

Pre-Service Teachers' Digital Literacy Levels, Views on Distance Education and Pre-University School Memories*

Murat Polatⁱ
Mus Alparslan Univesity

Abstract

Many studies are still ongoing on the possible effects of the Covid-19 Pandemic process on educational environments. With the decision to switch to distance education during the pandemic process, an important opportunity has emerged for rapid digital transformation in higher education. In this process, the relationships between the digital literacy levels of university students, their views on distance education and their pre-university school memories are curious. Therefore, the main purpose of this study is to examine the relationship between education faculty students' digital literacy levels and their views on distance education and their pre-university school memories. The research was carried out in the faculty of education at a state university in the 2020-21 academic year. The sample group consists of n = 234 (89 males; 145 females, mean age 21.7) pre-service teachers. Research data were collected online via Classroom. During the data collection process, one personal information form and three scale forms were used together. The return rate of the data collection tool is ~ 51%. Descriptive and relational analysis were used to analyze the collected data (p <.05). The findings, there are some significant and positive relationships between pre-service teachers' digital literacy levels, their views on distance education and their pre-university school memories. It has been revealed that students' digital literacy levels, their pre-university school memories and their views on distance education have significant effects in varying degrees. Some suggestions were made within the framework of the relevant literature for the results reached.

Keywords: School Memories, Digital Literacy, Distance Education and Online Learning, Pre-Service Teachers, 21st Century Abilities, Covid-19 Pandemic Process

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ⁱ **Murat Polat**, Assist. Prof., Educational Sciences, Education Faculty, Mus Alparslan University, ORCID: 0000-0002-2921-7831

Email: m.polat@alparslan.edu.tr

INTRODUCTION

For pre-service teachers, pre-university school memories form an academically important pre-experience in terms of future learning experiences. This pre-experience has several defining features for their future professional career. In terms of pre-service teachers, these determinants may have positive as well as negative effects in the future. According to Kaya (2018), pre-service teachers' future academic and professional understanding is not independent from their academic background / school memories (Kaya, 2018). This reality also plays an important role in the process of emerging teacher identities after pre-service teachers start their profession (Heikkilä, Uusiautti, & Määttä, 2012). Rothenberg (1994) emphasizes that school memories can be a remarkable way of providing insight into teachers' development and professional behavior. In this context, Arwas and Flum (2020) argue that the teacher-student relationship in past school memories has a long-term effect on students' identity formation.

Literature Review

In order to see the current situation on the subject more clearly, many studies of different types are encountered in the literature. For example, in a study conducted by Miller and Shifflet (2016) on primary school pre-service teachers, they revealed the power of early school memories for pre-service teachers.

Miller and Shifflet (2016) asked primary school pre-service teachers to write down their primary school memories and reflect on the meaning of these memories together with the course material. In this case, it was observed that the early school memories that the students had creating the teaching self they wanted and / or fear were effective. It has even been revealed that some pre-service teachers with negative school memories noticed some contrasts between these memories and the effective teaching practices learned in the lesson. Some pre-service teachers were able to define a more positive learning experience when they compared their past good school memories with current practices. So, it can be stated that studies on school memories have a high potential to gain a deep perspective on educational environments.

It is understood that school memories have important reflections on the social development of individuals. These reflections can pave the way for participant-oriented and historical thinking about the social dimensions of education (Lahelma, 2002; Tanggaard & Nielsen, 2013). Thus, an environment can be provided for the often-unheard voices of the daily life cycle at school. That is, it may lead to a special emphasis on the everyday and relational aspects of school education.

Sonu (2020), with a Foucault's point of view, drew attention to the fact that the analysis of school memories can shed light on the complex network of social problems, especially racism. In other words, school memories according to Meda and Viñao (2017); It can also be used to explore social perception of education and training. So, increasing research on school memories may reveal the effective social and cultural dimensions of the historical phenomenon. It can also help us identify the reasons behind some stereotypes / routines that still surround the school.

But, there are some studies in the literature that deal with school memories from the perspective of parents. For example, Rätty (2010) sees parents' school memories as an experience-based component of their attitudes towards education. In this context, parents with positive school memories are more satisfied with their children's school life than those with negative school memories. Başaran and Yıldırım (2017) found that parents' school memories differ according to their education level. In this sense, it can be stated that the school memories of students' parents have a partial effect on the positive or negative formation of students' school memories.

Smith et al. (2003) found that especially students' negative school memories can affect their future professional lives. For example, students who have negative school memories of school bullying are at risk of future workplace victimization. It has even been suggested that students with

memories of school who are unable to cope with bullying or who try to make fun of bullying are at greater risk in the workplace.

Today, it is possible to add university students' early acquaintance with technology among the factors affecting studies on the importance of school memories for students. In this context, it is necessary to consider the concepts of digital literacy and digital nativity, which are 21st century skills (Arabacı & Polat, 2013; Nawaz & Kundi, 2010). It is a predictable situation that especially digital literacy has become an important part of pre-university school memories among pre-service teachers, as it is for students at other school levels in today's conditions.

Since 1924 in Turkey, the developments occurring in distance education is necessary to keep in mind. In this process, there are changes in both technology and student structure in higher education. Distance education, especially on the internet, has become popular (Akdemir, 2011). Thus, the presence of a digital transformation in education in Turkey is accepted. In this respect, it is stated that there is a great need for projects that will increase the digital literacy competence of students (Karabacak & Sezgin, 2019). Because, as Zan et al. (2021) said, digital literacy skills come to the fore for university students to have the digital literacy level that will meet the needs of the 21st century, representing the qualified human resources of countries. Tejedor et al. (2020) point out that in the century we live in, it is almost necessary to guarantee a set of skills and competencies that integrate digital literacy into the existing higher education system in higher education.

It is observed that the digital transformation and digital literacy process in higher education has accelerated further with the effect of the Covid-19 pandemic process. Especially in this period, researches trying to examine the open and distance education process (Can, 2020; Durak, Çankaya & İzmirli, 2020) are also common. Yet, in this process, according to List (2019), it is important to examine the contexts that reveal the digital literacy of prospective teachers in more detail. In this context, it has been observed that there are not enough studies to shed light on a possible relationship between pre-service teachers' views on digital literacy and distance education and their pre-university school memories.

This observation makes up the main motivation of this research. So, the purpose of this study is to explore the relationships between pre-service teachers' views on digital literacy and distance education during the pandemic process and their pre-university school memories. The main sub-problems that the research seeks to answer are as follows:

- What are the pre-service teachers' digital literacy levels, their views on distance education and their pre-university school memories?
- Are there any significant relationships between prospective teachers' demographic characteristics (gender, grade level, parents' educational status, number of siblings, registered program) and their digital literacy levels, their views on distance education and their pre-university school memories?
- Are there any direct relationships / effects between prospective teachers' digital literacy levels and their views on distance education and their pre-university school memories?

MATERIAL AND METHODS

Research Model

In this study, cross-sectional and relational scanning patterns were used together. The aim of the cross-sectional survey is to reveal an instantaneous picture of the sample group (Özdemir, 2015). The purpose of relational screening is to discover possible relationships between pre-service teachers' digital literacy level, their views on distance education and their pre-university school memories. In

other words, it is to understand the nature of the relationship between these variables (such as whether there is a change together or what is its degree) (Fraenkel & Wallen, 2009; Karasar, 2005).

The Population and Sample

During the 2020-21 academic research universe constitute the faculty of education students who are at a state university in Turkey. The sample group of the study consists of $n = 234$ teacher candidates. The sample group was determined by appropriate / accidental sampling. This method of sampling is preferred because the sample can be selected from an accessible universe due to time, labor and money (Büyüköztürk & Diğ., 2017). The average age of the teacher candidates participating in the study is 21.7. The demographic information of the sample group is shared in Table 1.

Table 1. Demographic Information of Participants

| Variables | Male | Female | f | % | |
|-------------------------|---------------------------------------|--------|----|-----|------|
| Programs | Elementary mathematics | 21 | 17 | 38 | 16.4 |
| | Science | 0 | 1 | 1 | 0.4 |
| | English | 6 | 19 | 25 | 10.8 |
| | Pre-school | 18 | 48 | 66 | 28.2 |
| | Guidance and psychological counseling | 3 | 11 | 14 | 6 |
| | Elementary school teacher | 27 | 29 | 57 | 24.4 |
| | Social studies teacher | 7 | 17 | 24 | 10.3 |
| Grade Level | Turkish language teaching | 6 | 3 | 9 | 3.8 |
| | 1st grade | 48 | 71 | 119 | 50.9 |
| | 2nd grade | 6 | 14 | 21 | 9 |
| | 3rd grade | 20 | 35 | 53 | 23.5 |
| Mother Education Status | 4th grade | 14 | 25 | 39 | 16.7 |
| | Primary school | 28 | 53 | 80 | 34.6 |
| | High school | 4 | 13 | 17 | 7.3 |
| | Illiterate | 45 | 61 | 107 | 45.7 |
| | Middle school | 7 | 13 | 20 | 8.5 |
| Father Education Status | Graduated from a University | 4 | 5 | 9 | 3.8 |
| | Primary school | 41 | 51 | 92 | 39.3 |
| | Postgraduate | 0 | 2 | 2 | 0.9 |
| | High school | 14 | 32 | 46 | 19.7 |
| | Illiterate | 6 | 21 | 27 | 11.5 |
| | Middle school | 15 | 19 | 34 | 15 |
| Number of Siblings | Graduated from a University | 12 | 20 | 32 | 13.7 |
| | Between 1-3 | 18 | 47 | 66 | 28.2 |
| | Between 4-6 | 41 | 50 | 91 | 38.9 |
| | 7 and above | 27 | 47 | 74 | 31.6 |
| | I have not got brother or sister | 2 | 1 | 3 | 1.3 |

According to Table 1, the highest participation rate (62.2%) belongs to female pre-service teachers. The main reason for this situation is that the number of female students in education faculty is generally higher than the number of male students. Besides, it is understood that the number of teacher candidates participating in the study is higher in the preschool program (28.2%) than other teaching programs. Since the general student quota in this program is higher than other programs, it is understandable that the rate of participation is high. It can be stated that the most first year students (50.9%) participated in the study voluntarily. Among the participants, it was observed that the "Illiterate" option was preferred more (45.7%) for the education status of the mother. For the education level of the father, the option of "Primary School" was preferred at a rate of 39.3%. It has been determined that most of the teacher candidates have 4-6 siblings (38.9%).

Data Collection Tools

Personal information questionnaire and three different scales were used as data collection tools in the study. Detailed information on the data collection tools used is as follows:

Personal Information Questionnaire: There are seven structured questions in this questionnaire. Participants were asked questions about gender, age, class level, registered program, number of siblings, education status of fathers and mothers.

Digital Literacy Scale: The original of the scale, which was adapted into Turkish by Üstündağ, Güneş and Bahçivan (2017), belongs to Ng (2012). The Turkish version of the scale consists of 10 items and is one-dimensional. The calculated Cronbach Alpha reliability coefficient of the scale is .86 (Üstündağ, Güneş, & Bahçivan, 2017). In this study, scale items were graded as: "1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree". The reliability values calculated for the scale are Cronbach Alpha .87 and McDonalds' .88.

Global School Memories Rating Scale: The scale was adapted to Turkish culture by Başaran and Yıldırım (2017). The adaptation scale consists of 22 items and is one-dimensional. The original of the scale belongs to Rowley and Taylor (1999). The original scale consists of 26 items. There are six reverse-coded items in the scale. High scores from the scale indicate that the individual's memories about school are positive and good. The calculated Cronbach Alpha value of the scale is .89 (Başaran & Yıldırım, 2017). In this study, scale items were graded as: "1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree". The reliability values calculated for the scale are Cronbach Alpha .87 and McDonalds' .88.

Views on Distance Education Scale: The scale was developed by Yıldırım et al. (2014). There are a total of 18 items in the scale, which consists of four sub-dimensions, namely "Personal Suitability, Effectiveness, Instructional and Preparedness". Reverse coding is used for seven of the scale items. The calculated Cronbach Alpha value of the scale is .86 (Yıldırım & Diğ., 2014). In this study, scale items were graded as: "1 = Never Agree, 2 = Rarely Agree, 3 = Sometimes Agree, 4 = Generally Agree, 5 = Always Agree". The reliability values calculated for the scale are Cronbach Alpha .92 and McDonalds' ".93".

Data Collection Process

The data collection process of the research took place throughout the 2020-2021 academic year (Fall + Spring). Prior to the study, participants were asked to mark "yes" on a consent form indicating that they participated in the study voluntarily. Teacher candidates participating in the research follow the classes on Google Classroom due to the pandemic. For this reason, the data collection tool prepared for the research was sent to N = 461 pre-service teachers via Classroom using an online Google Forms link (<https://bit.ly/3relQkC>). The return rate of data collection form is ~ 51%. Marking appropriately among the returning data collection forms, missing data entry, not creating a pattern, etc. A preliminary examination was made before the analysis to be made in terms of criteria. At the end of this examination, analyzes were made on the data obtained from 234 data collection forms that were answered in accordance with the criteria required for analysis.

Data Analysis

First, whether the data met the assumption of normality or not was examined. The skewness-kurtosis values for the normality assumption can be found in Table 2. Accordingly, it is understood that these values are between -3 and +3 suggested by Tabachnick and Fidell (2013). In this case, it is accepted that the data generally meet the normality assumption. Then, the homogeneity of the variances was examined, and it was determined that Levene Test values were within acceptable limits ($p > .05$). All the scales used in the research are 5-point Likert scales. For this reason, the option ranges were arranged according to the interval coefficient ($4/5 = .80$) calculated for the evaluation range of the arithmetic mean of the scale scores ($5-1 = 4$). For example; For the digital literacy scale average score (1-1.79), the averages between (1-1.79) are "very low", (1.80-2.59) "low", (2.60-3.39) "medium", (3.40-4.19) "high" and (4.20-5.00) are interpreted as "very high".

Descriptive statistical analysis, Pearson Correlation analysis, Post-Hoc analysis (Games-Howell, Tukey), Independent sample t-test, One-way ANOVA test and Simple Linear Regression analysis were applied on the data. While interpreting the obtained correlation coefficients, the correlation intervals suggested by Cohen (1988) were used. Accordingly, it means small effect (.10-.29), medium effect (.30-.49) and strong effect (.50-1.00) for the established correlations. Jamovi (Version 1.6), a free open source statistical software, was used for data analysis. In the interpretation of the analysis results, the general significance value was taken as $p < .05$.

RESULTS AND DISCUSSION

A Following the data analysis, the findings obtained for the research questions are shared below, together with the research questions.

What are the pre-service teachers' digital literacy levels, their views on distance education and their pre-university school memories?

The findings obtained for the digital literacy levels of the pre-service teachers participating in the study, their views on distance education and the score levels of pre-university school memories are summarized in Table 2. In addition, in Table 2, along with the general views of the students about distance education, the level of the average scores reached for the sub-dimensions of "personal suitability, effectiveness, Instructiveness, familiarity " sub-dimensions of the scale of opinions towards distance education can be examined.

Table 2. Detailed statistical values of the mean scores of the participants regarding digital literacy, distance education and pre-university school memories

| | DL | PSM | DE | PS | Effect | Instruct | Fami |
|----------------|--------|---------|---------|--------|--------|----------|--------|
| n | 234 | 234 | 234 | 234 | 234 | 234 | 234 |
| Mean | 3.35 | 4.00 | 2.55 | 2.71 | 2.16 | 1.82 | 3.85 |
| S _x | 0.0489 | 0.0380 | 0.0565 | 0.0823 | 0.0720 | 0.0624 | 0.0611 |
| SD | 0.748 | 0.581 | 0.864 | 1.26 | 1.10 | 0.954 | 0.935 |
| Skewness | -0.286 | -0.666 | 0.806 | 0.460 | 1.00 | 1.22 | -0.563 |
| Kurtosis | 0.0876 | -0.0566 | -0.0932 | -0.981 | 0.180 | 0.845 | -0.279 |

When Table 2 are examined, the scores of pre-university teachers' memories of pre-university school (M = 4.00, SD = .58) are compared to other variables (digital literacy (M = 3.35, SD = .75) and distance education (M = 2.55, SD = .86)). In other words, pre-university school memories of pre-service teachers are high and positive. It has been found that the digital literacy levels of the participants are at a "medium" level and their views on distance education are generally at a "low" level.

The pre-service teachers stated a high level of opinion for the "familiarity" dimension of distance education (M = 3.85, SD = .94). In other words, pre-service teachers prefer to "postpone the assigned tasks, leave unfinished and wait until the last moment to do homework" at a very high level in the distance education process. So, it is understood that the opinions of the teacher candidates for the "instructiveness" dimension of distance education (M = 1.82, SD = .94) are quite low. According to this; Pre-service teachers do not think that face-to-face interaction is necessary for a good education. Contrary to what is known, it is not true for them that ideas in traditional education can be expressed instantly and more clearly. Students agree with a low level of opinion that face-to-face communication is needed in order to provide and learn a more effective learning environment.

Another dimension of distance education in which pre-service teachers take part at a low level is the "effectiveness" dimension (M = 2.16, SD = 1.10). In other words, students disagree with the view that distance education makes students more active in terms of teaching practices. Moreover, they are not eager to say that distance education is more effective than traditional education to provide

a good learning opportunity, to enable the student to learn at his own pace and to increase the retention of learning. However, it can be stated that the opinions of the pre-service teachers about the "personal suitability" dimension of distance education (M = 2.71, SD = 1.26) are at a medium level. In other words, almost half of the students prefer distance education due to the intensity of their personal work, lifestyle and the education they need. Besides, it is necessary to consider reasons such as not wasting time, the flexibility to attend classes from wherever they want, and it is difficult for them to go to the university campus.

Are there any significant relationships between prospective teachers' demographic characteristics (gender, grade level, parents' educational status, number of siblings, registered program) and their digital literacy levels, their views on distance education and their pre-university school memories?

In the study, no significant difference was found between the gender variable and the participants' digital literacy levels and their views on distance education in terms of independent t-test findings ($p > .05$). However, it was found that the relationship between the gender of the participants and their pre-university school memories was significant in favor of the female participants. In other words, female teacher candidates' pre-university school memories (M = 4.10, SD = .55) were significantly higher and positive than male students' pre-university school memories (M = 3.85, SD = .60) ($t = -3.13$; $p < .001$; Cohen's $d = -.42$).

No significant difference was found between teacher candidates' enrolled teaching program and fathers' educational status variables, their digital literacy levels, their views on distance education and their pre-university school memories in terms of One-Way ANOVA test findings ($p > .05$). However, One Way-ANOVA findings obtained for the significant differences reached for the variables of class level, mother's education status and number of siblings belonging to teacher candidates are shared in Table 3.

Table 3. One-way ANOVA Analysis Table for Participants' Variables

| Variables | | df | F | η^2 | p | Significant Differences |
|---|--------------------------------|----|------|----------|-------|-------------------------|
| Grade Level (1st grade (K); 2nd grade (L); 3rd grade (M); 4th grade (N)) | Distance Education | 3 | 5.43 | .066 | .001* | N>K - N>L |
| | Instructiveness | 3 | 4.88 | .060 | .003* | N>K - N>M |
| | Personal Suitability | 3 | 7.00 | .084 | *** | N>K - N>L |
| | | df | F | η^2 | p | |
| Mother Education Status (Illiterate (A); Primary school (B)) | Digital Literacy | 4 | 5.12 | .082 | *** | B>A |
| | Pre-University School Memories | 4 | 4.34 | .070 | .002* | B>A |
| | Familiarity | 4 | 2.76 | .046 | .029* | B>A |
| | | df | F | η^2 | p | |
| Number of Siblings (I have not got brother or sister (C); Between 4-6 (D); 7 and above (E)) | Digital Literacy | 3 | 3.02 | .038 | .031* | C>D; C>E |

Note: n=234; * Significant load $p < .05$, *** Significant load $p < .001$

When Table 3 is examined, according to the One-Way ANOVA test, it is seen that there is a significant relationship between the class level variable of the participants and their views on distance education in general ($F(3,230) = 5.43$, $p = .001$, $\eta^2 = .07$). According to the Post-Hoc Tukey test conducted for the source of the significant difference reached; There is a significant difference between 4th grade students and 1st ($p < .001$) and 2nd year ($p = .03$) students in favor of 4th grade students. In other words, positive opinions of 4th grade students on distance education are statistically higher than 1st and 2nd grade students.

Similarly, the relationship level between teacher candidates' views on the "instructiveness" sub-dimension of distance education and the classroom level variable was found to be significant ($F(3,230) = 4.88$, $p = .003$, $\eta^2 = .06$). According to the Tukey test, there is a significant difference

between 4th grade students and 1st grade ($p = .001$) and 3rd grade ($p = .021$) students for the teaching dimension of distance education in favor of 4th grade students. Besides, it was determined that the relationship between students' grade level variable and their views on the "personal suitability" dimension of distance education was also significant ($F(3,230) = 7.00, p < .001, \eta^2 = .08$). According to the Post-Hoc Games-Howell test, it is understood that there is a significant difference in favor of 4th grade students between 4th grade students and 1st grade ($p = .002$) and 2nd grade ($p = .021$) students.

Likewise, according to the One-Way ANOVA test; teacher candidates' mother education status variable and digital literacy levels ($F(4,229) = 5.12, p < .001, \eta^2 = .08$), "Familiarity" dimension of distance education ($F(4,229) = 2.76, p = .029, \eta^2 = .05$) and pre-university school memories ($F(4,229) = 4.34, p = .002, \eta^2 = .07$) were found to be significant. Accordingly, at the end of the Tukey test; It is understood that there is a significant difference between being a primary school graduate and being illiterate in terms of mother's education level at all variables. This significant difference (digital literacy ($p < .001$), pre-university school memories ($p = .002$), and distance education familiarity dimension ($p = .029$)) are in favor of primary school graduation. In other words, the digital literacy levels, "tendency" levels of distance education and pre-university school memories of teacher candidates whose mother education level is primary school is significantly higher than those who are illiterate.

As a result of the One-Way ANOVA test conducted on the relationship between the number of siblings that the teacher candidates have / did not have and their digital literacy levels, the difference was found to be significant ($F(3,230) = 3.02, p = .031, \eta^2 = .04$). According to the Games-Howell test, the difference between pre-service teachers who said they had no siblings and those with 4 to 6 siblings ($p = .037$) and those with 7 or more siblings ($p = .025$) was significant. This significant difference is in favor of teacher candidates who do not have siblings.

Are there any relationships / effects between prospective teachers' digital literacy levels and their views on distance education and their pre-university school memories?

Pearson Correlation analysis was conducted for the relationship between preservice teachers' digital literacy levels and their views on distance education and their pre-university school memories. The findings obtained are shared in Table 4.

Table 4. Correlation Table of the Basic Variables of the Study

| Variables | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|------|------|--------|--------|--------|--------|--------|-----|----|
| 1. Digital Literacy (DL) | 3.35 | .75 | -- | | | | | | |
| 2. Pre-University School Memories (PSM) | 4.00 | .58 | .20** | -- | | | | | |
| 3. Distance Education (DE) | 2.55 | .86 | .21** | -.06 | -- | | | | |
| 4. Personal Suitability (PS) | 2.71 | 1.26 | .27*** | -.09 | .92*** | -- | | | |
| 5. Effectiveness | 2.16 | 1.10 | .20** | -.05 | .91*** | .80*** | -- | | |
| 6. Instructiveness | 1.82 | .95 | -.07 | -.21** | .77*** | .57*** | .66*** | -- | |
| 7. Familiarity | 3.85 | .94 | .16* | .24*** | .24*** | .04 | .04 | .10 | -- |

Note: $n=234$; * Significant load $p < .05$, ** Significant load $p < .01$, *** Significant load $p < .001$

According to Table 4, the relationship between teacher candidates' pre-university school memories and their digital literacy levels is significant ($r = .20, r^2 = .04, p = .002$). In other words, pre-service teachers' pre-university school memories have a small positive effect of ~ 4% on their digital literacy level. In addition, there is a significant relationship between the pre-university school memories of teacher candidates and the "Instructiveness" dimension of distance education ($r = -.21, r^2 = .04, p = .002$).

There is also a significant relationship between pre-university school memories and the "Familiarity" ($r = .24, r^2 = .06, p < .001$) dimension of distance education. According to this, the pre-university school memories of students have a small negative effect of ~ 4% on their views on the "Instructiveness" dimension of distance education. It can be said that the effect of participants' pre-

university school memories on their "Familiarity" level to distance education has a small positive effect of ~ 6%. In other words, a positive increase in the pre-university school memories of the students indicates that they find distance education more useful than traditional education with a small and significant difference in terms of the "Instructiveness" dimension of distance education. Yet, the increase in the score of pre-university school memories can also increase the academic procrastination tendency in distance education with a small and significant effect. So, it was determined that there is a positive and significant relationship with a small effect between pre-service teachers' digital literacy levels and their views on distance education ($r = .21$, $r^2 = .05$, $p = .001$). In other words, the increase in the digital literacy scores of the students positively affects their views on distance education with a small effect of ~ 5%.

Moreover, the relationship between the digital literacy levels of students and the "personal fitness" ($r = .27$, $r^2 = .07$, $p < .001$) dimension of distance education is significant. Similarly, the relationship between digital literacy and distance education's "effectiveness" ($r = .20$, $r^2 = .04$, $p = .003$) and "Familiarity" ($r = .16$, $r^2 = .02$, $p = .001$) dimensions was also meaningful. It can be said that there are small and significant positive effects for the significant relationship levels in these dimensions.

Accordingly, it can be stated that as the digital literacy scores of the pre-service teachers increase, they think that distance education is more personally suitable (~ 7%) and offers a more effective learning environment (~ 4%). But, it is observed that the behavior of "academic procrastination" in distance education also increases with a small effect (~ 2%) in students with high digital literacy. However, as the level of personal suitability in distance education increases, it is understood that it is more effective for students ($r = .80$, $r^2 = .64$, $p < .001$). In other words, it can be stated that the personal fitness variable has a strong and significant effect (~ 64%) on the effectiveness of distance education. As the level of personal suitability increases, pre-service teachers prefer distance education more (~ 33%) than traditional education ($r = .57$, $r^2 = .33$, $p < .001$). Students find distance education ~ 43% more instructive than traditional education when there is an effective distance education environment ($r = .65$, $r^2 = .43$, $p < .001$).

We can explain distance education as a flexible educational approach in which students can freely access learning resources and there is usually no time constraint (Aydin & Erol, 2021; Gökçe, 2008; İnce, Kabul & Diler, 2020). In this respect, it is possible to associate many 21st century skills, especially digital literacy, with distance education.

The results of this study generally show that there is a positive and effective relationship between pre-service teachers' digital literacy levels and their views on distance education and their pre-university school memories. But, no direct relationship was found between distance education and pre-university school memories.

Within the scope of the study, it is understood that the opinions of teacher candidates on distance education are generally low and at a positive level. It was determined that digital literacy levels are at a medium level. According to the researches (İnce, Kabul & Diler, 2020; Kirali & Alcı, 2016; Kurtüncü, & Kurt, 2020; Özyürek, Begde, Yavuz & Özkan, 2016; Serçemeli & Kurnaz, 2020); The low level of positive opinions of teacher candidates on distance education can be attributed to the deficiencies in the distance education infrastructure, the inadequacy of web-based applications, the lack of personal computers and internet, etc.

So, it can be said that the medium level of digital literacy coincides with some research results (Öteles, 2020; Yontar, 2019).

These results are incompatible with many research results in the literature. Because, according to the researches in the literature (Akgün & Akgün, 2020; Güngör & Kurtipek, 2020; Kozan & Bulut Özek, 2019; Rusydiyah et al, 2020); Students' views on digital literacy and distance education are high and at a good level.

Of course, it can be stated that for these disparate research results, for example, there is a difficulty in evaluating digital literacy due to the large number of definitions available (Miranda, Isaias & Pifano, 2018; Spante et al, 2018). Or it could be argued that the technology that underlies online learning can be assumed to be fast, easy to use, suitable for all learning activities, and accessible to all (Burton et al, 2015). However, due to similar reasons, high and good results were not obtained as expected at the end of this study for the digital literacy levels of the students.

On the other hand, among the important results of this study is the finding that the opinions of the teacher candidates towards distance education are at a high level in the "Familiarity" dimension. In other words, the tendency of teacher candidates to exhibit "academic procrastination" behaviors in the distance education process may increase. This result coincides with the results of some research (Bayrak, 2019; Goroshit & Hen, 2019; Uçar, 2020). According to Uçar (2020), students can show academic procrastination in distance education for reasons such as purposeful procrastination, the structure of the lesson, habit, circle of friends, lecturer and the idea of failure.

However, pre-service teachers prefer distance education more than traditional education in terms of "Instructiveness". This result does not coincide with the research results reached by Keskin and Özer Kaya (2020), Karatepe, Küçükgençay and Peker (2020) and Bircan, Eleroğlu, Arslan & Ersoy (2018). Distance education for teacher candidates is considered to be medium in terms of "personal suitability". In other words, pre-service teachers look positively towards distance education due to reasons such as intensive personal work, lifestyle, the trainings they need, saving time and the flexibility to attend classes from wherever they want. Another of these reasons is that it is difficult for them to go to the university campus. For these reasons, they think that distance education provides an advantage for them. This result is similar to the results reached by Çavuşoğlu and Acar (2020) and Cheng, Cheon and Cho (2020). However, students find distance education to be low-level effective. For this conclusion, according to Guardianship, Charissi and Tympa (2021), it may be necessary to first consider the roles of educators working in distance education.

Another result of the research; There is no significant relationship between the gender variable and the digital literacy level of pre-service teachers and their views on distance education. This result showing that there is no relationship between distance education and gender coincides with the research results of Kırallı & Alcı (2016) and Kara (2021). On the other hand, many studies in the literature (Akgün & Akgün, 2020; Başar, Arslan, Günsel & Akpınar, 2019; Boyacı, 2019; Çam & Kıyık, 2017; Çavuşoğlu & Acar, 2020; Hamutoglu et al, 2020; Güngör & Kurtipek, 2020; Öteles, 2020; Özden, 2018; Yontar, 2019); It points out that there is a significant relationship between gender and the variables of digital literacy and distance education. In this context, for example, in general, male students' mean digital literacy score is significantly higher than female students.

According to another important result of this research; In terms of gender variable, it was revealed that the pre-university school memories of female pre-service teachers were significantly higher and positive than male students.

In the study, no significant relationship was found between pre-service teachers' grade levels and their digital literacy levels and their pre-university school memories. This result does not coincide with, for example, Dedeali's (2020) results for digital literacy. Yet, it has been revealed that there are some meaningful relationships between students' views on distance education and their grade levels. According to this; It is concluded that the opinions of the 4th grade teacher candidates about distance education are higher than the opinions of the 1st and 2nd grade pre-service teachers. In this context, it can be said that the 4th grade pre-service teachers found distance education more instructive and more personally appropriate than the 1st and 2nd grade teachers. In fact, these results are predictable. Because most of the 4th grade students prepare for various exams for both graduation and teaching. For this reason, they may think that a "face-to-face teaching" process can slow them down. These results obtained in terms of the grade levels of the teacher candidates do not match the research results of Başar and colleagues (2019).

The relationship between pre-service teachers' maternal education variables and their digital literacy levels, the "Familiarity" dimension of distance education and their pre-university school memories was found to be significant. The digital literacy levels and pre-university school memories of teacher candidates whose mother's education level is "primary school" is significantly higher than those of "illiterate". But, students whose mothers graduated from "primary school" tend to be more inclined towards "academic procrastination" in distance education.

In other words, the higher the education level of the mother; Pre-service teachers' digital literacy status and pre-university school memories may also be at a better level. At the same time, "academic procrastination" behaviors can be observed in distance education. According to this; The conclusion reached for the relationship between digital literacy and maternal education does not coincide with the research results of Kara (2021).

Here, according to Başaran and Yıldırım (2017) and Rätty (2011), the existence of a meaningful relationship between the "disposition" dimension of distance education and the education status of the mother can be evaluated in the context of parents' school memories.

Also, according to the research findings, the relationships between the number of siblings that prospective teachers have and their digital literacy levels are also significant. In other words, digital literacy levels of teacher candidates who do not have siblings can be significantly higher than those with "more than 4 siblings". This result can be considered in terms of the number of children the family has and the opportunities for children to access technological products on time within the framework of the outputs of this situation on the family economy.

Correlationally significant correlations were reached between students' pre-university school memories and their digital literacy levels, and the "Instructiveness" and "Familiarity" dimensions of distance education. This situation can be interpreted that the better / positive the pre-university school memories of teacher candidates are, their digital literacy levels can also be positively affected. Students with higher pre-university school memories prefer distance education more than traditional education in terms of "teaching". However, this situation can also increase "academic procrastination" in distance education among teacher candidates with a small effect.

In addition, it is understood that there is a positive correlational relationship between the digital literacy levels of prospective teachers and their views on distance education. It can be stated that digital literacy levels of teacher candidates have a positive effect on their views on distance education with a small but effective increase. Accordingly, the increase in the effectiveness of distance education explains that prospective teachers find distance education more instructive. But, similarly, this situation may increase the tendency of "academic procrastination" in distance education in pre-service teachers with a small effect. This result may be overcome by attaching more importance to the "personal suitability" dimension of distance education. Because the increase in personal fitness scores also has a small effect on the effectiveness and didactics of distance education. In other words, when there is an effective distance education environment, teacher candidates may prefer distance education more than traditional education. According to Abbas, Hussain, and Rasool (2019), it is possible to increase academic success and self-confidence in students with a well-designed distance education environment and a high rate of digital literacy.

Limitations and Recommendations

Apart from the results of this research, there are some limitations as well. Firstly, it can be stated that the rate of return of the data collection tool is slightly below the expected. Thus, the entire universe has not been reached. Secondly, the results reached are limited to the views of the small number of volunteer participants. So, it is possible to make some suggestions to educational policy developers, practitioners and researchers in terms of the results of the research. The results of this research can be taken into account while developing policies to include distance education in the teacher training process. In the process of implementing the distance education policies to be

developed for teacher candidates, special attention can be paid to the "personal suitability" criteria of distance education. Joint action researches, projects and workshops can be conducted with researchers on how to increase distance education and digital literacy skills of prospective teachers. Researchers can carry out longitudinal and mixed design studies on the possible effects of pre-university school memories on teacher education.

CONCLUSION

At the end of the study, it was revealed that there was a significant and effective relationship between the digital literacy levels of the teacher candidates, the "Instructiveness" and "Familiarity" dimensions of distance education and their pre-university school memories. In this context, it can be said that the pre-university school memories of pre-service teachers should be considered as an important variable in future studies for teacher training. Research results also state that an effective distance education approach will have a positive and significant effect on pre-service teachers' views on distance education. While developing this type of distance education approach, more attention can be paid to the "personal suitability" dimension of distance education.

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