

A study on the digital citizenship level of preservice teachers according to diverse variables

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Abstract

The purpose of this study is to identify and examine the digital citizenship levels of preservice teachers according to diverse variables. The sample of the study consists of students at Ataturk Education Faculty of Near East University ($n = 345$). Likert-type 'digital citizenship scale' with seven dimensions and 64 items and a personal information survey consisting of eight questions were used as data collection tools. Digital citizenship level of preservice teachers and their sub-dimensions such as digital communication and literacy were examined. According to the obtained findings, it was observed that digital citizenship level of preservice teachers varied between good and very good. At the end of the study, it has been understood that as the history of using digital tools of preservice teachers increases, so does their digital citizenship level; in addition, those with better economic means have higher access to digital tools and more knowledge and experience on digital shopping.

Keywords: Digital citizenship; preservice teachers; digital literacy; digital environments; digital native.

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1. Introduction

After computer and Internet technologies entered our homes in 1990s, they gained wide usage in several fields, especially entertainment sector. In those years, computer provided several usage facilities as a new technology, for which reason the persons who could use this technology were called computer literate. Later, the accelerated developments in Internet and mobile technologies brought with it such concepts as technology literate, media literate, information literate and digital citizenship (or literate). In the meantime, the generation who were born in this period (in and after 2000) were called the students of the new millennium (Pedro, 2006) or digital natives (Prensky, 2001). It is claimed that the students called 'digital natives' learned in a different manner compared to the previous generation such that they think that they can reach all the information they need from where they are connected (Bennet, Wells & Rank, 2009; Teo, Yurdakul & Ursavas, 2014). Digital natives are grown in a period when two lives (virtual and real) are being lived simultaneously. The generation which was born before digital age who tried to adapt to that age are called digital immigrants (Prensky, 2001). Both generations are accepted as digital citizens. As it is expected from today's citizens to participate in social processes every time and in every place (Simsek & Simsek, 2013), it might be thought that they have to be able to effectively use every new technology that emerges in order to share their opinions and make their voice heard. This, in turn, can require new literacy skills.

1.1. Digital citizenship

Similar to the real-life situations, there are responsibility and behaviour norms that people have to pay attention in digital environment (Bennett, 2008; Ribble & Bailey, 2010; Sullivan, 2016; Sward, 2014). These behaviour patterns which are coined as 'digital citizenship' by Ribble (2009) consist of such dimensions as digital access, digital commerce, digital communication, digital literacy, digital ethics, digital law, digital rights and responsibilities, digital health and digital safety. The time consumed with technology increases on a daily basis which increased the importance of the behaviours that should be observed in these media. The sub-dimensions of digital citizenship are briefly discussed below.

1.2. Digital access

It can be defined as the ability to reach digital media at any time and through high-quality infrastructure. However, not all people can enjoy this opportunity due to socio-economic status or physical location (Ribble & Baile, 2007).

1.3. Digital commerce

It includes the skills for making informed and safe commercial shopping in digital media. It is important that students raise awareness on which shopping sites they use or what they should pay attention in these sites.

1.4. Digital communication

It includes the abilities for effective use of different communication ways in digital media. Especially the value of the time spent with social media tools, opportunities, and the points that deserve attention, in short, the way of students using communication tools in an accurate and timely manner.

1.5. Digital literacy

It is the process of learning and teaching technology and how to use it (Ribble & Bailey, 2007). It is an essential dimension which includes reaching accurate information in digital media, using this

information in an effective manner, sharing it and making contribution to the production of new information.

1.6. Digital ethics

It can be defined as being respectful to others in digital environment and being aware of one's own rights and responsibilities.

1.7. Digital law

It consists of being aware of the rules, policies and laws valid in digital environment, obeying these rules, policies and laws and warning those who do not show obedience (Cubukcu & Bayzan, 2013).

1.8. Digital rights and responsibilities

It includes everyone using digital tools freely and expressing themselves freely by means of these tools and using their complaint rights against crimes and injustice committed in digital media.

1.9. Digital health

It includes the awareness on physical and psychological health problems caused by digital media. Especially the time perception disorder can lead to physical problems. All individuals, especially students, must gain awareness on such psychological problems as not receiving 'likes' in social media, being upset about the lives of others or nomophobia (failure to avoid mobile devices, the anxiety/fear of 'where is my device').

1.10. Digital safety

It is essential that while students are using technology, the safety of their personal information is ensured, action is taken against cyber-attacks, and that they know what to do in case they are exposed to a cyber-attack in addition to other acquisitions about digital safety (Sari & Elci, 2016).

2. Digital citizenship and preservice teachers

It can be said that as the sources for reaching information varies and the time spent with digital technologies increases, so does the importance of digital citizenship. Preservice teachers have to be good digital citizens themselves, so that they can be good role models (Güven, 2014). Digital natives should know that the behaviours they display in online media will not affect only themselves but also other media as well. The failure to know the rules and norms that should be obeyed in digital media can lead the digital media to create an idiosyncratic culture (Hollandsworth, Dowdy & Donovan, 2011). There are studies indicating that a majority of preservice teachers need help in digital citizenship (Linsey, 2015; Miani, 2015; Agnello & White, David R, Fryer, 2006). Kaya and Kaya (2014) concluded that the digital citizenship perception of junior and senior students in Computer and Teaching Technologies Education Programme is developed. In their study, Sakalli and Cifti (2016) found out that preservice teachers in classroom teaching department have medium digital citizenship level. In another study, Usluel and Asici (2013) examined preparatory class students and concluded that female more than male students use information and communication tools for academic purposes. Martin et al. (2016) stated in their study that neither teachers nor students knew how to defend themselves against dangers in digital media. In an experimental study conducted on university students in America, Carr (2010) allowed one group of students to access Internet during class and did not allow the other group to access Internet. In the end of the study, it

was concluded that the students who were not allowed to use Internet remembered the taught topics better. This study emphasised the distracting characteristic of Internet. In fact, it is possible that the insufficient level of digital citizenship of students contributed to this result as it is expected that a student with digital competencies should be aware of the distracting characteristics of digital media and act accordingly. In addition, the importance of internalizing digital citizenship was also emphasised (Altınay Gazi, 2016; Cavus & Kanbul, 2010) and the importance of individuals displaying behaviours in digital media with internal motivation is stressed. Perez-Escoda, Iglesias-Rodriguez and Sanchez-Gomez (2016) evaluated the digital literacy and competencies of 678 secondary school students and 67 teachers and concluded that the digital competencies of both teachers and students were weak and needed improvement. In 2015, digital competency standards were developed in order to use at schools in Malaysia (Shuhidan, Shuhidan, Bakar & Hakim, 2016) as technology develops, so do the abusing techniques and even in some countries digital crimes are on increase despite the respective stability of conventional crimes (Farmer & Wang, 2013). In addition, Howard (2015) stated that most of the digital media learning of students occurs in extra-school environments. One of the duties of teachers must be to equip students with digital citizenship characteristics so that individuals gain awareness on the abuses of technology and take necessary measures. Based on the literature search, it can be claimed that although there are positive developments on studies on preservice teachers, most studies are conducted on a single sample group with limited number, that the scope and importance of the concept of digital citizenship increases on a daily basis and that digital citizenship evolves with innovations and thus more research is needed.

In our study, an attempt is made to determine the digital citizenship levels of all education faculty students to avoid restraints imposed by studying a single department. In addition, variables such as income status and computer usage history which could directly affect the level of preservice students were also investigated.

3. The purpose of the research and research questions

The purpose of this study is to determine and examine based on diverse variables the digital citizenship levels of preservice teachers. In line with this general purpose, answers were sought to the following questions.

1. What is the digital citizenship level of preservice teachers?
2. Is there a significant difference between preservice teachers based on some variables (gender, age, income status, computer usage history)?

3.1. Research model

The purpose of the study is to describe a situation in the past or at present as it is; for this reason, scanning model, which is a descriptive research method, was employed as research pattern (Karasar, 2011).

3.2. Universe - sample

The working universe of the study consisted of preservice teachers studying at Faculty of Education Sciences of Near East University. Reaching the entire study universe was difficult in terms of time, cost and control; hence, a simple random sampling method was used. The research sample consisted of 345 preservice teachers in total, which was considered as sufficient among a research universe of 2202 people at 95% confidence level and 5% sampling error.

3.3. Data collection tools

In the research, personal information survey prepared by researchers and digital citizenship scale developed by Kocadag (2012) were used as data collection tools.

The personal information survey consists of 8 questions asking the age, gender and nationality of preservice teachers as well as questions to determine the time they spend on social networks and computer.

Digital citizenship scale consists of 63 statements prepared in five Likert type.

The answers given to the items in the scale were scored as '1 points for never' and '5 points for always'. The criteria used to determine the digital citizenship level of preservice teachers on the basis of received scores are presented in Table 1.

Table1. Digital citizenship scale levels

level	Score interval
Weak level	135–170
Medium level	171–206
Good level	207–242
Very good level	243–278
Perfect level	279–315

As a result of the reliability-validity study conducted by Kocadag (2012), it was stated that the scale consisted of seven factors, namely, 'digital communication and literacy characteristics', 'digital ethic and legal characteristics', 'digital access characteristics', 'digital rights and responsibilities characteristics', 'digital health characteristics', 'digital safety characteristics' and 'digital commerce characteristics' and that Cronbach–Alpha coefficient as regards sub-dimensions varied between 0.75 and 0.97 and that the value calculated for the entire scale was 0.97. In addition, as a result of the reliability analysis conducted by researchers in this study, the Cronbach Alpha coefficient was found as 0.95 and the Cronbach Alpha coefficients for the sub-dimensions in the scale were calculated between 0.70 and 0.85. Accordingly, the scale was accepted as valid and reliable.

Written permission was obtained from the Dean's Office of Atatürk Education Faculty of Near East University so as to apply the questionnaires on the preservice candidates studying at departments of the education faculty. Questionnaires were applied using face-to-face interview technique.

3.4. Analysis of data

Statistical Package for the Social Sciences (SPSS) 23.0 for Windows Evolution package programme was used in analysing the obtained data.

Within the scope of the study, the frequency analysis of the personal information of preservice teachers was conducted and frequency distribution tables were created.

In order to determine the hypothesis tests to be used in statistical analysis, Kolmogorov–Smirnov test, which is a normality test, was applied so as to examine whether the data set showed normal distribution. At the end of the test, it was found out that the data set did not show normal distribution due to which non-parametric hypothesis tests were used. In order to compare the answers given by preservice teachers to Digital Citizenship Scale based on their personal information, Mann–Whitney *U* test and Kruskal–Wallis test, which are non-parametric hypothesis tests, were used. Mann–Whitney *U* test was applied in cases where there were two categories in the independent variable and Kruskal–Wallis test was applied wherever there were more than two categories in the independent variable. In

addition, Spearman correlation analysis was also used if the independent variable was a quantitative one.

4. Findings and interpretation

The findings obtained in line with the purposes of the research are handled under the heading findings and interpretations as regards the personal information of preservice teachers and findings and interpretations as regards the digital citizenship behaviours of preservice teachers. The findings obtained from the personal information questionnaire are given in Table 1.

Table 2. Personal information of preservice teachers

	N	%
Gender		
Female	179	51.88
Male	166	48.12
Age group		
19 years and below	87	25.22
20–21 years	131	37.97
22–23 years	83	24.06
24 years	44	12.75
Nationality		
Republic of Turkey	281	81.45
TRNC	60	17.39
Turkey-TRNC	4	1.16
Income group (household)		
2000 TLs and below	108	31.30
2001–5000 TLs	182	52.75
5001 TLs and above	55	15.94
Computer user for		
5 years and less	71	20.58
6–9 years	101	29.28
10 years and more	173	50.14
Total	345	100.00

When the gender distribution according to Table 2 is examined, it can be seen that female and male preservice teachers are close in ratio. According to age distribution, the distribution coincides with the expected age average (18–22) of university students. Most of the preservice teachers (4/5) are nationals of the Republic of Turkey and their average income varies between 2,000 TLs and 5,000 TLs. The majority of the candidates stated that they had been computer users for more than 10 years. Desktop computers began to enter homes in 1985s in the world; however, in Turkey and Cyprus, they did not enter homes until the 1990s. It can be claimed that this period and the ages of preservice teachers and their computer usage history coincide with each other.

The distribution of preservice teachers covered by the study according to their departments is given in Figure 1.

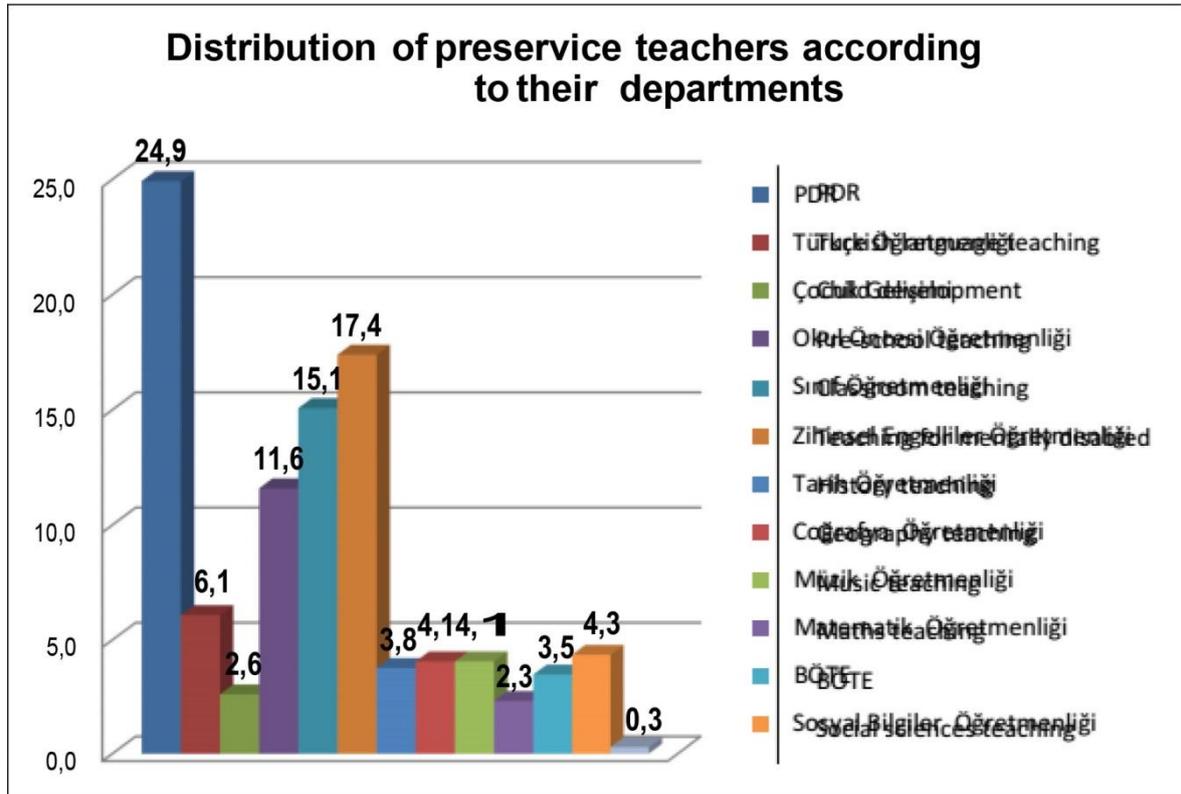


Figure 1. Distribution of preservice teachers according to their departments

When the distribution of preservice teachers covered by the study according to their departments is examined (Figure 1), it can be seen that the majority of candidates studied Psychological counselling and guidance (PDR) (24.9%) and teaching for mentally disabled (17.4%). It is also observed that the departments with the least number of candidates are science teaching (0.3%) and child development (2.6%).

Figure 2 shows the distribution of teachers covered by the study according to technological devices they possess.

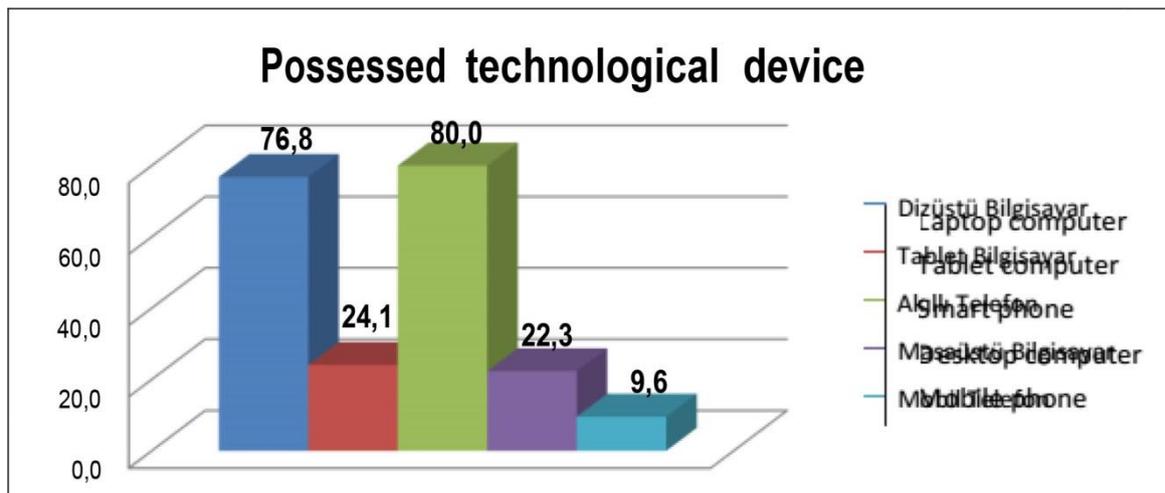


Figure 2. Distribution of preservice teachers according to the technological devices in their possession

According to Figure 2, it is found out that preservice teachers mostly prefer mobile devices (smartphones (80%) and laptop computers (76%). Figure 3 shows the distribution of preservice teachers according to the social networks that they use.

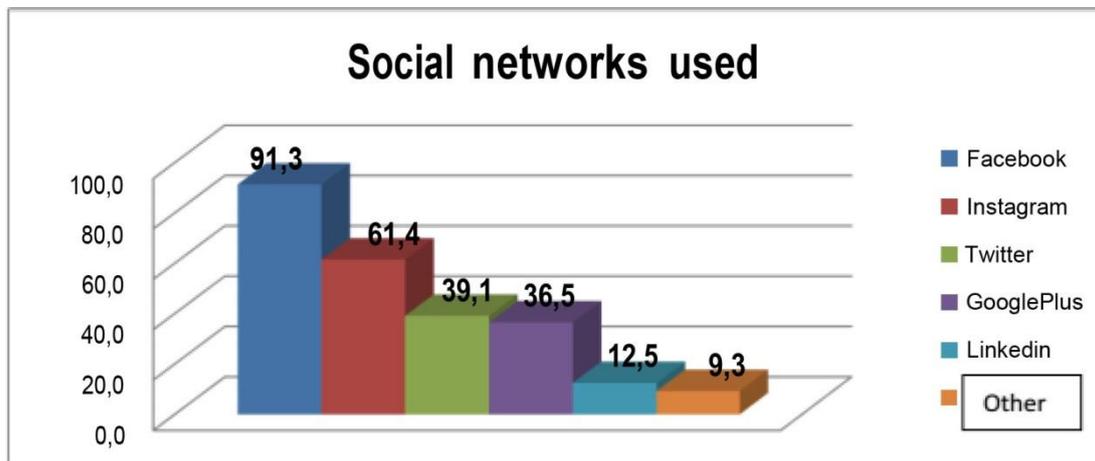


Figure 3. Distribution of preservice teachers according to the social networks that they use

According to Figure 3, it can be said that the most widely used social media network is Facebook (91.3%) and Instagram (61.4), whereas the least popular ones are LinkedIn (12.5%) and other social networks (9.3%).

4.1. Findings and interpretations as regards digital citizenship levels of preservice teachers

The scores obtained by preservice teachers covered by the study from digital citizenship scale and descriptive statistics as regards these scores are given in Table 3.

Table 3. Descriptive statistics as regards scores obtained by preservice teachers from digital citizenship scale

Sub-dimensions	n	x	s	Min	Max
Digital communication and literacy characteristics	345	93,75	14,09	60	120
Digital ethics and law characteristics	345	62,80	9,90	38	80
Digital access characteristics	345	27,33	4,80	13	35
Digital rights and responsibilities characteristics	345	10,90	2,36	3	15
Digital health characteristics	345	18,60	4,05	5	25
Digital safety characteristics	345	19,27	4,00	8	25
Digital commerce characteristics	345	11,12	2,85	3	15
Entire scale	345	243,76	34,47	167	312

When Table 3 is examined, it can be seen that the total scores obtained by preservice teachers from the entire digital citizenship scale is 243.76. This score in the scale indicates high level. The sub-dimension from which candidates received the highest score was digital communication and literacy dimension and the sub-dimension from which they received lowest score was digital commerce. According to these findings, it can be said that the digital citizenship level of preservice teachers is at a very good level vis-a-vis to the entire scale. Likewise, Iscioglu and Kocak (2012) found in their study that preservice teachers enjoyed a high level of digital literacy.

4.2. Comparison of scores obtained by preservice teachers from digital citizenship scale according to their gender

Table 4 gives the Mann–Whitney *U* test results as regards the descriptive statistics and comparison of scores obtained by preservice teachers covered by the study from the entire digital citizenship scale and its sub-dimensions according to their gender.

Table 4. Mann–Whitney *U* test performed in order to determine whether the digital citizenship scores of pre-service teachers change according to gender variable

Sub-dimension	Gender	n	x	s	p
Digital communication and literacy characteristics	Female	179	92,91	14,36	0,32
	Male	166	94,66	13,77	
Digital ethics and law characteristics	Female	179	63,41	10,33	0,14
	Male	166	62,13	9,40	
Digital access characteristics	Female	179	26,99	4,68	0,12
	Male	166	27,69	4,92	
Digital rights and responsibilities characteristics	Female	179	10,64	2,28	0,02*
	Male	166	11,17	2,42	
Digital health characteristics	Female	179	18,84	3,80	0,36
	Male	166	18,84	4,29	
Digital safety characteristics	Female	179	19,44	4,29	0,25
	Male	166	19,08	3,67	
Digital commerce characteristics	Female	179	10,81	2,82	0,02*
	Male	166	11,46	2,85	
Entire scale	Female	179	243,04	35,72	0,92
	Male	166	244,54	33,16	

* $p < 0,05$

When Table 4 is examined, it can be seen that there is no statistically significant difference between scores obtained by preservice teachers covered in the study from digital communication and literacy, digital ethics and law, digital access, digital health and digital safety sub-dimensions according to their genders ($p < 0,05$). It is observed that female and male preservice teachers received similar scores from these sub-dimensions indicating that no significant difference has been observed according to the gender variable.

It has been observed that there is a statistically significant difference between scores obtained by preservice teachers covered in the study from digital commerce and digital rights and responsibilities sub-dimensions in digital citizenship scale ($p < 0,05$). In these sub-dimensions, male preservice teachers received statistically significantly higher scores compared to female preservice teachers.

It has been found out that there is no statistically significant difference between scores obtained by preservice teachers from the entire digital citizenship scale according to their gender ($p > 0,05$). Although male preservice teachers received higher scores compared to female preservice teachers, this difference is not statistically significant. In other words, the digital citizenship levels of female and male preservice citizens are similar.

4.3. Determination of differentiation of scores obtained by preservice teachers from digital citizenship scale according to age

Table 5 gives the Mann–Whitney *U* test results as regards the descriptive statistics and comparison of scores obtained by preservice teachers covered by the study from the entire digital citizenship scale and its sub-dimensions according to their age.

Table 5. Mann–Whitney *U* test performed in order to determine whether the digital citizenship scores of pre-service teachers change according to age variable

Sub-dimension	Age group	n	x	s	p
Digital communication and literacy characteristics	19 years and below	87	93,59	13,94	0,97
	20-21 years	131	93,31	14,81	
	22-23 years	83	94,20	13,30	
	24 years and above	44	94,52	14,06	
Digital ethics and law characteristics	19 years and below	87	62,60	9,89	0,56
	20-21 years	131	62,44	9,92	
	22-23 years	83	62,54	10,10	
	24 years and above	44	64,73	9,62	
Digital access characteristics	19 years and below	87	27,02	4,63	0,58
	20-21 years	131	27,31	4,96	
	22-23 years	83	27,16	5,05	
	24 years and above	44	28,30	4,17	
Digital rights and responsibilities characteristics	19 years and below	87	11,31	2,26	0,31
	20-21 years	131	10,85	2,30	
	22-23 years	83	10,70	2,42	
	24 years and above	44	10,59	2,57	
Digital health characteristics	19 years and below	87	18,64	3,86	0,85
	20-21 years	131	18,53	3,89	
	22-23 years	83	18,39	4,55	
	24 years and above	44	19,11	3,94	
Digital safety characteristics	19 years and below	87	19,55	4,05	0,40
	20-21 years	131	19,49	3,98	
	22-23 years	83	18,58	4,20	
	24 years and above	44	19,34	3,55	
Digital commerce characteristics	19 years and below	87	11,37	2,55	0,87
	20-21 years	131	11,00	2,88	
	22-23 years	83	11,04	3,04	
	24 years and above	44	11,18	3,01	
Entire scale	19 years and below	87	244,08	33,37	0,86
	20-21 years	131	242,94	35,71	
	22-23 years	83	242,60	34,38	
	24 years and above	44	247,77	33,86	

* $p < 0,05$

It has been found out that there is no statistically significant difference between scores obtained by preservice teachers from the entire digital citizenship scale according to their age ($p > 0,05$). The scores obtained by preservice teachers from the entire scale and its sub-dimensions are similar.

In addition, the scores obtained by preservice teachers from the entire digital citizenship scale and its sub-dimensions and their age were tested with Spearman correlation test and it was found out that there is no statistically significant correlation between the age of preservice teachers and the scores obtained from the entire digital citizenship scale and its sub-dimensions ($p > 0,05$).

4.4. Determination of differentiation of scores obtained by preservice teachers from digital citizenship scale according to monthly income

Table 6 gives the Kruskal–Wallis test results as regards the descriptive statistics and comparison of scores obtained by preservice teachers covered by the study from the entire digital citizenship scale and its sub-dimensions according to their monthly income level.

Table 6. Kruskal–Wallis *U* test performed in order to determine whether the digital citizenship scores of pre-service teachers change according to monthly income variable

Sub-dimension	Income status	<i>n</i>	<i>x</i>	<i>s</i>	<i>p</i>
Digital communication and literacy characteristics	2000 TLs and less	108	92,92	13,7	0,05
	2001-5000 TLs	182	92,95	14,4	
	5001 TLs and more	55	98,02	13,4	
Digital ethics and law characteristics	2000 TLs and less	108	62,98	10	0,93
	2001-5000 TLs	182	62,65	9,76	
	5001 TLs and more	55	62,93	10,3	
Digital access characteristics	2000 TLs and less	108	26,81	4,33	0,00*
	2001-5000 TLs	182	27,02	4,99	
	5001 TLs and more	55	29,35	4,62	
Digital rights and responsibilities characteristics	2000 TLs and less	108	10,88	2,23	0,11
	2001-5000 TLs	182	10,71	2,5	
	5001 TLs and more	55	11,56	1,99	
Digital health characteristics	2000 TLs and less	108	18,85	3,99	0,19
	2001-5000 TLs	182	18,26	4,1	
	5001 TLs and more	55	19,24	3,94	
Digital safety characteristics	2000 TLs and less	108	18,68	4,07	0,11
	2001-5000 TLs	182	19,43	3,92	
	5001 TLs and more	55	19,87	4,08	
Digital commerce characteristics	2000 TLs and less	108	11,02	2,78	0,00*
	2001-5000 TLs	182	10,88	2,82	
	5001 TLs and more	55	12,15	2,9	
Entire scale	2000 TLs and less	108	242,1	34,6	0,11
	2001-5000 TLs	182	241,9	33,9	
	5001 TLs and more	55	253,1	35,1	

* $p < 0,05$

It has been found out that there is no statistically significant difference between scores obtained by preservice teachers covered in the study from digital communication and literacy, digital ethics and law, digital rights and responsibilities, digital health and digital safety sub-dimensions according to the monthly income of the household ($p < 0,05$). Although pre-service teachers with 5001 TLs and more monthly household income received higher scores from these sub-dimensions compared to students in other income groups, this difference is not statistically significant.

As a result of the conducted Kruskal–Wallis test, it has been found out that there is a statistically significant difference between scores obtained by preservice teachers covered in the study from digital access characteristics sub-dimension of digital citizenship scale according to the monthly income of the household ($p < 0,05$). This difference is associated with the students with 5001 TLs and more monthly income. Students with 5001 TLs and more monthly household income received statistically significantly higher scores from digital access sub-dimension compared to students in other income groups. There is no statistically significant difference between scores obtained from these sub-dimensions by students with 2000 TLs and less monthly household income and 2001–5000 TLs monthly household income.

When the scores obtained by preservice teachers from digital commerce characteristics sub-dimension of the scale according to their monthly household income are compared, it has been calculated that there is a statistically significant difference between scores obtained by female and male preservice teachers from this sub-dimension ($p < 0,05$). This difference is associated with the students with 5001 TLs and more monthly household income who received statistically significantly higher scores from digital commerce characteristics sub-dimension compared to students in other income levels. Students with 2000 TLs and less monthly household income and students with 2001–5000 TLs monthly household income received similar scores from this sub-dimension.

It has been found out that there is no statistically significant difference between scores obtained by preservice teachers covered in the study from the entire digital citizenship scale according to their monthly household income level ($p > 0,05$). Although preservice teachers with 5001 TLs and more monthly household income received higher scores from the entire scale compared to students in other income groups, this difference is not statistically significant. In addition, as a result of the Spearman correlation analysis conducted in order to identify the correlations between scores obtained by preservice teachers from digital citizenship scale and its sub-dimensions according to the monthly household income, statistically significant and positive correlations have been determined between scores obtained from digital citizenship scale and digital communication and literacy, digital access, digital rights and responsibilities, digital safety and digital commerce sub-dimensions based on the monthly household income levels. Accordingly, as a monthly income of the household of students increase, so do the scores obtained from digital citizenship scale and digital communication and literacy, digital access, digital right and responsibilities, digital safety and digital commerce sub-dimensions.

4.5. Determination of differentiation of scores obtained by preservice teachers from digital citizenship scale according to their computer usage history

Table 7 gives the Kruskal–Wallis test results as regards the descriptive statistics and comparison of scores obtained by preservice teachers covered by the study from the entire digital citizenship scale and its sub-dimensions according to their computer usage history.

Table 7. Citizenship scores of pre-service teachers change according to computer usage history

Sub-dimension	Computer usage history	N	x	S	Media n	Rank mean	X ²	P
Digital communication and literacy characteristics	Less than 5 years	71	86,49	12,5 0	86,00	120,33	26,2 0	0,00*
	6-9 years	10	94,33	14,8 3	96,00	177,82		
	10 years and more	17	96,39	13,2 9	98,00	191,80		
Digital ethics and law characteristics	Less than 5 years	71	59,45	9,78	60,00	139,87	10,5 6	0,01*
	6-9 years	10	64,32	9,67	65,00	188,12		
	10 years and more	17	63,28	9,83	64,00	177,77		
Digital access characteristics	Less than 5 years	71	25,03	4,38	26,00	123,15	24,0 8	0,00*
	6-9 years	10	27,41	4,94	28,00	175,19		
	10 years and more	17	28,23	4,60	29,00	191,83		
Digital rights and	Less than 5	71	10,59	2,23	11,00	160,49	3,98	0,14

responsibilities characteristics	years							
	6-9 years	10	10,66	2,51	11,00	163,75		
		1						
Digital health characteristics	10 years and more	17	11,16	2,30	11,00	183,53		
		3						
	Less than 5 years	71	18,30	3,63	18,00	163,22	0,92	0,63
Digital safety characteristics	6-9 years	10	18,82	3,77	19,00	177,31		
		1						
	10 years and more	17	18,60	4,36	19,00	174,50		
Digital commerce characteristics		3						
	Less than 5 years	71	17,72	3,89	18,00	133,73	13,9	0,00*
		9						
Entire scale	6-9 years	10	19,62	4,12	21,00	182,73		
		1						
	10 years and more	17	19,69	3,84	20,00	183,44		
Entire scale		3						
	Less than 5 years	71	10,11	2,63	10,00	133,74	16,1	0,00*
		5						
Entire scale	6-9 years	10	11,08	2,90	11,00	171,78		
		1						
	10 years and more	17	11,57	2,81	12,00	189,82		
Entire scale		3						
	Less than 5 years	71	227,6	32,7	227,00	125,73	20,3	0,00*
		9		6			7	
Entire scale	6-9 years	10	246,2	36,1	253,00	181,03		
		1	4	7				
	10 years and more	17	248,9	32,2	254,00	187,71		
Entire scale		3	1	8				

* $p < 0,05$

When Table 7 is examined, it can be seen that there is statistically significant difference between scores obtained by preservice teachers covered by study from digital communication and literacy, digital ethics and law, digital access, digital safety and digital commerce sub-dimensions of the scale according to their computer usage history ($p < 0,05$). This difference is associated with the preservice teachers with less than five years of computer usage history. Preservice teachers who have five years or less computer usage history received lower scores compared to preservice teachers with 6–9 years and more than 10 years of computer usage history from this sub-dimension.

It has been found out that there is no statistically significant difference between scores obtained by preservice teachers covered by study from digital rights and responsibilities characteristic and digital health characteristics sub-dimensions of digital citizenship scale according to their computer usage history ($p > 0,05$). Preservice teachers received similar scores from these sub-dimensions regardless of their computer usage history.

It has been found out that there is a statistically significant difference between scores obtained by preservice teachers covered by a study from digital citizenship scale according to their computer usage history ($p > 0,05$). This difference is associated with preservice teachers with 5 years and less computer usage history who received lower scores compared to other preservice teachers. Similarly, Isman and Gungoren (2013) found out that students who used 0–1 hour Internet every day had less digital citizenship skills compared to students who used the Internet for 3 to 6 hours.

Statistically significant and positive correlations have been identified between scores obtained by preservice teachers from digital communication and literacy, digital ethics and law, digital access, digital rights and responsibilities, digital safety and digital commerce sub-dimensions of digital citizenship scale according to their computer usage histories ($p < 0,5$). Accordingly, as the computer usage history of students increases, so do the scores obtained from digital communication and literacy, digital ethics and law, digital access, digital rights and responsibilities, digital safety and digital commerce sub-dimensions of digital citizenship scale.

5. Conclusion and discussion

In this study, digital citizenship level of preservice teachers has been determined and examined according to various characteristics. In addition, the study was conducted based on the data collected from all departments of a faculty of education of a university instead of focusing on a certain department of education sciences. At the end of the study, it has been observed that the digital citizenship of preservice teachers was generally at 'very good level' but significant differences were identified in the sub-dimensions of digital citizenship. When similar studies are examined, it can be seen that the digital citizenship level of preservice teachers was found as high (Iscioglu & Kocakusak, 2012; Kumar & Vigil, 2011) or medium (Akbaba Dag & Oksal 2013; Erkan, Akkoyunlu & Tugrul, 2010; Gokcearslan & Bayir, 2011).

According to the findings obtained from the study, the following conclusions have been reached.

- Although male candidates have higher scores than female candidates in digital rights and responsibilities and digital commerce sub-dimensions, this difference is not significant.
- According to age variable, they are at similar levels both in the entire scale and in all sub-dimensions.
- According to income status, the preservice teachers with 5001 TLs and more monthly household income received higher scores from digital access and digital commerce sub-dimensions, and the candidates with higher income status have better knowledge and experience in access to digital devices and digital shopping,
- According to the computer usage history, candidates with five years and less history have lower level compared to candidates with more than five years in digital communication and literacy, digital ethics and law, digital access, digital safety and digital commerce sub-dimensions; therefore, as the computer usage history of preservice teachers increase, so do their digital citizenship levels.

According to the obtained results, although the preservice teachers enjoy high level in the entire scale, significant differences are identified in digital access, digital safety, digital commerce, digital communication and literacy sub-dimensions of digital citizenship. Although digital access and digital commerce sub-dimensions appear to be related to income status, the level of preservice teachers in these sub-dimensions has to be improved too. In addition, attention must be paid to the fact that preservice teachers with shorter computer usage history have lower digital citizenship levels. It can be seen that preservice teachers need education on increasing their digital citizenship levels and studies can be organized in this direction. The results of this study can be used as a point of reference for further studies. It is believed that conducting studies which cover preservice teachers studying at the faculties of other universities in the Turkish Republic of Northern Cyprus can make a contribution to the field.

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