

## **Examining The Relationship Between Pre-Service Turkish Teachers Digital Writing Attitudes and Digital Reading Tendencies**

**Yusuf Mete ELKIRAN<sup>i</sup>**  
Çanakkale Onsekiz Mart University

### **Abstract**

This research aims to determine the relationship between pre-service Turkish teachers' digital writing attitudes and their digital reading tendencies. In this context, 167 teacher candidates from different grades studying in the Turkish language teaching program of a state university in the west of Turkey were consulted. The relational surveying method, one of the quantitative research methods, was used. "Digital Writing Attitudes Scale" and "Digital Reading Tendencies Scale" were used as data collection tools in the study. The obtained data were analysed with the SPSS package program. Since it was determined that the data showed normal distribution due to the assumption analysis of the findings, independent sample t-test and one-way ANOVA analyses were used in the research. In addition to these parametric tests, mean scores and standard deviation scores of the descriptive analysis results were used. As a result of the data analysis, it has been seen that pre-service Turkish teachers' digital writing attitudes and digital reading tendencies are at a high level. There has been no significant difference observed in the results in terms of participants gender for the convenience and motivation sub-dimensions of the scale. However, digital writing attitudes show a significant difference favouring female teacher candidate in the effect sub-dimension. According to the class variable, Turkish teacher candidates' digital writing attitudes show a significant difference in favour of small classes. The research findings concluded a moderate, positive, and significant relationship between pre-service Turkish teachers' digital writing attitudes and their digital reading tendencies. In order to provide digital transformation and dispositions, the positive and negative aspects of reading and writing in digital tools can be thoroughly researched, and improvements can be made by reviewing the existing tools.

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<sup>i</sup> **Yusuf Mete ELKIRAN**, Dr., Çanakkale Onsekiz Mart University, ORCID: 0000-0001-8372-8555

**Email:** ymelkiran@gmail.com

## INTRODUCTION

The development, use and prevalence of language show differences depending on the conditions and opportunities in each age. Automation systems, information and digital technologies developed in the 21<sup>st</sup> century have caused significant changes in all life conditions of human beings. A new era of communication has been started with the new mass media tools. It is understood that these changes are adopted by society (Güneş, 2016). In this period, the source prefers and uses online virtual systems more intensely as a channel to reach the target audience. In years, media has started to transform into new media by moving to digital environments. The transformation of the media to new digital media started especially with periodicals, and other printed media tools have been followed. This transformation has led to new communication, literacy and education process. In addition to these new process, language skills and literacy have begun to be reinterpreted with the word digital.

Traditionally, literacy has meant that individuals can read and write the language shared in a particular culture. Digital literacy is not an alternative or a replacement for traditional literacy. Digital literacy is the literacy that exists in online environments depending on the needs of the age (Churchill, Oakley and Churchill, 2008). Digital literacy is one of the most important skills of the 21<sup>st</sup> century. Digital literacy is a term beyond using digital tools and technologies. Digital literacy includes different stages of processing information, which are accessing information over online tools, organising it, analysing it, interpreting it, evaluating it, communicating it and producing it (Akkoyunlu and Soyulu, 2010; Churchill, 2016; Gilster, 1997).

Theoretically, the field of reading skill includes dimensions, processes, skills and techniques (Güneş, 2016; Özbay, Bağcı, and Uyar, 2008; Özbay and Özdemir, 2014). Before the 1940s, the reading skills of individuals who were able to analyse and make sense of symbols in a written text were evaluated differently. Later, the concept of the reader has changed in terms of meaning. Apart from written texts, the processes of making sense of nature and social events through media such as pictures, sketches, graphics, and cartoons and structuring processes in mind are included in the concept of reading (Akkaya and Toprak, 2021; Eryaman, 2007; Özden, 2019). The printed materials are constant. Reading the printed materials makes it possible to review the titles and review and master the general text. Digital texts have variable motion and dynamic structures. When reading digital texts, the entire text can not be seen. It can be accessed as much as shown on the screen. Reaching the remaining parts may not be as easy as in printed texts. The level of ease of reading may differ depending on the possibilities and offers of the electronic device. For this reason, it may be necessary to spend more energy reading digital texts.

Writing as a means of communication has been used in different ways by the world's nations for centuries (Karatay, 2011). The invention that most served and contributed to civilisations is the invention of writing. It is considered as recording the communication. As a channel for transmitting the message to the target audience in the past ages, cuneiform, hieroglyphs, papyrus and parchments were used. Writing skill has become unthinkable in one dimension with current technological tools. Today, virtual reality and augmented reality applications are available in digital online environments (Erbaş and Demirer, 2015). In this way, shorter and more concise statements can be made that appeal to more sense.

Technology will have been changed in future. With the quantum age, quantum computers and devices will be indispensable parts of our lives. However, the theoretical sources of comprehension and expression skills will continue to have a guiding effect. 4+1 Planned writing and evaluation model will guide obtaining a well-written expression product in the future (Karatay, 2011). More generally, the theories, principles, purpose and importance of reading and writing education will continue to exist (Ahmed Abdo Shaban, 2002; Avcı and Çelik, 2019; Fişekcioğlu, 2019; Güneş, 2016; Göçer, 2018; Karatay, 2011; Kurudayıoğlu and Çetin, 2015; Müldür and Çevik, 2021; Özbay, Bağcı and Uyar, 2008; Ustabulut, 2021).

Reading and writing are not just a tool for pleasantly spending time. These actions include learning, interpretation and critical thinking (Güneş, 2016). Reading and writing are not just skills, which are used and developed for educational purposes. Reading and writing skills are a need throughout life. In this phase, where digital tools and products become widespread, teachers should follow the change and development, improve themselves and guide students (Aytan, Güneş, and Çalıcı, 2018; Eryaman, 2008).

In line with the explanations made, this study, it is aimed to reveal the relationship between the digital reading tendencies of pre-service Turkish teachers' and their digital writing attitudes. Thus, it is thought to understand pre-service teachers' perceptions about reading and writing in the digital environment. The research problems determined in accordance with the purpose of the research are presented below:

1. What is the digital writing attitude of pre-service Turkish teachers?
2. What is the level of digital reading tendencies of pre-service Turkish teachers?
3. Do pre-service Turkish teachers' digital writing attitudes show a significant difference according to gender, class and academic achievement variables?
4. Do pre-service Turkish teachers' digital reading tendencies show a significant difference according to gender, class and academic achievement variables?
5. Is there a relationship between the digital writing attitudes of Turkish teacher candidates and their digital reading tendencies?

## METHOD

### Research Design

In this study, the relational surveying model, one of the quantitative research methods, was used to examine the relationship between the digital writing attitudes of pre-service Turkish teachers and their digital reading tendencies. Studies in which data are collected to determine certain characteristics of a group are called survey research (Büyüköztürk, Çakmak, Akgün, Karadeniz, and Demirel, 2018). In relational surveying models, the existence or degree of change of two or more variables together is tried to be determined (Karasar, 2007). In this study, pre-service Turkish teachers' digital writing attitudes and their digital reading tendencies and the relationships between variables in the data collection tool were examined.

### Participants

The research sample group consists of 167 pre-service Turkish teachers studying at Çanakkale Onsekiz Mart University Department of Turkish Education. Descriptive statistical analyses of the study sample group are given in table 1, table 2 and table 3.

**Table 1. Distribution of research participants by gender**

Gender	f	%
Female	115	68.9
Male	52	31.1

When Table 1 is examined, it is seen that 68.9% of the study participants are female, and 31.1% are male.

**Table 2. Distribution of the participants according to their grade levels**

Grade	f	%
First-grade	35	21
Second-grade	39	23.4
Third-grade	50	29.9
Fourth-grade	43	25.7

When Table 2 is examined, it is seen that 21% of the participants are first-grade, 23.4% are second-grade, 29.9% are third-grade, and 25.7% are fourth-grade.

**Table 3. Distribution of the participants according to their academic success averages**

GPA	f	%
0-2,5	0	0
2,51-3,00	60	35.9
3,01-4,00	107	64.1

When Table 3 is examined, none of the participants in the research has a grade point average between 0-2.5. It is seen that 35.9% of the participants have a grade point average between 2.51-3.00 and 64.1% between 3.01-4.0.

### Data Collection Tools

The "Digital Writing Attitudes Scale" developed by Kırmızı, Kapıkıran, and Akkaya (2021) is a 5-point Likert type. The scale consists of 25 items, which requires a Likert-type scoring between 1 and 5. The sub-dimensions of the scale are convenience, motivation and effect. The convenience sub-dimension consists of 13 items. The motivation sub-dimension consists of 6 items, and the effect sub-dimension consists of 6 items. The minimum score for the scale is 25, and the maximum score is 125 (Kırmızı, Kapıkıran and Akkaya, 2021). If the resulting score is high, it is seen that pre-service teachers have positive attitudes towards the digital writing process; if it is low, comments can be made that they have negative attitudes (Kırmızı, Kapıkıran, and Akkaya, 2021).

The "Digital Reading Tendency Scale" developed by Bulut and Karasakaloğlu (2018) is in the 5-point Likert type. The scale, which consists of 12 items, requires a Likert-type scoring between 1 to 5. The scale has only one dimension. The minimum score for the scale is 12, and the maximum score is 60. The increase in the scores obtained from the scale indicates that the individual's tendency to digital reading is high (Bulut and Karasakaloğlu, 2021).

A reliability study was conducted within the scope of the research. The Cronbach-Alpha internal consistency coefficient calculated for the "Digital Reading Tendency Scale" was .702, and the Cronbach-Alpha internal consistency coefficient for the whole "Digital Writing Attitudes Scale" was calculated as .878. The Cronbach-Alpha internal consistency coefficient for the "Digital Writing Attitudes Scale" sub-dimensions was calculated as .894 in the Convenience sub-dimension, .933 for the Motivation sub-dimension, and .788 in the Effect sub-dimension. Accordingly, it can be concluded that the scales are reliable.

### Data Analysis

SPSS package program, one of the quantitative data analysis programs, was used in the research. Standard deviation (Sd) and arithmetic mean ( $\bar{X}$ ) values were used in the study. According to George and Mallery (2010), the value ranges providing normality are between (+2.0) – (-2.0). The skewness and kurtosis values obtained from this study ranged from -2 to +2. Since the skewness and

kurtosis values showed normal distribution, t-test, one-way ANOVA analysis and Pearson correlation analyses were used.

## FINDINGS

Analysis results of pre-service Turkish teachers' digital writing attitudes and digital reading tendencies are given in table 4.

**Table 4. Analysis results on digital writing attitudes and digital reading tendencies of pre-service Turkish teacher**

	N	Min	Max	$\bar{x}$	S
Digital Writing Attitude	167	60	125	100.71	12.603
Digital Reading Tendencies	167	27	60	42.01	5.917

When table 4 is examined, it can be seen that the average scores of the pre-service teachers from the digital writing attitudes scale are at a positive level with a score of  $\bar{X}$ =100.71 out of 125. Also, they seem to respond as "I agree". It is seen that the average scores they received from the Digital Reading Tendency scale are at a moderate level with  $\bar{x}$ =42.01 out of 60 points.

**Table 5. Kurtosis and skewness values of the scales**

Dimension	Skewness	Kurtosis
Convenience	-1.244	1.608
Motivation	-.104	-.949
Effect	-.271	.441
Digital Writing Attitudes (Total)	-.281	.149
Digital Reading Tendencies (Total)	-.153	.151

When table 5 is examined, it can be seen that the entire Digital Writing Attitudes scale (Skewness: -.281, Kurtosis: .149) took values between -2 and +2. In addition to the total scale scores, sub-dimensions of the digital writing attitudes scale convenience (Skewness: -1.244, Kurtosis: 1.608), motivation (Skewness: -.104, Kurtosis: -.949), and the effect (Skewness: -.271, Kurtosis: .441) took values between -2 and +2. Also, table 5 shows that the entire Digital Reading Tendency scale (Skewness: -.153, Kurtosis: .151) took values between -2 and +2. According to George and Mallery (2010), the value ranges providing normality are between (+2.0) – (-2.0). In this context, the data obtained from the scales and sub-dimensions range from -2 to +2. According to these results, parametric tests will be applied for the analyses in this study. The analysis of the digital writing attitudes of pre-service Turkish teachers according to the gender variable is given in table 6.

**Table 6. Analysis results of pre-service Turkish levels of digital writing attitudes according to gender variable**

Dimension	Gender	N	$\bar{x}$	Sd	t	p
Convenience	Female	115	58.89	5.81	1.95	.05
	Male	52	56.33	8.59		
Motivation	Female	115	19.78	6.45	.29	.77
	Male	52	19.46	7.03		
Effect	Female	115	23.31	2.63	2.07	.04*
	Male	52	22.12	3.77		
Total	Female	115	101.98	11.05	1.73	.08
	Male	52	97.90	15.24		

As seen in table 6, digital writing attitudes of Turkish teacher candidates do not show a significant difference in terms of gender variable when the total scale score is considered ( $t_{(165)} = 1.73$ ,

$p > .05$ ). When the sub-dimensions of the scale are examined, there is a significant difference found in favour of female teacher candidates in terms of gender variable in the effect sub-dimension ( $t_{(165)} = 2.07, p < .05$ ). However, it does not show a significant difference in terms of gender variable in the sub-dimensions of convenience ( $t_{(165)} = 1.95, p > .05$ ) and motivation ( $t_{(165)} = .29, p > .05$ ). According to these results, it can be said that female pre-service teachers' perceptions of digital writing attitudes in the effect sub-dimension ( $\bar{X} = 23.31$ ) are higher than male pre-service teachers ( $\bar{X} = 22.12$ ).

The analysis of the digital reading tendencies of Turkish teacher candidates according to the gender variable is given in table 7.

**Table 7. The results of the analysis of the digital reading tendencies of Turkish teacher candidates according to the gender variable**

Dimension	Gender	N	$\bar{X}$	Sd	t	p
Total	Female	115	42.03	5.7	.07	.94
	Male	52	41.96	6.35		

As seen in table 7, the digital reading tendencies of Turkish teacher candidates do not show a significant difference in terms of gender when the total scale score is examined ( $t_{(165)} = .07, p > .05$ ).

In order to determine whether the sub-dimensions constituting the perception level of Turkish teacher candidates towards the digital writing attitudes differ from the variable of academic achievement, the independent groups' t-test was applied, and the results are shown in Table 8.

**Table 8. Analysis results of Turkish teacher candidates' digital writing attitudes levels according to academic success variable**

Dimension	Academic Achievement	N	$\bar{X}$	Sd	t	p
Convenience	2.51-3.00	60	58.27	7.41	.248	.80
	3.01-4.00	107	57.99	6.59		
Motivation	2.51-3.00	60	18.71	6.66	2.57	.01*
	3.01-4.00	107	21.42	6.41		
Effect	2.51-3.00	60	22.48	3.20	-1.44	.15
	3.01-4.00	107	23.20	2.98		
Total	2.51-3.00	60	102.17	14.00	1.06	.29
	3.01-4.00	107	99.90	11.73		

$p^* < .05$

It can be seen in table 8, digital writing attitudes of pre-service Turkish teachers` do not show a significant difference in terms of academic achievement when the total scale score is considered ( $t_{(165)} = 1.06, p > .05$ ). When the sub-dimensions of the scale are examined, the motivation sub-dimension ( $t_{(165)} = 2.57, p < .05$ ) shows a significant difference in favour of pre-service Turkish teachers` whose academic achievement level is between 3.01-4.00 in terms of academic achievement. In other words, the pre-service teachers' perceptions whose academic achievement level is between 3.01-4.00 in the motivation sub-dimension ( $\bar{X} = 21.42$ ) are at a higher level than the pre-service teachers whose academic achievement level is between 2.51-3.00 ( $\bar{X} = 18.71$ ). However, it does not show a significant difference in terms of academic achievement in the sub-dimensions of convenience ( $t_{(165)} = .248, p > .05$ ) and effect ( $t_{(165)} = -1.44, p > .05$ ).

In order to determine whether the dimensions and scale that make up the perceptions of Turkish teacher candidates' digital writing attitudes differ according to the gender variable, independent groups t-test was applied, and the results are shown in Table 9.

**Table 9. The results of the analysis of the digital reading tendencies of Turkish teacher candidates according to the academic achievement variable**

Dimension	Academic Achievement	N	$\bar{X}$	Sd	t	p
Total	2.51-3.00	60	41.15	5.96	2.55	.01*
	3.01-4.00	107	43.55	5.73		

p\* < .05

As seen in Table 9, digital reading tendencies of Turkish teacher candidates show a significant difference in favour of pre-service Turkish teachers' whose academic achievement level is between 2.51-3.00 in terms of academic achievement variable when the total scale score is examined. ( $t_{(165)} = 2.55$ ,  $p > .05$ ). In other words, the perception of digital reading tendencies of pre-service teachers with an academic achievement level between 3.01-4.00 ( $\bar{X} = 43.55$ ) is higher than that of pre-service teachers with an academic achievement level between 2.51-3.00 ( $\bar{X} = 41.15$ ).

In order to determine the digital writing attitude scale and its sub-dimensions in terms of grade-level variable, a One-way ANOVA analysis was applied to determine whether the perception levels of Turkish teacher candidates towards digital writing attitudes differ. One-way ANOVA analysis results according to the grade level variable of digital writing attitudes of Turkish teacher candidates are given in Table 10.

**Table 10. One-way ANOVA analysis results of Turkish teacher candidates' digital writing attitudes according to grade level variable**

	Source of Variance	Sum of Squares	sd	Mean Square	F	p	Significant Difference
Convenience	Between Groups	509.210	3	169.737	3.768	.012*	A-D
	Within Groups	7342.442	163	45.046			
	Total	7851.653	166				
Motivation	Between Groups	609.807	3	203.269	4.976	.002*	A-C
	Within Groups	6658.373	163	40.849			
	Total	7268.180	166				
Effect	Between Groups	49.100	3	16.367	1.755	.158	
	Within Groups	1520.301	163	9.327			
	Total	1569.401	166				
Total	Between Groups	1549.392	3	516.464	3.392	.019*	A-B
	Within Groups	24816.812	163	152.250			
	Total	26366.204	166				

p\* < .05, A: First-grade, B: Second-grade, C: Third-grade, D: Fourth-grade

According to table 10, digital writing attitudes of pre-service Turkish teachers show a significant difference according to the grade level variable [ $F_{(3-163)} = 3.392$ ;  $p < .05$ ]. Tukey test was conducted in order to reveal among which groups this difference originated. According to the Tukey test, digital writing attitudes of first-grade Turkish teacher candidates ( $\bar{X} = 104.23$ ) were determined according to second-grade Turkish teacher candidates ( $\bar{X} = 103.82$ ), third-grade Turkish teacher candidates ( $\bar{X} = 99.04$ ), and fourth-grade Turkish teacher candidates ( $\bar{X} = 96.98$ ) shows a significant difference in favour of first-grade Turkish teacher candidates.

It shows a significant difference in the convenience sub-dimension according to the grade level variable [ $F_{(3-163)} = 3.768$ ;  $p < .05$ ]. Tukey test was conducted in order to reveal among which groups this difference originated. According to the Tukey test, digital writing attitudes of first-grade pre-service Turkish teachers show a significant difference in favour of first-grade pre-service Turkish teachers in the sub-dimension of convenience ( $\bar{X} = 59.34$ ) compared to fourth-grade pre-service Turkish teachers ( $\bar{X} = 58.09$ ). In addition to the convenience sub-dimension, it also shows a significant

difference in the motivation sub-dimension according to the grade level variable [ $F_{(3-163)}=4.976$ ;  $p < .05$ ]. According to the Tukey test results, digital writing attitudes of first-grade pre-service Turkish teachers in the motivation sub-dimension ( $\bar{X}=21.89$ ), compared to third-grade pre-service Turkish teachers ( $\bar{X}=18.00$ ) and fourth-grade pre-service Turkish teachers ( $\bar{X}=17.95$ ), there is a significant difference in favour of first-grade pre-service Turkish teachers. However, it does not show a significant difference in the effect sub-dimension according to the grade level variable [ $F_{(3-163)}=1.755$ ,  $p > .05$ ].

One-way ANOVA analysis was applied to determine whether the digital reading tendencies of Turkish teacher candidates differ when considering the total scale score in terms of the class variable. The results of a One-way ANOVA analysis of the digital reading tendencies of Turkish teacher candidates according to the class variable are given in Table 11.

**Table 11. One-way ANOVA analysis results of Turkish teacher candidates' digital reading tendencies according to the class variable**

Source of Variance	Sum of Squares	sd	Mean Squares	F	p	Significant Difference
Between Groups	78,970	3	26,323	.748	.525	-
Within Groups	5733,006	163	35,172			
Total	5811,976	166				

$p > .05$ ,

According to Table 11, there is no significant difference between the digital reading tendencies of pre-service Turkish teachers according to the class variable [ $F_{(3-163)} = .748$ ,  $p > .05$ ]. On the other hand, the digital reading tendencies of the first-grade pre-service Turkish teachers ( $\bar{X}= 43.31$ ) are higher than the second-grade ( $\bar{X}= 41.87$ ) and third-grade ( $\bar{X}=41.70$ ) pre-service Turkish teachers. In addition, fourth-grade pre-service Turkish teachers ( $\bar{X}= 41.44$ ) have the lowest digital reading tendencies.

A One-way ANOVA analysis was applied to determine whether the digital reading tendencies of pre-service Turkish teachers differ when considering the whole scale in terms of the class variable. The results of a One-way ANOVA analysis of the digital writing attitudes of pre-service Turkish teachers according to the class variable are given in Table 12.

**Table 12. Pearson Correlation analysis on the relationship between Turkish teacher candidates' digital writing attitudes and digital reading tendencies**

		Writing	Reading
<b>Writing</b>	Pearson Correlation	1	.524**
	Sig. (2-tailed)		.000*
	N	167	167
<b>Reading</b>	Pearson Correlation	.524**	1
	Sig. (2-tailed)	.000*	
	N	167	167

\*\*Correlation is significant at the 0.01 level (2-tailed)

\* $p < .01$

When Table 12 is examined, there is a moderate, positive and significant relationship between the digital writing attitudes of pre-service Turkish teachers and their digital reading tendencies [ $r=0.524$ ,  $p < .01$ ]. Accordingly, it can be said that as the pre-service teachers' writing increases, their



reading also increases. According to the coefficient of determination [ $r^2=.27$ ], it can be said that 27% of the total variance in the writing scale is due to the reading scale.

## DISCUSSION AND RESULTS

This study determined the relationship between Turkish teacher candidates' digital writing attitudes and digital reading tendencies. The research consists of 167 pre-service Turkish teachers who were studying at Çanakkale Onsekiz Mart University. 68.9% of the participants were female, and 31.1% were male teacher candidates. 21% of the participants were first grade, 23.4% were second grade, 29.9% were third grade, and 25.7% were fourth-grade students. It was determined that none of the participants had a grade point average below 2.5 out of 4.0. It has been determined that 35.9% of the participants had academic achievement scores between 2.51-3.00 and 64.1% between 3.01-4.0.

It has been observed that there is a moderate, positive and significant relationship between the digital writing attitudes of Turkish education teacher candidates and their digital reading tendencies. The moderate level of Correlation indicates that there is a relationship between them. According to this result, it can be said that a change in one affects the other at a moderate level. In other words, it can be said that pre-service teachers' digital writing attitudes and digital reading tendencies affect each other positively.

The digital reading tendencies of Turkish teacher candidates were at a moderate level. Some studies in the literature support this finding (Bulut and Karasakaloğlu, 2019; Maden, Banaz and Maden, 2018; Saracaloğlu, Karasakaloğlu and Aslantürk, 2010). It was seen that the pre-service teachers who participated in the research conducted by Geçgel, Kana, Öztürk, and Akkaş (2020) preferred printed materials more than digital materials. According to this research, it can be said that pre-service teachers do not prefer to read wide and large texts from digital media. Pre-service teachers prefer digital reading if the texts contain short and specific information (Larson, 2012). In their study, Kırmızı, Kapıkıran, and Akkaya (2021) concluded that pre-service teachers prefer reading from printed sources more than digital materials. According to Dağtaş's (2013) study, reading from the screen tires the eyes and mind more than reading from the printed media.

The digital writing attitudes of the Turkish teacher candidates were at a positive level, and they responded as "I agree". Some of the studies in the literature support this result. Maden, Banaz and Maden (2018) found that pre-service Turkish teachers' digital writing habits were above average. In another study, Yamaç, Öztürk, and Mutlu (2020) found that students' writing skills in digital environments were higher than students who write using pen and paper. Aktaş and Akyol (2020) found that digital environments improve students' writing skills in their experimental research. Aytan, Güneş, and Çalıcı (2018) concluded that pre-service Turkish teachers were successful in their screenwriting skills.

Another finding in the study is that pre-service Turkish teachers' digital writing attitudes did not significantly differ in terms of gender variable in the total scale score and the sub-dimensions of convenience and motivation. According to Bağcı's (2010) study, pre-service teachers' composition (written expression skill) scores did not show a significant difference according to their gender. However, it was understood that there was a significant difference favouring female pre-service teachers regarding gender variable in the effect sub-dimension. There is a significant difference in favour of female pre-service teachers between female pre-service teachers average text creation levels and the average male pre-service teachers text creation levels. In Dumanlı's (2014) study, it was determined that female pre-service Turkish teachers consider themselves more competent in terms of written expression skills.

The digital reading tendencies of pre-service Turkish teachers do not show a significant difference in terms of gender variable when the total scale score is considered. In other words, the gender variable is not an influential variable on the digital reading tendencies of pre-service Turkish

teachers. This result shows similarities with Şahin's (2019) research on reading motivation. In some studies in the literature, it was determined that female students read more books than male students (Arslan, Çelik and Çelik, 2009; Gönen, Çelebi and Işıtan, 2004; Başaran and Ateş, 2009; Korkmaz, 2007; Özbay, Bağcı and Uyar, 2008; Yalınkılıç, 2007). However, these studies are about traditional reading trends, not digital reading.

The digital writing attitudes of pre-service Turkish teachers do not show a significant difference in terms of academic achievement for the total scale score and the convenience and effect sub-dimensions. However, in the motivation sub-dimension, it shows a significant difference favouring the pre-service teachers whose academic success level is between 3.01-4.00 according to the academic achievement variable. According to these findings, it was determined that pre-service teachers with high academic success enjoyed taking notes in the digital environment more, they felt the satisfaction of writing more, they felt more fluent and enjoyed while writing.

When the digital reading tendencies of pre-service Turkish teachers are taken into account as a whole, in terms of the academic achievement variable, the digital reading tendencies perceptions of the pre-service Turkish teachers whose academic achievement level is between 3.01-4.00 are higher than those of the pre-service Turkish teachers whose academic achievement level is between 2.51-3.00. According to these findings, it was determined that the pre-service Turkish teachers' digital reading tendencies were high if their academic achievement level was also higher than the contrary group. It is understood that the pre-service teachers with high academic success variable may prefer the sources in the digital environment more, prefer to use the internet sources, and prefer to follow the news sites in the social media such as Twitter et al., to get instant information.

The digital writing attitudes of pre-service Turkish teachers show a significant difference according to the grade level variable. The digital writing attitudes of the first-grade pre-service Turkish teachers show a significant difference in favour of the first-grade pre-service Turkish teachers compared to the second-grade, third-grade and fourth-grade pre-service Turkish teachers. In the convenience sub-dimension, the digital writing attitudes of the first-grade pre-service Turkish teachers according to the grade level variable showed a significant difference in favour of the first-grade pre-service Turkish teachers compared to the fourth-grade pre-service Turkish teachers. According to the grade level variable in the motivation sub-dimension, the digital writing attitudes of the first-grade pre-service Turkish teachers show a significant difference in favour of the first-grade pre-service Turkish teachers compared to the third and fourth-grade pre-service Turkish teachers. However, it does not show a significant difference in the effect sub-dimension according to the class level variable. According to these findings, as the grade level increases, it is understood that the digital writing attitudes are at a lower level. It can be said that pre-service teachers in low-level classes are more tending to digital writing.

According to the class variable, the digital reading tendencies of pre-service Turkish teachers do not show a significant difference. In some studies in the literature, it can be seen that the class factor related to reading skill was not an influential variable on pre-service Turkish teachers (Özbay, Bağcı, and Uyar, 2008; Şahin, 2019). In Şahin's (2019) study, it was seen that lower grades pre-service Turkish teachers had higher reading motivations than those studying in upper grades.

According to the class variable, pre-service Turkish teachers digital writing attitudes show a significant difference in favour of the lower classes. In the convenience sub-dimension, the digital writing attitudes of the first-grade pre-service Turkish teachers show a significant difference in favour of the first-grade pre-service Turkish teachers compared to the fourth-grade. Besides that, the motivation sub-dimension of the digital writing attitudes of the first-grade pre-service Turkish teachers show a significant difference in favour of the first-grade compared to the fourth-grade pre-service Turkish teachers. However, it does not show a significant difference in the effect sub-dimension according to the class level variable. According to the study results, it can be said that the class variable has no effect on the pleasure of touching the paper and the concern that digital tools emit

radiation. In addition, according to the answers given by the pre-service Turkish teachers to the scale items, it was found that the class variable did not affect health problems as digital writing would cause eye diseases and tired the eyes. Besides that, it can be said that first-year pre-service teachers have a higher tendency to digital writing tools and digital writing attitudes than fourth-grade pre-service teachers.

We are in an era where the concept of digital citizenship is accepted, where official business and transactions are done electronically without the need to go to institutions in person (Arcagök, 2020). Evaluations have been made from the past to the present to meet the changing needs of society and language learning due to technological developments (Balcı and Temizyürek, 2015; Güneş, 2016). In this period, Turkish teaching programs were also tried to catch up with the future and update it (Güzel and Karadağ, 2013, Özbay and Özdemir, 2014). Digital reading and digital writing issues have started to take an important place in our lives. The ability to participate, write, edit or read content in digital and especially social media environments; affects the behaviour and attitudes of users (İşlek, 2012). In digital writing and digital reading, causes and effects are examined, and research is needed to focus on social media.

In future, it can be ensured that the digital writing attitudes of Turkish teachers working in schools can be investigated, and necessary in-service training can be provided according to the results. Digital writing attitudes and digital reading tendencies can also be investigated in-depth qualitatively. The advantages and disadvantages of reading and writing on digital devices can be questionable. In order to provide digital transformation and dispositions, the positive and negative aspects of reading and writing in digital tools can be thoroughly researched, and improvements can be made by reviewing the existing tools.

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