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TURKISH PRE-SERVICE TEACHERS' PERCEPTIONS OF DIGITAL CITIZENSHIP IN EDUCATION PROGRAMS

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ABSTRACT

Aim/Purpose: The principal aim of this study was to reveal digital citizenship levels of pre-service teachers enrolled in 1st and 2nd year in the education faculty at the Muğla Sıtkı Koçman University in Muğla, Turkey. Pre-service teachers' perceptions of digital citizenship and their patterns of knowledge of digital citizenship were explored.

Background: This study examines the concepts of digital citizenship, including digital communication, digital rights / responsibilities, critical thinking, digital participation, digital security, digital skills, digital ethics, and digital commerce, of pre-service teachers and their interaction with instructional technology. This research study will inform policies and strategies to enhance teacher trainings and education in Turkey.

Methodology: A mixed methodology of data sources including a survey and open-ended questions were collected to explore pre-service teachers' perceptions of digital citizenship. The Digital Citizenship Scale was used as the quantitative data collection instrument. Various statistical techniques and tests such as ANOVA, t-Test, and Tukey HSD were used in the analysis of the data.

Contribution: This study contributes to existing literature knowledge by demonstrating the patterns of digital citizenship that influence Turkish pre-service teachers' professional development and deepening the discussion of change in policies and strategies in education programs in Turkey.

Findings: Results indicated that there was a statistically significant difference of digital citizenship scores of male and female pre-service teachers with male participants scoring higher than female participants. However, participants' mean scores did not significantly differentiate by their departments. Similarly, it was observed that

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participants' mean scores did not significantly differentiate by the high school types. As far as parent educational background was concerned, the mean scores of the participants did not indicate a significant difference by the education level of the mother, but the scores differed significantly by the father's education level. Similar responses emerged in the open-ended questions. Participants expressed that they felt competent in digital communication and digital participation and their parents are partly influential in the improvement of these skills. In addition, the majority of the participants stated that the major they enrolled did not have any contribution to their digital skills so far.

Recommendations for Practitioners	Recommendations for practitioners to include in their teacher education programs training pre-service teachers to become digital citizens.
Recommendations for Researchers	Recommendations for researchers to include identifying practical activities that enhance pre-service teachers' digital citizenship skills.
Impact on Society	The findings and results of this study will help display a universal digital citizenship model for pre-service and veteran teachers in Turkey as well as to strengthen their interaction with instructional and information technologies through policy and strategy changes in educational settings.
Future Research	Further studies should be undertaken, especially in developing countries. Future research can further explore pre-service teachers' perceptions of digital citizenship such as digital rights, responsibilities, and ethics as well as evaluating the opinions of school administrators, students, and parents regarding their perceptions of digital citizenship in educational settings.
Keywords	digital citizenship, pre-service primary school teachers, digital technologies, internet

INTRODUCTION

It is an undeniable fact that the rapid development of information and communication technologies (ICTs) has influenced almost all aspects of life, including citizenship and technology related-issues, in this digitally mediated world. However, despite great efforts to address issues concerning the development of digital citizenship, it does not still appear to be reflected upon school curricula, especially in developing countries such as Turkey. The extent to which priorities are set to address major challenges of technologies, digital media, and social networks at all levels of education is still vague. Therefore, there is a clear need to develop policy orientations, approaches, and strategies in order to adopt digital citizenship education. On the basis of this deficiency, this study aims to identify, explore, and measure digital citizenship perceptions of entry level pre-service teachers enrolled in Muğla Sıtkı Koçman University in Muğla, Turkey.

Students who will be citizens of the future and shape society are required to become digital literate and use digital technologies in accordance with ethical principles. It can be said that the concept of digital citizenship is an important feature within education programs since technologies are complex and changing. Considering the importance of the education of citizens who are compatible with the information society in order to compete in a global world, it is of great importance to ensure that students acquire competency in digital citizenship skills in schools. In this regard, exploring the perceptions of pre-service teachers will help guide digital citizenship curriculum policies in Turkey. Furthermore, the majority of youth already have access to the internet and may have already developed inappropriate online behaviors that may become their norm in using digital technologies. Thus, students should be provided appropriate guidelines in their digital paths for their careers and personal behavior benefits. At this point, understanding what students value is important in order to develop policies and practices to make digital citizenship embedded in education programs.

LITERATURE REVIEW

THEORETICAL BACKGROUND

Digital citizenship concept is characterized in this paper as responsible and appropriate behaviors rules related to the use of technology (Ribble, 2004) and abilities to display online engagement (De Marco, Robles, & Antino, 2014), which would be directly associated with Internet self-efficacy (Choi, Glassman, & Cristol, 2017). Within this framework, the following were identified at the core of the digital citizenship: *Digital Moral Principles, Media and Information Literacy,* and *Participation/ Engagement. Digital Moral Principles* refers to ethical and responsible online behaviors (ISTE, 2007), awareness of political, social, and cultural issues emerged in digital technologies (Winn, 2012), and digital rights and responsibilities such as securing personal information or avoiding cyber-bullying (Choi, 2016). *Media and Information Literacy* includes abilities to efficiently access the Internet, evaluate information, communicate, cooperate and collaborate with individuals in digital platforms (Simsek & Simsek, 2013). *Participation/Engagement* implies participating in the political, economic, social, and cultural activities/campaigns using the Internet (Choi et al., 2017).

Digital citizenship is also termed as cyber citizenship, e-citizenship, or online citizenship. Digital citizenship is conceptualized in the scope of education by the Council of Europe (Richardson & Milovidov, 2019) as the component and positive engagement with digital technologies including creating, sharing, socializing, investigating, playing, communicating, and learning. This also includes participating actively and responsibly in all sorts of communities, such as political, economic, social, cultural, and intercultural, considering values, skills, attitudes, and knowledge. Another aspect of digital citizenship is being involved in formal, informal, and non-formal settings as a process of lifelong learning (Melhuish, Spencer, Webster, & Spence, 2018). Furthermore, digital citizenship acknowledges continuously defending human dignity, which is framed within ten main domains, namely, access and inclusion, learning and creativity, media and information literacy, ethics and empathy, health and wellbeing, e-presence and communication, active participation, rights and responsibilities, privacy and security, and consumer awareness (Frau-Meigs, O'Neill, Soriani, & Tomé, 2017).

This description of digital citizenship closely aligns with the current emergent issues such as internet safety, privacy and security, online communication and relationships, online behaviour and engagement, cyberbullying, sexting, digital addiction, digital footprints, identity, media and information literacy, and copyrights. Some may confuse the term of "digital citizenship" (Mossberger, Tolbert, & McNeal, 2007; Ribble, 2011, 2014) with the term of "digital literacy" (Buckingham, 2010). Digital literacy can be considered as having internet and computer technical and intellectual skills, whereas the particular emphasis within digital citizenship is given to practice appropriate online social skills and engagements acting as an umbrella concept (Emejulu & Mcgregor, 2019). Ethics, literacy, engagement, and critical participation are thus essential in the establishment and endowment of digital citizenship (Choi, 2016).

Law, Chow, and Fu (2018) examined what constitutes a digital citizenship curriculum and the challenges in its implementation on citizenship education. The researchers argued that digital citizenship education is considered within a competence for safe, ethical, and legal participation, and generally social and political concerns are ignored. The current emphasis in digital citizenship education appears in digital competence and disposition for safe, ethical, and legal participation. Nevertheless, an appropriate model for a digital citizenship curriculum is expected to ensure individuals become good citizens through self-improvement in a connected world (Lee, 2015). This was echoed by the argument of Heath and Marcovitz (2019), which indicates that teacher education programs should integrate a more critical and justice-oriented approach.

When the relevant literature is examined, various studies appear to explore practices of social media for digital citizenship (Gleason & Gillern, 2018; McGillivray, McPherson, Jones, & McCandlish, 2016; Snyder, 2016), relationships between social change (i.e., socioeconomic status, parental involvement)

and digital citizenship (Wang & Xing, 2018), factors (i.e., computer experience, daily average technology use, students' attitudes toward the internet, and computer self-efficacy) affecting digital citizenship (Al-Zahrani, 2015), forms of access and activities online and digital citizenship (Mossberger et al., 2017), as well as relationships between internet self-efficacy and internet anxiety and digital citizenship (Choi et al., 2017). These authors centralized the concept of digital citizenship within digital ethics, media and information literacy, participation/engagement, and critical resistance. Certainly, there may be other factors, some of which are not yet even recognized, that impact different aspects of digital citizenship. As most teenagers have grown up in the digital era, they must be well equipped with specific know-how or skill sets to be fully aware of the norms of appropriate online behaviour with regard to the use of technology and participation in digital life (Farmer & Ramsdale, 2015; Hamutoğlu & Ünal, 2015; Gleason & Gillern, 2018; Paskevicus & Knaack, 2018; Simard & Karsenti, 2017).

Research Questions

Hence the following questions guided this study:

1. What are digital citizenship perception levels of pre-service teachers?
2. What are the relationships between demographic characteristics of pre-service teachers and their perceptions regarding digital citizenship?
3. What opinions do pre-service teachers have regarding digital citizenship?

Research Methodology

Research Design

We used a convergent mixed method (Creswell & Creswell, 2017) design to explore the perceptions and views of pre-service teachers about digital citizenship to increase the breadth and depth of our understanding related to the studied research problem. This method allowed us to simultaneously collect two types of data so that we could better describe the phenomena (Creswell & Plano Clark, 2018). While both qualitative and quantitative data were collected, much focus was placed on the quantitative data (QUAN+qual). Two different online questionnaires were used to collect the data. One questionnaire included items relevant to the pre-service teachers' demographic information, background, and internet experiences. The items regarding the perceptions of pre-service teachers on digital citizenship were on a five-point Likert-type scale developed by Kuş, Güneş, Başarmak and Yakar (2017), with responses ranging from 1 = strongly disagree to 5 = strongly agree. Another online questionnaire included 8 open-ended questions (e.g., What do you understand about digital citizenship? Which of the aspects of "digital communication" "digital rights and responsibility", "critical thinking", "digital participation", "digital security", "digital skills", "ethics", and "digital commerce" do you consider yourself more competent/ informed? How does the family have a role in the acquisition of digital citizenship skills? What sorts of relation might be between having a smart phone and digital citizenship skills? How does your educational background contribute to development of your digital citizenship skills?) focusing on the views of the pre-service teachers related to the factors affecting their digital citizenship skills and perceptions.

Participants

This research study used a convenience sampling method to enroll the participants in the study. The participants were 291 pre-service teachers who enrolled in 1st and 2nd year at the Muğla Sıtkı Koçman University in Muğla, Turkey in 2018. The participants' majors were social studies, mathematics, science, art and craft, physical education and sports, psychological counselling and guidance, German language, and Turkish Language Arts. The study took place in the Spring semester of 2017-2018 academic year. All participants voluntarily participated in the data collection process. Two online surveys, which took approx. 20 minutes to complete, were administered to the participants. Prior to

qualitative data collection, the pilot study was carried out with 10 participants to see how the open-ended questions operate and some amendments and changes were made to finalize the questions. After piloting with students participating in the study, 50 of 291 responded the open-ended questions in the online questionnaire. The low number of responses would have been due to the type of questions. These questions required participants to write more about what they think, and therefore spend more time responding. Table 1 presents demographic information and personal experiences of the participants regarding the use of the internet.

Table 1. Demographic Information and Personal Experience of the Participants

	n	%
Gender		
Female	190	65.29
Male	101	34.71
Majors		
German Language	27	9.28
Mathematics	37	12.71
Art and Craft	35	12.03
Physical and Education and Sports	27	9.28
Science	33	11.34
Social Studies	55	18.90
Turkish Language Arts	21	7.22
Psychological Counselling and Guidance	56	19.24
Age		
18	36	12.37
19	79	27.15
20	86	29.55
21	44	15.12
22	46	15.81
High School Education		
Anatolian	175	60.14
Vocational	22	7.56
Regular	35	12.03
Fine arts and Sport	32	11.00
Social Sciences	33	9.28
Father Education Level		
Elementary School	111	38.14
Middle School	62	21.31
High School	69	23.71
Undergraduate	49	16.84

	n	%
Mother Education Level		
Elementary School	149	51.20
Middle School	69	23.71
High School	47	16.15
Undergraduate	26	8.93
Frequency of Internet Use		
1-2 Hour/s a Week	7	2.41
3-4 Hours a Week	11	3.78
1-2 Hour/s a Day	57	19.59
3-4 Hours a Day	84	28.87
More than 4 Hours a Day	132	45.36
Internet Access Tools		
Smart Phone	276	94.85
Laptop	15	5.15
Purposes of Internet Use		
Social Media	244	32.75
Education/Scientific Research	103	13.83
Communication (Email etc.)	103	13.83
Games/Entertainment	48	6.44
Film/Video/Music	173	23.22
News	38	5.10
Personal Affairs (Banking, Shopping etc.)	36	4.83

The Digital Citizenship Scale

The Digital Citizenship Scale was developed by Kuş et al. (2017), and included 49 items (see Appendix for the original scale). An explanatory factor analysis was performed on the 49 items for construct validity in the original scale. As a result of the exploratory factor analysis, it was determined that the 49-item scale had 8 factors, namely digital communication (6 items), digital rights and responsibilities (9 items), critical thinking (7 items), digital participation (5 items), digital security (6 items), digital skills (5 items), ethics (4 items), and digital trade (7 items). It was determined that the scale is a valid scale in terms of item loadings and variance explanatory rates. The scale with 8 factors explained 49.70 % of the overall variance. Cronbach's alpha reliability coefficients for the internal consistency of the scale were examined. The reliability coefficient for each factor was found to be between 0.733 and 0.829. The five options in each item are scored between one and five. The responses on the scale range from "Strongly Disagree" to "Strongly Agree". The lowest score indicates a decrease in the perception of knowledge and skills required by digital citizenship, and the highest score indicates an increase in the perception of the knowledge and skills required by digital citizenship. As a total score can be obtained for the whole scale, the analysis can be made according to subdimensions. In this study, only the analysis process for the whole scale was employed. Reliability analysis of the scale was performed and values close to the original values of the scale were observed. Table 2 gives Cronbach's alpha reliability coefficients of the scale and its dimensions.

Reliability Cronbach's Alpha coefficients, a measure of internal reliability, were obtained for the scale as a whole as well as for each factor of the scale. For Digital Communication, Digital Rights and Responsibilities, Digital Critical Thinking, Digital Participation, Digital Security, Digital Skills, Digital Ethic, Digital Trade factors, the values were .70, .57, .61, .79, .57, .79, .55, .76 respectively. For the whole scale, the value obtained was .86. These values indicate acceptable internal consistency for the scale as a whole and for the sub-dimensions (Hinton, Brownlow, McMurray & Cozens, 2004).

Table 2. Cronbach's Alpha Reliability Coefficients of the Scale and Its Dimensions

Factors	Number of Items	Cronbach's Alpha Coefficients
Digital Communication	6	.70
Digital Rights and Responsibilities	9	.57
Critical Thinking	7	.61
Digital Participation	5	.79
Digital Security	6	.57
Digital Skills	5	.79
Digital Ethics	4	.55
Digital Trade	7	.76
Whole Scale	**49**	**.86**

FINDINGS

We used descriptive and inferential statistics to analyze the data related to the quantitative phase of the research. Through the descriptive statistics, we reached overall understanding about the perceptions of the pre-service teachers on the measure of digital citizenship. By means of inferential statistics including Independent Samples T-Test and One-Way Analysis of Variance, we shed light on the significant differences of pre-service teachers' perceptions on the measure of digital citizenship with regard to the teachers' demographic information. Additionally, we used descriptive analysis on the views of the pre-service teachers' digital citizenship to reach overall codes in the qualitative phase of the research. Descriptive coding process on the views of the pre-service teachers provided new insights into understanding of the pre-service teachers' perceptions on measure of digital citizenship.

SURVEY RESULTS

1. WHAT ARE DIGITAL CITIZENSHIP PERCEPTION LEVELS OF PRE-SERVICE TEACHERS?

Skewness and kurtosis values of the data were checked to identify whether the data were normally distributed. Skewness and kurtosis values of the data, which fell between +3 and -3, are considered acceptable (Kline, 1998). The mean and standard deviation scores of the pre-service teachers on the measure of digital citizenship are presented in Table 3.

The evaluation intervals of means indicate digital citizenship perception levels of the participants. If the score of the participants is above 3.41, it was considered that they have high perception of knowledge and skills required by digital citizenship, medium if it is between 2.61-3.40, and low if it is below 2.60. Accordingly, pre-service teachers feel that their perceptions are higher in the digital skills sub-dimension ($\bar{x}$= 4.09*)* and relatively lower in the digital participation sub-dimension ($\bar{x}$= 3.21). Furthermore, given the mean scores of the pre-service teachers' perceptions on the measure of digital citizenship in terms of the whole scale and its dimensions in Table 3, the pre-service teachers had high and positive perceptions of the knowledge and skills required by digital citizenship. The reason of this argument is that the maximum mean score that can be obtained from this scale, which is de-

signed in five Likert-type, is 5.00, and the minimum mean score is 1.00 due to the structure of the scale.

Table 3. Mean and Standard Deviation Scores of Whole Scale and Its Dimensions

	N	*Minimum*	*Maximum*	*M*	*SD*
Whole Scale	**291**	**2.18**	**4.57**	**3.69**	**.37**
Skills	291	1.60	5.00	4.09	.69
Communication	291	1.00	5.00	3.92	.77
Trade	291	1.29	5.00	3.91	.67
Security	291	1.67	5.00	3.70	.62
Ethics	291	1.25	5.00	3.61	.69
Rights	291	1.78	5.00	3.57	.59
Critical Thinking	291	2.14	4.57	3.45	.42
Participation	291	1.00	5.00	3.21	.85

2. WHAT ARE THE RELATIONSHIPS BETWEEN DEMOGRAPHIC CHARACTERISTICS OF PRE-SERVICE TEACHERS AND THEIR PERCEPTIONS REGARDING DIGITAL CITIZENSHIP?

The finding that is concerned with whether there is a statistically significant difference between the female and male pre-service teachers' perceptions of digital citizenship is presented in Table 4.

Table 4. Mean and Standard Deviation Scores of Male and Female Pre-Service Teachers' Perceptions of Digital Citizenship

Gender	*n*	*M*	*SD*	*df*	*p*
Female	190	2.96	.33	289	.007**
Male	101	3.09	.52		

***p*<.01

As can be seen in Table 4, there was a statistically significant difference between the female and male pre-service teachers' perceptions of digital citizenship with the male participants scoring higher than the female participants (t (289) =-2.708, p=.007). The finding showing whether there are statistically significant differences among the majors of the pre-service teachers considering their perceptions of digital citizenship is presented in Table 5.

Table 5. Mean and Standard Deviation Scores of Pre-Service Teachers' Perceptions of Digital Citizenship by Their Majors

Majors of Pre-Service Teachers	*n*	*M*	*SD*
German Language	27	3.02	.272
Mathematics	37	2.95	.313
Art and Craft	35	2.99	.371
Physical Education and Sports	27	3.06	.53
Science	33	3.17	.45
Social Studies	55	2.94	.42
Turkish Language Arts	21	3.12	.56
Psychological Counselling and Guidance	56	2.94	.36

Considering Table 5, one-way analysis of variance showed that the pre-service teachers' perceptions of digital citizenship did not differentiate significantly by their majors (F (7,283) = 1.507, p = .165). The finding showing whether there are statistically significant differences among the age of the pre-service teachers considering their perceptions of digital citizenship is presented in Table 6. Although the data were distributed normally, the linear regression analysis could not be run since the data did not meet all other assumptions of a linear regression.

Table 6. Mean and Standard Deviation Scores of Pre-Service Teachers' Perceptions of Digital Citizenship by Their Age

Age of Pre-Service Teachers	*n*	*M*	*SD*
18.00	36	2.94	.33
19.00	79	2.94	.34
20.00	86	3.03	.39
21.00	44	3.07	.38
22.00	46	3.08	.58

Given Table 6, one-way analysis of variance showed that the pre-service teachers' perceptions of digital citizenship did not differentiate significantly by their age (F (4,286) = 1.432, p = .224). The finding showing whether there are statistically significant differences among the high schools where the pre-service teachers graduated considering their perceptions of digital citizenship is presented in Table 7.

Table 7. Mean and Standard Deviation Scores of Pre-Service Teachers' Perceptions of Digital Citizenship by Their High Schools Graduated

Types of High Schools	*n*	*M*	*SD*
Anatolian	175	3.02	.41
Vocational	22	2.97	.44
Regular	35	2.93	.31
Fine Arts and Sport	32	2.99	.54
Social Sciences	27	3.01	.27

Considering Table 7, one-way analysis of variance showed that the pre-service teachers' perceptions of digital citizenship did not differentiate significantly by their high schools where they graduated (F (4,286) = .524, p = .718). The finding showing whether the pre-service teachers' perceptions of digital citizenship differentiate statically by their mother education levels is presented in Table 8.

Table 8. Mean and Standard Deviation Scores of Pre-Service Teachers' Perceptions of Digital Citizenship by Their Mother's Education Levels

Types of High Schools	*n*	*M*	*SD*
Elementary School	149	2.98	.42
Middle School	69	2.98	.45
High School	47	3.07	.33
Undergraduate	26	3.14	.39

As can be seen in Table 8, one-way analysis of variance showed that the pre-service teachers' perceptions of digital citizenship were not differentiated significantly by their mother education levels (F (3,287) = 1.662, p = .175). It means that mother's education level of the pre-service teachers did not appear a significant factor differentiating the pre-service teachers' perceptions of digital citizenship. The finding showing whether the pre-service teachers' perceptions of digital citizenship differentiate statically by their father education levels is presented in Table 9.

Table 9. Mean and Standard Deviation Scores of Pre-Service Teachers' Perceptions of Digital Citizenship by Their Father's Education Levels

Types of High Schools	*n*	*M*	*SD*	*Pair-Wise Comparisons (Significant Differences)*
Elementary School	111	2.95	.41	
Middle School	62	2.90	.38	
High School	69	3.11	.38	High School Edu. > Middle School Edu. *** High School Edu. > Elementary School Edu.***
Undergraduate	49	3.14	.43	Undergraduate Edu. > Middle School Edu. *** Undergraduate Edu. > Elementary School Edu***

*** $p < .001$.

As can be seen in Table 9, one-way analysis of variance showed that the pre-service teachers' perceptions of digital citizenship differed significantly by their fathers' education levels (F (3,287) = 5.734, p = .001). Post hoc multiple comparisons using the Tukey HSD test indicated that the mean score for the perceptions of pre-service teachers whose fathers have undergraduate degree (M = 3.14, SD = .43) was significantly different than the perceptions of pre-service teachers whose fathers have only middle school education certificate (M = 2.90, SD = .38) and whose fathers have only elementary school education certificate (M = 2.95, SD = .41). In addition, the mean score for the perceptions of pre-service teachers whose fathers have only high school education certificate (M = 3.11, SD = .38) was significantly different than the perceptions of pre-service teachers whose fathers have only middle school education certificate (M = 2.90, SD = .38) and whose fathers have only elementary school education certificate (M = 2.95, SD = .41). Considering the findings in Table 9, it would be contended that the pre-service teachers whose fathers have higher education levels had more positive and higher perceptions of digital citizenship than the pre-service teachers whose fathers have lower education levels. The finding showing whether the pre-service teachers' perceptions of digital citizenship differentiate statistically by the frequency of internet use is presented in Table 10.

Table 10. Mean and Standard Deviation Scores of Pre-Service Teachers' Perceptions of Digital Citizenship by the Frequency of Internet Use

Frequency of Internet Use	*n*	*M*	*SD*
1-2 Hour/s a Week	7	3.17	.48
3-4 Hours a Week	11	2.94	.48
1-2 Hour/s a Day	57	2.93	.39
3-4 Hours a Day	84	2.97	.36
More than 4 Hours a Day	132	3.06	.43

Considering Table 10, one-way analysis of variance showed that the pre-service teachers' perceptions of digital citizenship did not differentiate significantly by the frequency of internet use (F (4,286) = 1.605, p = .173). The finding showing whether the pre-service teachers' perceptions of digital citizenship differentiate statically by the internet access devices is presented in Table 11.

Table 11. Mean and Standard Deviation Scores of Pre-Service Teachers' Perceptions of Digital Citizenship by Internet Access Devices

Internet Access Tools	*n*	*M*	*SD*
Smart Phone	276	2.99	.40
Laptop	15	3.31**	.41

***p*>.01

Given Table 11, the results indicated that the pre-service teachers' perceptions of digital citizenship differentiated statistically by the preferences of internet access tools (t (289) = -2.987, p=.003) in favor of the pre-service teachers using laptop.

Open-ended Questions Results

3. WHAT OPINIONS DO PRE-SERVICE TEACHERS HAVE REGARDING DIGITAL CITIZENSHIP?

Participants also indicated their understanding of the concept of the digital citizenship with expressions such as " active use of digital environments", "using technology appropriately", "following the necessary internet rules", "introducing the concept of morality into the digital world", "having rights and permissions in digital platforms", "having technological ethics", "obeying rules in virtual environments", "establishing presence in the digital environment", "being more sensitive on social issues on the internet", and "being respectful for the rights of persons in virtual environments" in the open-ended questions. In this regard, Table 12 indicates participants' responses for their opinions regarding in which areas they feel competent within digital citizenship domains.

Table 12. The Frequency and Percent of Respondents Who Feel Competent in each Digital Citizenship Domain

Codes	*n*	*%*
Digital communication	18	36
Digital rights and responsibilities	3	6
Critical thinking	6	12
Digital participation	8	16
Digital security	2	4
Digital skills	5	10
Ethics	4	8
Digital trade	1	2
None	2	4

As seen in Table 12, some of the participants (n:18, 36%) stated in open-ended questions that they feel more competent in digital communication. Furthermore, even the perceptions of the participants regarding their digital skills and digital trade appear to be higher in the digital citizenship scale; digital communication emerged as the dimension that they feel competent in the open-ended questions. On the other hand, Table 13 indicates participants' opinions regarding strong and limited aspects of being a digital citizen within their understanding of digital citizenship in open-ended questions.

Table 13. Participants' opinions regarding strong and limited aspects of being a digital citizen

Aspects	*Codes*	*n*	*%*
Strong	Easy or quick access	37	74
	Saving time	13	26
Limited	Privacy	20	40
	Accuracy	13	28
	Freedom / censorship	9	18
	Copyright issues	4	8
	Physical interaction	2	4
	Social values	2	4

As given in Table 13, the majority of participants brought easy or quick access expressions to the forefront as advantages of being a digital citizen in open-ended questions, whereas personal privacy, inaccuracy, limited freedom, copyright issues, limited physical interaction and social values erosion expressions emerged as concerns within the digital platforms. Participants' opinions regarding the role of the family in gaining digital citizenship are given in Table 14.

Table 14. Participants' opinions regarding the role of the family in gaining digital citizenship

Codes	*f*	%
Guide	14	28
Role model	12	24
Education	10	20
Financial opportunities	6	12
No role	6	12

Considering Table 14, it seems that the responses vary in this regard. Some participants believe that family can be guide or role model for their kids in gaining these sorts of skills; whereas some think that education and financial opportunities are more influential rather than the family.

DISCUSSION

The findings revealed that the participant pre-service teachers had positive perceptions and high awareness of digital citizenship. This is likely due to fact that the participants had positive attitudes towards digital technologies. In addition, it was observed that participants emphasized their understanding of digital citizenship especially within digital communication and digital participation aspects as shown in Table 12. This indicates that participants consider the concept of digital citizenship within the understanding that the technology facilitates to communicate and participate. On the other hand, it can be said that pre-service teachers were not deeply familiar with the concept of digital citizenship as they were trying to express it within social media stereotypes (Facebook, Instagram etc.) rather than online culture paradigms and forms of civic engagement such as engaging effectively with politic issues. This finding is also in line with the study results of Görmez (2016). Similarly, Hui

and Campbell (2018) reveal that while students have the most appreciation for access, communication, literacy, and security; factors such as digital etiquette and wellbeing online are trivialized and undervalued. As Chen (2015) also stated, crucial digital competencies ought to indicate insights to be able to effectively adapt to participatory culture, turning away from consumer pursuits.

When the data were examined in terms of participants' demographics, while no significant difference was observed by majors, age, high school types, mother's education, frequency of internet use, significant difference was seen in favor of male pre-service teachers, father's education, and internet access devices. Similarly, the findings of Lyons (2012) indicated that males had significantly more digital citizenship issues such as online misbehavior or personal safety. In addition, Çepni, Oğuz, and Kilcan (2014) revealed that total scores of the students regarding digital citizenship were significantly differentiated by gender in favor of the male students. This indicates that the online behaviors associated with digital citizenship issues may be much more engaged by males. However, the study of Aladağ and Çiftçi (2017) found statistically insignificant difference among the pre-service teachers' digital citizenship scores in terms of gender. Furthermore, both quantitative and qualitative data indicated that opportunities for digital citizenship in formal teaching and learning settings are not sufficiently implemented. In this regard, the literature expressed that it is necessary to include more digital citizenship elements in education programs and textbooks (Ünal, 2017). On the other hand, whilst the quantitative data were not significantly differentiated in terms of mother's education, a significant difference was observed in support of father's education. Literature indicates that digital divide occurs with the effects of socio-cultural factors and differences, which is rather related to parent educational background (Mertens & d'Haenens, 2010). From this point of view, parent educational background may have an impact on young people's online surf paths. Lastly even though the vast majority of the pre-service teachers stated that they access the internet through their smartphones, significant difference was observed in support of Laptop users for high digital citizenship perceptions and familiarities. It is considered that this might be due to very small number of Laptop users participating in the study.

CONCLUSION

It is noteworthy that no significant regulations are made in teacher education programs specifically for digital citizenship education in Turkey. Nevertheless, some digital competence elements within the course of media literacy appear since 2018. However, the media literacy course is an elective course in almost all programs. The course covers topics such as information literacy, the conscious use of internet and social media, the effects of social media on individuals, the power of information dissemination and misleading media, the media and perception management, legal rights and responsibilities for the media and the internet, copyright, violation of privacy, popular culture, gender roles in media, consumption culture and advertisements, stereotyping in the media and so on (Council of Higher Education, 2018).

It appears that digital citizenship elements are not sufficiently featured in the data obtained from the participants. The pre-service teachers rarely highlighted aspects such as active citizenship, democratic participation in society, and consideration of the social-relational dimension (Soriani, 2018). Therefore, digital citizenship courses should be included in education programs in a more effective and practical form with example activities to prepare students to be citizens of the future considering the factors emerged in the study. This will evenly spread within society by delivering digital citizenship education via online courses or distance education centers. Specific policies should be developed for conscious, safe, ethical, and effective use of the internet, and projects should be carried out to increase public awareness and to strengthen the sense of digital citizenship in Turkey. At this point, important national information projects such as FATİH (Movement of Enhancing Opportunities and Improving Technology), EBA (Education Information Network), e-state, technology transformation movement can be considered as key milestones in using technology effectively and accurately in Turkey.

There are some limitations which may be subject to further research. The first one may be related to reliability of the scale. For future research, it was recommended that the items in the subscales with Cronbach alphas less than .70 might be examined in more detail and perhaps these items could be sharpened up and re-piloted. Similarly, this scale does not directly assess the digital citizenship knowledge competence of individuals. Instead, this scale assesses individuals' perceptions of digital citizenship, in other words, how much they see themselves on the measure of perceptions related to digital citizenship. One of the limitations on the scales is self-reporting methodologies, which are acknowledged as limitations of scales (e.g., Fisher, Maritz, & Lobo, 2014; Pan, Wong, & Ye, 2013). The self-reporting nature of quantitative studies raises the possibility of participant bias, social desirability, demand characteristics, and response sets researchers do not control (Margado, Meireless, Neves, Amaral, & Ferreira, 2017). Particularly social desirability bias is considered to be a systematic error in self-reporting measures resulting from the desire of respondent to avoid embarrassment and project a favorable image to others (Fisher, 1993). In the current research, the same limitations caused by self-reporting procedure might have appeared. In future research, different data collection techniques can be included in the process to minimize bias due to the structure of the scales and to increase the validity of the researches. Another limitation may be the sample. Although it was sufficient to represent the population in higher education, recruiting samples from more universities and using a random sampling approach can improve the generalizability of the findings. The other limitation is that the overall results may be altered by integrating more and different variables. Further studies can be conducted considering these issues. Future studies to raise awareness about digital citizenship on the part of pre-service school teachers can be conducted. Further studies should be undertaken especially in developing countries. Future research can further explore pre-service teachers' perceptions of digital citizenship such as digital rights, responsibilities, and ethics as well as evaluating the opinions of school administrators, students, and parents regarding their perceptions of digital citizenship in educational settings.

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APPENDIX

THE DIGITAL CITIZENSHIP SCALE (DCS)

Items of DCS

Digital Communication	I1	I don't mind everyone seeing what I share on social media.
	I2	I send images, videos or information to someone I don't know.
	I3	If my comments were responded with bullying and rude comments, I respond in the same way.
	I4	I like sharing everything I do on social media (Facebook, twitter, etc.).
	I5	I communicate with people I don't know in digital platforms.
	I6	I use abbreviations (wb, omg, ok, etc.) in my text in digital platforms
Digital Right and Responsibility	I7	I report the situations that bother me in digital platforms to the respective department.
	I8	I am aware that my freedom is over where someone else's freedom begins when communication on the Internet.
	I9	I actively use my e-state account.
	I10	I use the e-complaint system (Presidential communication center, etc.) on matters I think I've been wronged.
	I11	I Don't know exactly the rights I have in digital platforms.
	I12	I use abbreviations (wb, omg, ok, etc.) in my text in digital media
	I13	I display behaviors that I do not embrace in real life by hiding my identity on the Internet.
	I14	I don't access websites with inappropriate content (leading to racism, bigotry and vulgarity).
	I15	I access blocked websites in different ways.
Critical Thinking	I16	Internet is a reliable source for economic, political and social issues.
	I17	I participate in campaigns in digital platforms after searching in detail.
	I18	I criticize the issues I consider unfair on the Internet.
	I19	I accept the accuracy of the information I read digitally without question.
	I20	Shares of my friends are reliable for me.
	I21	The information I read in digital platforms influence my thoughts and decisions in daily life.
	I22	I use the shared information without investigating the accuracy of this information.
Digital Participation	I23	I support a social, economic, cultural campaign initiated through digital platforms.
	I24	I contact the official institutions through the Internet about the issues I consider important.
	I25	I collaborate with other people in digital platforms for problems concerning my city, my country or the world.
	I26	I use my right to obtain information from official agencies in digital platforms.
	I27	I express my thoughts related to issues I consider important in social media.
Digital Security	I28	I share my personal information with people I don't know in online platforms.
	I29	I click on all kinds of links that I receive in digital platforms.
	I30	I use an anti-virus program for my security in digital platforms.
	I31	I download all kinds of programs I need from digital platforms.
	I32	I usually use the same passwords in digital platforms.
	I33	I come together people I meet in digital platforms in real life.

Digital Skills	I34	I can edit my personal settings in my social accounts.
	I35	I can use easily digital tools (computers, smart phones, etc.) for my needs.
	I36	I can easily access the information I need over the Internet.
	I37	I can download and use the applications / programs I need from digital platforms.
	I38	If I have a problem with digital tools, I can solve it myself.
Ethics	I39	I use someone else's ideas and thoughts without citing them.
	I40	I am aware of copyright infringement situations.
	I41	I use the content and information of others (images, articles, graphics, etc.) without obtaining permission.
	I42	I do not install or download copyrighted works such as games, music, and films without paying the copyright.
Digital Trade	I43	I prefer the website with the cheapest product.
	I44	I do shopping in digital platforms.
	I45	I take into account reviews when I choose or not choose a product.
	I46	I make sure that the websites I shop for are institutional and reliable.
	I47	I note details of the websites I shop for (name, phone, address, price).
	I48	I prefer to do a price search on the Internet before purchasing a product from digital platforms.
	I49	I am aware of my rights about shopping I do/ will do in digital platforms.

BIOGRAPHIES

Rıdvan Ata holds a bachelor degree in teacher education. He attained his Master's degree in Digital Technologies, Communication and Education from the University of Manchester in 2009. He earned his Ph.D. in 3D Multiple User Virtual Environments-Second Life- in Higher Education from the University of Sheffield in the UK in 2014. After his years of education at the University of Sheffield, he worked as a Graduate Fellow in Education Faculty Computer Education and Instructional Technology Department at Muğla Sıtkı Koçman University in Turkey between 2014-2016 and he has been working as an Assistant Professor since then.

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