels. In the study conducted by Guzel (2017), it was concluded that there is a high level, positive and significant relationship between academic self-efficacy and lifelong learning tendencies. In this case, it can be said that lifelong learning tendencies, information literacy and academic self-efficacy are related to each other; academic self-efficacy and especially information literacy have a significant influence on lifelong learning tendencies. As a matter of fact, it is stated in the literature that information literacy is related to lifelong learning and it is a necessity for lifelong learning. Polat and Odabas (2008) describe lifelong learning as a process that requires active information use and it is based on information literacy. Kurbanoglu (2010) states that information literacy is the key element for participating in an information society and the most important element of lifelong learning. The need to know how to make use of the Internet and computer technologies in today's conditions in order to enable individuals to learn lifelong explains the level of the relationship between these two elements. The ability of the individual to follow the flow of information, to constantly renew his/her knowledge and thus his/her personal development is directly related to possessing information literacy. The fact that information is not the same for a long time, new information is constantly produced, and that information flow can be traced by means of information technologies rather than books suggests that information literacy is necessary for an individual who wants to have lifelong learning skills. In this case, it can be said that information literacy is an important and necessary skill in acquiring lifelong learning habits and in developing lifelong learning tendencies. Academic self-efficacy, as another important predictor of lifelong learning tendencies, can be said to be an effective element in individuals' lifelong learning efforts and in every field that learning takes place, since it represents the individual's belief in being academically successful. As a matter of fact, it is stated that it is necessary for the individual in the lifelong learning process to have confidence in himself/herself to be able to solve any problems they encounter (Guzel, 2017). Therefore, it is possible to say that academic self-efficacy is mainly related to all learning activities and influences individuals' lifelong learning tendencies.

Colakoglu (2002) emphasises that learning should now be considered independent of time and space, highlighting the necessity of educating individuals with lifelong learning that we need in the information society. In this respect, it is thought that in our country, lifelong learning activities, which are generally perceived as 'public education courses attended by individuals without school experience', should be diversified in such a way as to encompass all the people in the society and to attract them.

As a result, it is concluded in this study that how important information literacy skills are for lifelong learners. The reason for the fact that information literacy has become so important is that today's ability to find and use information means the ability to know and use technology at the same time. Nowadays in which written sources leave their places on internet pages, individuals' constantly improving themselves and being innovators, in other words, being lifelong learners have become directly related to their level of information literacy. Therefore, it would not be wrong to say that an individual will have lifelong learning competencies at the level of his/her information literacy. In this context, it is thought that providing equality of opportunities in terms of technological facilities and access to the internet can be a solution for the high level of information literacy of the individuals. Within the scope of Fatih Project implemented in Turkey recent years, a significant improvement was achieved for individuals' recognition of technological possibilities at an early age and learning to use to obtain information by means of providing the students tablet computers and dissemination of interactive whiteboard use in class (Kurt, Kuzu, Dursun, Gullupinar & Gultekin, 2013). Yet, the fact that all educational institutions, especially the schools in the villages, cannot benefit from these opportunities constitutes an obstacle for the education of all individuals in the society. The provision of equal opportunity in all parts of the society to achieve technological opportunities will contribute to

the solution of this problem. It is of utmost importance that teachers who will guide individuals in the recognition and use of technology have sufficient information literacy. For this reason, it is thought that it would be beneficial for prospective teachers to go through a learning process that will improve their information literacy. Therefore, it is thought that the addition of courses to pre-service teacher education programs that will improve students' information literacy skills and these courses' inclusion of practice besides theoretical knowledge will enable the teachers to better guide the students in terms of information literacy in their professional lives.

In this research, another significant predictor of lifelong learning was identified as academic self-efficacy. Just as individuals are influenced by their own experiences in the development of academic self-efficacy perceptions, the support they receive from the environment is of utmost importance. Interpretations of teachers and family members, especially for children in the age of childhood, may cause the individual's academic self-efficacy to increase or decrease. For this reason, it is thought that encouraging comments about the individual's works at home and in the school will make a serious contribution to the development of self-efficacy positively. In addition, directing the individuals to work in line with their individual talents and tendencies will contribute positively to self-efficacy as it increases the likelihood of individual success.

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