

## Digital Literacy Skill Levels of Teacher Candidates

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### ABSTRACT

In this study, it was analyzed whether there are differences in the digital literacy levels of teacher candidates who are receiving education in the Faculty of Education in terms of variables. To that end, the answer to the question, "Do the digital literacy levels of teacher candidates display differences according to gender, high-school type they graduated from, their department, interest level in use of technology and time they spend on the Internet?" was sought. In this study the survey model was used. The sample of the study consists of freshmen students who received education at the Departments of Social Studies, Guidance and Psychological Counselling, Mathematics, Turkish and Preschool Faculty of Education Kahramanmaraş Sütçü İmam University (KSU) in the 2019-2020 academic year. The sample of the study consists of 215 students who were selected with the simple random sampling method. With the purpose of collecting data, the "Digital Literacy Scale" adapted to Turkish by Hamutoğlu, Güngören, Kaya Uyanık and Gür Erdoğan (2017) was used. According to the results of the study, it was determined through the analyses that there is a significant difference in the digital literacy levels of teacher candidates in favor of female candidates when gender was taken as the basis. It was determined that there is no significant difference in the digital literacy levels of teacher candidates in any of the sub-factors in terms of their department, high-school they graduated from and time spent on internet. In addition, a significant difference was found in all sub-factors according to the levels of interest in technology.

**Key words:** Teacher Candidate, Literacy, Digital Literacy, Digital Literacy Skill

### INTRODUCTION

The tremendous innovations we are experiencing in the 21<sup>st</sup> century have led to many other changes in other areas such as politics, economy, health, military, education and industry as well and in this respect, have paved the way for a speedy transformation to take place. With the speedy technological developments experienced in the millennium age, a new world environment has been created and it has shown the need for societies to adapt to this new order and this life-style which is focused on technology and technology's pioneering role within the social order. In fact, this situation shows that individuals' skill of keeping pace with technological developments grows in parallel with these developments; communication environments and tools are changing as well and the developments in the area of technology influence every area of life. Essentially, this situation expresses the reality that training individuals who adapt to the process of technology which exists in every part of our lives and has serious impacts on our lives is a necessity as well. Today, it is expected of individuals who keep pace with our age to comprehend the importance of technology and grasp its importance and acquire the skill to use various technologies in many stages of life to reach accurate information (Onursoy,

2018; Direkçi et al., 2019). It can be seen that all areas of life are affected by the speedy changes in technology and bring along many needs based on these innovations. The speedy technological changes that we experience directly or indirectly influence and even shape our lives from home appliances we use every day which facilitate our lives to various devices used in the area of health and to weapons used in the military or with the purpose of security in a significant manner. Technology, which exists in every area of life and has made an important place for itself has surely gained ground in the education-training dimension as well. It can be seen that computers, tablets and smart phones have become important tools which are used in education-training activities with technological developments. It has been observed in particular during the recent pandemic which has wreaked havoc on the world that technology and technological devices can be made use of in education and training activities.

Our century expects training individuals who are able to display skills of using technological devices with human profile and skills which can meet the needs of the age. The meeting of current needs is associated with the concept of literacy. In our age, literacy is used as an educational concept which is beyond being a behavior that is displayed with

typefaces and is expressed as a communication skill which makes use of numerous cognitive activities and language. In addition, the skill of literacy helps individuals to reach their goals by developing the skill of public speaking (Aşıcı 2009; Direkçi et al., 2019). With the transition from industrial society to information society, the speedy development of innovative societies created a progressive structure besides physical production such as production of information, production with intellectual labor, future use of information and creativity. At this point, it is seen that technology and Internet use have a great place (Balay, 2004; Mercimek et al., 2015). The integration of the technology we need has begun to make a place for itself within a short period of time in educational environments in the form of smart boards, projection devices, WEB2 technologies, tablets, computers, programs, software, etc. Materials which have changed as a result of technological developments have in particular surrounded students who are receiving education, teachers, and of course, parents. Numerous changes have taken place from activities to the materials used in education-training activities. However, since education cannot go far with solely the use of technological devices in education-training environments, the need for the inclusion of teachers, students and parents to this system as well, to be equipped with technology and to make as much use of technological tools as possible in a healthy manner has come to the fore as well (Baştuğ & Keskin, 2013; Korkmaz, 2020). The technological developments experienced in our century have paved the way for the knowledge and skills individuals need to have to change as well. The adaptation of individuals to these changes requires life-long learning. In this process, the concept of literacy, which is the source of life-long learning, has become a wide ranging concept which embodies the experienced changes and types of literacy (Öztürk & Budak, 2019). At the point of keeping pace with technological changes, the skill of digital literacy has become one of the primary skills individuals are expected to have in today's world. While digital literacy involves the individual's active learning of information and communication technologies, it also expresses the healthy functionality and the related competencies of technologies, which will be beneficial in terms of individual development with useable technologies, help solve current problems and support social and individual production as well. The concept of digital literacy means doing healthy research on the Internet and access information through different digital technologies. The increase of the importance of life-long learning in today's world and computers and other technological devices starting to have a structure which can be actively used have made the concept of digital literacy quite important for our age. Technology's solidifying its place in our lives has displayed how, why and how much we need to use it and why we need to make use of it (Özerbaş & Kuralbayeva, 2018). Digital literacy is a concept which involves the active learning of the individual through information and communication technologies, makes it possible for the individual to gain competency in terms of secure, legal and moral use of technology in a manner which supports social participation and production and presents data which contributes to the personal development of the individual

(Acar, 2015). Digital literacy is an awareness which is acquired in the sense of getting to know digital tools, accessing these tools and using digital resources with the purpose of communicating. Digital literacy, which involves more than the ability to use a digital device or software, is a concept which also embodies certain skills. These skills express the cognitive, sociological and emotional skills of users which are required for them to work efficiently in digital media. In order for users to understand the digital world, benefit from its opportunities, use technology in an efficient and productive manner, be aware of digital risks and thus protect themselves from the threats and dangers of the environments, they need to have a good level of digital literacy (Eshet Alkalai, 2004; Martin, 2005). The Internet, which has become an important source of information today, is being used intensely for different purposes besides accessing knowledge. Many routine tasks of daily life such as sharing personal updates on the social media, shopping, reading the news, banking transactions and education-training activities are carried out through the Internet. Numerous questions have been put forward on the reliability of the Internet due to excess use. The distribution of erroneous information which has a significant role in the creation of Internet risks increases the importance of digital literacy as well. Therefore, digital literacy is a concept which needs to be evaluated in the light of such an approach. Individuals need to have the skill of digital literacy in order to be able to use the Internet in a secure, healthy manner, select accurate information in a successful way and avoid experiencing problems (Hamutoğlu et al., 2017; Karabacak & Sezgin, 2019), because individuals with the skill of digital literacy are people who have a high level of digital literacy, are cautious against cyber bullying and conscious (Kozan & Özek, 2019)

One of the main goals of education is to help the development of individuals and society. Therefore, education is not limited to helping the society acquire literature individuals (Yun, 2014). Individuals need to be equipped with certain information and skills required by this age as well. As in particular the sources in digital media gained a more useable structure, it was observed that the need to learn how individuals can reach these sources of information in a healthy manner and then use them has become important. In our century, the digital media skills bring the concept of digital literacy to the fore. In our age, virtual platforms have become a very important part of human life (Tüzel & Tok, 2013). The reason behind this is the speedy development of communication technologies and the accelerated dissemination of information in turn. As a part of the century they live in, individuals need to adapt to their age and thus acquire skills which are the proceeds of time and are expected to have (Karaman & Karataş, 2009). When educational programs are analyzed, it can be seen that skills related to training individuals fit for the age, which can meet the needs of the age have been given place to. For instance, when the social studies program is reviewed, it can be seen that it aims at giving individuals the literacy skills required in the age of information and training efficient citizens for the future (Yaman, 2019). It is stated in the 2018 social studies educational program that literary skills have directly been given place to and that one of the skills in this light is the digital literacy skill (MoE, 2018).

Technological awareness and use of technology have become requirements of the digital age in which we make use of technology. In the digital age, knowing about the use of digital devices and social networks, being aware of accessing information through the Internet and finding accurate information while meeting needs without engaging in cyber bullying problems all require an extremely important skill and digital technology users need to have numerous cognitive, physical and social skills (Doğan, 2020). Although an individual's adapting to new technologies and being able to use them is important in determining whether he/she is digitally literate, the digitally literate individual comes to the fore as a person who is able to actively access the digital information he/she needs to solve problems, has the skill to analyze the accessed information for his/her own use and is able to evaluate the situations he/she faces. In this respect, there is a parallelism between the use of technology and the level of digital literacy (Onursoy, 2018). Therefore, it should not be forgotten that there is a need to train digitally literate individuals who are mostly able to benefit from technology in a healthy manner to develop education and training. Today, digital literacy needs to be regarded as a basic skill to be acquired in the education and training process, because it is an important century skill which is accepted as a skill of survival (Eshet-Alkalai, 2004; Duran & Özen, 2018).

With the active use of technology and technological devices in education and training, identification of the digital literacy levels of teachers, teacher candidates and students has become important in terms of organizing educational programs and teachers' being role models for their students in terms of using technology (Üstündağ et al., 2017). Today, educational institutions without doubt have an active role in raising awareness on digital literacy and making it possible for individuals to acquire digital literacy. In fact, it is known that this situation creates a social paradox. Many employers and educators think that universities as undergraduate educational institutions do not prepare their students in a sufficient manner in terms of digital literacy and that students do not graduate as individuals who are digitally literate (Duggan, 2013; Onursoy, 2018). As in many other occupations, teachers also acquire vocational competency during their undergraduate education. It is highly important that individuals acquire values, beliefs and responsibilities in terms of both vocational knowledge and personal competencies in the undergraduate level. It is a reality that the more self-confidence and self-belief teachers have in carrying out their professions, the more successful they will be (Özerbaş & Kuralbeyeva, 2018). Therefore, the acquisition of the digital literacy skill expected by our age will have positive contributions to teachers' successfully carrying out their professions.

Digital literacy skill is related to the conscious use of digital tools and the internet. It involves being aware of various applications and programs in terms of malware and knowing how to make use of digital platforms and applications in a safe manner (Deye, 2015). In our increasingly digitalized world, digital literacy is being defined as one of the basic literacy types individuals need to have to avoid coming face to face with various dangers. In the changing and developing

world order, it is apparent that everything is now digitalized and that education and training activities are seriously impacted from this. Today, it is known that digital technologies are greatly made use of in in-class and extracurricular activities. At the same time, training healthy digital users in all stages of life in a planned and programmed manner is carried out through teachers where education and training activities are implemented in schools. In order for future generations to adapt to this system and be healthy individuals, the subject of digital literacy being a part of the curriculum is an indication of this, as one of the skills students need to acquire. Having the digital literacy skill for teacher candidates, who will be educating the future generations and be role models for them, is considered as extremely important in terms of increasing the quality of education, achieving goals of education and raising up the type of individuals the present age requires. In order for young generations to acquire the digital literacy skill, firstly teachers are expected to have this skill. In this light, it is important that the digital literacy skills of future teacher candidates are analyzed in this study in terms of various variables. Considering this fact, it was aimed at analyzing the digital literacy levels of teacher candidates in terms of different variables. With this purpose, the research questions of the study were formulated.

The aim of this study is to analyze the digital literacy levels of teacher candidates who receive education in the Faculty of Education. For this purpose, answers to the following questions were sought.

1. Is there a difference between the levels of digital literacy by gender of teacher candidates?
2. Is there a difference between the digital literacy levels of teacher candidates according to the type of high school they graduated from?
3. Is there a difference between the digital literacy levels of teacher candidates according to the program they are studying?
4. Is there a difference between the digital literacy levels of teacher candidates according to their interest in technology?
5. Is there a difference between the digital literacy levels of teacher candidates according to the time they spend on the internet?

## METHOD

In this study which aims at determining the digital literacy levels of teacher candidates, the survey model, which is one of the quantitative research models, was used. The survey model attempts to answer questions such as "What is it? What is it about?" (Büyüköztürk, 2016). The survey model is a research model which helps in collecting information by using the answer choices determined by the researcher from a wide research group and it is in general about how ideas are disseminated in terms of the related individuals rather than ideas and their sources (Fraenkel & Wallen, 2006). The survey model covers all of the processes applied which depicts a situation as it is and used with the purpose of making learning possible and developing the desired behaviors in the individual (Karasar, 2011).

### Study Group

The targeted population of the study is teacher candidates and its accessible population consists of students from Faculty of Education, KSU. The study sample consists of students who received education at the Departments of Social Studies, Guidance and Psychological Counselling, Mathematics, Turkish and Preschool Teaching, Faculty of Education, Kahramanmaraş Sütçü İmam University (KSU) in the 2019-2020 academic year. The sample of the study consists of 215 students selected with the simple random sampling method.

### Data Collection Tool and Analysis of Data

In the study, the "Digital Literacy Scale" which was adapted to Turkish by Hamutoğlu et al. (2017) was used to collect data. The scale consists of four factors as attitude, technique, cognitive and social. As a result of the reliability analysis of the study, the Cronbach's Alpha coefficient for the whole scale was found as.92. The Cronbach's Alpha coefficients of the sub-dimensions of the scale were found as.88 for attitude, .89 for technique, .70 for cognitive and .72 for social.

In addition, the Cronbach's Alpha coefficient was found as.92 for the whole scale in this study. The Cronbach's Alpha coefficients of the sub-dimensions of the scale were found as.87 for the attitude sub-factor, .84 for the technique sub-factor, .70 for the cognitive sub-factor and .64 for the social sub-factor. It is understood from these data that the data in this study have "very reliable" values.

It was determined that the data of the study according to the Kolmogorov Smirnov and Shapiro-Wilk test results do not display normal distribution for all independent variables. According to this, the Mann-Whitney U and Kruskal-Wallis tests were used in the analysis of the data.

### FINDINGS

In this section, the findings on whether there is a difference between the digital literacy levels of teacher candidates in terms of gender, high-school type they graduated from, their department and interest in use of technology and the time they spend on the Internet are presented.

The digital literacy levels of teacher candidates according to the results of the Mann-Whitney U test are shown in Table 1.

The digital literacy sub-dimension scores and the total scores of teacher candidates according to the results of the Mann-Whitney U test in terms of the gender variable are shown in Table 1. According to this, a significant difference was found between the teacher candidates' attitude towards digital literacy ( $U=2838,5$ ,  $p<.05$ ), social conditions ( $U=2986$ ,  $p<.05$ ) and total score values ( $U=2923,5$ ,  $p<.05$ ) in favor of female candidates.

The digital literacy levels of teacher candidates according to the results of the Kruskal-Wallis test in terms of the type high-school they graduated from are shown in Table 2.

In Table 2, the Kruskal-Wallis test results of the digital literacy levels of the teacher candidates according to the type

of high school they graduated from (general high school, science high school, vocational high school, Anatolian high school and other high school types) and no significant difference was found in the sub-factors of attitude  $X^2$  ( $SD=4$ ,  $n=215$ )= $2,398$ ,  $p>.05$ , technique  $X^2$  ( $SD=4$ ,  $n=215$ )= $4,306$ ,  $p>.05$ , cognitive  $X^2$  ( $SD=4$ ,  $n=215$ )= $2,049$ ,  $p>.05$ , social  $X^2$

**Table 1.** Digital literacy levels according to the gender variable

| Digital Literacy | Gender | N   | Mean Rank | Rank Sum | U      | p     |
|------------------|--------|-----|-----------|----------|--------|-------|
| Attitude         | Male   | 44  | 87.01     | 3828.5   | 2838.5 | 0.012 |
|                  | Female | 171 | 113.4     | 19391.5  |        |       |
| Technique        | Male   | 44  | 93.14     | 4098     | 3108   | 0.075 |
|                  | Female | 171 | 111.82    | 19122    |        |       |
| Cognitive        | Male   | 44  | 97.94     | 4309.5   | 3319.5 | 0.221 |
|                  | Female | 171 | 110.59    | 18910.5  |        |       |
| Social           | Male   | 44  | 90.36     | 3976     | 2986   | 0.032 |
|                  | Female | 171 | 112.54    | 19244    |        |       |
| Total Scores     | Male   | 44  | 88.94     | 3913     | 2923.5 | 0.023 |
|                  | Female | 171 | 112.9     | 19306.5  |        |       |

**Table 2.** Kruskal Wallis test results of digital literacy levels in terms of the type of high-school variable

| Digital Literacy | High-school types | N   | Mean Rank | SD | $X^2$ | P     |
|------------------|-------------------|-----|-----------|----|-------|-------|
| Attitude         | General           | 16  | 106.66    | 4  | 2.398 | 0.663 |
|                  | Science           | 10  | 88.4      |    |       |       |
|                  | Vocational        | 39  | 102.45    |    |       |       |
|                  | Anatolian         | 141 | 109.78    |    |       |       |
|                  | Other             | 9   | 128.33    |    |       |       |
| Technique        | General           | 16  | 101.25    | 4  | 4.306 | 0.366 |
|                  | Science           | 10  | 92.85     |    |       |       |
|                  | Vocational        | 39  | 95.32     |    |       |       |
|                  | Anatolian         | 141 | 111.81    |    |       |       |
|                  | Other             | 9   | 132.11    |    |       |       |
| Cognitive        | General           | 16  | 107.75    | 4  | 2.049 | 0.727 |
|                  | Science           | 10  | 81.60     |    |       |       |
|                  | Vocational        | 39  | 107.77    |    |       |       |
|                  | Anatolian         | 141 | 109.57    |    |       |       |
|                  | Other             | 9   | 114.22    |    |       |       |
| Social           | General           | 16  | 98.97     | 4  | 3.989 | 0.407 |
|                  | Science           | 10  | 101.8     |    |       |       |
|                  | Vocational        | 39  | 92.77     |    |       |       |
|                  | Anatolian         | 141 | 113.31    |    |       |       |
|                  | Other             | 9   | 113.78    |    |       |       |
| Total Scores     | General           | 16  | 102.69    | 4  | 3.03  | 0.553 |
|                  | Science           | 10  | 89.4      |    |       |       |
|                  | Vocational        | 39  | 99.05     |    |       |       |
|                  | Anatolian         | 141 | 111.18    |    |       |       |
|                  | Other             | 9   | 127       |    |       |       |

(SD=4, n=215)=3,989,  $p>.05$  and total scores  $X^2$  (SD=4, n=215)=3,03,  $p>.05$ .

The digital literacy levels of teacher candidates according to the results of the Kruskal-Wallis test in terms of their department type are shown in Table 3.

In Table 3, the Kruskal-Wallis test results of the digital literacy levels of the teacher candidates according to the departments they are studying (classroom teaching, social studies teaching, sciences teaching, mathematics teaching and GPC teaching) are given, and no significant difference was found in the sub-factors of attitude  $X^2$  (SD=4, n=215)=5.924,  $p>.05$ , technique  $X^2$  (SD=4, n=215)=4.818,  $p>.05$ , cognitive  $X^2$  (SD=4, n=215)=5.185,  $p>.05$ , social  $X^2$  (SD=4, n=215)=1.269,  $p>.05$  and total scores  $X^2$  (SD=4, n=215)=5.056,  $p>.05$ .

The digital literacy levels of teacher candidates according to the results of the Kruskal-Wallis test in terms of their interest levels in use of technology are shown in Table 4.

In Table 4, the Kruskal-Wallis test results on the digital literacy levels of teacher candidates in terms of interest levels in use of technology are given and a significant difference was found in all of the sub-factors.

According to these results, significant differences were found in terms of interest in use of technology in the

**Table 3.** Kruskal Wallis test results of digital literacy levels in terms of the department type

| Digital Literacy | Department      | N  | Mean Rank | SD | $X^2$ | P     |
|------------------|-----------------|----|-----------|----|-------|-------|
| Attitude         | Classroom       | 46 | 92.38     | 4  | 5.924 | 0.205 |
|                  | Social Studies  | 25 | 68.8      |    |       |       |
|                  | Science         | 33 | 84.5      |    |       |       |
|                  | Mathematics     | 28 | 96.29     |    |       |       |
|                  | GPC             | 37 | 78.68     |    |       |       |
| Technique        | Classroom       | 46 | 90.74     | 4  | 4.818 | 0.306 |
|                  | Social Studies  | 25 | 65.82     |    |       |       |
|                  | Science         | 33 | 84.8      |    |       |       |
|                  | Mathematics     | 28 | 88.63     |    |       |       |
|                  | GPC             | 37 | 88.26     |    |       |       |
| Cognitive        | Classroom       | 46 | 88.51     | 4  | 5.185 | 0.269 |
|                  | Social Studies  | 25 | 72.58     |    |       |       |
|                  | Science         | 33 | 86.88     |    |       |       |
|                  | Mathematics     | 28 | 98.55     |    |       |       |
|                  | GPC             | 37 | 77.09     |    |       |       |
| Social           | Classroom       | 46 | 83.79     | 4  | 1.269 | 0.867 |
|                  | Social Studies  | 25 | 79.76     |    |       |       |
|                  | Science         | 33 | 90.86     |    |       |       |
|                  | Mathematics     | 28 | 80.25     |    |       |       |
|                  | GPC             | 37 | 88.41     |    |       |       |
| Total Scores     | Classroom       | 46 | 91.67     | 4  | 5.056 | 0.282 |
|                  | Social Studies. | 25 | 67        |    |       |       |
|                  | Science         | 33 | 85.03     |    |       |       |
|                  | Mathematics     | 28 | 92.95     |    |       |       |
|                  | GPC             | 37 | 82.82     |    |       |       |

teacher candidates' attitude towards digital literacy  $X^2$  (SD=2, n=215)=26.232,  $p<.05$ , technical competency in digital literacy  $X^2$  (SD=2, n=215)=42.449,  $p<.05$ , cognitive awareness and competency levels  $X^2$  (SD=2, n=215)=19.718,  $p<.05$ , social awareness on literacy  $X^2$  (SD=2, n=215)=28.725,  $p<.05$  and total values related to their digital literacy  $X^2$  (SD=2, n=215)=40.266,  $p<.05$ .

According to the Kruskal-Wallis test results in the table, it was determined that there is significant difference in the teacher candidates' attitude towards digital literacy 1-3, 2-3 between their interest levels; in their technical competency 1-2, 1-3, 2-3 between their interest levels; in their cognitive awareness and differences 1-2, 1-3, 2-3 between their interest levels; in their social awareness 1-2, 1-3, 2-3 between their interest levels and lastly in their general digital literacy 1-2, 1-3, 2-3 between their interest levels.

The digital literacy levels of teacher candidates according to the results of the Kruskal-Wallis test in terms of the time they spend on the Internet are shown in Table 5.

In Table 5, the Kruskal-Wallis test results of the digital literacy levels of the teacher candidates according to the time they spend on the Internet (0-2 hours, 2-4 hours, 4-6 hours, 6-8 hours and more than 8 hours) are given, and no significant difference was found in the sub-factors of attitude  $X^2$  (SD=4, n=215)=1.122,  $p>.05$ , technique  $X^2$  (SD=4, n=215)=4.3,  $p>.05$ , cognitive  $X^2$  (SD=4, n=215)=1.509,  $p>.05$ , social  $X^2$  (SD=4, n=215)=2.26,  $p>.05$  and total scores  $X^2$  (SD=4, n=215)=2.428,  $p>.05$ .

## DISCUSSION

In the study, the digital literacy levels of teacher candidates who received education in different departments were analyzed and the results of the study are presented below.

The skill of digital literacy is regarded as one of the basic literacy skills individuals need to have in today's world. When the literature was reviewed, it was noted how important digital literacy has become in particular in the recent times as one of the basic skills to be acquired and has turned into a greatly emphasized area of research. There are numerous studies in the literature about teacher candidates, teachers and students in this area (Onursoy, 2018; Aydemir et al., 2019; Ocak & Karkuş, 2019; Kuru, 2019; Direkçi et al., 2019; Yaman, 2019; Öztürk & Budak, 2019; Kozan & Özek, 2019; Pala & Başbüyük, 2020; Akgün & Akgün, 2020; Yazıcıoğlu et al., 2020; Kul, 2020; Karabacak & Sezgin, 2019; Okumuş & Atılğan, 2021; Silik & Aydın, 2021; Aksoy et al., 2021; Altun & Alpan, 2021; Talan & Aktürk, 2021; Bay, 2021; Göldağ, 2021; Taşkıran & Salur, 2021).

As a result of the Mann-Whitney U test done to analyze the digital literacy levels of the teacher candidates in terms of gender, a positive difference in favor of female teacher candidates was determined in the attitudes of the teacher candidates towards digital literacy, their social conditions and total score values. In Özerbaş and Kuralbayeva's study (2018), it was concluded that there was a difference in all dimensions of the scale in favor of the male teachers when the digital literacy levels of the teacher candidates were compared and they evaluated this as male teachers being better in

**Table 4.** Kruskal Wallis test results of digital literacy levels in terms interest levels in use of technology

| Digital Literacy | Interest Level        | N   | Mean Rank | SD | X <sup>2</sup> | P     | Difference    |
|------------------|-----------------------|-----|-----------|----|----------------|-------|---------------|
| Attitude         | Not interested (1)    | 9   | 160.22    | 2  | 26.232         | 0.000 | 1-3, 2-3      |
|                  | Partly interested (2) | 82  | 129.26    |    |                |       |               |
|                  | Interested (3)        | 124 | 90.15     |    |                |       |               |
| Technique        | Not interested (1)    | 9   | 170.11    | 2  | 42.449         | 0.000 | 1-2, 1-3, 2-3 |
|                  | Partly interested (2) | 82  | 135.84    |    |                |       |               |
|                  | Interested (3)        | 124 | 85.08     |    |                |       |               |
| Cognitive        | Not interested (1)    | 9   | 172.78    | 2  | 19.718         | 0.000 | 1-2, 1-3, 2-3 |
|                  | Partly interested (2) | 82  | 121.05    |    |                |       |               |
|                  | Interested (3)        | 124 | 94.67     |    |                |       |               |
| Social           | Not interested (1)    | 9   | 182.72    | 2  | 28.725         | 0.000 | 1-2, 1-3, 2-3 |
|                  | Partly interested (2) | 82  | 124.95    |    |                |       |               |
|                  | Interested (3)        | 124 | 91.37     |    |                |       |               |
| Total Scores     | Not interested (1)    | 9   | 176.39    | 2  | 40.266         | 0.000 | 1-2, 1-3, 2-3 |
|                  | Partly interested (2) | 82  | 133.65    |    |                |       |               |
|                  | Interested (3)        | 124 | 86.07     |    |                |       |               |

**Table 5.** Kruskal Wallis test results of digital literacy levels in terms the time spent on the Internet

| Digital Literacy | Time spent on the Internet | N  | Mean Rank | SD | X <sup>2</sup> | P     |
|------------------|----------------------------|----|-----------|----|----------------|-------|
| Attitude         | 0-2 hours                  | 48 | 109.19    | 4  | 1.122          | 0.891 |
|                  | 2-4 hours                  | 66 | 109.8     |    |                |       |
|                  | 4-6 hours                  | 61 | 108.44    |    |                |       |
|                  | 6-8 hours                  | 24 | 95.85     |    |                |       |
|                  | 8 hours and more           | 16 | 113.53    |    |                |       |
| Technique        | 0-2 hours                  | 48 | 121.5     | 4  | 4.3            | 0.367 |
|                  | 2-4 hours                  | 66 | 108.83    |    |                |       |
|                  | 4-6 hours                  | 61 | 103.48    |    |                |       |
|                  | 6-8 hours                  | 24 | 91.63     |    |                |       |
|                  | 8 hours and more           | 16 | 105.84    |    |                |       |
| Cognitive        | 0-2 hours                  | 48 | 109.09    | 4  | 1.509          | 0.825 |
|                  | 2-4 hours                  | 66 | 103.83    |    |                |       |
|                  | 4-6 hours                  | 61 | 110.56    |    |                |       |
|                  | 6-8 hours                  | 24 | 101.58    |    |                |       |
|                  | 8 hours and more           | 16 | 121.81    |    |                |       |
| Social           | 0-2 hours                  | 48 | 118.93    | 4  | 2.26           | 0.688 |
|                  | 2-4 hours                  | 66 | 104.23    |    |                |       |
|                  | 4-6 hours                  | 61 | 107.79    |    |                |       |
|                  | 6-8 hours                  | 24 | 100.1     |    |                |       |
|                  | 8 hours and more           | 16 | 103.44    |    |                |       |
| Total Scores     | 0-2 hours                  | 48 | 116.54    | 4  | 2.428          | 0.658 |
|                  | 2-4 hours                  | 66 | 106.59    |    |                |       |
|                  | 4-6 hours                  | 61 | 107.66    |    |                |       |
|                  | 6-8 hours                  | 24 | 92.9      |    |                |       |
|                  | 8 hours and more           | 16 | 112.13    |    |                |       |

the use of technology dimension. In Kuzu and Erten's study (2014) on the analysis of digital competency of teacher candidates, it was concluded that there is a significant difference in favor of female teacher candidates in terms of the gender

variable. Yontar (2019) determined in his study on the analysis of the digital literacy levels of teacher candidates that digital literacy levels do not create a significant difference in terms of the gender variable. In Yazıcıoğlu et al.'s study

(2020) on the analysis of digital literacy levels of pre-school and classroom teacher candidates, they determined similarly that digital literacy levels do not create a significant difference in terms of the gender variable. In Aksoy et al.'s study (2021) on the analysis of digital literacy levels of classroom teachers, they determined that the digital literacy levels of classroom teachers do not have a significant difference in terms of the gender variable. However, it was seen that the scores were higher in favor of male teacher candidates. In Ocak and Karakuş's study (2019) on the analysis of digital literacy levels of teacher candidates, it was concluded similarly that there is no significant difference in the digital literacy levels of teacher candidates in terms of the gender variable. However, it was observed as a result of the analyses that the average scores were in favor of male teacher candidates. In Bay's study (2021) in which the digital literacy levels of pre-school teacher candidates were analyzed, it was expressed that there is no significant difference in the digital literacy levels of the teacher candidates in terms of the gender variable. However, when the results were analyzed in terms of the averages, it was seen that the digital literacy levels of the male teachers were higher compared to female teachers. In Akgün and Akgün's study (2020) on the analysis of digital literacy levels of social studies teacher candidates, it was concluded that the digital literacy levels of teacher candidates displayed a significant difference in favor of the male teacher candidates. In Kozan and Özek's study (2019) on the analysis of digital literacy levels of teacher candidates and sensitivity towards cyber bullying, it was concluded that their digital literacy levels did not display a difference in terms of the gender variable. In Arslan's study (2019) in which the digital literacy levels of teachers were analyzed, it was concluded that there is no significant difference in their digital literacy levels in terms of the gender variable. As in many studies in the related literature, it can be seen in the findings that the total scores are high in favor of male teachers. In this study, it was concluded contrary to the studies in the literature that the digital literacy levels displayed a significant difference in favor of female teacher candidates. This can be explained with female teacher candidates' more active use of social media, the Internet and computer technologies and it can be concluded for this reason that their digital literacy levels are higher.

As a result of the Kruskal-Wallis test done with the purpose of analyzing the digital literacy levels of teacher candidates in terms of the type of high-school they graduated from, a significant difference was not found in any of the sub-factors. However, when the digital literacy scores were analyzed in terms of the type of high-school they graduated from, it was seen that candidates who graduated from general high-schools and Anatolian high-schools had much higher scores in the sub-dimensions and total scores. In Ocak and Karakuş's study (2019) on the analysis of the digital literacy levels of teacher candidates, it was concluded that although the digital literacy averages of the teacher candidates were high, the averages of the teacher candidates who graduated from vocational high-schools were higher. Similarly, in Bay's study (2021) in which the digital literacy levels of pre-school teacher candidates were analyzed, it was found that

the type of high-school they graduated from did not affect their levels of digital literacy, but general high-school graduates had higher skill scores compared to teacher candidates who graduated from other types of high-schools.

As a result of the Kruskal-Wallis test done with the purpose of analyzing the digital literacy levels of teacher candidates in terms of their department, a significant difference was not found in any of the sub-factors. However, it was seen that the digital literacy levels of teacher candidates receiving education in the department of classroom teaching was higher compared to teacher candidates in other departments. Similarly, in Özerbaş and Kurabayeva's study (2018), it was concluded that there is a difference in favor of mathematics and classroom teacher candidates in all of the dimensions of the scale when the digital literacy levels of the teacher candidates were compared in terms of their department. The researchers interpreted this result as candidates in mathematics and classroom teaching programs using the Internet more than the teacher candidates in other departments. Similarly, in Usta et al.'s study (2007), it was seen that the attitudes of classroom teacher candidates was high in terms of Internet use.

As a result of the Kruskal-Wallis test done with the purpose of analyzing the digital literacy levels of teacher candidates in terms of their interest levels in use of technology, a significant difference was found in all of the sub-factors. According to this result, it was seen that there is a significant difference between the attitudes of not interested and partially interested teacher candidates towards digital literacy and interested teacher candidates, in favor of teacher candidates with low interest levels. Similarly, a significant difference was found between the technical competencies of interested teacher candidates and not interested and partially interested teacher candidates, in favor of not interested and partially interested teacher candidates. A significant difference was found between the interested teacher candidates and not interested and partially interested teacher candidates in terms of the social sub-dimension of digital literacy levels, in favor of not interested and partially interested teacher candidates. A significant difference was found between the interested teacher candidates and not interested and partially interested teacher candidates in terms of interest level in use of technology of digital literacy levels, in favor of not interested and partially interested teacher candidates. It was seen in the results of the study that the lower the interest level of teacher candidates in use of technology, the higher the digital literacy levels are. There is an inverse proportion between the interest level of teacher candidates in use of technology and their digital literacy levels. When the literature was reviewed, it was determined as different from this study that there are studies which report that active technology use of teacher candidates affect their digital literacy levels as to create a significant difference and that there is a direct relationship between them. In Özerbaş and Kuralbayeva's study (2018), it was expressed that having a stable Internet connection is an efficient variable in terms of the teacher candidates' views on digital literacy and that teacher candidates who have a stable Internet connection feel more competent in terms of digital literacy.

As a result of the Kruskal-Wallis test done with the purpose of analyzing whether the digital literacy levels of teacher candidates change according to the time they spend on the Internet, a significant difference was not found in any of the sub-factors. However, it was concluded that the digital literacy levels of teacher candidates who spend more than 8 hours on the Internet are higher. Similarly, in Usta et al.'s (2007) study, it was expressed that the attitude scores related to Internet usage of teacher candidates, who spend more time weekly on the Internet, are higher compared to teacher candidates who spend less time on the Internet. In Menzi et al.'s study (2012) on the analysis of technological competency of teacher candidates in terms of various variables, it was concluded that teacher candidates who use the Internet more for their research studies feel more technologically competent.

## CONCLUSION

Conferences, symposiums and seminars can be organized for teacher candidates on productive use of the Internet in order to minimize the difference related to the time spent on the internet.

This study was planned and implemented to be carried out with the teacher candidates. Within the scope of related literature, research can be done on the digital literacy levels of teachers, students and parents and qualitative studies can be carried out which involve improving digital literacy skills and the conditions which develop this skill.

Teacher candidates, who wish to increase their digital literacy level, can participate in paid or free training activities organized by universities and non-governmental organizations especially on subjects such as the use of web 2.0 and integration of technology to class environment.

As a contribution to the development of pedagogical competency of teacher candidates in terms of technology, it is suggested to increase their digital literacy levels. It is considered that this might positively influence teacher candidates' vocational development.

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