

Literature Review on Digital Citizenship in Turkey

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Abstract

With as of the start of the 2000s, technology and internet have become almost indispensable in the lives of individuals. Rapid development of technology has increased the interest and dependence of people on the internet and made it compulsory to use the internet. Increased use of the internet has led to the development invention of mobile devices, cloud technologies, and information and communication technologies. Besides facilitating and accelerating their lives, this situation has caused individuals to encounter some risks. Individuals can exchange information in an online environment, share their feelings and thoughts in a comfortable way, easily benefit from public services and be aware of the events that take place in various parts of the world. In addition, they have started to perform some transactions in electronic media such as e-shopping, e-government, e-book, e-library, e-pulse, e-banking. This brought about the concept of digital life. Digital life has changed a large part of our habits as the Internet began to enter our lives. Most of these changes are in the fields of communication and life perception. This phenomenon led researchers to work more intensively on the concept of digital citizenship. While researching the effects of digital citizenship on the one hand, studies were carried out to determine what to do at school and at teachers' level. The aim of this study is to address the trends and gaps observed in the research studies about on digital citizenship and to focus on which their subject areas in Turkey. As a result of literature review: (1) Most of the researches studies that are conducted as a result of literature review are focused on students and teachers, (2) In these studies many different scales have been developed to determine the levels of digital citizenship according to the focal point and different factors.

Keywords: digital citizenship, digital citizenship level, digital citizenship and teacher, digital citizenship and student

1. Introduction

The 21st century, which can also be labelled as information era, has shaped the lives of individuals due to the advancements in technology. In accordance with the developments in technology, people started using the internet technologies more often and it evolved into one of the main factors of developments in health, education, communication, media, politics and industry (Firat, 2016). This has given rise to studies focusing on this digital component.

Thanks to the internet, individuals now can share information, experience, thought and emotions with large populations, exchange knowledge and learn about events happening in other sides of the world in a very short time. The internet has replaced everyday activities that require sharing the same physical environment such as schooling, shopping in the store, reading from a paper or researching in a library. The advancement in computer technologies is also felt in the developments in the internet and people have started to use the computer more effectively for the purpose of discovery, playing games and communication (Şahin & Gülnar, 2016).

The increased effects of the above-mentioned developments in computers and the internet have caused people to show a stronger tendency towards mobile devices (smart phones, smart watches, tablets etc.) that combine these functions. Especially among youth, this is quite widespread because of functions such as leisure activities, academic purposes, communication and sharing information (Cicioğlu, 2014; Ko et al., 2009). Students and teachers, being a part of this technologically equipped environment, have a positive attitude towards the use of integrating technology into educational tasks (Odabaşı et al., 2012).

The increase in the digitalization in education and social life has also necessitated the specification of behaviors

required within this new environment (Payne, 2016). The fact that individuals adopt ethical manners in the digital arenas, protect themselves against possible threats and increase security measures has shaped their life styles and, consequently, led to the rise of the concept of digital citizenship (Som-Vural & Kurt, 2018). Many studies have focused on determining the rules that conform to the requirements of digital citizenship.

The rules that digital citizens need to follow in the education sector have been defined by the International Society for Technology in Education- ISTE and published by Educational Technology Standards-NETS. In light of the advancements in educational technologies, standards have been reviewed and updated; i.e. NETS-T (teachers), NETS-S (students), NETS-A (administrators) and NETS-C (coaches), and compiled under the general heading of NETS (Aslan, 2016). This study serves as a guide for teachers, students, administrators, technology coaches and computer science teachers in terms of social and ethical issues, raises awareness about responsibilities, and assists individuals in behaving like digitally responsible citizens.

Digital citizens of today need to be equipped with 21st century skills such as creative thinking, effective communication, planning and management. In this respect, digital literacy is in direct correlation with computer literacy, internet literacy, web literacy, information literacy, visual literacy, science literacy and media literacy (Som-Vural & Kurt, 2018).

Developments in information and communication technologies increase day by day and the area of utilization expands. These developments enable people located in various places to reach information and to communicate with one another (Çubukçu & Bayzan, 2013). Thanks to technological advancements, people do not only make use of the information they need but also make themselves available to others by creating and sharing content (Karaduman & Öztürk, 2014). Yet, this eventually causes individuals to develop an addiction to technology. Consequences of this are not only limited to the change of life style of people but also changes in the definitions of some concepts. As such, the definition of citizenship has also been affected by technology and acquired a new dimension. Thus, together with this new dimension, the definition of citizenship has converted into digital citizenship (Tatlı, 2018). Digital citizenship is a new concept that differs from all other citizenship definitions.

Being a new concept, several definitions of digital citizenship have been introduced, yet there are characteristics shared by these.

In short, it is the ability to employ the rules of using digital technologies; more technically, it can be defined as “the behavioral norms governing the appropriate and responsible use of technologies” (Ribble, 2012). According to Aydın (2015), digital citizenship is the ability to be aware of potential risks involved in the virtual environment and being able to protect oneself against those; whereas another definition explains it as the ability to use information and communication technologies with respect to regulations, security, ethics and responsibility (ISTE, 2007). Thus, it is possible to define digital citizen as someone who uses digital technologies and the internet appropriately in accordance with the rules of ethics, and someone who respects human rights by refraining from harming others (Görmez, 2016).

Teachers, families and parties shaping technology assume great responsibility in developing individuals into digital citizens (Görmez, 2016).

Individuals who have not reached the state of digital citizenship are labelled as digital immigrants. The term “digital immigrant” refers to people who were born before the digital age, met with technology at later stages but are affected by technology and try to adapt (Prensky, 2001).

Based on the activities people engage in in the digital environment, it will be possible to determine their digital citizenship potentials (Bakır, 2016). According to the figures of the Turkish Statistical Institute (TSI), there is a steady increase in the use of mobile phones and internet in Turkey. For instance, the use of mobile phone was 15 million in 2000, which went up to 61 million in 2010, and further up to over 76 million recently. This shows that almost everyone in the country has integrated technology into their lives, by at least using a mobile phone. When it comes to the use of internet, TSI numbers suggest that there were 1,5 million internet memberships in 2000, which went up to 15 million in 2010 and finally reached 66 million now. The statistics taken from TSI regarding mobile phone and internet use, which are the two norms for digital citizenship, refer to a remarkable upswing during the past years. The fact that technology has entered our lives in such a rapid pace obliged people to learn and use it in areas such as schools, homes or workplaces. Therefore, training individuals to adapt to technologies gains great importance. This would lead to an increase in the number of digital citizens who can use technologies with awareness, are aware of the consequences of their online behaviours and act accordingly, follow ethical rules, and respect others rights (Tatlı, 2018).

To become a digital citizen, students at all level have to receive training based on their technological needs that

enables them to use these technologies efficiently and with awareness. In this respect, the awareness of digital citizenship has to be raised among students, teachers and administrators (Çubukçu & Bayzan, 2013). Thus, digital citizenship policies have to guide schools, specifically teachers and administrators (Alberta, 2012).

Ribble (2012) identifies nine dimensions of digital citizenship, which are:

- 1) Digital Access: Full access to all involved.
- 2) Digital Commerce: Buying and selling of goods in an electronic environment.
- 3) Digital Communication and Collaboration: Electronic information exchange.
- 4) Digital Fluency: The process of teaching and learning technology and the efficient use of it.
- 5) Digital Etiquette: Rules of online behavior
- 6) Digital Law: Responsibilities resulting from the use of technology.
- 7) Digital Security and Privacy: Electronically enabled precautions to protect students, staff and institutions.
- 8) Digital Health and Welfare: Physical and psychological welfare in the digital environment.
- 9) Digital Rights and Responsibilities: Space of freedom in the digital environment.

2. The Purpose of the Study

Technological developments, along with globalization, have led to the rise of the concept of digital citizenship, unlike traditional citizenship which is determined by geographical boundaries. Many studies have been conducted on digital citizenship centering around different definitions, which is one of the leading concepts of our world today. This study aims at reviewing the literature on digital citizenship by examining articles, thesis and doctoral dissertations in this area. Based on the analysis of articles and graduate and doctoral thesis done, an overview of studies conducted on digital citizenship has been compiled. This will enable us to see the studies on digital citizenship from multiple perspectives and open ways to discuss their findings and conclusions. In the end, the aim is to suggest ways to improve the research done on digital citizenship by focusing on the results of this literature review. Moreover, the aim is to help interpret the studies on digital citizenship better and shed light on further research on the topic.

3. Method

In terms of research methodology, the studies on digital citizenship show differences. As such, this study is a qualitative synthesis of the qualitative and quantitative research carried out. Qualitative research synthesis can be defined as “a systematic study to synthesize quantitative research” (Suri & Clarke, 2009). This research synthesis is especially suggested for quantitative studies as it provides transparency in terms of responsibility, reliability and transferability of findings (Suri & Clarke, 2009). Therefore, it is quite different from synthesis that adopts a meta-analytic approach.

When identifying the studies subject to this synthesis, “digital citizenship” and “digital citizen” were taken as keywords during screening academic journals and the National Thesis Center database. The data source of this synthesis consists of 21 articles, 17 thesis and 2 doctoral dissertations accessed through the National Thesis Center.

The studies have been coded and categorized based on their research type (interview, observation, survey, scale etc.), theory, and content such as digital citizenship perceptions of teachers, levels of digital citizenship in students, and digital citizenship perceptions. The studies have been chosen based on the following criteria:

- Variety in subject area (for example, education, sociology and informatics) and experimental studies conducted with respect to the pre-service and in-service teacher training context,
- Digital citizenship devices used in teacher and student education (for example, mobile phones, smart phones, tablets),
- In-service teachers, pre-service teachers and teacher trainers as the participants,
- Primary, secondary and university students as the participants,
- Having been published in refereed journals or having made reference to such journals.

The 19 thesis and 21 articles were examined in detail and the data was processed into an analytic research synthesis table. While processing the data, coding was done based on the categories of study area, education type, theoretical basis, technology, method, reliability and validity (Table 1).

To allow comparison of studies, information was added representing methodological details such as the purpose of the study, data sources, and participant information (Table 1).

The comparison of the categorized studies has resulted in the following themes of differences and similarities: tendencies, perceptions, attitudes and their factors, digital citizenship levels and digital citizenship dimensions. The section on findings outlines the report along with the synthesis and their effects based on the comparison done.

4. Findings

The synthesis of the 40 studies reviewed on digital citizenship resulted in the following findings and are demonstrated in Table 1. The findings are outlined based on tendencies, levels, theoretical perspectives, perceptions, attitudes and utilization.

Table 1. Analysis of studies on digital citizenship

Study (Author Name and Year)	Working area	The aim of the study	Education Type	Theory Basis	Technology	Method	Participants	Data collection tool	Validity-Reliability
Kaya & Kaya, 2014	Education and Training	An Investigation of Prospective Teachers' Perceptions of Digital Citizenship	Formal Education	No	No	Qualitative	Teacher candidates	Semi-structured interview	No
Copper, 2016	Education and Training	An Investigation of Classroom Candidates' Digital Citizenship Levels	Formal Education	No	No	Mixed Model	Teacher candidates	Scale, Interview, Observation	No
Cicioğlu, 2014	Education and Training	An examination of the Views of Students Studying at Vocational High Schools About Problematic Internet Use and Cyber Bullying Behaviors	Distance Education	No	E-Learning Environment	Descriptive Method Based on the Screening Model	Vocational high school students	Scale	No
Som-Vural, 2018	Education and Training	Revealing Digital Citizenship Indicators with University Students' Perspective	Formal Education	No	E-Learning Environment	Scanning model	University students	Digital Citizenship Scale	There is
Kocadağ, 2012	Education and Training	Identifying Digital Citizenship Levels of Prospective Teachers	Formal Education	No	No	Scanning model	Teacher candidates	Scale, Interview	There is
Öztürk, 2015	Education and Training	Determining the Level of Digital Citizenship of Secondary School Students	Formal Education	No	No	Mixed Model	Secondary School Students	Scale, Interview	There is
Karaduman & Öztürk 2014	Education and Training	How did Social Information in the Digital Course Activities Citizenship Based on Digital Media in the Student Investigation of the Effects of Attitude	Formal Education	No	No	Mixed Model	Secondary School Student	Scale, Interview	There is
Aslan, 2016	Education and Training	An Investigation of Social Science Teacher Candidates' Digital Citizenship Behavior	Formal Education	No	No	Mixed Model	Teacher candidates	Scale	No
Eser Akkus, 2017	Instructional technologies	Digital citizenship practices and the level of minority citizens living in Turkey	Distance Education	No	E-Learning Environment	Qualitative research method	Minorities living in Turkey	In-depth interview technique	No
Çubukçu & Bayzan, 2013	Instructional technologies	Digital Citizenship Perception in Turkey and Methods for the Improvement of the Internet Consciousness, Safety and Effective Use	Distance Education	No	E-Learning Environment	-	-	-	No
Sakallı, 2015	Education and Training	Examining Digital Citizenship Levels of Pre-Service Teachers	Formal Education	No	No	Quantitative	Teacher candidates	Scale	No
Sarar & Engin, 2015	Education and Training	Tracking pre-service teachers' literacy levels according to gender, newspapers and magazines and using social media accounts	Distance Education	No	E-Learning Environment	Descriptive research model	Pre-service teacher candidates	Media and Television Literacy Levels Scale	No

Elçi, 2015	Education and Training	Investigation of Students' Views Regarding ITS Course Curriculum in the Context of Digital Citizenship	Formal Education	No	No	Scanning model	Secondary School Students	Scale	There is
Tatlı, 2018	Education and Training	An Investigation of Lecturers' Digital Citizenship Levels	Formal Education	No	No	Quantitative	Teacher	Scale	No
Altınay-Gazi, 2016	Education and Training	Determining the awareness of the learners and teachers in internalizing numerical literacy ability, depending on the right technology.	Distance Education	No	E-Learning Environment	Qualitative research method	Teacher	Meetings and meetings	*
Ocak & Karakus, 2018	Education and Training	Determining the digital literacy self-efficacy of prospective teachers	Distance Education	No	E-Learning Environment	Scanning model	Teacher candidates	Scale	No
Turan & Karasu-Avcı, 2018	Education	Examining digital citizenship in the learning areas in which the competencies in the 2018 Social Studies Curriculum and the values, skills and achievements in the program are given.	Distance Education	No	E-Learning Environment	Qualitative research method	2018 Social Studies Curriculum	Document review method	No
Tüzel & Tok, 2013	Education	Describing university students' writing experiences in digital media	Distance Education	No	E-Learning Environment	Qualitative	University students	Semi-structured interview	No
Çepni et al., 2014	Education and Training	An Investigation of Primary School Students' Attitudes towards Digital Citizenship	Formal Education	No	No	Quantitative	Primary School Students	Scale	No
Türel & Gürevin, 2016	Education and Training	Investigating the Effects of Digital Citizenship Perceptions of Individuals Working as Administrators in Educational Institutions on Technology Leadership	Formal Education	No	No	Mixed Model	Managers	Survey, Interview	No
Çiftçi & Aladağ, 2016	Education and Training	Examining the Relationship Between Pre-Service Teachers' Digital Citizenship and Democratic Values	Formal Education	No	No	Quantitative	Pre-Service Teachers	Scale	No
Sincar, 2010	Education and Training	Examining the Digital Citizenship Rules of Education Faculty Students	Formal Education	No	No	Qualitative	Education Faculty Students	Interview	No
Demirkaya, 2018	Sociology	Digital Citizenship and Redefining Political Participation in Turkey	Distance Education	No	E-Learning Environment	Qualitative	Change.Org Participants	Semi-Structured Interview	No
Gündoğdu, 2019	Education and Training	Developing digital citizenship awareness in students by using creative drama as a method.	Formal Education	No	No	Pre-Test Post-Test Model	University students	Scale	No
Sari, 2019	Education and Training	Examining the Contribution of 7th Grade Students and the Seminar Conducted Within the Scope of Digital Citizenship Education to the Social Citizens' Digital Citizenship Skills	Formal Education	No	No	Experimental Method	7th Grade Students and Social Studies Teacher	Scale and Interview	No
Aygun, 2019	Education and Training	Determining the digital citizenship levels of Social Sciences Teacher Candidates	Formal Education	No	No	Mixed Model	Social Studies Teacher	Scale and Interview	No

Türkürresin, 2019	Education and Training	An Investigation of Secondary School Teachers' Digital Citizenship Behavior	Formal Education	No	No	Scanning model	Teacher	Scale	There is
Öztürk, 2019	Education and Training	Determining the Relationship Between 8th Grade Students' Digital Citizenship Level and Cyberbullying Trends	Formal Education	No	No	Scanning model	8th Grade Students	Scale	No
Kabataş, 2019	Education and Training	Evaluation of Pre-Service Teachers' Perceptions of Digital Citizenship in Terms of Lifelong Learning Attitudes and E-Learning Readiness	Formal Education	No	E-Learning Environment	Scanning model	Teacher candidates	Scale	No
Görmez, 2016	Education and Training	Investigation of Prospective Teachers' Opinions About "Digital Citizenship and Its Sub-Dimensions"	Formal Education	No	No	Qualitative	Teacher candidates	Interview	No
İşman & Güngören, 2014	Education and Training	Digital Citizenship Scale Preparation	Formal Education	No	No	Qualitative	Teacher candidates	Scale	There is
Aydemir, 2018	Education and Training	Examining the Social Studies Course Curriculum for 2017-2018 academic year in terms of digital citizenship and its sub-dimensions	Formal Education	No	E-Learning Environment	Descriptive analysis	Secondary School Grades 5, 6 and 7	Document review	No
Cabi, 2016	Education and Training	Developing a tool to determine the attitudes of students studying at secondary level towards digital technology	Formal Education	No	No	Qualitative	Secondary school students	Scale	No
Çakmak & Aslan, 2018	Education and Training	To examine the perceptions of social studies teacher candidates towards digital citizenship and its sub-dimensions	Formal Education	No	No	Descriptive analysis	Teacher candidates	Scale	No
Dere & Yavuzay, 2019	Education and Training	Examining digital citizenship indicators of social studies teacher candidates	Formal Education	No	No	Descriptive Scan	Teacher candidates	Scale	No
Görmez, 2017	Education and Training	To reveal the levels of teachers working in different branches about "digital citizenship and their dimensions"	Formal Education	No	No	Content analysis	Teacher	Interview	No
Kara & Atasoy, 2019	Education and Training	Evaluation of the learning area and contents of the Social Studies Curriculum renewed in 2018 in terms of digital citizenship and its sub-dimensions	Formal Education	No	No	Content analysis	2018 Social Studies Curriculum	Document review	No
Peker Ünal, 2017	Education and Training	Determination of the digital citizenship items in the "Information and Communication Technologies" course curriculum and the level of digital citizenship of the students participating in the curriculum of this course.	Formal Education	No	No	Content analysis	Information and Communication Technologies "course curriculum and textbook	Scale	No
Tanoğlu, 2019	Education and Training	To examine the relationship between the digital citizenship levels and attitudes of art education students towards digital technology according to various parameters.	Formal Education	No	No	Scanning model	University students	Survey, Interview	No

		Demonstrating social studies							
Albayrak & Özer, 2017	Education and Training	teacher candidates' needs for digital citizenship education in line with their own opinions	Formal Education	No	No	Qualitative	Teacher candidates	Interview	No

4.1 Tendencies in Digital Citizenship

The spread of mobile phones, the internet and technology use during the 2000s has also led to an increase in studies related to digital citizenship. According to the figures of TSI, in early 2000s, the number of mobile phone users was 15 million and the number of internet users was 1,5 million, whereas in 2010, the figure for mobile phones went up to more than 61 million and internet users increased close to 15 million (Tatlı, 2018).

In terms of the scales used to elicit individuals' attitudes, beliefs, tendencies or preferences, there seems to be a vast variety. The most widely used type in the field of education is the Likert-Type scale (Salı, 2006). The "Digital Citizenship Scale" (DCS) was developed to determine digital citizenship levels, whereas there was none earlier (Kocadağ, 2012). In the studies subject to this synthesis, this scale seems to be the main data collection instrument as well. 60% of the studies collected data through this scale.

As the concept of digital citizenship is relatively new, studies focusing on this term have also increased during the past decade. Thus, it is not surprising that all studies in this respect were conducted after 2010. Especially 2014 seems to be a turning point for research into this topic. 85% of all studies reviewed were carried out after 2014.

Almost all studies on digital citizenship center around education. Moreover, many focus on the digital citizenship levels of the educators. The reflection of this can be understood from the fact that 50% of such studies were conducted either with teachers or teacher candidates and their digital citizenship levels.

4.2 Limitation Report on Theoretical and Conceptual Perspectives

In the studies synthesized, it can be seen that the focus was mainly on students and teacher participants. The trending area for conducting research seems to be the digital citizenship levels, perceptions, or opinions of in-service teachers, pre-service teachers and students at various levels. It can also be seen that, depending on the specific aspect of digital citizenship under study, different scales were developed. For example, Elçi (2015) developed a scale eliciting 6th and 7th grade Information Technologies and Software curriculum effectiveness with respect to digital citizenship.

In addition, one scale was developed that aims at eliciting digital citizenship levels of pre-service teachers enrolled at face-to-face and blended education programs. The findings suggest that pre-service teachers who use the internet to follow daily news and read books, who use tablets to do online shopping and e-banking or who are engaged in social networking sites such as Twitter and Facebook possess more features evident in digital citizenship (Aslan, 2016).

In a study that focused on teachers' digital citizenship tendencies, another scale was developed to determine the digital citizenship levels of teacher candidates enrolled at education faculties in Turkey. This descriptive survey study aimed at identifying whether digital citizenship levels show variations based on different factors (Kocadağ, 2012).

Regarding student activities, another study looked at the effect of digital citizenship education in the 6th grade Social Sciences course on students' behaviors in digital platforms and on their learning. The scale that was designed for the purpose of this study demonstrated that the training in digital citizenship had positive effects on students' attitudes towards digital ethics, responsibility, rights, communication, privacy, security and access (Karaduman & Öztürk, 2014).

A student-centered scale was developed in a similar study done with the same target group. Using this scale, the research aimed at identifying 6th, 7th, and 8th grade students' digital citizenship levels. The findings were striking in the sense that students used technological tools intensively, yet were not adequately aware of their rights and responsibilities in the area; neither did they have a sound opinion about solutions to potential problems they might encounter (Öztürk, 2015).

4.3 Information Technologies and Software Courses in Education

As digital citizenship requires the use of technology and sensitivity to agreed-upon principles in the area, it is difficult for individuals to acquire the capabilities and skills on their own. Thus, trainings to be offered in this field would be of great benefit to the younger generation, specifically. Elçi (2015), who looked into students' opinions on this, found that Information Technologies and Software courses had a moderate level of impact on gaining the

necessary skills, knowledge and values related to digital citizenship.

Information and communication technologies offer great benefits to people in everyday life, work and education. Therefore, possessing the features of a digital citizen will put them into an advantageous position. To form the digital citizens needed in the society, individuals first have to be trained in gaining the necessary skills through updated and current educational programs that meet the needs of today's circumstances (Altınay-Gazi, 2016).

In this respect, the content of Information Technologies and Software (ITS) courses at schools need to be revised and updated so that it covers the basics of training good and effective digital citizens. If the course is given by teachers who are equipped with the necessary technological skills, in classrooms that are equipped with the technological infrastructure, then students would benefit from the course at the upmost level. In line with these, it is not surprising that the ITS course, which used to be just an elective course up to 2013, is now included in the list of obligatory courses. As a matter of fact, Kaya and Kaya (2014) found that all teacher candidates in their study responded positively to the question "Do you think digital citizenship should be a part of education at schools?"

4.4 Digital Citizenship levels of Teachers and Teacher Candidates

Apart from the positive effect of the education at schools on digital citizenship, of equal importance is the level of teachers and teacher candidates' digital citizenship and whether these are adequate. It is not surprising that 9 of the studies reviewed focus on different aspects of this topic. Based on the results of the study conducted by Ocak and Karakuş (2018), teacher candidates perceive themselves at a satisfactory level in terms of their own digital literacy. An additional finding suggests that male teacher candidates' level of digital literacy is higher when compared to female teacher candidates. Furthermore, teacher candidates enrolled in undergraduate programs have a higher level of digital literacy than those enrolled in pedagogical formation programs. One of the major factors impacting digital literacy level is the effectiveness in the use of internet. The results of the study suggest that the frequency of internet use affects digital literacy level positively (Ocak & Karakuş, 2018).

4.5 Digital Citizenship among University Students

There were 19 studies on the digital citizenship levels of university students. The studies mainly center around university students who are also teacher candidates. The only study conducted involving students from different departments was carried out by Som-Vural and Kurt (2018). During the 2015-2016 spring semester, they investigated students' perspectives and digital citizenship indicators by involving 2148 students from six different universities from Turkey (Som-Vural & Kurt, 2018). One of the most fundamental findings is related to the gender difference and students' digital citizenship averages. When digital citizenship and related sub-factors are analyzed with respect to gender, female participants exhibited higher averages in terms of digital citizenship and correct use.

5. Results and Implications

As a result of the rapid developments in digitalization, the concept of digital citizenship has gained importance. In line with the world, Turkey also focused on this concept in many research studies. A review of the literature shows that the number of research carried on digital citizenship has increased after the 2000s; specifically after 2014, numerous studies have been conducted. The studies reviewed show that the main center of attention regarding digital citizenship has been on pre-service and in-service teacher' digital citizenship levels and factors related to it. Therefore, it is claimed that instruction practices related to digital citizenship in teacher training programs will facilitate the quality of the educational environment.

Following the studies on teachers and teacher candidates are the ones done with students as target participants. Studies in this respect demonstrate that integrating digital citizenship into the programs and practices in the classroom reflects positively on students. As a matter of fact, this leads to an overall improvement in education by fostering students' researching, questioning, discussing and critical thinking skills. Students who exhibit higher levels of digital citizenship do not only use digital devices more effectively, but they also have better interpersonal skills with their teachers and peers. Many studies conclude that digital citizenship has similar effects on students (Ocak & Karakuş, 2018).

In the majority of the studies, the most commonly used scale is the 'Digital Citizenship Scale' developed by Kocadağ (2012).

As for students enrolled at programs other than teacher training, it can be seen that the most dominant factor of digital citizenship is access. The main reason for this result can be attributed to the ease of accessibility to digital devices and applications. Followed by the factor "access", we can see online operations, health and social responsibility factors. On the other hand, the factor of rights and responsibilities has the lowest scoring. The results of a similar study conducted with secondary school students also showed that despite the widespread use of technological communication devices, students' awareness regarding rights and responsibilities was considerably

low. As a result, it can be claimed that not only university students but also secondary school students do not know how to solve a problem when faced with a digital issue (Öztürk, 2015).

Studies on digital citizenship with respect to gender show that female students exhibit a higher rate of digital citizenship and correct use of technology. This results from the fact that female students use the internet more often than their male counterparts, which makes them better digital citizens as they can identify what is good or bad more easily (Kocadağ, 2012). Similar studies conducted with teacher candidates yield supporting results (Sakallı, 2015).

Digital citizenship is particularly more important for students at secondary schools and secondary education in terms of students' needs and effective use of technology. In this sense, students guide teachers and administrators about relevant practices (Çubukçu & Bayzan, 2013). Studies conducted on digital citizenship show that teachers and teacher candidates are in the position of affecting the society at large; therefore it is important to design further studies that aim at increasing teachers' levels of digital citizenship. This also necessitates the design of further studies that focus on identifying the factors affecting teachers' digital citizenship levels positively. Moreover, the dissemination of these results with the teachers and teacher candidates is crucial.

Regarding the dimensions of digital citizenship, both private sector and state have to assume important roles. Rather than teaching individuals how to use technology, the focus needs to shift towards how to become a digital citizen in the light of rights and responsibilities related to technology use.

Overall, the scale that was used in most of the studies is considered to be successful, yet further studies need to be done embracing new developments in the field. Another area that needs further research regards identifying and increasing teacher and teacher candidates' levels of digital citizenship. The findings of these have the potential to affect teacher training curriculum at large and lead to future changes. This in turn, will have an indirect impact on the digital citizenship levels of students.

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