

Investigation of Prospective Preschool Teachers' Digital Literacy and Teacher Readiness Levels

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Abstract:


The aim of this study is to examine the relationship between prospective preschool teachers' digital literacy and teaching readiness levels. The research was conducted with the correlational survey model, one of the quantitative research methods. The sample of the study consisted of 349 prospective preschool teachers studying in third and fourth year in four state universities in Turkey during the academic year 2020-2021. Data on digital literacy levels of prospective preschool teachers were collected with the "Digital Literacy Scale", and data on their readiness to teach were collected with the "Teaching Readiness Scale". The data were analyzed with the SPSS 22 software program. As a result of the analysis of the data, it was determined that prospective preschool teachers' digital literacy and teaching readiness levels were high, and that their levels of digital literacy and teaching readiness did not differ according to gender or grade level variables. It was revealed that there was a moderate, positive relationship between the digital literacy and teaching readiness levels of prospective teachers.

Keywords: Preschool, prospective teachers, digital literacy, teaching readiness

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INTRODUCTION

In the current century, there has been a rapid growth and change in information and communication technologies. In 21st century societies, individuals are expected to have the skills to communicate successfully, to use information to solve complex problems, to adapt to new demands and changing conditions, to innovate, to generate new knowledge, and to use the power of technology to increase human capacity and productivity (Binkley et al., 2012). In the digital world, where technology shapes the lives of individuals, having the skills to use technology is seen as a necessity as much as literacy. Digital literacy, which is also considered as the ability to use technology in the digital age we are in, is defined as the ability to survive (Eshet, 2004), and adapt to changes and development. Gilster (1997) defined digital literacy as understanding information and presenting digital information obtained from multiple sources in different forms through information technologies. Jones and Hafner (2012) evaluated digital literacy as a competence in the use of digital tools. Digital literacy is developmental; in other words, it is built gradually on basic and acquired skills and knowledge. In this sense, the digital literacy skill of individuals is measured by their capacity to adapt mentally, socially-emotionally and technically to changes in technology. The more digitally literate an individual is, the easier it will be to adapt to new developments (Ng, 2012). In this direction, digital literacy is related to the skills of accessing and using digital information correctly.

The concept of digital literacy has begun to be widely used in many fields, including education today (Bawden, 2001; Chase & Laufenberg, 2011). The evolving potential of information, education and communication technologies and digital tools require digital literacy to take place in all learning areas, both formal and informal (Meyers, Erickson & Small, 2013). The inclusion of educational technologies in the learning process has profoundly affected pedagogical approaches to the nature of learning and teaching. Pedagogical knowledge is information about teaching and learning processes and practices that cover the aims, objectives, values and strategies of education. Pedagogical knowledge enables teachers to understand how students construct knowledge and acquire different skills (Loughran, Berry & Mulhall, 2012). Teachers' connection between content, pedagogy and technology for effective teaching and their effective use are also considered as technopedagogical competence (Koehler, Mishra, Kereluik, Shin & Graham, 2014). Studies have shown that information and communication technologies should be widely used in higher education (Bullen, Morgan & Qayyum, 2011), and that efforts to increase digital competence in teacher training programs and to use information and communication technologies in the classroom have a positive effect on teacher competencies (Røkenes & Krumsvik, 2014). This situation reveals the necessity of training digitally literate teachers who have the skills to use technology in learning-teaching processes.

The most important task of teacher training institutions is to prepare prospective teachers for professional life. In many countries, teacher training programs are based on the

national curriculum, and various contents such as digital competence or technological pedagogical content knowledge are not sufficiently included (Lund, Furberg, Bakken & Engelién, 2014). Studies reveal the importance of using technology for the development of digital competences in teacher education programs (Gudmundsdóttir & Hatlevik, 2018; Instefjord & Munthe, 2017; Maderick, Zhang, Hartley & Marchand, 2016; Tondeur et al., 2012). Therefore, it should be ensured that teacher training programs include using digital tools and resources for teaching purposes and guiding children in using digital tools (Harris, Mishra & Koehler, 2009; Koehler, Mishra, Akcaoglu & Rosenberg, 2013). In order for prospective teachers to be prepared for professional life in the digital world, it is expected that digital competencies will be included in teacher training programs more, and that different applied contents for the development of digital competencies of prospective teachers will be included in the program.

Prospective teachers are expected to feel professionally ready and competent to use technology resources as meaningful pedagogical tools and to create positive learning and teaching opportunities (Ertmer & Ottenbreit-Leftwich, 2010). Self-evaluations and self-efficacy perceptions are necessary for organizing one's abilities and managing possible situations, and these affect the choices and actions of individuals (Bandura, 1986). Teachers' perception of professional competence also determines their goals, behavior in the classroom and the effort they make to teach (Lauermann & König, 2016; Murkatik, Harapan & Wardiah, 2020). In other words, professional preparation and competence affect academic performance. Research findings reveal that the professional competence level of prospective teachers affects the teaching process when they become teachers (Hatlevik, 2017) and teachers' pedagogical knowledge, teaching motivation and self-regulation skills have positive effects on teaching quality (Kunter et al., 2013; McLoughlin & Lee, 2010). Classroom, school management and school characteristics and teaching resources may also affect teachers' self-preparedness and competence perception (Fackler, Malmberg & Sammons, 2021; Uslu & Çeliköz, 2020). Prospective teachers gain experience and become ready to teach by improving teaching competencies through hands-on teaching opportunities and teachers' observation (Brown, Lee & Collins, 2015). Studies show that being ready for teaching is related to having teaching competencies (Balcı, Şanal & Üğüten, 2019; Caires, Almeida & Vieira, 2012; Leung, Wong & Wong, 2013; Pendergast, Garvis & Keogh, 2011). The fact that teachers' sense of professional readiness and professional competence affect the teaching and learning process raises the issue of what qualifications prospective teachers should have in teacher training programs and how they will be supported in this process.

Teacher training programs should have certain standards in order to train teachers with the desired qualifications. Each country determines these standards in line with teacher competencies studies, and these qualifications have the feature of being a reference in the regulation of education programs in higher education institutions, in the process of teachers' admission to and candidacy for the profession, as well as in teachers' professional development studies (GDTTD, 2017). In today's world, where digitalization is inevitable in

teacher education, there is a need to implement different practices in the teaching-learning process in order to improve the ability to use information and communication technologies, which are among the teacher competencies, and to make prospective teachers digitally literate (Gruszczynska, Merchant & Pountney, 2013). In order to understand the innovations and changes in education and technology and to reflect them in the classroom environment, digital literacy is expected to be added to the professional competencies of prospective teachers by performing a digital innovation in teacher training programs. Thus, educational models that are open to pedagogical innovations, using flexible, creative digital technologies can be created and applications that will make the teaching learning process more meaningful can be implemented (Hepp, Fernández & García, 2015; Ligocki & Sturgis, 2021). Research results show the importance of digital literacy skills in teacher education (Gruszczynska & Pountney, 2013), the necessity to support teacher education in terms of technology use and digital literacy in teaching (Burnett, 2011), and the requirement for digital competence among prospective teachers to maintain their instructional self-efficacy in technology-rich classrooms (Elstad & Christophersen, 2017). It is seen that new generation teachers need to have enough equipment to feel ready for the profession and to complete their learning processes in such a way that they possess the competencies that include digital literacy.

As a result of the reflection of the great change in technology in the 21st century, the qualifications that prospective teachers should possess also differed and it became necessary for teachers to possess digital literacy, also known as the ability to use technology, for their professional readiness. In teacher training programs, there is a need for good quality studies to be made in this field in order to ensure the professional readiness of teachers by supporting teacher competencies in the dimensions of knowledge, understanding, skill and ability with technology and new approaches. In the light of the studies in the literature, this study aims to determine the extent to which prospective teachers consider themselves competent to have digital literacy skills and feel ready for the teaching profession. Digital literacy skills can contribute to prospective teachers' creating an online learning environment, feeling more competent, using appropriate teaching-learning methods, and increasing interaction among students. Considering that prospective teachers frequently use technology in daily life, it is thought that knowing how to use digital skills in developing professional teaching competencies will contribute to the improvement of the quality of teacher education, and the graduation of prospective teachers who are more professionally equipped and ready for teaching.

In the aim of this study is to examine the relationship between prospective preschool teachers' digital literacy and teaching readiness levels. Accordingly, answers to the following questions were sought in the study:

- 1: What are prospective teachers' digital literacy and teaching readiness levels?

2: Do digital literacy and teaching readiness differ significantly according to gender and grade level variables?

3: Is there a significant relationship between digital literacy and teaching readiness?

4: Is digital literacy a predictor of teaching readiness?

METHOD

Research Model

This study, which examines the digital literacy and teaching readiness levels of prospective preschool teachers, was carried out using the quantitative research method. Quantitative research is a research method that focuses on qualities such as beliefs, opinions, attitudes, motivation and behavior and requires collecting numerical data to explain a phenomenon (Muijs, 2010). The correlational survey model, one of the quantitative research designs, was used in the study. Correlational research is used to test the existence of relationships between variables (Fraenkel, Wallen & Hyun, 2012). In the study, an attempt was made to determine whether the dependent variables differed significantly according to the independent variables, the relationship between digital literacy and teaching readiness levels, and whether digital literacy predicted teaching readiness.

Research Sample

The sample of the study consisted of 349 prospective preschool teachers studying in the third and fourth year at four state universities in Turkey during the academic year 2020-2021. While determining the sample of the study, the criterion sampling method was preferred among the purposeful sampling methods. Criterion sampling helps to provide in-depth and rich data for a specific purpose (Teddlie & Tashakkori, 2015). The criteria determined at this stage were that the participants should be educated in the third and fourth grade and have taken the information technologies and instructional technologies courses for their suitability for the teaching profession. Demographic information regarding the research sample is given in Table 1 below.

Table 1

Demographic Information Regarding the Research Sample

Variable	Group	f	%
Gender	Female	290	83.1
	Male	59	16.9
Grade level	3rd grade	162	46.4
	4th grade	187	53.6

When Table 1 is examined, it is seen that 290 (83.1%) female and 59 (16.9%) male prospective teachers were included in the study. Of the prospective teachers, 162 (46.4%) students were in the 3rd grade and 187 (53.6%) students were in the 4th grade.

Data Collection Tools and Data Collection

The research data were collected by using the 'Digital Literacy Scale' and 'Teaching Readiness Scale'. The independent variables of the research were determined as gender and grade level of education; the dependent variables were determined as digital literacy and teaching readiness.

Digital Literacy Scale (DLS): Developed by Ng (2012), the Digital Literacy Scale, which consists of 17 items and 4 sub-dimensions (attitude, technical, cognitive and social), was adapted into Turkish by Hamutoğlu, Güngören, Uyanık and Erdoğan (2017) and validity and reliability studies were made. A 5-point Likert type rating is used as "strongly agree" (5), and "strongly disagree" (1) on the scale, in which there are no reverse-scored items.

The internal consistency coefficient of the scale (Cronbach alpha) was calculated as .93 for the whole scale, .88 for the attitude sub-dimension, .89 for the technical sub-dimension, .70 for the cognitive sub-dimension and .72 for the social sub-dimension. In this study, the Cronbach's alpha coefficient was found to be .89 for the reliability of the whole scale, .83 for the attitude sub-dimension, .81 for the technical sub-dimension, .59 for the cognitive sub-dimension and .65 for the social sub-dimension. These values can be interpreted as that the scale gives reliable results for the data obtained from the sample group. The KMO sample fit coefficient for the construct validity of the scale was determined to be .90, and the Bartlett sphericity test value was 2993.427 ($p < .001$). With factor analysis, it was determined that the scale has a four-factor structure, explaining 59.50% of the total variance, and that the factor loadings vary between .38 and .81.

Teaching Readiness Scale: The Teaching Readiness Scale, adapted to Turkish by Yıldırım and Kalman (2017), is a 5-point Likert-type scale consisting of 20 questions and 4 sub-dimensions: "creating an effective learning environment", "designing the teaching process", "technopedagogical competence" and "understanding the learner". The scale, which does not contain any items that need to be coded in reverse, ranges from 1 = very insufficient to 5 = very sufficient, and at least one and at most five points can be obtained from each item.

Yıldırım and Kalman (2017) determined the value of the Cronbach's alpha reliability coefficient as .92 for the whole scale, and .82 for the creating an effective learning environment dimension, .80 for the designing of the teaching process dimension, .83 for the technopedagogical competence dimension, and .73 for the understanding the learner dimension that constitute the scale. In this study, the Cronbach's alpha coefficient was found

to be .94 for the reliability of the whole scale, .86 for the creating an effective learning environment dimension, .89 for the dimension of designing the teaching process, .74 for the technopedagogical competence dimension and .81 for the understanding the learner dimension. These values can be interpreted as that the scale gives reliable results for the data obtained from the sample group. The KMO sample fit coefficient for the construct validity of the scale was determined as .94, and the Bartlett Sphericity test value was 4309.843 ($p < .001$). With factor analysis, it was determined that the scale has a four-factor structure, explaining 61.38% of the total variance, and that the factor loadings vary between .47 and .76.

The implementation of this research was carried out online in the 2020-2021 academic year with the voluntary participation of prospective preschool teachers. The necessary explanations were given to the participants about the questionnaire and the participants were informed about the confidentiality of personal information. No personal information about the prospective teachers was collected, and the data collected from the scales were used only for research purposes.

Data Analysis

In the analysis of the data, firstly, the missing data in the data set were examined and the questionnaire forms belonging to persons who completed them without due care were removed from the data set. In the analysis of the data, 349 questionnaire forms were evaluated. The data obtained within the scope of the research were analyzed using the IBM SPSS 22 software program. In order to examine the normal distribution of the data in the study, kurtosis and skewness values were examined and it was determined that the data were distributed normally. In the interpretation of the data, the significance level was accepted as .05 (Creswell, 2012). In the analysis process, independent samples t-test was used when the normality assumption was met for the data; the relationship between the two dependent variables of the study was calculated using the Pearson correlation coefficient, one of the correlation techniques. Multiple linear regression analysis was conducted to find out whether digital literacy predicted teaching readiness.

Research Ethical Permissions

In this study, all rules stated to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed. None of the actions stated under the title "Actions Against Scientific Research and Publication Ethics", which is the second part of the directive, were not taken.

Ethical review board name: Nevşehir Hacı Bektaş Veli University Ethics Committee

Date of ethics review decision: 03.02.2021

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RESULTS

In this section, the findings obtained as a result of the analysis of the research data are included. Descriptive statistics on digital literacy levels of prospective teachers are given in Table 2.

Table 2
Descriptive Statistics on Prospective Teachers' Digital Literacy Levels and Sub-Dimensions

	Variables	N	\bar{X}	sd	Med	Mod	Ky	SE (Ky)	Bs	SE (Bs)
Digital Literacy	Digital Literacy	349	3.65	.60	3.70	3.59	1.385	.260	-.710	.131
	Attitude	349	3.67	.71	3.71	3.71	1.246	.260	-.847	.131
	Technical	349	3.70	.65	3.83	3.67	.806	.260	-.275	.131
	Cognitive	349	3.71	.84	4	4	1.074	.260	-.877	.131
	Social	349	3.32	.85	3.50	4	-.083	.260	-.273	.131

When Table 2 is examined, it is seen that the mean digital literacy score of the participants is $\bar{X}=3.65$. Accordingly, it can be said that the digital literacy levels of prospective teachers were high. When the means of the digital literacy scale sub-dimensions are examined, it is seen that attitude is $\bar{X}=3.67$, technical is $\bar{X}=3.40$, cognitive is $\bar{X}=3.71$ and social is $\bar{X}=3.32$. It can be said that the digital literacy levels of the participants were also high in the sub-dimensions. Descriptive statistics on prospective teachers' readiness for teaching are given in Table 3.

Table 3
Descriptive Statistics on Prospective Teachers' Levels of Teacher Readiness and Sub-Dimensions

	Variables	N	\bar{X}	sd	Med	Mod	Ky	SE (Ky)	Bs	SE (Bs)
Teaching Readiness	Teaching Readiness	349	3.68	.61	3.82	4	1.261	.260	-.889	.131
	Understanding the Learner	349	3.64	.75	3.89	4	1.329	.260	-.929	.131
	Creating an Effective Learning Environment	349	3.64	.69	3.83	4	1.292	.260	-.905	.131
	Designing the Teaching Process	349	3.76	.67	4	4	1.292	.260	-.871	.131
	Technopedagogical Competence	349	3.65	.67	3.80	4	1.039	.260	-.795	.131

When Table 3 is examined, it is seen that the participants' mean scores for readiness for teaching are $\bar{X}=3.68$. Accordingly, it can be said that prospective teachers had a high level of teacher readiness. When the means of the sub-dimensions of the scale of readiness for teaching is examined, it is seen that understanding the learner is $\bar{X}=3.64$, creating an effective learning environment is $\bar{X}=3.64$, designing the teaching process is $\bar{X}=3.76$ and technopedagogical competence is $\bar{X}=3.65$. It can be said that the readiness level of the participants for teaching was also high in the sub-dimensions.

When Tables 2 and Table 3 are examined, it is seen that the mean, median and mode values obtained from the digital literacy and teaching readiness scales converge and that the distribution does not diverge from the normal. The digital literacy scale skewness value was found to be 1.385 and the kurtosis value was -.710, the readiness to teach scale skewness value was found to be 1.261 and the kurtosis value was -.889. It was determined that kurtosis and skewness values varied within the range of ± 1.5 in all variables. The fact that kurtosis and skewness values are within the limits (± 1.5) indicates that the distribution of the data is normal (Tabachnick & Fidell, 2012). Accordingly, it was determined that the data obtained from the digital literacy scale and the readiness for teaching scale were distributed normally. In Table 4 below, the findings regarding the analysis of prospective teachers' mean scores on digital literacy and teaching readiness according to the gender variable are given.

Table 4

T-test Results on Digital Literacy and Teacher Readiness Levels of Prospective Teachers According to Gender

	Variables	N	\bar{X}	sd	Med	Mod	Ky	SE (Ky)	Bs	SE (Bs)
Teaching Readiness	Teaching Readiness	349	3.68	.61	3.82	4	1.261	.260	-.889	.131
	Understanding the Learner	349	3.64	.75	3.89	4	1.329	.260	-.929	.131
	Creating an Effective Learning Environment	349	3.64	.69	3.83	4	1.292	.260	-.905	.131
	Designing the Teaching Process	349	3.76	.67	4	4	1.292	.260	-.871	.131
	Technopedagogical Competence	349	3.65	.67	3.80	4	1.039	.260	-.795	.131

* $p>.05$

When Table 4 was examined, it was determined that the digital literacy levels of the participants did not differ significantly according to the gender variable [$t_{(347)}=.462$, $p>.05$]. Similarly, it was seen that there was no significant difference between the teachers' readiness levels for teaching and the gender variable [$t_{(347)}= -1.009$, $p>.05$]. In this case, it can be said that the digital literacy and teaching readiness levels of female and male prospective teachers did not differ significantly. In Table 5 below, the findings regarding the analysis of the mean scores of the prospective teachers regarding their digital literacy and teaching readiness levels according to the grade level variable are given.

Table 5

T-test Results Regarding the Digital Literacy and Teaching Readiness Levels of Prospective Teachers According to Grade Level Variable

Variable	Group	N	\bar{X}	sd	df	t	p
Digital Literacy	3rd grade	162	3.61	.57	347	-1.071	.285
Teaching Readiness	4th grade	187	3.68	.62			
	3rd grade	162	3.63	.60	347	-1.389	.166
	4th grade	187	3.72	.62			

* $p>.05$

When Table 5 was examined, it was determined that the digital literacy levels of the participants did not differ significantly according to the grade level variable [$t_{(347)}= -1.071$, $p>.05$]. Similarly, it is seen that there was no significant difference between the teachers' readiness levels for teaching and the grade level variable [$t_{(347)}= -1.389$, $p>.05$]. In this case, it can be said that the digital literacy and teaching readiness levels of prospective teachers studying in the third and fourth grades did not differ significantly. Table 6 below includes findings related to Variance Inflation Factors (VIF) and Tolerance Values (Tolerance = $1 / \text{VIF}$) to determine multiple relationships between predictor variables.

Table 6

Tolerance and VIF Values of Digital Literacy Dimensions

Predictive Variables	Tolerance	VIF
Attitude	.474	2.109
Technical	.450	2.222
Cognitive	.578	1.729
Social	.525	1.904

When Table 6 is examined, it is seen that the VIF values of the predictor variables are lower than 10 and that the tolerance values are higher than 0.20. In line with these results, it can be said that there is no multicollinearity problem in terms of tolerance values and VIF values among the predictive variables (Hair, Anderson, Tatham & Black, 1998) and that there is no perfect linear relationship between variables. Table 7 below includes the findings of the correlation analysis conducted to examine the relationship between the digital literacy and teaching readiness levels of the participants.

Table 7

Relationship between Prospective Teachers' Digital Literacy and Teaching Readiness Levels

	Understanding the Learner	Creating an Effective Learning Environment	Designing the Teaching Process	Technopedagogical Competence	Mean Teaching Readiness Score
Attitude	.38**	.38**	.26**	.42**	.40**
Technical	.26**	.30**	.26**	.34**	.33**
Cognitive	.32**	.28**	.25**	.38**	.34**
Social	.28**	.25**	.23**	.34**	.30**
Mean Digital Literacy Score	.39**	.39**	.31**	.45**	.42**

**p<.01

When Table 7 is examined, it is seen that there is a positive and significant relationship between the digital literacy and teaching readiness mean scores of the participants at the level of .42 ($p < .01$). The highest correlation between the mean score of being ready to teach and digital literacy sub-dimensions is with the attitude sub-dimension (.40) ($p < .01$). The lowest correlation between the mean score of being ready for teaching and digital literacy sub-dimensions was found to be with the social sub-dimension (.30) ($p < .01$). The highest correlation between the digital literacy mean score and the readiness for teaching sub-dimensions is with the technopedagogical competence sub-dimension (.45) ($p < .01$). The lowest correlation between the digital literacy mean score and the readiness for teaching sub-dimensions is with the sub-dimension of designing the teaching process (.31) ($p < .01$). In Table 8 below, the findings related to Multiple Linear Regression analysis regarding the predictive value of the digital literacy levels of the participants for teaching readiness are given.

Table 8

Regression Analysis Results Regarding the Predictive Effect of Digital Literacy on Teacher Readiness

Variable	B	Standard Error B	β	t	p	Paired r	Partial r
Constant	2.116	.190	-	11.165	.000	-	-
Attitude	.201	.061	.234	3.318	.001	.401	.176
Cognitive	.088	.047	.120	1.888	.061	.340	.101
Social	.072	.048	.100	1.487	.138	.305	.080

Technical	.071	.069	.075	1.036	.301	.330	.056
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R=.436 R²=.190 F_(4,345)=20.133 p=.000

When Table 8 is examined, it is seen that there is a moderately significant relationship ($R=.436$) between the digital literacy attitude, technical, cognitive and social sub-dimensions and the readiness for teaching scores. The four dimensions together explain 19% of the total variance in the level of teaching readiness ($R^2=.190$). According to the standardized regression coefficient (β), the relative importance of predictor variables on teaching readiness is attitude ($\beta=.234$), cognitive ($\beta=.120$), social ($\beta=.100$) and technical ($\beta=.075$). According to the t-test results regarding the significance of the regression coefficients, among all predictor variables, the attitude sub-dimension ($t = 3.318, p = .001$) is a significant predictor of the level of teaching readiness. Accordingly, there is a low level positive relationship between the readiness level of the participants for teaching and attitude, which is one of the sub-dimensions of the digital literacy scale. From the digital literacy sub-dimensions, it is seen that cognitive ($t=1.888, p=.061$), social ($t=1.487, p=.138$) and technical ($t=1.036, p=.301$) are not significant predictors of teaching readiness.

DISCUSSION

The digitalization of education provided by universities today has revealed the necessity of developing new competencies in terms of adapting to changing needs for prospective teachers in universities. Digitalization has brought a new dimension to teachers' pedagogical skills and competencies, making it necessary to add digital knowledge and skills within pedagogical competencies. Prospective teachers' development of digital skills in using technology by integrating technology into the learning-teaching process and gaining experience in this field support teacher competencies and teacher readiness. In this study, the relationship between prospective preschool teachers' digital literacy and teaching readiness was examined.

When the findings regarding the determination of digital literacy levels of prospective teachers' in the study were examined, it was found that the digital literacy levels of the participants were high. When the results of the digital literacy sub-dimensions were evaluated, it was determined that the digital literacy levels of the participants were high in the attitude, technical, cognitive and social sub-dimensions. Based on these results, it can be said that prospective teachers find themselves competent in digital literacy and that the digital experiences of prospective teachers in daily life have a positive effect on their digital competence. In similar studies, it was found that prospective teachers' digital literacy levels were high (Çetin, 2016; Ocak & Karakuş, 2019; Kim, Hong & Song, 2018; León-Pérez, Bas, Escudero-Nahón, 2020; Üstündağ, Güneş & Bahçivan, 2017; Şad & Nalçacı, 2015). The results of the digital competence of the participants obtained in this study are similar to the other research results. Accordingly, it can be suggested that various applied training courses

are organized in order to professionally develop the digital competencies of prospective teachers.

When the findings of the study regarding the determination of digital literacy levels of prospective teachers according to the gender variable were examined, it was found that in terms of gender variable, digital literacy levels of prospective teachers do not differ significantly. In this case, it can be said that there was no difference between the digital literacy levels of female and male prospective teachers. In similar studies, it was determined that gender did not affect the frequency of internet use (Dikmen & Tuncer, 2018; Kozan & Bulut-Özek, 2019; Kul, 2020; Tondeur, Aesaert, Prestridge & Consuegra, 2018). Those research results are parallel with the findings of this study regarding the gender variable. On the other hand, research findings exist which reveal that male prospective teachers' digital literacy levels were significantly higher than those of female prospective teachers (Esteve-Mon, Llopis & Adell-Segura, 2020; Owens & Lilly, 2017; Yazıcıoğlu, Yaylak & Genç, 2020; Yontar, 2019). This may be due to the interest of male teacher candidates in technology. Accordingly, it can be said that digital competencies of female prospective teachers should be developed with various strategies in order to eliminate gender inequalities in education.

When the findings of the study regarding the determination of digital literacy levels of prospective teachers according to the grade level variable were examined, it was found that the digital literacy levels of the participants did not differ according to the grade level variable. It is seen that prospective teachers studying in the third and fourth grades had similar characteristics in terms of digital literacy levels. It can be said that there was no difference according to grade level, since all prospective teachers frequently used digital tools in daily life and all candidates had taken information technologies and instructional technologies courses. The use of technology by prospective teachers in teacher training programs plays a decisive role in the professional preparation of prospective teachers. Prospective teachers are expected to develop their digital literacy skills through applied studies from the first year of the teaching process (Mouza, 2016). When similar studies were examined, it was determined that there was no significant difference in digital literacy levels of prospective teachers according to grade levels (Dedebali, 2020; Özerbaş & Kuralbayeva, 2018; Law, 2018). In the study conducted by Can, Çelik, and Çelik (2020), it was found that the class level variable affected the digital literacy level and that the level of literacy increased as the class level increased. It can be said that there was no difference in this study because the prospective teachers who took part in the study were in the third and fourth grades.

When the findings on the determination of prospective teachers' level of teaching readiness in the study were examined, it was found that the participants' level of teaching readiness was high. When the data on the sub-dimensions of teaching readiness were examined, it was determined that the participants' level of teaching readiness was high in the sub-dimensions of understanding the learner, creating an effective learning

environment, designing the teaching process and technopedagogical competence. It can be said that the prospective teachers perceived themselves as competent and that they were ready to teach. Prospective teachers' feeling ready for the profession can positively affect the learning and teaching process. In similar studies, it was determined that prospective teachers had a positive perception of their professional performance (Caires, Almeida & Vieira, 2012; Colson, Sparks, Berridge, Frimming & Willis, 2017; Khalid, Dukmak & Dweikat, 2017) and showed a positive attitude towards the teaching profession. (Doğrul & Kılıç, 2020; Ismail & Jarrah, 2019). The results obtained in this study are similar to the results of the research in the literature.

When the findings regarding the determination of prospective teachers' level of teaching readiness according to the gender variable were examined, it was found that the participants' level of teaching readiness did not differ according to the gender variable. It can be said that male and female prospective teachers had a positive attitude towards the teaching profession and felt themselves competent. In similar studies, it was revealed that gender did not affect the level of teaching readiness (Karakaya, Uzel, Gül & Yılmaz, 2019; Kula, 2015), and that female and male prospective teachers had similar characteristics regarding professional preparation (Specht & Metsala, 2018; Subbaye & Vithal, 2017). It can be said that it is a positive result that female and male prospective teachers evaluated themselves as ready for the profession.

When the findings regarding the determination of prospective teachers' level of teaching readiness according to the class level variable were examined, it was found that the participants' level of teaching readiness did not differ according to the class level variable. In similar studies, it was revealed that the level of teacher readiness did not differ according to the class level variable (Karatekin, Meray & Keçe, 2015; Tuncer & Bahadır, 2016). In education faculties, theoretical and practical studies are carried out to improve the performance of prospective teachers from the first year onwards in order for them to have the necessary professional knowledge and skills (Bastian, Lys & Pan, 2018). As pedagogical competencies develop in prospective teachers, the process of transformation from student to teacher begins and an increase in feeling ready to teach occurs (Welsh & Schaffer, 2017). In this respect, it can be said that prospective teachers' professional preparations start from an early period and that prospective teachers who have a positive attitude towards the teaching profession feel themselves ready for the profession.

In the study, when the findings on the determination of the relationship between digital literacy and teaching readiness levels of prospective teachers were examined, it was found that there was a positive and significant relationship between the participants' mean scores of digital literacy and teaching readiness at the level of .42 ($p < .01$). According to Can (2019), there is a weak correlation or no correlation between 0.0 and 0.4, there is a moderate correlation between 0.4 and 0.6 and a high correlation between 0.6 and 1. It was determined that the highest correlation between the mean score of being ready to teach and the digital

literacy sub-dimensions was with the attitude sub-dimension (.40) ($p < .01$). In this respect, it can be said that there is a relationship between the attitudes of prospective teachers towards using technology in the learning process and their competencies for being ready for teaching. Similar studies have revealed that there is a strong relationship between prospective teachers' digital competencies and their instructional self-efficacy (Bond, Marín, Dolch, Bedenlier & Zawacki-Richter, 2018; Elstad & Christophersen, 2017; Ng, 2012). Supporting teacher training programs with digital learning experiences (Ally, 2019; Mourlam, Strouse, Newland & Lin, 2019; Wetzel, Buss, Foulger & Lindsey, 2014) is seen as a structure that affects teaching readiness. On the other hand, in some research studies, digital competence is still not seen as an important component of teachers' professional competence (Instefjord & Munthe, 2016) and digital literacy is not included in the process as part of academic literacy in universities (Bakir, 2015; Guzmán-Simón, García-Jiménez & López-Cobo, 2017; Gudmundsdottir & Hatlevik, 2018). Developing digital competencies in teacher training programs is important for prospective teachers' professional readiness. According to the results of the study, it was determined that the highest correlation between the digital literacy average score and the sub-dimensions of being ready for teaching was with the technopedagogical competence sub-dimension (.45) ($p < .01$). In line with these results, it can be said that prospective teachers associated technopedagogical competence with digital literacy and that digital literacy positively affected technopedagogical competence. Similar studies show that digital competencies in teacher education are important for teachers' professional development (Instefjord & Munthe, 2017; Kopcha, 2012; List, 2019). The pedagogical use of technology, which is called technological pedagogical content knowledge in teacher education, and the integration of technology into the teaching process are necessary for the professional development of teachers (Mishra & Koehler, 2006; Tarling & Dick, 2016). In this regard, the development of digital competence should be encouraged so that prospective teachers can use technology correctly, access the information they need and reflect this knowledge in the teaching process.

When the findings of the relationship between the predictivity of digital literacy for teaching readiness were examined, it was determined that there was a moderately significant relationship between the digital literacy attitude, technical, cognitive and social sub-dimensions and the readiness for teaching scores, and that the four dimensions together explained 19% of the total variance in the level of teaching readiness. According to the t-test results regarding the significance of the regression coefficients, it was observed that among all the predictive variables, the attitude sub-dimension was a significant predictor of the level of teaching readiness, while the cognitive, social and technical sub-dimensions were not significant predictors of the level of teaching readiness. The fact that attitude sub-dimension of the digital literacy scale is related to the learning process and that the prospective teachers had a positive attitude towards digital literacy may be effective in their finding themselves professionally ready for teaching. The attitude towards digital literacy can also be evaluated as a result of the increased use of digital resources in teacher

education. In similar studies, it was revealed that students thought that digital literacy courses were effective for academic development (Buzzetto-Hollywood, Elobeid & Elobaid, 2018; Hsu, 2012; McGarr & Gavaldon, 2018), and that university students used digital technologies for learning and social purposes (Margaryan, Littlejohn & Vojt, 2011). It has been determined that students' digital literacy and positive attitudes contribute to their self-perception in professional development (Gill & Dalgarno, 2017; Prior, Mazanov, Meacheam, Heaslip & Hanson, 2016; Tondeur, Pareja Roblin, van Braak, Voogt & Prestridge, 2017). Raising innovative and creative prospective teachers with digital literacy skills is seen as one of the ways to easily overcome the problems that may occur in the future teaching process. In this respect, it is important to ensure that digital competencies are included among professional teacher competencies for the professional preparation of future teachers.

LIMITATIONS AND RECOMMENDATIONS

In today's education system, where digital literacy is more accepted as a basic skill to support professional readiness, evaluating the digital literacy of prospective teachers after starting university and providing them with continuous support and training can contribute to their professional development. In line with the results of the research, it may be suggested that the practices aimed at improving the digital literacy and teaching readiness of prospective teachers in teacher training programs are increased, and that digital skills are added to teacher competencies. The fact that the study was conducted with prospective preschool teachers in the universities included in the sample is the limitation of this study.

CONCLUSION

When the results of the research were examined, it was determined that prospective preschool teachers had high digital literacy levels. It was revealed that the digital literacy levels of prospective teachers were also high in the sub-dimensions of the digital literacy scale. In the study, it was determined that digital literacy level did not differ according to gender or grade level variables. As a result of the research, it was determined that prospective preschool teachers had a high level of teacher readiness. In the sub-dimensions of the teaching readiness scale, it was revealed that the prospective teachers' level of teaching readiness was high. In the study, it was determined that the level of teaching readiness did not differ according to the variables of gender or grade level. In the study, it was determined that there was a positive and significant relationship between the digital literacy and teaching readiness scores of the prospective teachers. It was determined that the highest relationship between the mean score of being ready for teaching and the sub-dimensions of digital literacy was with the attitude sub-dimension, while the highest correlation between the mean digital literacy score and the sub-dimensions of teaching readiness was with the technopedagogical competence sub-dimension. In the study, it was

revealed that the digital literacy scale attitude sub-dimension was a significant predictor of the level of teaching readiness.

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