

An Investigation of the Relationship Between Digital Literacy Levels of Social Studies Teacher Candidates and Their Attitudes Towards Distance Education

Nazike KARAGÖZOĞLU¹

Yozgat Bozok University

Uğur GEZER²

Yozgat Bozok University

Abstract

The relationship between the digital literacy levels of Social Studies teacher candidates and their attitudes towards distance education was investigated in this study. In addition, attitudes of teacher candidates towards distance education and their digital literacy levels were compared in terms of gender, year of education and income variables. The sample of this study, in which the general screening model was used, consisted of 260 social studies teacher candidates studying at state universities in the Central Anatolia Region of Turkey in the 2020-2021 academic year. “Digital Literacy Scale” developed by Bayrakçı (2020) and “Distance Education Attitude Scale” developed by Ağır (2007) were used in the data collection process. Kolmogorov-Smirnov normality test was run for data normality and after data normality was provided, regression and Pearson correlation analyzes, independent sample t-test, one-way ANOVA test and Post Hoc analysis were performed. The findings of the current study showed that the digital literacy levels of teacher candidates did not differ significantly depending on gender and grade levels, but the digital literacy levels of male teacher candidates were higher. It was observed that the attitudes of teacher candidates towards distance education significantly differed based on gender and year of education. It was determined that teacher candidates with high-income had a more positive attitude towards distance education and had higher levels of digital literacy compared to teacher candidates with low- and middle-income levels. The findings of the present study also showed that there was a positive and moderately significant relationship between digital literacy levels of teacher candidates and their attitudes towards distance education, and it was concluded that digital literacy levels of teacher candidates significantly predicted their attitude scores toward distance education.

Keywords: Teacher candidates, Digital literacy, Distance education, Attitudes

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¹Assist. Prof. Dr., Education Faculty, Yozgat Bozok University, Yozgat, Turkey, ORCID: (0000-0002-7410-3286)

Correspondence: nazike.karagozoglu@bozok.edu.tr

² Assist. Prof. Dr., Education Faculty, Yozgat Bozok University, Yozgat, Turkey, ORCID: (0000-0001-6752-7526), Email: ugur.gezer@bozok.edu.tr

Introduction

With the official announcement of the first Covid case in Turkey, a number of measures have been taken in many areas from education to transportation, from working life to social life in order to control or reduce the spread of the epidemic (Balci & Çetin, 2020). Within the scope of these measures, education and training were suspended at all educational levels. Considering that the disease will still continue to spread and that it will take a long time for vaccination and treatment studies, it has been decided to carry out education-training activities through distance education. Educational activities have continued remotely by establishing teacher-student interaction by using technological devices such as computers, tablets and phones to the extent that the current technological equipment of teachers and students allows.

Distance education is an interactive type of education eliminating the distance by means of information technologies, in which the teacher and the student or student group taking the course are physically in different environments. When the historical perspective of distance education is examined, it is seen that it has started with the aim of enabling individuals living in places where the traditional education cannot reach (Özbay, 2015). Today, some associate degree, undergraduate, graduate and certificate programs are offered through distance education by higher education institutions. In addition to these, various lessons and courses can be offered through distance education for every age group and every education level by different institutions and organizations. Distance education, which is the subject of this study, is the distance education that has been started compulsorily at all education levels due to the pandemic.

Educational technologies play an important role in maintaining the educational activities through online or offline environments under any extraordinary situations such as natural disaster or pandemic (Kurt & Doğan, 2020). Technology eliminates the distance between students and teachers, enabling students to access educational opportunities at any time and from anywhere (Beldarrain, 2006). Digital technology includes a wide variety of information processing tools and software such as mobile devices, web tools, applications, software, communication and storage services, etc. Digital technology has become an important part of education and has changed the learning methods of today's students. Students can use digital technology for learning activities such as reading and sending e-mails, accessing to learning management systems, reading e-magazines or e-books, taking online quizzes, participating in discussion forums, etc. (Tang & Chaw, 2016). However, technology alone is not sufficient in distance education; the most important thing is how the technology is used to organize and teach the lesson. The effectiveness of distance education depends on how teachers organize their lessons by taking advantage of technology (Toker Gökçe, 2008). In every situation in which educational activities take place such as formal or remote, online or offline, the teacher is still the teacher and the role of the teacher is basically the same. However, teachers must have learned to

integrate educational technologies into learning-teaching processes in this period, and they should have digital literacy skills that will enable them to conduct their lessons in a virtual environment (Kurt & Doğan, 2020, p.250). It is highly essential that teachers have high digital literacy and digital pedagogical competences. Only if teachers have high digital literacy and digital pedagogical competence, will they be able to organize the teaching environment by taking digital technologies into account (Aslan, 2021).

Digital literacy is one of the eight key competencies determined in line with the Turkish Qualifications Framework in the curriculum renewed in 2018. Regarding this competency, the following statements were included in the program: “It covers the safe and critical use of information communication technologies for business, daily life and communication. This competence is supported by basic skills such as access to information and the use of computers for evaluation, storage, production, presentation and exchange of information, as well as engaging in common networks and establishing communication via the Internet. (MoNE, 2018, p.5).

Digital literacy skills are the skills that teachers should have in order to use technology safely, creatively and critically both in their personal work and in their lessons. The term "digital skills" covers a range of different skills that make up the combination of behaviors, expertise, technical knowledge, work habits, character traits, disposition and critical understanding (UNESCO, 2017). Digital literacy should be understood as the fundamental skill or ability to use a computer safely and effectively. These skills include the use of:

- Office applications such as word processing, presentations and spreadsheets
- The Internet, including browsing, searching and creating content for the web, communication and collaboration via email, social networks, collaborative workspace, and discussion forums.
- Creative applications such as digital photography, video editing, sound editing (Royal Society, 2012, p.21)

Basic components of digital literacy are information literacy and digital communication skills. Information literacy includes understanding how information is stored and shared, and being able to read and understand digital texts efficiently and effectively; on the other hand, digital communication includes the ability to produce comprehensible text and content using digital programs, as well as using these tools to interact with others on digital platforms (Parks, 2012). The term digital literacy was first introduced by Paul Gilster (1997) as the ability to use information from various digital sources effectively and efficiently. Digital literacy can be expressed as the ability of individuals to use digital tools to search, find, evaluate, create and communicate information to make informed

decisions. According to Belshaw (2001), digital literacy is not only the ability to use digital resources, but also the ability to effectively think about information obtained from various multimedia sources (Lestari, Siskandar & Rahmawati, 2020).

The learning styles of younger generation, intertwined with technology since the day they were born and called "digital natives", and their expectations from learning, teachers, and teaching environments have also changed depending on technology (Kuru, 2019). The 21st century student needs educational opportunities that are not tied to time or place but still allow interaction with teachers and peers. Interaction in distance education, as in formal education, is considered as a necessary component for a successful learning experience (Beldarrain, 2006). Designing both face-to-face and online learning environments to increase student participation and motivation will positively affect students' perspectives on learning (Ergüleç & Eren, 2021). For this reason, it is important for teachers to be able to prepare and use digital materials, especially in distance education. Teachers must have digital literacy skills in order to meet the expectations and at the same time to provide the required interaction of the new generation in the field of education.

When the literature is reviewed, it is seen that many studies have been conducted to measure the digital skills of teachers and teacher candidates (Tyger, 2011; Kumari & D'Souza, 2016; Çam & Kıyıcı, 2017; Özerbaş & Kuralbayeva, 2018; Kuru, 2019; Hamutoğlu, Savaşçı & Sezen- Gültekin, 2019; Akgün & Akgün, 2020; Yazıcıoğlu, Yaylak & Genç, 2020; Lestari, Siskandar & Rahmawati, 2020). In addition, there were some studies in the literature examining the perceptions and attitudes of teacher candidates towards distance education (Kaleli Yılmaz & Güven, 2015; Yenilmez, Turğut & Balbağ, 2017; Hamutoğlu, Sezen-Gültekin & Savaşçı, 2019; Karatepe, Küçükgençay & Peker, 2020). However, there is no study examining the relationship between digital literacy and distance education perceptions in the literature. This study is important to fill this gap in the literature. Based on the observation that the efficiency of distance education, which started at all levels of education rapidly and compulsorily due to the pandemic, varied especially because of the digital competencies of teachers and students, this study aims to investigate the relationship between digital literacy levels of teacher candidates and their attitudes towards distance education. For this purpose, the answers of the following research questions were sought:

1. Is there a relationship between the digital literacy levels of social studies teacher candidates and their attitudes towards distance education?
2. Is there a statistically significant predictive power of digital literacy levels of social studies teacher candidates on their attitude towards distance education?
3. Do digital literacy levels of social studies teacher candidates differ depending on their gender, year of education and income level?

4. Do the attitudes of social studies teacher candidates towards distance education differ depending on their gender, year of education, and income level?

Method

Research Model

This study, which examines the relationship between digital literacy levels of social studies teacher candidates and their attitudes towards distance education, is a quantitative study conducted as a correlational screening model. Screening models are research approaches that aim to describe a past or present situation as it exists (Karasar, 2005). Correlational screening model aims to determine the relationships between more than one variable and the level of their relationships (Creswell, 2003). This study examines whether there is a correlation between the digital literacy levels of social studies teacher candidates and their attitudes towards distance education. In addition, the current study aims to examine whether the levels of these two basic variables differ based on the gender, year of education and income level of social studies teacher candidates.

The Sample

The sample of this study consisted of 260 social studies teacher candidates who were selected by the easily accessible sampling method among the students studying at state universities in the Central Anatolia Region in the 2020-2021 academic year. The demographic characteristics of the social studies teacher candidates participating in the current study are as shown Table 1.

Table 1. Frequency and percentage distribution of the demographic characteristics of the participants

Variables	Categories	<i>f</i>	%
Gender	Male	84	32,3
	Female	176	67,7
Year of Education	1 st	44	16,9
	2 nd	64	24,6
	3 rd	64	24,6
	4 th	88	33,8
Income Level	Less than 2.000 TL	115	44,2
	2.000 TL - 4.000 TL	84	32,3
	4.000 TL - 6.000 TL	40	15,4
	Above 6.000 TL	21	8,1
Total		260	100,0

When Table 1 is examined, it is seen that 84 (32.3%) of the teacher candidates are male and 176 (67.7%) of them are female. According to the year of education variable, 44 (16.9%) of the participants are 1st year students, 64 (24.6%) of them are 2nd year, 64 (24.6%) of them are 3rd year, and

88 (33%) of them are 4th year students. According to the household income level, 115 of the participants (44.2%) have less than 2000 TL, 84 (32.3%) of the participants have between 2000 TL and 4000 TL, 40 (15.4%) of them have between 4000 TL and 6000 TL, 21 of them (8.1%) have 6000 TL and above household income.

Data Collection Tools

The data of the current study were collected with the Digital Literacy Scale developed by Bayrakcı (2020) and the Distance Education Attitude Scale developed by Güney (2007). The Digital Literacy Scale was prepared as a five-point Likert type consisting of 29 items, all of which were positive. The lowest score that can be obtained from the scale was 29 while the highest score was 145. The scale consisted of 6 sub-dimensions. There were 7 items in the ethics and responsibility sub-dimension, 6 items in the general knowledge and functional skills sub-dimension, 6 items in the daily use sub-dimension, 2 items in the professional production sub-dimension, 4 items in the privacy and security sub-dimension, and 4 items in the social sub-dimension. The Kaiser-Meyer-Olkin (KMO) fit value of the scale is 0.922; Bartlett test coefficient was found to be significant ($p < .005$). The Cronbach-Alpha internal consistency coefficient of the scale was calculated as 0.911. The CFA results of the scale showed that the fit indices of the 6-factor model were at an acceptable level ($\chi^2/sd = 4.3$; GFI = .91; AGFI = .90; CFI = .91; RMSEA = .05; RMR = .05; NFI = .89; IFI = .91).

The distance education attitude scale composed of a total of 21 items as five-point Likert type. While 14 of the items were positive, 7 of them were negative. The lowest score that can be obtained from the scale is 21 and the highest score is 105. The scale has 2 sub-dimensions: the advantages of distance education consisting of 14 items and the limitations of distance education consisting of 7 items. KMO coefficient of the scale was calculated as 0.814 and Bartlett test coefficient was found to be significant. The correlation coefficient calculated using the Spearman Brown formula for split half test reliability was found to be 0.799. Cronbach-Alpha reliability coefficient was calculated as 0.835.

Data Analysis

The data collected from the participants were first transferred to the SPSS package program, and the data of the participants who created extreme values due to missing or marking the same option for all scale items were excluded from the study. Before the analysis, kurtosis, skewness and Kolmogorov-Smirnov normality test values were checked to determine whether the data were normally distributed. These values are as shown in Table 2.

Table 2. Descriptive statistics, normality, and Levene’s test values of the scales

Variables	n	\bar{x}	sd	Kurtosis	Skewness	Kolmogorov-Smirnov	Levene
Digital Literacy Scale	260	105,65	16,40	.305	-.286	.053	.239
Distance Education Attitude Scale	260	56,96	15,01	-.275	.242	.064	.766

As Table 2 shows, the skewness and kurtosis values of the scores obtained from each scale are between -1 and +1 and Kolmogorov-Smirnov test scores are also significant ($p > .05$). Accordingly, it can be said that digital literacy scale and distance education attitude scale scores are normally distributed. Since Levene’s test values for testing the assumption of homogeneity of variances are [$F(1,391) = 0,239, p > .05$] for the digital literacy scale and [$F(0,089) = 0,766, p > .05$] for the distance education attitude scale, this assumption is met.

After determining the normal distribution of the data, regression and Pearson correlation analyzes were conducted to determine the relationships between digital literacy levels of the teacher candidates and their attitudes towards distance education. Independent sample t-test was performed to find out whether the teacher candidates’ scores obtained from digital literacy scale and distance education attitude scale create a significant difference according to gender. One-way ANOVA tests were used to examine whether the scores had significant differences depending on year of education and income level. If the ANOVA test was found to be significant, Post Hoc analyzes were carried out to determine which groups significantly differed from others.

Findings

Is there a relationship between the digital literacy levels of social studies teacher candidates and their attitudes towards distance education?

The result of the correlational analysis conducted to answer the first research question and to determine whether there is a relationship between the digital literacy levels of social studies teacher candidates and their attitudes towards distance education are shown in Table 3.

Table 3. Pearson correlation analysis for the relationship between digital literacy levels of social studies teacher candidates and their attitudes towards distance education

Variables	n	\bar{x}	sd	r
Digital Literacy Scale	260	105,65	16,40	.475**
Distance Education Attitude Scale	260	56,96	15,01	

When Table 3 is examined, it can be seen that there is a positive, moderate ($r = .475$, $p < .01$), and significant relationship between the digital literacy levels of the teacher candidates and their attitude towards distance education.

Is there a statistically significant predictive power of digital literacy levels of social studies teacher candidates on their attitudes towards distance education?

To answer the second research question and to determine whether the digital literacy levels of prospective teachers have a statistically significant predictive role on their attitude towards distance education, regression analysis was conducted. Table 4 shows the results of regression analysis.

Table 4. Regression analysis results on the predictive role of digital literacy levels of social studies teacher candidates on their attitudes towards distance education

R	R ²	ΔR^2	B	Std. Error	β	t	p
			Constant	11,02	5,35		2,05
.475	.226	.223	Attitude Towards Distance Education	.435	.050	.475	8,67

When the regression analysis table is examined, it is seen that the digital literacy scores of teacher candidates significantly predicted their attitudes towards distance education ($R = .475$, $R^2 = .226$, $F = 75,227$; $P < .01$). It can be said that 22% of the total variance of teacher candidates' attitudes towards distance education is explained by their digital literacy levels.

Do digital literacy levels of social studies teacher candidates differ depending on their gender, year of education and income level?

Independent sample t-test was used to determine whether digital literacy levels of social studies teacher candidates differ significantly according to their gender. Test results are shown in Table 5.

Table 5. Independent sample t-test for digital literacy levels of social studies teacher candidates according to their gender

Gender	n	\bar{x}	sd	df	t	p
Male	84	107,45	17,56	258	1,225	.22
Female	176	104,78	15,79			

As Table 5 shows, the digital literacy levels of social studies teacher candidates do not differ significantly according to their gender [$t_{(258)}=1,225$, $p > .05$]. Although there is no significant difference, it is seen that the digital literacy level of male teacher candidates ($\bar{X}=107,45$; $sd=17,56$) is higher than that of female teacher candidates ($\bar{X}=104,78$; $sd=15,79$).

Table 6 shows the results of one-way analysis of variance (ANOVA) conducted to determine whether the digital literacy levels of social studies teacher candidates differ significantly depending on year of education.

Table 6. One-way ANOVA results for digital literacy levels of social studies teacher candidates according to year of education

Year of Education	n	\bar{x}	sd	df	F	p
1 st	44	103,68	17,70			
2 nd	64	103,43	14,73	3	2,353	.07
3 rd	64	104,07	18,05	256		
4 th	88	109,38	15,21			

Looking at Table 6, it is seen that the digital literacy levels of teacher candidates do not differ significantly according to their year of education [$F_{(3-256)}=2,353, p > .05$]. In other words, digital literacy levels of social studies teacher candidates do not change significantly depending on their grade levels.

One-way analysis of variance (ANOVA) results conducted to determine whether the digital literacy levels of social studies teacher candidates differ significantly according to their income levels are as shown in Table 7.

Table 7. One-way ANOVA results for digital literacy levels of social studies teacher candidates according to income levels

Income Level	n	\bar{x}	sd	df	F	p	Post Hoc
Less than 2.000 TL	115	105,11	16,59				
2.000 TL - 4.000 TL	84	104,01	14,30	3	3,522	.01*	4>1
4.000 TL - 6.000 TL	40	104,92	18,90	256			
Above 6.000 TL	21	116,52	15,20				

* $p < .05$; Categories: Less than 2.000 TL=1, 2.000 TL – 4.000 TL=2, 4.000 TL – 6.000 TL=3, Above 6.000 TL=4

Table 7 shows that the digital literacy levels of social studies teacher candidates show a statistically significant difference according to their income levels [$F_{(3-256)}=3,522, p < .05$]. Post Hoc analysis revealed that the digital literacy levels of social studies teacher candidates having 6.000 TL and above income level ($\bar{X}=116,52$; $sd=15,20$) are significantly higher than that of teacher candidates having 2.000 TL and below income level ($\bar{X}=105,11$; $sd=16,59$) and teacher candidates having between 2.000 TL and 4.000 TL income level ($\bar{X}=104,01$; $sd=14,30$).

Do the attitudes of social studies teacher candidates towards distance education differ depending on their gender, year of education, and income level?

Independent sample t-test was run to determine whether the attitudes of social studies teacher candidates towards distance education differ significantly according to their gender. T-Test results are as shown in Table 8.

Table 8. Independent sample t-test for attitudes of social studies teacher candidates towards distance education according to their gender

Gender	n	\bar{x}	sd	df	t	p
Male	84	60,32	15,24	258	2,519	.01*
Female	176	55,35	14,67			

* $p < .05$

When Table 8 is examined, it is seen that the attitudes of social studies teacher candidates towards distance education show a statistically significant difference according to their gender [$t_{(258)}=2,519, p < .05$]. In other words, the attitude scores of male teacher candidates towards distance education ($\bar{X}=60,32; sd=15,24$) are higher than the attitude scores of female teacher candidates towards distance education ($\bar{X}=55,35; sd=14,67$).

Table 9 shows the results of one-way analysis of variance (ANOVA) conducted to determine whether the attitudes of social studies teacher candidates towards distance education differ significantly depending on year of education.

Table 9. One-way ANOVA results for the attitudes of social studies teacher candidates depending on their year of education

Year of Education	n	\bar{x}	sd	df	F	p	Post Hoc
1 st	44	55,00	15,68	3	4,314	.005	4>3
2 nd	64	56,54	14,98				
3 rd	64	52,90	13,98	256			
4 th	88	61,19	14,58				

* $p < .01$; Categories: 1st =1, 2nd =2, 3rd =3, 4th =4

Looking at Table 9, it is seen that the attitudes of teacher candidates towards distance education differ statistically significantly according to their year of education [$F_{(3-256)}=4,314, p < .01$]. According to the Post Hoc test results, the attitude scores of the 4th year social studies teacher candidates towards distance education ($\bar{X}=61,19; sd=14,58$) are significantly higher than that of the attitude scores of 3rd year social studies teacher candidates ($\bar{X} = 52.90; sd = 13.98$).

The results of one-way analysis of variance (ANOVA) conducted to determine whether the attitudes of social studies teacher candidates towards distance education differ significantly according to their income levels are shown as in Table 10.

Table 10. One-way ANOVA results for the attitudes of social studies teacher candidates according to their income levels

Income Level	n	\bar{x}	sd	df	F	p	Post Hoc
Less than 2.000 TL	115	54,16	13,56				
2.000 TL - 4.000 TL	84	55,53	13,09	3	8,960	.001*	4>1
4.000 TL - 6.000 TL	40	60,87	17,46	256			4>2
Above 6.000 TL	21	70,52	16,86				

* $p < .01$; Categories: Less than 2.000 TL=1, 2.000 TL – 4.000 TL=2, 4.000 TL – 6.000 TL=3, Above 6.000 TL=4

When Table 10 is examined, it is seen that the attitudes of teacher candidates towards distance education differ statistically significantly according to their income levels [$F_{(3-256)}=8,960, p < .01$]. The Post Hoc test showed that the attitudes of teacher candidates having 6.000 TL and above income level ($\bar{X}=70,52$; $sd=16,86$) towards distance education are significantly higher than the attitudes of teacher candidates having 2.000 TL and below income level ($\bar{X}=54,16$; $sd=13,56$) and teacher candidates having between 2.000 TL and 4.000 TL income level ($\bar{X}=55,53$; $sd=13,09$).

Discussion, Conclusion and Recommendations

Advances in science and technology are changing the way we live and communicate, and new technologies require individuals to acquire new skills. The most important of these skills is digital competence, which is one of the eight key competences included in all curriculums renewed in 2018. Today, we can meet almost all our needs by using information and communication technologies. During the epidemic, education could be maintained thanks to information communication technologies. The efficiency of teaching through online courses has varied depending on the digital literacy levels of teachers, students, and parents.

This study, which aims to investigate the relationship between digital literacy levels of social studies teacher candidates and their attitudes towards distance education, first tried to determine the digital literacy levels of teacher candidates according to the variables of gender, year of education and income level. It was determined that the digital literacy levels of teacher candidates did not differ significantly based on their gender; however, the digital literacy level of male teacher candidates was higher than that of female teacher candidates. It can be said that this finding may be related to the fact that men are more interested in the internet and technology than women. The studies conducted by Yazıcıoğlu, Yaylak & Genç (2020) with pre-school and primary school teacher candidates and carried out by Sarıkaya (2019) with Turkish teacher candidates reached to the conclusion that digital literacy

levels do not differ significantly according to year of education and gender variables, which were in line with the findings of the current study. The previous studies conducted by Özerbaş and Kuralbayeva (2018), Yontar (2019), and Akgün and Akgün (2020) found that the digital literacy level of male teacher candidates is higher than that of female teacher candidates. It was determined in the study conducted by Vázquez-Cano et.al (2017) that men showed more competence than women in the process of searching for information online and in developing online presentations. Yau & Cheng (2012) stated that the high level of self-competency of male students in using technology is not an innate ability, but is related to the lack of the opportunities and environments created for women to use technology.

This study demonstrated that the digital literacy levels of teacher candidates did not show a significant difference depending on their year of education. This finding corresponds to the findings of the study conducted by Özerbaş & Kuralbayeva (2018). On the contrary, the study of Can, Çelik & Çelik (2020) with science teacher candidates revealed that the level of digital literacy increased as the education level progressed from the 1st year to the 4th year.

The present study showed that the digital literacy levels of teacher candidates differed statistically significantly based on their income. It was determined that high-income teacher candidates had higher digital literacy levels compared to teacher candidates with low- and middle-income levels. This situation can be explained by the technological opportunities that teacher candidates have. On the other hand, the master's thesis prepared by Kara (2021) showed no significant differences between the digital literacy levels of teacher candidates and their income status.

The current study also aimed to determine the attitudes of teacher candidates towards distance education based on the variables of gender, year of education and income level. The findings of the current study showed that the attitudes of teacher candidates towards distance education changed significantly based on the gender variable. It was observed that attitudes of male teacher candidates towards distance education were more positive than that of the female teacher candidates. Similarly, the studies conducted by Başar, Arslan, Günsel & Akpınar (2019), Boz (2019) and Yenilmez, Turğut & Balbağ, (2017) revealed that attitudes of male teacher candidates towards distance education were higher than female teacher candidates.

In addition to the previous findings, the current study demonstrated that the attitudes of teacher candidates towards distance education differed statistically significantly depending on their year of education, and it was also determined that the attitude scores of the 4th year teacher candidates were higher than the attitude scores of the 3rd year teacher candidates. Among the previous studies on attitude towards distance education, there is no study examining the year variable. Gökbulut (2021) focused on the effects of the age variable on the attitudes towards distance education and no

significant difference was found between the age of the participants and their attitudes towards distance education.

Another finding of the current study was that there were statistically significant differences in the attitudes of teacher candidates towards distance education depending on their income status. It was discovered that teacher candidates with high income had a more positive attitude towards distance education compared to teacher candidates with low- and middle-income levels. This situation can be associated with the economic opportunity to have the necessary technical material for distance education. In other words, the students who do not have required technical material may experience problems in their course participation, which, in turn, may cause them to have negative attitudes towards distance education.

Looking at the studies conducted in 2020-2021, it is seen that many studies concentrated on the perception of online learning, online education, and distance education. For example, according to the results of the survey conducted by the Higher Education Council (YÖK) on the efficiency of online education during the pandemic process, the proportion of students who stated that online education has a negative effect on learning was determined to be 52%. The proportion of students who stated that online education affects education life negatively was 52% while the proportion of students who stated that it affected education life positively was 31%. The majority of the instructors (74%) who participated in the survey conducted by the Higher Education Council (YÖK) on the efficiency of online education during the pandemic period stated that the online education process helped them develop new technological and pedagogical skills. On the other hand, the study conducted by Karadağ & Yücel (2020) concluded that there were problems arising from the management, teaching staff and the systems used in distance education at universities during the pandemic process, and for these reasons, the satisfaction level of students towards distance education was low. On a similar vein, university students of the study conducted by Bayram et al. (2019) emphasized the inadequacies of the infrastructure for distance education and the limitations such as the inability of distance education to provide the expected efficiency in some courses that require practice. Karakus et.al. (2020) concluded that Turkish teacher candidates could not adapt to the distance education process that started suddenly. The participants of the study thought that skill-based courses could not be carried out with distance education, and suggested that the courses should be face-to-face as soon as possible. According to Bozkurt (2020) and Erbaş (2021), the Covid-19 outbreak showed that both students and educators did not fully have the digital competencies and skills needed during emergency distance education. Although some institutions have implemented digital transformation in terms of infrastructure, the mental transformation of teachers and learners has not been actualized. For this reason, the results of the studies on the attitude towards distance education mostly reveal the inadequacies, deficiencies and negativities.

One of the main objectives of this study was to reveal the relationship between digital literacy skills and the attitudes towards distance education. The findings of the current study indicated that there was a positive and moderately significant relationship between the digital literacy levels of teacher candidates and their attitude scores towards distance education, and it was concluded that the digital literacy levels of teacher candidates predicted their distance education attitude scores in a statistically significant way. Accordingly, it can be said that when the digital literacy levels of teacher candidates increase, their attitude scores towards distance education also increase. Therefore, it can be claimed that the ability of teacher candidates to follow the lectures, to participate in the discussions held in the lessons, to upload the assignments and tasks require the use of digital skills in online or offline remote courses held during the pandemic process. In this case, it can be said that the academic achievement levels of the students in distance education will vary depending on their digital literacy skills. As the success level of the students increase, their attitude towards distance education will change in a positive way. In the thesis prepared by Boz (2019), it was seen that the teacher candidates who have a high level of self-efficacy in using information and communication technologies also had a high level of perception of distance education and it was stated that information and communication technologies usage self-efficacy was an important factor for the perception of distance education. Other studies that can be associated with the findings of this study were the studies of Yakar & Yakar (2021) and Akgün (2015). The study conducted by Yakar & Yakar (2021) which examined the relationship between the attitudes of students towards distance education and their readiness to e-learning pointed out that there was a moderate relationship between attitude towards distance education and e-learning readiness. Another conducted by Akgün (2015) revealed a low positive correlation between self-efficacy perceptions of the students towards online technologies and their attitudes towards web-based teaching. These findings correspond to the findings of the current study.

In the light of the results of this study, the following suggestions can be offered:

- Teacher candidates should be provided with the settings where they can develop their digital competencies.
- As the effectiveness of distance education may vary depending on the digital competencies of the instructors, in-service trainings should also be organized to improve their digital competencies.
- Weekly hours of the course on information and communication technologies can be increased so that teacher candidates can improve their digital literacy skills. Practices should be emphasized in these courses.
- It should be ensured that teacher candidates work on projects where they can use their digital literacy skills.

- The content of the instructional technologies and material design course in the undergraduate curriculum should be arranged in a way to improve students' digital literacy skills. It should be ensured that teacher candidates develop digital materials for their fields of study.
- More theoretical and practical studies on distance education and digital literacy and competencies may be included in the Teaching Principles and Methods course and other courses on field taught in the undergraduate curriculum.
- It may be recommended to offer elective courses related to digital literacy and distance education.
- The reasons for the negative attitude towards distance education should be investigated and necessary precautions should be taken.

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