

The Relationship Between Prospective Teachers' Digital Literacy Skills, Attitude Towards the Teaching Profession and Academic Motivations

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Abstract

Within a process, which is intricate and multifaceted, such as teacher training it is crucial that pre-service teachers are well informed and have high academic motivations as well as cultivating positive attitudes towards their profession. The purpose of this study is to determine the relationship among undergraduate students' academic motivations, their attitudes toward the teaching profession, and their digital literacy abilities. A quantitative correlational research design was employed. 493 teacher candidates participated in the study. Convenient sampling approach, one of the non-random sampling techniques, was utilized while choosing the sample group. The results of the data analysis revealed a favorable correlation among teacher candidates' attitudes toward the teaching profession, their academic motivation, and their levels of digital literacy. Taking precautions to assist teacher candidates' academic motivation, their levels of digital literacy, and their attitudes toward teaching is advised.

Keywords: Academic motivation, attitudes, teaching profession, digital literacy.

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Introduction

It is important that teachers, who are one of the important elements of the education system, are high quality, have improved morale and motivation, and keep themselves up to date. In other words, special attention should be paid to teachers, who are the most valuable parts of the system, and their attitudes and behaviors should be taken into account. Because these attitudes and behaviors affect students' participation and learning (Akkuş, Akkaş, & Yıldırım, 2018; Blazar & Kraft, 2017). Attitude is defined as an individual's reaction predisposition towards situations, events or things (Temizkan, 2008).

Attitude Towards The Teaching Profession

It is stated that some of the problems that teachers experience in teaching are related to enjoying teaching, respecting and internalizing their professions (Pehlivan, 2008; Tschannen-Moran, 2009). In other words, attitudes towards the teaching profession are among the factors that directly affect student achievement (Caprara, Barbaranelli, Steca, & Malone, 2006; Senel, Demir, Sertelin, Kilicaslan, & Koksall, 2004). When teachers' attitudes towards the profession are not positive, the learning climate will also be negatively affected (Küçük Kiliç, 2014; Malm, 2020). For this reason, in a complex and multifaceted process such as teacher training, it is important that teacher candidates develop positive attitudes towards their profession as well as being well-trained in field knowledge and professional knowledge (Chakraborty & Mondal, 2014; Temizkan, 2008). In the literature, it is stated that teacher candidates' attitudes towards the profession are high (Alkhateeb, 2013; Aydemir, 2021; Dağ, 2022; Güdek, 2007; Horvath, Goodell, & Kosteas, 2018; İlder, 2009; Kumar, 2016; Musa & Bichi, 2015; Özder, Konedralı, & Zeki, 2010) and low (Hussain, Ali, Khan, Ramzan, & Qadeer, 2011; Kahyaoğlu, Tan, & Kaya, 2013; Osunde & Izevbogie, 2006). It will be beneficial to continuously determine the attitudes towards the teaching profession, which can predict the in-service professional performance of teacher candidates.

Academic Motivation

Academic motivation is also an important variable within the scope of 21st century learner skills learning and innovation skills. Academic motivation is the energy required for academic work (Karataş & Erden, 2012). It can be said that this motivation affects the classroom behaviors and attitudes of learners at all levels of education (Gömleksiz & Serhatlıoğlu, 2014; Jiang, Rosenzweig, & Gaspard, 2018). Because there are many studies showing that high academic motivation positively affects course success (Çevik & Bakioğlu, 2021; Coetzee, 2011; Compeau & Higgins, 2020; Erfani, 2017; Higgins, Huscroft-D'Angelo, & Crawford, 2019; Htoo, 2014; Pirāni, Yārahmadi, Ahmadiān, & Pirāni, 2018; Titrek, Çetin, Kaymak, & Kasikçi, 2018; Tokan & Imakulata, 2019). Motivating learners in order to realize the achievements determined by the studies in question and to ensure

learning are among the important issues that school stakeholders should overcome (Karataş & Erden, 2012). Therefore it is important to investigate academic motivation at all levels of education and to take precautions as a result of these researches. For these reasons, it is thought that the current academic motivation levels of teacher candidates may also affect their success in their future professional lives. When the literature is scanned, it has been stated that working time, environment, social background, expectations and innovation are among the factors affecting academic motivation (Wilkesmann, Fischer, & Virgillito, 2012).

Digital Literacy

Today, the concept of digital literacy has emerged with the digitalization that has entered every field. Digital literacy, which is among the 21st century learner competencies, is the ability to use technology confidently, creatively and critically to fulfill the requirements of the learning and working process in a digital society (JISC, 2015). In her research, Arpa (2017) emphasized that it would not be possible to respond to today's social and individual needs if modern education policy, plans and programs do not benefit from technological opportunities, and stated that skills such as innovation, productivity, versatility, entrepreneurship and technology literacy should be included in education programs.

With the digitalized life, it has become a necessity for each individual to be digitally literate at a certain level. In other words, the 21st century learner is expected to be digitally literate within the scope of information, media and technology skills. In the same direction, teachers and prospective teachers need to develop their digital literacy levels in order to be successful in digitalized learning environments. With the COVID-19 pandemic, the importance of digital literacy has emerged more. Because lessons had to be held remotely during the pandemic period, and both teachers and students had difficulties using digital tools (Al Salman, Alkathiri, & Khaled Bawaneh, 2021; El Refae, Kaba, & Eletter, 2021; Kaya, 2020). another indicator is the large number of studies (Oh et al., 2021; Reddy, Sharma, & Chaudhary, 2020). For example, basic education programs (Altun & Alpan, 2021), social studies curriculum (Direkçi, Akbulut, & Şimşek, 2019), Information technologies and software curriculum (Elçi & Mediha, 2015) and Turkish curriculum (Direkçi et al., 2019; Duran & Özen, 2018; Özbay & Özdemir, 2014) were examined in the context of digital literacy. In addition, there are studies (Doğan & Demirkan, 2020; Kozan, 2018a; Kuru, 2019; Onursoy, 2018; Yaman, 2019) in which the digital literacy levels of university students are determined.

In this study, digital literacy levels, attitudes towards the teaching profession and academic motivation levels of teacher candidates, which are among the important skills that teacher candidates have today, were examined. It is expected that the high level of digital literacy of teacher candidates will positively affect their academic motivation and attitudes towards the teaching profession. It is observed that the variables mentioned in the literature are being researched. However, no study was

found that examined the relationship among these variables. In addition, it is also important to carry out up-to-date studies that measure the attitudes, digital literacy levels and academic motivations of teacher candidates towards the teaching profession. In this context, it is thought that it can contribute to the field. The purpose of this study is to determine the relationship between undergraduate students' academic motivations, their attitudes toward the teaching profession, and their digital literacy abilities.

In order to reach this purpose the following research questions are asked:

1. What are the attitudes of undergraduate students towards the teaching profession?
2. What is the academic motivation level of undergraduate students?
3. What is the digital literacy skills level of undergraduate students?
4. Is there a significant relationship between their attitudes towards the teaching profession, their academic motivation and their digital literacy skills and the gender of undergraduate students?
5. Is there a significant relationship between their attitudes towards the teaching profession, their academic motivation and their digital literacy skills and the department in which undergraduate students study?
6. Is there a significant relationship between their attitudes towards the teaching profession, their academic motivation and their digital literacy skills and the grade levels of undergraduate students?
7. Is there a significant relationship among undergraduate students' attitudes towards the teaching profession, academic motivation and digital literacy skills?

Method

Research Model

Quantitative correlational research design was used in this study, which aims to determine the relationship among undergraduate students' attitudes towards the teaching profession, their academic motivations and their digital literacy skills.

Sample

The sample of the study consisted of 493 teacher candidates studying at a state university in the 2021-2022 academic year. While determining the sample group, convenient sampling method, which is one of the non-random sampling methods, was used. This sampling method refers to the collection of data from a sample that is easily accessible for the researcher (Büyüköztürk et al. 2017). When the demographic characteristics of the teacher candidates included in the research are examined; 78.1% of the teacher candidates were female and 21.9% male; 12.8% Science Education,

13.6% Classroom Education 1.2% English Education, 15.4% Social Studies Education, 18.7% Preschool Education 8.3% Mathematics Education, 5.3% Biology Education, % 14.0% of them studied in Psychological Counseling and Guidance, 8.1% in Turkish Education, 2.6% in Music Education; It was determined that 8.5% of them were in their 1st year, 36.3% in their 2nd year, 9.7% in their 3rd year and 45.4% in their 4th year.

Data Collection Tools

In order to determine the relationship among undergraduate students' attitudes towards the teaching profession, their academic motivation and their digital literacy skills, the attitude scale towards the teaching profession developed by Kahramanoğlu (2018), the academic motivation scale developed by Karagüven, (2012) and digital literacy scales were used developed by Üstündağ, Güneş, and Bahçıvan, (2017).

Attitude Scale Towards Teaching Profession

The Attitude Scale towards Teaching Profession, developed by Kahramanoğlu (2018) and aiming to determine the attitudes of undergraduate students towards the teaching profession, is a 5-point Likert scale and consists of one dimension and 12 items. As a result of exploratory factor analysis; Cronbach Alpha reliability coefficient of the scale was .93; KMO value is .832; Bartlett test 593,874; df: 66 and $p = .000$. When the results of the confirmatory factor analysis (CFA) conducted to test the construct validity of the "Attitude towards Teaching Profession Scale" are examined, it is observed that the Chi-square fit index ($X^2 = 45.131$, $df = 34$, $X^2/df = 1.33$) is significant. Looking at the other fit index values, it was found that $RMSEA = .06$, $RMR = .04$, $CFI = .98$, $NFI = .93$, $GFI = .91$ and $AGFI = .79$. When the results of the model are evaluated in general, it is observed that the model has a good fit.

Academic Motivation Scale

The Academic Motivation Scale, which was developed by Karagüven (2012) aims to determine the academic motivation levels of teacher candidates, and is a 7-point Likert type and consists of one dimension and 10 items. As a result of exploratory factor analysis; Cronbach Alpha reliability coefficient of the scale was .94; KMO value of .860; Bartlett test 1739,993; df: 378 and $p = .000$. The Cronbach Alpha reliability coefficients of the scale according to the sub-dimensions are presented in Table 1.

Table 1. Cronbach Alpha Values of the Sub-Dimensions of the Academic Motivation Scale

		Dimensions	Cronbach Alpha
Academic Scale	Motivation	Intrinsic motivation to know	.84
		Intrinsic motivation for success	.90
		Intrinsic motivation to experience stimulation	.84
		Identified extrinsic motivation	.77
		Introjected extrinsic motivation	.90
		Extrinsic motivation - external regulation	.80
		lack of motivation	.89

When the results of the confirmatory factor analysis (CFA) performed to test the construct validity of the "Academic Motivation Scale" are examined, it is observed that the Chi-square fit index ($X^2 = 283.225$, $df = 216$, $X^2/df = 1.311$) is significant. Looking at the other fit index values, it was found that $RMSEA = .03$, $RMR = .07$, $CFI = .99$, $NFI = .96$, $GFI = .96$ and $AGFI = .93$. When the results of the model are evaluated in general, it is observed that the model has a good fit.

Digital Literacy Scale

The Digital Literacy Scale, developed by Üstündağ, Güneş, and Bahçivan, (2017) aiming to determine the digital literacy skills of teacher candidates, is a 5-point likert type and consists of one dimension and 10 items. As a result of exploratory factor analysis; Cronbach Alpha reliability coefficient of the scale was .93; KMO value is .909; Bartlett test 454,860; $df: 45$ and $p = .000$. When the results of the confirmatory factor analysis (CFA) performed to test the construct validity of the "Digital Literacy Scale" are examined, it is observed that the Chi-square fit index ($X^2 = 33.369$, $df = 30$, $X^2/df = 1.112$) is significant. Looking at the other fit index values, it was found that $RMSEA = .04$, $RMR = .04$, $CFI = .99$, $NFI = .94$, $GFI = .91$ and $AGFI = .84$. When the results of the model are evaluated in general, it is observed that the model has a good fit.

Analysis of Data

The Kolmogorov-Smirnov and Shapiro-Wilk Tests are used to observe whether the data obtained from the Attitudes towards Teaching Profession Scale, Academic Motivation Scale and Digital Literacy Scale showed normal distribution. When the Skewness and Kurtosis values are examined, it is observed that the data obtained from the scales were normally distributed. For this reason, descriptive statistics regarding the variables in the research; T-test, One-factor Analysis of Variance (ANOVA) and structural equation modeling were used.

Results

In the first sub-problem of the research, the answers given by the undergraduate students to the attitude scale towards the teaching profession were analyzed and the results are presented in Table 2.

Table 2. Mean and standard deviations related to the scale of attitude towards the teaching profession

	n	\bar{x}	s
Attitude Scale Towards Teaching Profession	493	4.36	.48

As a result of the analysis of the data obtained from the Attitude Scale towards Teaching Profession in Table 2, it is observed that the attitudes of undergraduate students towards the teaching profession are at a very high level ($\bar{x}= 4.36$, $s= .48$).

In the second sub-problem of the research, the answers given by the undergraduate students to the academic motivation scale were analyzed and the results are presented in Table 3.

Table 3. Mean and standard deviations of the academic motivation scale

Dimensions	n	\bar{x}	s
Intrinsic motivation to know	493	5.85	1.00
Intrinsic motivation for success	493	5.51	1.13
Intrinsic motivation to experience stimulation	493	5.16	1.21
Identified extrinsic motivation	493	5.88	.97
Introjected extrinsic motivation	493	5.03	1.34
Extrinsic motivation - external regulation	493	5.22	1.17
Lack of motivation	493	2.07	1.34
General	493	4.97	.72

When the data obtained from Table 3 are examined, it is observed that the academic motivation of undergraduate students ($\bar{x}= 4.97$, $s=.72$) is at a high level. When the perceptions of undergraduate students about the dimensions that constitute academic motivation are examined; Determined extrinsic motivation ($\bar{x}= 5.88$, $s=.97$), intrinsic motivation to know ($\bar{x}= 5.85$, $s= 1.00$) and intrinsic motivation to success ($\bar{x}= 5.51$, $s= 1.13$) levels were very high; Extrinsic motivation - extrinsic regulation ($\bar{x}= 5.22$, $n= 1.17$), intrinsic motivation to experience stimulation ($\bar{x}= 5.03$, $s= 1.34$) and Introjected extrinsic motivation ($\bar{x}= 5.16$, $s= 1.21$); It was concluded that the level of amotivation ($\bar{x}= 2.07$, $s=. 72$) was also low.

In the third sub-problem of the study, the answers given by the undergraduate students to the digital literacy scale were analyzed and the results are presented in Table 4.

Table 4. Mean and standard deviations of the digital literacy scale

	n	\bar{x}	s
Digital Literacy Scale	493	3.57	.61

As a result of the analysis of the data obtained from the digital literacy scale in Table 4, it is observed that the digital literacy skills of the undergraduate students are at a very high level ($\bar{x}= 3.36$, $s= .61$).

In the fourth sub-problem of the study, whether the undergraduate students' attitudes towards the teaching profession, their academic motivations and digital literacy skills differ according to the gender variable was examined with the T-Test, and the results are presented in Table 5.

Table 5. T-test results to determine the differences in undergraduate students' attitudes towards the teaching profession, their academic motivation and digital literacy skills according to the gender variable

	Gender	n	x	Sd	t	df	p
Attitude towards the teaching profession	Female	385	4.42	.46	3.864	491	.00
	Male	108	4.14	.51			
academic motivation	Female	385	4.98	.74	.762	491	.44
	Male	108	4.92	.67			
digital literacy	Female	385	3.53	.60	.816	491	.00
	Male	108	3.72	.64			

When the data obtained from Table 5 are examined, it is observed that there is a significant difference between undergraduate students' attitudes towards the teaching profession ($t= 3.864$; $p = .00$) and digital literacy skills ($t= .816$; $p = .00$) and gender. It was concluded that there was no significant difference between the academic motivations of undergraduate students ($t= .762$; $p > .44$) and their genders. The significant difference in the attitudes and academic motivations of undergraduate students towards the teaching profession is in favor of female students; It is observed that the significant difference in digital literacy skills is in favor of male teachers.

In the fifth sub-problem of the study, whether the attitudes, academic motivations and digital literacy skills of undergraduate students towards the teaching profession differ according to the variable of the department they studied was examined with the One-Way ANOVA test and the results are presented in Table 6.

Table 6. One-Way ANOVA results to determine the differences in undergraduate students' attitudes towards the teaching profession, academic motivation and digital literacy skills according to department

	Department	n	x	S	F	p	Significance
Attitude towards the teaching profession	1-Science Education	63	4.28	.55	2.715	.00	2-8
	2-Class Education	67	4.54	.41			
	3-English Education	6	4.31	.47			
	4-Social Studies Education	76	4.32	.49			
	5-Preschool Education	92	4.37	.48			
	6-Mathematics Education	41	4.45	.49			
	7-Biology Education	26	4.40	.35			
	8-Psychological Counseling and Guidance	69	4.18	.51			
	9-Turkish Education	40	4.44	.38			
	10-Music Education	13	4.26	.51			

academic motivation	1-Science Education	63	5.47	.73	1.845	.05	7-9
	2-Class Education	67	5.59	.77			
	3-English Education	6	6.04	.35			
	4-Social Studies Education	76	5.62	.78			
	5-Preschool Education	92	5.49	.94			
	6-Mathematics Education	41	5.93	.74			
	7-Biology Education	26	5.58	.76			
	8-Psychological Counseling and Guidance	69	5.28	.70			
	9-Turkish Education	40	5.68	.68			
	10-Music Education	13	5.71	.81			
digital literacy	1-Science Education	63	5.47	.73	1.845	.05	6-7
	2-Class Education	67	5.59	.77			
	3-English Education	6	6.04	.35			
	4-Social Studies Education	76	5.62	.78			
	5-Preschool Education	92	5.49	.94			
	6-Mathematics Education	41	5.28	.70			
	7-Biology Education	26	5.93	.74			
	8-Psychological Counseling and Guidance	69	5.58	.76			
	9-Turkish Education	40	5.68	.68			
	10-Music Education	13	5.71	.81			

When the data obtained from Table 6 are examined, undergraduate students' attitudes towards the teaching profession ($F= 2.718$; $p < .05$), academic motivations ($F= 1.845$; $p < .05$), and digital literacy skills ($F= 1.845$; $p \leq .05$) It is observed that there is a significant difference between) and the variable of the department they studied. According to the Tukey Test, which was conducted to determine between which groups the difference in the attitudes of undergraduate students towards the teaching profession, it was concluded that the significant difference between classroom education and psychological counseling and guidance departments was in favor of classroom education students. According to the Tukey Test, which was conducted to determine between which groups the difference in undergraduate students' academic motivations was, it was concluded that the significant difference between biology education and Turkish education departments was in favor of Turkish education students. It was concluded that the significant difference between the mathematics education and biology education departments according to the Tukey Test conducted to determine whether there was a difference between the groups was in favor of the Biology Education students.

In the sixth sub-problem of the study, whether the undergraduate students' attitudes towards the teaching profession, their academic motivations and digital literacy skills differ according to their grade levels was examined with the One-Way ANOVA test, and the results are presented in Table 7.

Table 7. One-Way ANOVA results to determine the differences in undergraduate students' attitudes towards the teaching profession, academic motivation and digital literacy skills according to the grade level variable

	Grade level	n	x	S	F	p	Significance
Attitude towards the teaching profession	1st Class	42	4.28	.46	2.834	.03	3-2 4-2
	2. Class	179	4.29	.50			
	3rd Class	48	4.45	.44			
	4th grade	224	4.41	.48			
academic motivation	1st Class	42	5.62	.73	.125	.94	-
	2. Class	179	5.57	.80			
	3rd Class	48	5.51	.88			
digital literacy	4th grade	224	5.57	.78	8.565	.00	3-1 4-1 4-2
	1st Class	42	3.29	.55			
	2. Class	179	3.46	.62			
	3rd Class	48	3.68	.56			
	4th grade	224	3.69	.60			

When the data obtained from Table 7 are examined, it is observed that there is a significant difference between undergraduate students' attitudes towards the teaching profession ($F= 2.834$; $p < .05$) and digital literacy skills ($F= 8.565$; $p < .05$) and grade level variable; It is observed that there is no significant difference according to academic motivation ($F= .374$; $p > .05$) and grade level variable. According to the Tukey Test, which was conducted to determine between which groups the difference in the attitudes of undergraduate students towards the teaching profession, it was concluded that the significant difference between the third and second grades was in favor of the third grades, and between the fourth grades and the second grades in favor of the fourth graders. When the results are examined in terms of digital literacy skills, it is concluded that the significant difference between the third grades and first grades in favor of the third graders, and between the fourth grades and the first and second grades in favor of the fourth graders, according to the Tukey Test conducted to determine among which groups the difference in digital literacy skills of undergraduate students.

In the last problem of the study, the relationship among undergraduate students' attitudes towards the teaching profession, their academic motivation and digital literacy skills were examined with the structural equation model and the path diagram for the model is shown in Figure 1.

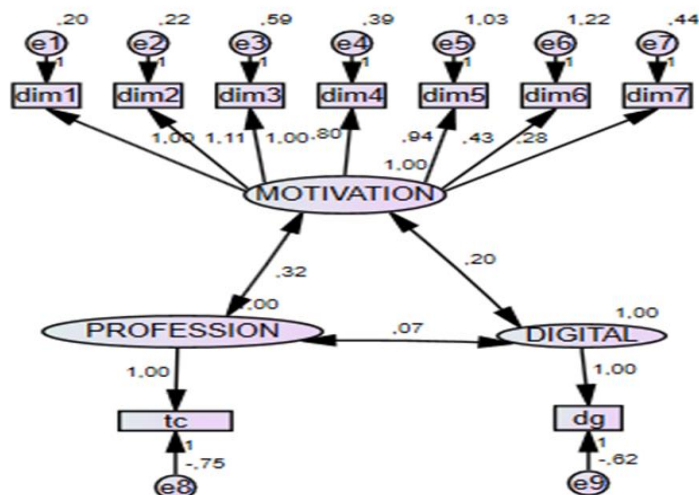


Figure 1. Structural equation model in which there is a reciprocal relationship between undergraduate students' attitudes towards the teaching profession, their academic motivation and digital literacy skills

When the model in Figure 1 is examined, it is observed that there was a low level and positive relationship between undergraduate students' attitudes towards the teaching profession and their academic motivation ($\gamma = .32$); It was concluded that there is a low and positive relationship between digital literacy skills and academic motivation ($\gamma = .20$), and a low level and positive relationship between attitudes towards the teaching profession and digital literacy skills ($\gamma = .07$).

The structural model values of undergraduate students' attitudes towards the teaching profession, academic motivation and digital literacy skills are shown in Table 8.

Table 8. Structural model values of undergraduate students' attitudes towards the teaching profession, academic motivation and digital literacy skills

	X^2	df	X^2/df	RMR	RMSEA	CFI	GFI	AGFI	NFI
Structural Equation Modeling	100.961	21	4.81	.08	0.08	0.97	0.96	0.91	0.96

According to the path analysis results of the conceptual model in Table 8, the Chi-square fit index of the model ($X^2 = 100.961$, $df = 21$, $X^2/df = 4.81$) was determined to be significant. Other fit indices were found to be $RMSEA = .08$, $CFI = .97$, $NFI = .95$, $RMR = .08$, $GFI = .96$, and $AGFI = .91$. It is observed that the model is at an acceptable level in terms of fit values

Conclusion

In this study, it was aimed to determine the digital literacy levels of teacher candidates, their attitudes towards the teaching profession and their academic motivation levels and the level of relationship among these variables. In the first sub-problem of the study, the attitudes of

undergraduate students towards the teaching profession were determined. Considering the findings of our study, the attitudes of teacher candidates towards the teaching profession are quite high. Accordingly, it can be said that teachers' high attitudes will positively affect success and satisfaction in their professional life. Manuel and Hughes (2006) state that students' choosing the teaching profession means fulfilling their inner self and desires, taking responsibility in a field they want, and working with young people, which is a large social project in the field of education. It can be said that pre-service teachers with positive attitudes will do their jobs willingly and lovingly in the future, and as a result, they will make significant contributions to education. It is very important to do this profession lovingly and willingly in order to be successful in the teaching profession, which requires lifelong learning, patience and dedication. There are studies supporting this result obtained from the research (Ayık & Ataş, 2014; Kocaer, 2019; Pehlivan, 2008; Temizkan, 2008). In some studies, it has been stated that the attitudes of teacher candidates towards the teaching profession are at a low level and the reason for this is that teacher candidates prefer the profession without knowing the profession or they may be reluctant towards the teaching profession (Kahyaoğlu et al., 2013).

According to the second finding of our study, it is observed that the academic motivation of the undergraduate students was at a very high level. Many studies in the literature have revealed that there is a positive relationship between motivation and academic achievement. In other words, motivation is an important element in increasing the academic performance of students (Vanthournout, Gijbels, Coertjens, Donche, & Van Petegem, 2012). In this sense, the high academic motivation of teacher candidates can be regarded as positive. There are studies in the literature that overlap with this result (Alemdağ, Erman, & Yılmaz, 2014; Amrai, Motlagh, Zalani, & Parhon, 2011; Temizsiz & Serhatlıoğlu, 2014; Özen, 2019; Yurtsever & Dulay, 2022). It can be seen that they accept the opinions about the sub-dimension at a low level. On the other hand, it is observed that the views on intrinsic motivations for knowing, success oriented and adapting, determined extrinsic motivation, introverted extrinsic motivation and extrinsic motivation-external regulation dimensions are at a high level.

According to the findings, it was revealed that the level of digital literacy skills of teacher candidates is high. This may be due to the fact that today's learners frequently experience technological changes and use technological tools intensively in their daily lives. It can be said that this situation is positive for future teachers to be ready for learning environments compatible with digital life. Having a high level of digital literacy can also increase the potential of teachers to improve themselves (Svensson & Baelo, 2015). Recent studies (Akman, 2021; İşişoğlu & Kocakuşak, 2012; G. Karakuş & Gürbüz, 2019; Kozan, 2018b; Talan & Aktürk, 2021) seem to support this finding and interpretation. Considering that digital literacy plays an important role in the acceptance of online learning (Mohammadyari & Singh, 2015), it can be said that digital literacy should be

included in the education programs of faculties since the concept of digital citizen has emerged in the digital age. Digital citizenship is a word that refers to the amount of education and skills required to participate actively in social, professional, and civic life (Milenkova & Lendzhova, 2021). However, there are also studies in which the level of digital literacy is determined as intermediate (Yontar, 2019).

When the attitudes of teacher candidates towards the teaching profession change according to gender, it is observed that the average of female students is higher. There are studies that overlap with this result (Chakraborty & Mondal, 2014; C. İpek, Kahveci, & Camadan, 2015; Maliki, 2013; Pehlivan, 2008; Terzi & Tezci, 2007). This situation can be explained by the thought that the teaching profession is among the ideal professions for women (Çeliköz & Çetin, 2004; Pehlivan, 2008). In addition, there are studies in which the attitude towards the teaching profession does not differ according to gender (Uygun & Avarogullari, 2020).

It is observed that the academic motivations of teacher candidates differed significantly in favor of women according to gender. In addition, it is observed that male teacher candidates' motivation levels were higher than female teacher candidates. Studies supporting these results have been done (Akbaşlı, Kubilay, & Durnalı, 2017; Brouse, Basch, LeBlanc, McKnight, & Lei, 2010; Eymur & Geban, 2011; Kırmızısisiz & Serhatlıoğlu, 2014; Özen, 2019; Roohi & Asayesh, 2012; Tunç, Çiftçi, & Dal, 2018). On the other hand, there are studies (Tuncer, Yelken, & Tanrıseven, 2018; Zembat, Akşın-Yavuz, Tunçeli, & Yılmaz, 2018) in which the academic motivations of teacher candidates do not differ according to gender.

It is observed that the digital literacy levels of teacher candidates differed significantly according to gender. In other words, the digital literacy levels of teacher candidates vary according to their gender. We can see that the relevant change is in favor of men. There are studies supporting this result (Korkmaz, 2020; Öteles, 2020; Özerbaş & Kuralbayeva, 2018; Sarıkaya, 2019; Timur, Timur, & Akkoyunlu, 2014; Yeşildal, 2018). In some studies (Dedebali, 2020; Erol & Aydın, 2021; G. Karakuş & Gürbüz, 2019; Kazu & Erten, 2014; Kozan, 2018b; Yaman, 2019; Yontar, 2019) it was stated that there was no significant difference. The concept of technological gender gap regarding individuals' technology use can explain this situation (DuBow & Pruitt, 2019). In the literature, it has been stated that men are more prone to use technology than women.

It is observed that the attitudes of teacher candidates towards the teaching profession change according to the department they study. There are studies supporting this result in the literature (Kayhan, Baysan, & Alcı, 2018; Kocaarslan, 2014; Özgenel & Deniz, 2020). It has been determined that the pre-service teachers studying in classroom education have the highest average. Kocaarslan (2014) found similar results in his study. In addition, a significant difference was found between the

attitudes of prospective teachers of classroom teaching and Psychological Counseling and Guidance education. In other words, it can be said that the students in the classroom teaching program have a more positive attitude towards the teaching profession than the students in the psychological counseling and guidance program. In another study, Kayhan, Baysan, & Alıcı(2018) stated that pre-school teacher candidates had a higher average. The different results obtained from different departments may be due to the differences in the faculty members of the departments and the universities where the students study. Contrary to these results, there are also studies (Uygun & Avarogullari, 2020) in which attitudes towards the teaching profession do not differ significantly according to the department of education.

It was found that the academic motivation levels of teacher candidates differed significantly according to the department they studied. Keskinsiz & Serhatlıoğlu (2014) and Korkmazer (2020) encountered the same results in their studies. It is observed that the highest average was in English and mathematics education departments. In addition, the academic motivation levels of Turkish education teacher candidates differed significantly compared to biology education teacher candidates. We can attribute this situation to the differences in university entrance scores between departments or to the opportunities to find a job after graduation. There are also studies in which academic motivation does not differ significantly between departments (Akyürek, 2020; Özgenel & Deniz, 2020).

When the digital literacy levels of teacher candidates were examined according to the department they studied, it was determined that there was a significant difference. It is observed that the department with the highest average was the department of English education. In addition, it was determined that there was a significant difference between pre-service mathematics and biology education teachers. There are studies (G. Karakuş & Gürbüz, 2019) that overlap with this result. In the literature, it shows that in terms of technology competencies, teacher candidates are at different levels according to their departments (Çetin, Çalışkan, & Menzi, 2012). It can be said that this differentiation in technological competencies is reflected in digital literacy. In our study, this difference was in favor of biology education teacher candidates.

It is observed that the attitudes of teacher candidates towards the teaching profession differ significantly according to the class variable. Erbaş (2021), Karakuş (2017), Zembat, Hilal, & Küsmüş (2019), Çapa&Çil (2000) and Göktaş (2017) reached the same conclusion in their studies. In our study, it is observed that the attitudes of the teacher candidates in the upper class towards the teaching profession differed significantly compared to the prospective teachers in the lower class. It is thought that this situation may be related to the upcoming teaching exams and graduation. In addition, it can be said that the departments they study have positively affected the attitude towards the teaching

profession over the years. However, Atalmış & Köse (2018), Pehlivan (2008), Gökçe & Sezer (2012) and Kocaer (2019) stated in their study that the grade level variable did not make a significant difference.

It was determined that the academic motivation of the teacher candidates was higher than the grade levels, but they did not make a significant difference. There are studies similar to this result (Aktaş, 2017; Özbek, 2019; Özgenel & Deniz, 2020; Yavuz Eroğlu, Eroğlu, & Ekinçi, 2019). This positively interpreted situation shows that teacher candidates have good academic motivation. There are studies in the literature (Akyürek, 2020; Avcı, Kula, & Haşlamam, 2019; Çetinel & Gürcüoğlu, 2022; Taşkın, 2015) which contradicts with this result. In these studies, it was stated that the academic motivation levels of senior students were generally lower.

The digital literacy levels of teacher candidates has been examined in terms of class variable and it is observed that there was a significant difference. According to the results, it is observed that the digital literacy levels of the teacher candidates studying in the upper class differed significantly compared to the candidates in the lower class. We can attribute this situation to the knowledge, experience and life that increases as the grade level progresses. There are studies supporting this result (Kozan, 2018b; Özerbaş & Kuralbayeva, 2018; Yaman, 2019). However, there are also studies (Aslan, 2021; Yontar, 2019) stating that the level of digital literacy does not differ according to the grade level.

The relationship between pre-service teachers' attitudes towards the teaching profession, academic motivation and digital literacy skills was examined. Accordingly, a low level of positive correlation was found between the attitude towards the teaching profession and academic motivation. In other words, it is expected that teacher candidates who have high academic attitudes will also have high attitudes towards the teaching profession. This result was found in Çeliköz & Çetin, (2004) and Zembat et al. (2018) are similar to the results of their studies. However, İpek&Camadan (2012) and Bedel(2016) stated in their studies that there is no relationship between these two variables. A low level of positive correlation was found between the digital literacy level of teacher candidates and their academic motivation. In other words, it is predicted that the academic motivation of the candidates with a high level of digital literacy is also high. There are studies supporting this result in the literature (Akman, 2021; Wong, Ho, Chen, Gu, & Zeng, 2015). It is natural to obtain this result because there is a relationship between digital competence and academic motivation (Hatlevik & Christophersen, 2013). When we look at the attitude towards the teaching profession and the level of digital literacy, a low and positive relationship was found again. It is stated that when the pre-service teachers' perceptions of technology use proficiency are high, their attitudes towards the teaching

profession are also high (Usta & Korkmaz, 2010). As a result of these findings, the following recommendations were made.

For teacher candidates;

1. Taking measures to increase the academic motivation of teacher candidates in adopting their profession,
2. Gaining digital literacy skills in order to support the academic motivation of teacher candidates,
3. Taking measures to increase the digital literacy levels of future teachers,
4. Providing support for teacher candidates in accessing internet resources and digital devices,

For researchers;

1. Increasing the number of studies investigating these variables,
2. Reaching more detailed results with mixed methods in future studies,
3. It is recommended that the research be applied to different samples as well.

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