



THE IMPLEMENTATIONS OF PRIMARY SCHOOL TEACHERS ABOUT THE CONCEPT OF DIGITAL CITIZENSHIP

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Abstract

The current study seeks to explore primary school teachers' implementations of the concept of digital citizenship. The study adopted a questionnaire as the quantitative method and distributed it to the participants online. 943 participants were both (female, male) of Hail city in Saudi Arabia. The results show that the primary teachers have positive implementations about the concept of digital citizenship and its dimensions. It also found that tender had no effect on digital citizenship dimensions. However, primary teachers with more than 10 years of technological experience high high a level of knowledge of concept of digital citizenship, especially in digital communication and digital etiquette.

Based on the findings, the study recommended focusing on developing the capabilities of educational cadres in general and teachers in particular, as well as preparing and training them in the areas of digital citizenship, allowing them to teach it effectively and to effectively employ digital technologies in the educational process. More research is needed in the future to identify the requirements for citizenship in education from the set of cultural, social, health, legal, and security determinants related to digital technology that enable the educational system in general, and teachers in particular, to contribute to the preparation of a modern citizen capable of using and employing digital technology in a safe and sound manner.

Keywords: *descriptive research, digital citizenship (dc), education system, primary school teachers*

Introduction

Today, the entire world is experiencing a great scientific renaissance and progress in the field of information and communication technology. There is a diversity of electronic applications that have become accessible to people, which has been known as the digital revolution. Mahdi (2018) stated that with the emergence of this revolution, the individual's use of applications is no longer confined to a specific site or email, but rather his or her use of it has been part of the daily life such as communication, information exchange, entertainment, public services, commerce, health, and education. Although this technological progress and the many benefits it provides to individuals, many issues may negatively affect them if they are not considered (Al-Abdullatif & Gameil, 2020).

One of the most serious issues that people face when using the internet is online security, which includes identity theft, fraud, and hacking; information misuse, such as plagiarism and unauthorized access to protected content; and health risks, such as eye damage from prolonged screen exposure and internet addiction. Therefore, there is a clear need to educate the community and educators about the risk and misuse of the internet and how to deal with it, which will certainly contribute to educating their students, helping them to how protect from these dangers while using them and the benefit from the advantages of the internet. From this standpoint, the term Digital Citizenship (DC) has emerged to spread its culture at home among family members and at school among teachers and students. In the context of current scientific

developments and their challenges to raise a generation that leads a culture of knowledge and learning in a safe environment, DC has become an urgent necessity and a necessary requirement (Alhosary, 2016; Alselehat, & Alsarhan, 2018).

Studies pointed that developed countries, such as UK, USA, and Canada, have designed special curricular of DC that is currently taught in all schools, which aims to spread the culture DC among both students and teachers (Al-Abdullatif & Gameil, 2020; Mahdi, 2018; Djudin & Kartono, 2022). However, since the Kingdom of Saudi Arabia (KSA) is a developing country, there have been few studies on how well individuals, particularly teachers, understand the concept of Digital Citizenship. As a result, the current study investigates the issue more thoroughly in a different context, namely Saudi Arabia, which has adopted an e-learning environment in its learning, particularly in primary and kindergarten, during the pandemic period.

Research Problem

With the corona pandemic's emergence, internet use has become mandatory among people (Akcıl & Bastas, 2020). People do not use the internet only for communication purposes, but rather they use it for shopping, work, meeting, and education. Previous studies, such as Ranchordas's study conducted in 2020, stated that individuals at this time have been more careful in communicating and their relationships with others have shifted from offline to online. According to Yolal and Kozak (2008), internet users can meet their needs through the electronic environment. As a result of technological advancement and the increasing use of technology among individuals, technology and its applications have become a part of human life, resulting in the emergence of a new dimension to human relations and communication, which has been referred to as a new societal concept, whose members are known as digital citizens (Castells, 2000).

Ribble (2008, p.15) defined DC as "the norms of appropriate, responsible behavior with regard to technology use". It briefly means smart dealing with technology. DC should not be understood by users as aiming to set up borders and obstacles for control and tyranny against users in contravention of the values of freedom and human rights. It seeks to find the best way to guide and protect all users, particularly children and adolescents, in the digital world by encouraging desirable behaviors and combating unwanted behaviors (Al-Abdullatif & Gameil, 2020). In addition, Almeslemani (2014) described DC as practices that aim to empower teachers, students, and parents to use technology safely and effectively.

DC includes rules and standards that aim to create a society capable of using technology responsibly. Several studies, such as Djudin and Kartono (2022); Al-Abdullatif and Gameil (2020) and Ruby (2020), declared that DC is an upgraded version of traditional citizenship that requires belonging to society, achieving its goals, and adhering to its social, economic, and political laws. As a result, users in general, and students and teachers in particular, benefit from DC by dealing with rights and duties that contribute to the nation's and citizen's progress.

According to Al-Abdullatif and Gameil (2020), not only the citizen in the traditional context must learn how to be a conservative citizen in order to develop the society for better, but the citizen in the digital world also must learn and understand the ethics of this context to have insight about his/ her rights and protect her/himself from the damages that may be inflicted. According to Alqahtani et al. (2017), a digital citizen is someone who can improve skills and behaviors that promote positive interactions with others in the digital world. Çubukcu and Bayzan (2013) argued that digital citizens can use and employ digital technology in a good way and in accordance with behavioral, ethical, religious, and legal rules. They explained that digital citizens are able to use technology without harming others who use this environment and benefit from electronic communication and learning. According to Ribble (2008), the digital citizen possesses characteristics that set him or her apart from others, including confidence

and ability to use technology; use of technology to participate in educational, cultural, and economic activities; use of critical thinking skills in cyberspace; use of technology to connect with others in positive ways; and respect for the concepts of privacy and freedom of expression in the digital world; a sense of responsibility towards continuous learning; and contributing to effectively promoting the values of digital citizenship. Ohler (2010) added that the digital citizen could manage his/her actions, know the right way to access the information wants, and be aware of the risks associated with the bad use of this context.

The concept of DC has been associated with the education system because it has undoubtedly contributed to the understanding of what students must know in order to use technology properly by both teachers and parents. The aim of DC is to prepare students for participation in society and active participation in serving the nation through the digital world (Başarmak, et al. 2019). Al-Abdullatif & Gameil (2020) showed that educational institutions must spread the culture of DC among the students to actually enhance the protection of the society from the increasing negative effects of technology and promote the optimal use of it to contribute to the development of the knowledge and building the national digital economy.

Park (2016) argued that teachers should contribute to providing students with important skills and knowledge in the digital citizenship. For example, digital citizen identity refers to the ability to create and manage a healthy online identity; screen time management refers to the ability to manage screen time, multitask, and engage in social media responsibly. Cyberbullying management entails the ability to handle and detect cyberbullying cases as well as deal with them wisely; management of cyber security, which means the ability to manage various cyber-attacks and protect person's data by creating strong passwords; privacy management, which means the ability to protect the privacy of others and all personal information shared over the Internet; critical thinking, which means the ability to differentiate between true and false information, good and harmful content, reliable and suspicious online communications; digital empathy, which means the ability to understand the needs and feelings of others online and empathize towards them; and digital footprints, which means the ability to understand and manage responsibly the real world implications of digital footprints.

Most previous studies conducted in the field of DC focused on the digital citizen and the extent of his/ her knowledge of the aspects of privacy, security, ease of access to information through technology as well as the health and moral aspects. For example, Suson (2019), through research on the issue of the awareness of teachers and students of the concept of DC and its elements, found that both teachers and students had awareness of its meaning and its elements, but in a level lower than average. He added that the participants' awareness of the digital law was higher compared to the extent of their awareness of their digital rights and duties, which means that the participants are not prepared to know their rights, duties, and their responsibility in digital world.

Furthermore, Mahrous (2018) conducted a study on the level of knowledge of kindergarten teachers in the KSA in the dimensions of digital citizenship, which revealed a significant lack of knowledge about digital citizenship among kindergarten teachers. Therefore, it is recommended providing teachers with training courses related to digital citizenship. In addition, Alselehat et al. (2018) discovered that students had an average level of awareness of the concept of DC and elements of DC among undergraduate students in the Faculty of Educational Sciences at the University of Jordan. They recommended that students do need a training course from teachers and institutions to increase the level of their awareness and educate them about the concept of digital citizenship. Also, Netwong (2013) studied the relationship between DC and learning success in the field of information technology. The findings revealed that through e-learning, their awareness of DC increased by 15.85%, while their rate of learning success increased by 23.37%, indicating a strong relationship between DC and learning success. Jones and Mitchell (2016) discovered that young users exhibited less respectful online behavior and females were

more aware of DC than males when they developed a DC scale for the online civil participation dimensions as well as respectful online behavior.

Although there are many studies, such as Ata & Yildirim (2019); Mahdi (2018); and Alsuhaime & Alibrahim (2019) conducted to measure the extent of students' awareness of the concept of DC, few studies have been concerned with knowing the degree of awareness of the concept and its elements among teachers particularly in Saudi context. Because the researcher believes that correctly educating school students about the concept of DC necessitates first raising the level of teachers' understanding of the concept of DC and the importance of acquiring basic technological skills among primary school teachers' implementations. As a result, the current study sought to investigate primary school teachers' perspectives on the concept of DC. The study sought to answer the following questions:

1. What are the primary school teachers' implementations about the concept of DC?
2. Is there any difference in the dimension of the DC among primary school teachers' implementations by gender?
3. Is there any difference in the dimension of the DC among primary school teachers' implementations by extent of experience in using technology?

Theoretical Background

As the aim of DC is to contribute to the preparation of the modern citizen in the ability to use digital technology properly and safely, and to give the citizen necessary skills that help in protecting them from digital dangers, Digital citizenship has nine dimensions (Ribble et al. 2004; Ruby & Li, 2020; Djudin & Kartono, 2022): digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital laws, digital rights and responsibilities, digital health and safety, and digital security. Since the current study explores the implementations of primary teachers about the concept of digital citizenship, the researcher focuses on five dimensions, which are as follows:

- **Digital communication:** it has become the new means by which people interact with each other, whether it is through social networking sites, such as Facebook or Twitter, and other digital means of communication, such as email or others. As a result, it is necessary to educate digital citizens in order to achieve appropriate digital social communication when communicating with others, as well as educate digital users in terms of etiquette and rules to follow (Almallah, 2017).
- **Digital etiquette:** It is the standards of behavior or procedure that other users of digital technology expect, according to Almallah (2017). In fact, most digital users do not learn digital etiquette before using technology. Almallah added that, while some policies in technology have been implemented, there is a great need for parents to educate users, particularly digital youngsters, on how to deal with technology. However, Ruby (2020) argued that with technological development no longer education is the responsibility of parents only, but also teachers have a big role in dealing with digital behavior issues and emphasizing the recognition of the basics of digital rules of behavior, which is based on the principle of respect.
- **Digital health and safety:** It refers to the ability to maintain mental and physical health while using digital technology. Digital users must be made aware of the importance of taking health precautions, as well as the inherent physical and psychological risks and negative effects that can occur when using technology and its resources for extended periods of time. Digital users must reconcile between their use of technology in a responsible way and maintaining their good health.
- **Digital laws:** It refers to how well digital users understand the legal rights and constraints that govern their use of technology. It was created under the name of the

Anti-Cybercrime Law to protect digital users all over the world, and any violation of the laws of this system carries serious consequences. So, this issue must be addressed, through awareness and clarification of the penalties that result from irresponsible behavior of some users, such as: using hacking programs, illegally downloading their files, disseminating destructive viruses or spyware, sexual harassment, or identity theft.

- **Critical thinking dimension:** It refers to users' ability to effectively use technology. Regardless of the efforts made to spread technology in general, it is necessary to understand how to use and benefit from technological resources, not just how to use them appropriately. Learning digital basics, evaluating electronic resources and the accuracy and truthfulness of their content, and detecting and developing patterns of online learning and distance learning are all critical issues in digital culture.

Even though the International Association for Technology in Education (ISTE) has established standards for the appropriate use of technology that teachers and students must follow, no specific behaviors were agreed upon when using technology (Shehatah, 2013). Therefore, the current study sheds the light on five dimensions that seem to be more important than others in Saudi context and unclear among Saudi digital users at the same time.

Research Methodology

General Background

Since the current study is descriptive in nature, a questionnaire was used to answer the study questions. The questionnaire was adopted from the previous studies (Ribble, et al. 2004; Alselehat; Ruby & Li, 2020; Djudin & Kartono, 2022), and it contains two parts. First part: general demographic information such as their age, academic majors, and level of technology experience. Second part: teachers' implementations on DC scale: it has 25 items digital citizenships scale that was applicable for primary school teachers. It consisted of five dimensions: digital communication (items from 1 to 5), digital etiquette (items from 6 to 10), digital health and safety (items from 11 to 16), critical thinking (items from 17 to 22), and digital law (items from 23 to 25). Responding to the items according to a 5-point Likert scale from 'strongly disagree' to 'strongly agree'.

Participants

Regarding to the participants, the study included 943 participants from Hail city in Saudi Arabia. The sample was selected as available, and the reason behind choosing primary school teachers as the sample of the study is that education in KSA (Primary school teachers were chosen because of their significant influence on students' attitudes at this age), especially for this stage, continued from a distance through e-platforms for a longer period. The demographic variables were shown as in Table 1.

Table 1
The Demographic Variables Descriptive Analysis

Variable	Levels	Frequency	Percent %
Gender	Males	71	7.5
	Females	854	90.6
	Missing	8	1.9
Age	26 y – 35 y	158	16.8
	36 y – 46 y	544	57.7
	37 or more	217	23
	Missing	24	2.5
Experience years	Less than 5y	173	18.3
	6 y – 10 y	269	28.5
	More than 10 y	478	50.7
	Missing	23	2.4
Usage objectives	Educational	550	58.3
	Snss	176	18.7
	Researching data	164	17.4
	Enjoyment	29	3.1
	Missing	24	2.5
Login types	PC	367	38.9
	Smart phone	450	47.7
	Projector	24	2.5
	Tablets	66	7
	Smartboard	10	1.1
	Missing	26	2.8

Instrument

The questionnaire was sent to experts in the field to verify its validity. The experts checked the questionnaire and all its items and ensured the accuracy of the language. The researcher made the required modifications to the questionnaire before sending it to the participants. Regarding to the reliability of the questionnaire, it was calculated using Cronbach's alpha. The internal consistency by Cronbach's alpha was 0.873, which indicates the high reliability of the questionnaire. The mean score of the scale was 95.66 and the standard deviation 11.50 degree. The 5-point Likert scale was selected for scale responses. The total degree was ranged from 25 to 125 degrees.

Data Analysis

Regarding Data analyses, IBM SPSS v.21 statistical software was used to examine the data and perform statistical analysis of inferential tests to verify the study hypotheses. Descriptive statistics indicators such as mean, median, standard deviation, skewness and kurtosis coefficients were calculated for the dimensions. The linear normality of the data and

the boxplots were performed to examine the dimensions data of outliers. Data dimensions were transformed using standardized data. Internal consistency was calculated using Cronbach's alpha coefficient. Lisrel software version 8.7 was used to verify the construct validity. The study depended on the RMSEA, χ^2/df , SRMR, NNFI, GFI and AGFI indices.

Research Results

Descriptive Results

Some descriptive indicators were computed to test the existence of teachers' perceptions on DC scale. The descriptive indicators as in table 2.

Table 2
The DC Dimension Descriptive Statistics

	Digital Communication	Digital Etiquette	Digital Health and Safety	Critical thinking	Digital law
Mean	18.96	20.80	24.18	17.69	13.35
Median	20	21	24	18	14
σ^2	12.94	16.93	17.92	22.18	1.87
Skewness	-.90	-1.24	-1.08	.15	-1.01
Kurtosis	2	1.60	2.39	-.04	.47
Cronbach's alpha	.820	.820	.876	.838	.879

From table 2, the mean for DC dimensions ranged from (Digital Health and Safety; 24.18, Digital Etiquette; 20.80, Digital Communication; 18.96, Critical thinking, 17.69) to Digital law; 13.35. This indicates that the primary teachers have positive implementations about the concept of DC.

Also, the dimensions had strong consistency by alpha coefficients: digital communication ($\alpha = .82$), digital etiquette ($\alpha = .82$), digital health and safety ($\alpha = .88$), critical thinking ($\alpha = .84$), and digital law ($\alpha = .88$).

Linear normality: The Kolmogorov-Smirnov test was used to determine the presence of linear normality. Digital communication dimension has no normality (statistics = 0.12, $p < 0.05$), Digital etiquette dimension has no normality (statistics = .15, $p < 0.05$), Digital health and safety dimension has no normality (statistics = 0.14, $p < 0.05$), critical thinking dimension has no normality (statistics = 0.09, $p < 0.05$), and Digital law dimension has no normality (statistics = 0.24, $p < 0.05$).

Outliers: Using the boxplot to study data dimension outliers. The outliers were as follows:

Figure 1
Outliers of DC Dimensions

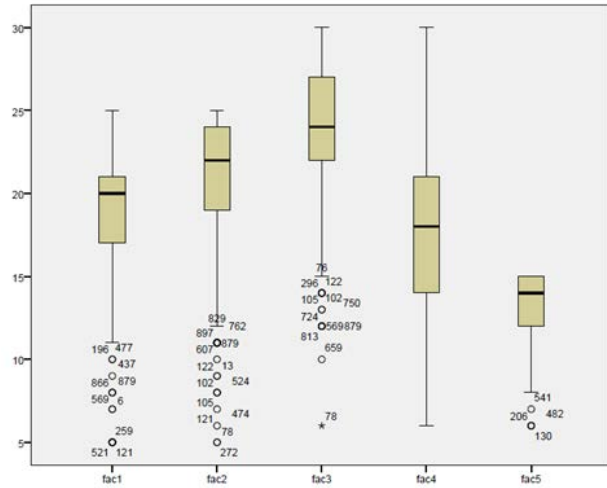


Figure 1. cleared that there are negative outlier values in four dimensions. To get rid of the outlier cases, the data was transformed into standardized data.

Construct Validity

Confirmatory factor analysis was performed to verify the construct validity. The maximum likelihood method was selected in data analysis. The goodness-of-fit were: RMSEA= .086, $\chi^2/df = 6.8$, NNFI = .94, GFI = .95, SRMR = .075, and AGFI = .81. the indices were accepted according to sample data. The index of χ^2/df has badly fitted index. The factor items are as in table 3.

Table 3
The DC Dimensions Item Factor

Dimensions	No.	Items	Loadings	SE	t-values
Digital Communication	1	I use ICTs to communicate with others and share ideas.	.79	.029	26.99
	2	I communicate with others through digital social media.	.80	.029	27.38
	3	In my online interactions, I frequently share audio and video clips.	.58	.032	18.20
	4	I use the Internet to assist with activities both inside and outside of school.	.72	.030	23.66
	5	I communicate with others via email.	.54	.032	16.57

Digital Etiquette	6	I never share any of my personal information on social media or other ICTs.	.47	.033	14.41
	7	I follow the rules of polite dialogue and conversation when using various ICTs.	.79	.029	27.63
	8	I block accounts with inappropriate messages (e.g., in relation to morality, religion, or public taste).	.74	.030	24.98
	9	I do not use ICTs to exchange offensive digital content.	.77	.029	26.73
	10	In my use of various ICTs, I respect others' views and opinions and accept people's differences.	.73	.030	24.72
Digital Health and Safety	11	I am aware of the physical consequences of long-term use of ICTs.	.60	.031	19.12
	12	I understand the dangers of ICT addiction and how to mitigate its effects.	.66	.030	21.88
	13	I commit to using digital devices only at certain times of the day.	.74	.029	25.34
	14	When using a computer or mobile device, I use the appropriate settings.	.80	.028	28.51
	15	I make certain that the lighting on the computer screen and in the workplace is adequate to reduce eyestrain.	.78	.029	27.13
	16	While working on the computer or other digital devices, I take breaks and exercise.	.66	.030	21.71
Critical thinking	17	The internet is a reliable source of information on economic, political, and social issues.	.60	.032	18.85
	18	I participate in campaigns on digital platforms after conducting extensive research.	.64	.032	20.17
	19	On the Internet, I criticize issues that I believe are unjust.	.66	.031	21.13
	20	Without hesitation, I accept the accuracy of the information I read digitally.	.78	.030	26.35
	21	Shares of my friends are reliable for me	.71	.031	23.11
Digital law	22	The information I read on digital platforms influences my daily thoughts and decisions.	.65	.031	20.74
	23	I respect others' rights on the Internet and do not violate them.	.83	.028	30
	24	I do not use hacking software or steal the identities or private information of others.	.86	.027	31.33
	25	When I use digital material from others, I follow electronic licenses and copyright rules and acknowledge their work.	.84	.028	30.28

The digital communication dimension factor ranged from .52 to .80. Then, the digital etiquette dimension ranged from .47 to .79. whereas the digital health and safety dimension ranged from .60 to .80. Critical thinking dimension ranged from .60 to .78. Finally, Digital law ranged from .83 to .86.

This means that the dimensions of the DC scale affect the research sample, so their familiarity and influence begin with the dimension of the most digital communications axis, followed by the dimension of digital etiquette, then the dimension of health and security, then the dimension of critical thinking, and finally the dimension of digital law.

The Differences in Teachers' Implementations on DC Dimensions Across Gender

Standardized data was used in analyses after dimensions data transformation. The independent sample t-test was used to examine gender differences in data. The results are as in Table 4.

Table 4
The Differences in DC Dimensions Across Gender

Dimensions	Gender	N	mu	SD	t-value	df	p																																												
Digital Communication	Males	68	.117	1.18	1.005	907	.315 No sig.																																												
	Females	841	-.009	.98				Digital Etiquette	Males	69	-.08	.96	.677	912	.499 No sig.	Females	845	.006	1.003	Digital Health and Safety	Males	69	-.214	.97	1.846	903	.065 No sig.	Females	836	.016	1	Critical thinking	Males	69	-.14	.95	1.223	887	.222 No sig.	Females	820	.012	1.004	Digital law	Males	68	-.172	1.110	1.474	859	.141 No sig.
Digital Etiquette	Males	69	-.08	.96	.677	912	.499 No sig.																																												
	Females	845	.006	1.003				Digital Health and Safety	Males	69	-.214	.97	1.846	903	.065 No sig.	Females	836	.016	1	Critical thinking	Males	69	-.14	.95	1.223	887	.222 No sig.	Females	820	.012	1.004	Digital law	Males	68	-.172	1.110	1.474	859	.141 No sig.	Females	793	.013	.99								
Digital Health and Safety	Males	69	-.214	.97	1.846	903	.065 No sig.																																												
	Females	836	.016	1				Critical thinking	Males	69	-.14	.95	1.223	887	.222 No sig.	Females	820	.012	1.004	Digital law	Males	68	-.172	1.110	1.474	859	.141 No sig.	Females	793	.013	.99																				
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	Females	793	.013	.99																																															

The results revealed that gender has no effect on DC dimensions.

The Differences in Teachers' Implementations on DC Dimensions Across Experience Years

After dimensions data processing, standardized data was used in analyses. One ANOVA was performed to test the differences in teachers' experience years data. The results are as in Table 5.

Table 5
The Differences in DC Dimensions across Experience

Dimensions	Variance source	SS	df	MS	F	p
Digital Communication	Between	19.42	2	9.71	9.91	< 0.001 Sig.
	Within	882.98	901	.98		
	Total	902.40	903			
Digital Etiquette	Between	7.34	2	3.67	3.69	.025 Sig.
	Within	902.14	906	.99		
	Total	909.48	908			
Digital Health and Safety	Between	4.01	2	2.01	2.01	.134 No Sig.
	Within	894.66	897	.99		
	Total	898.68	899			
Critical thinking	Between	.10	2	.05	.05	.950 No Sig.
	Within	887.45	881	1.01		
	Total	887.55	883			
Digital law	Between	4.79	2	2.40	2.40	.091 No Sig.
	Within	851.54	853	.99		
	Total	856.33	855			

The results revealed that there were effects in digital communication and digital etiquette dimensions across teachers’ experiences. The experience years have no effect on digital health and safety, critical thinking, and digital law.

The post hoc analysis was performed for the digital communication and digital etiquette dimensions as in table 6.

Table 6
Post Hoc Analysis of Experience Years Levels in Digital Communication Dimension

Dependent variable	Experience	(J) experience	Mean difference	p
Digital Communication	Less than 5 y	6y – 10y	-.107	.514
		More than 10 y	-.349	.0001
	6y – 10y	More than 10 y	-.242	.004

There were statistically significant differences between the level of less than five years and the level of more than 10y. The differences were in favor of the level of more than 10y. Then, there were statistically significant differences between the level of 6y. – 10y. and the level of more than 10y. The differences were in favor of the level of more than 10y.

Table 7
Post Hoc Analysis of Experience Years Levels in Digital Etiquette Dimension

Dependent variable	experience	(J) experience	Mean difference	p
Digital Etiquette	Less than 5 y	6y – 10y	-.179	.162
		More than 10 y	-.242	.018
	6y – 10y	More than 10 y	-.064	.683

There were statistical significance differences between the level of less than 10 years and the level of more than 10y. The differences were in favor of the level more than 10y.

Discussion

According to the findings, the primary teachers had positive implementations about the concept of DC. The first reason behind this might be the high ability of participants to integrate DC and its dimensions; which are communication, etiquette, health and safety, critical thinking, and law; into technology; The second reason behind this might lie in the positive attitudes of participants about technology and their use in the teaching and learning process. This result corresponds to the findings of the study conducted by Ata and Yldrm (2019), who discovered that participant pre-service teachers had positive attitudes toward digital citizenship. The result also shows that the participants have a high awareness of the concept of DC particularly with digital health and safety and digital etiquette. This is the same as what was confirmed by Walters et al. (2019); Peart et al. (2020). The results show that participants are aware of the physical effects of sustained use of ICTs. I may argue that this indicates their clear concern for their health and high realization of the risks that technology might present on their health in the long term.

This finding concurs with the research results of Al-Abdullatif and Gameil's study (2020). In terms of digital etiquette, participants stated that they do not share personal information on social media, that they block accounts that contain inappropriate messages, that they respect the views and opinions of others, and that they accept people's differences. It might be due to the role of educational institutions, especially during the period of the Corona pandemic, in providing educational courses for teachers about the concept of DC to spread the sufficient awareness of digital etiquette to reduce cybercrime and others (Fernández-Prados, et al. 2021). The findings contradict the findings of Tangül and Soykan's (2021) and Domingo and Guerrero's (2018) studies, which found that classroom teachers and candidate classroom teachers lacked knowledge of digital ethics and needed training. The inconsistency in the results of the current and previous study might be due to the courses that were provided by the ministry of education and educational institutions. In KSA has introduced many courses of digital ethics during the pandemic for all classes of society, especially the educational community.

Furthermore, the results revealed that female primary teachers have the same perception about the concept of DC and its dimensions as male primary teachers. This may be attributed to the great developments in the KSA and the vision 2030, which interests significantly in educating teachers, regardless of their gender. The result is in accordance with the study of Djudin and Kartono (2022); Buchholz, et al. 2020, which found that gender does not have effect on the concept of DC and its dimensions. The findings also showed that primary teachers with more than 10y of technological experience have high level of knowledge of the concept of digital citizenship, especially with digital communication and digital etiquette. This may be due to their long and effective use of technology, which has in turn contributed to the development of the concept of DC and their proper understanding of it. The result is in accordance with the study of Guillén-Gámez, et al. (2021).

The findings support the previous research that the COVID-19 crisis provides an opportunity to reflect deeply on what it means to be a "good [digital] citizen. [now by] participating[ing] in civil and political life, critique[ing] global problems, and ameliorat[ing] them through hopeful inquiry and action" (Stitzlein, 2020; Buchholz, et al. 2020). It is critical to be prepared for the possibility of additional crises in the near future (Fernández-Prados, et al. 2021).

Conclusions and Recommendations

This study concludes that the primary teachers in KSA have positive implementations about the concept of DC and its dimensions. It reveals that gender has no effect on DC dimensions. However, primary teachers with more than 10y of technological experience have high level of knowledge of the concept of digital citizenship, especially with digital communication and digital etiquette. To increase the reliability of the study, it is necessary to apply the study to students to have more insight about the issue.

The concept of DC is closely related to educational systems because it assists teachers in understanding what a student must know to successfully use technology. DC is more than just an educational tool; it is a method of preparing students to contribute effectively to society while also participating safely in the digital environment. We need learners who are equipped with a critical and creative mindset to deal with all forms of technology that exist and will emerge in the future. We want to create a digital society that embodies civic values. Modern trends of information technology education should focus on the importance of developing the capabilities of educational cadres in general and teachers and preparing them well and training them in the areas of digital citizenship, allowing them to teach it in the best way and to effectively employ digital technologies in the educational process.

Educational leaders, such as policymakers, researchers, and teachers, would be wise to take a holistic approach as they develop policies and procedures to ensure healthy, active, and productive—yet safe—use of the Internet and related tools in educational settings. Because external, i.e., out-of-school, interactions shape so much of today's students' digital experiences, so should the solutions. In other words, as we work to develop positive and productive solutions, we should strive to include as many key members and stakeholders who share in – and benefit from – students' digital lives as possible, from families to law enforcement, from telecommunications organizations to local, provincial, and national leaders.

More future research is needed to identify the requirements for citizenship in education from the set of cultural, social, health, legal and security determinants related to digital technology that enable the educational system in general, and the teacher in particular to contribute to the preparation of a modern citizen capable of using and employing digital technology in safe and sound way. Also, studying the challenges facing Saudi schools in trying to instill the values of citizenship among their students and ways to deal with them. In addition, Future research should concentrate on what is unique to the concept of digital citizenship: "critical awareness" and "digital activism," as other conceptual categories and measurement tools, such as "digital literacy" or "digital competence," address the other dimensions.

Limitations

The results suffer from a Type I error in the generalizability of the results because of the disparity of the participant sample size in gender. The female sample was much larger than the male participants, which indicates the biased decision in favor of females.

Some demographic variables were excluded from the analysis, due to the varying sample sizes, which makes the decision taken according to the results inaccurate concerning the use of

the objectives of using the Internet, and the age level to which be selected, as the participants' selection was available sample by the researcher, and accordingly, making a decision regarding generalization of the results gives Type II error.

References

- Akcil, U., & Bastas, M. (2020). Examination of university students' attitudes towards e-learning during the covid-19 pandemic process and the relationship of digital citizenship. *Contemporary Educational Technology*, 13(1), Article ep291. <https://doi.org/10.30935/cedtech/9341>
- Al-Abdullatif, A., & Gameil, A. (2020). Exploring students' knowledge and practice of digital citizenship in higher education. *International Journal of Emerging Technologies in Learning (iJET)*, 15(19), 122-142. <https://doi.org/10.3991/ijet.v15i19.15611>
- Alamry, R. (2020). The degree of awareness among Jordanian University students of the concept of digital citizenship and the relationship with Her Interlocutors. *Dirasat: Educational Sciences*, 47(3).
- Alhosary, K. D. (2016). The level of knowledge of a social studies teacher with the dimensions of digital citizenship and its relationship to some variables. *The Arab Journal for Educational and Social Studies*, 8, 89-141.
- Almallah, T. M. (2017). *Digital citizenship*. Assahab Publishing and Distribution.
- Almeslemani, L. E. (2014). Learning and digital citizenship: A proposed vision Education. *World Journal*, 2, 15-92.
- Alqahtani, A., Alqahtani, F., & Alqurashi, M. (2017). The extent of comprehension and knowledge with respect to digital citizenship among Middle Eastern and US students at UNC. *Journal of Education and Practice*, 8(9), 96-102. <https://eric.ed.gov/?id=EJ1138839>
- Alselehat, R. A. K. (2018). The degree of awareness of the concept of digital citizenship for undergraduate students in the Faculty of Educational Sciences at the University of Jordan. *Dirasat: Educational Sciences*, 45, 19-33.
- Alsuhaim, A., & Alibrahim, A. (2019). The extent to which computer teachers activate the digital citizenship standards in secondary school. *Specialized Educational Journal*, 8, 1-12.
- Ata, R., & Yıldırım, K. (2019). Turkish pre-service teachers' perceptions of digital citizenship in education programs. *Journal of Information Technology Education Research*, 18, 419-431. <https://doi.org/10.28945/4392>
- Başarmak, U., Yakar, H., Güneş, E., & Zafer, K. (2019). Analysis of digital citizenship subject contents of secondary education curricula. *Turkish Online Journal of Qualitative Inquiry*, 10(1), 26-51. <https://doi.org/10.17569/tojqi.438333>
- Buchholz, B. A., DeHart, J., & Moorman, G. (2020). Digital citizenship during a global pandemic: Moving beyond digital literacy. *Journal of Adolescent & Adult Literacy*, 64(1), 11-17. <https://doi.org/10.1002/jaal.1076>
- Castells, M. (2000). Materials for an exploratory theory of the network society1. *The British Journal of Sociology*, 51(1), 5-24.
- Çubukcu, A., & Bayzan, Ş. (2013). Türkiye'de dijital vatandaşlık algısı ve bu algıyı internetin bilinçli, güvenli ve etkin kullanımı ile artırma yöntemleri [The perception of digital citizenship in Turkey and methods to increase this perception with the conscious, safe and effective use of the internet]. *Middle Eastern & African Journal of Educational Research*, 5(1), 148-174. <https://www.guvenliweb.org.tr/dosya/73bDc.pdf>
- Djudin, T., & Kartono, K. (2022). The perceptions on digital citizenship among prospective teachers: A survey-explorative study in Westkalimantan-Indonesia. *Journal of Education and Training Studies*, 10(1), 1-10.
- Domingo, S., & Guerrero, N. (2018). Extent of students' practices as digital citizens in the 21st century. *Research in Social Sciences and Technology*, 3(1), 134-148. <https://doi.org/10.46303/ressat.03.01.9>
- Fernández-Prados, J. S., Lozano-Díaz, A., & Ainz-Galende, A. (2021). Measuring digital citizenship: A comparative analysis. *Informatics*, 8(1), Article 18. <https://doi.org/10.3390/informatics8010018>
- Guillén-Gámez, F. D., Mayorga-Fernández, M., Bravo-Agapito, J., & Escribano-Ortiz, D. (2021). Analysis of teachers' pedagogical digital competence: Identification of factors predicting their acquisition. *Technology, Knowledge and Learning*, 26(3), 481-498. <https://doi.org/10.1007/s10758-019-09432-7>

- Jones, L. M., & Mitchell, K. J. (2016). Defining and measuring youth digital citizenship. *New Media & Society*, 18(9), 2063-2079. <https://doi.org/10.1177/1461444815577797>
- Netwong, T. (2013). The use of e-learning to develop digital citizenship and learning achievement in information technology. *International Journal of e-Education, e-Business, e-Management, and e-Learning*, 3(2), 135. <http://dx.doi.org/10.7763/IJEEEE.2013.V3.208>
- Ohler, J. B. (2010). *Digital community, digital citizen*. Corwin Press.
- Park, Y. U. (2016). 8 digital life skills all children need – and a plan for teaching them. <https://www.weforum.org/agenda/2016/09/8-digital-life-skills-all-children-need-and-a-plan-for-teaching-them>
- Peart, M. T., Gutiérrez-Esteban, P., & Cubo-Delgado, S. (2020). Development of the digital and socio-civic skills (DIGISOC) questionnaire. *Educational Technology Research and Development*, 68, 3327–3351. <https://doi.org/10.1007/s11423-020-09824-y>
- Ribble, M. (2008). Passport to digital citizenship. *Learning & Leading with Technology*, 36(4), 14-17.
- Ribble, M. S., Bailey, G. D., & Ross, T. W. (2004). Digital citizenship: Addressing appropriate technology behavior. *Learning & Leading with Technology*, 32(1), 6.
- Shehatah, W. (2013). *The nine elements of digital citizenship*. https://doi.org/10.1007/3-540-26620-8_28
- Stitzlein, S. M. (2019). *Learning how to hope: Reviving democracy through our schools and civil society*. Oxford University Press.
- Suson, R. L. (2019). Appropriating digital citizenship in the context of basic education. *International Journal of Education, Learning and Development*, 7(4), 44-66. <https://www.eajournals.org/wp-content/uploads/Appropriating-Digital-Citizenship-in-the-Context-of-Basic-Education-1.pdf>
- Tangül, H., & Soykan, E. (2021). Comparison of students' and teachers' opinions toward digital citizenship education. *Frontiers in Psychology*, 12, 752059-752059. <https://doi.org/10.3389/fpsyg.2021.752059>
- Walters, M. G., Gee, D., & Mohammed, S. (2019). A literature review: Digital citizenship and the elementary educator. *International Journal of Technology in Education (IJTE)*, 2(1), 1–21. <https://files.eric.ed.gov/fulltext/EJ1264251.pdf>
- Yolal, M., & Kozak, R. (2008). Bilgiye Erişim Aracı Olarak Öğrencilerin İnternete Yaklaşımı [Students' attitudes towards internet as an information tool]. *Sosyal Bilimler Dergisi*, 115-128. https://birimler.dpu.edu.tr/app/views/panel/ckfinder/userfiles/17/files/DERG_/20/115-128.pdf
- Mahdi, H. S. (2018). Effectiveness of mobile devices on vocabulary learning: A meta-analysis. *Journal of Educational Computing Research*, 56(1), 134-154. <https://doi.org/10.1177/0735633117698826>
- Ruby, A., & Li, A. (2020). The mobility of education policy in the 21st century: Lessons from other fields. *FIRE: Forum for International Research in Education*, 6(3), 83-93. <https://doi.org/10.32865/fire202063187>
- Ranchordás, S. (2020). Nudging citizens through technology in smart cities. *International Review of Law, Computers & Technology*, 34(3), 254-276.

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