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Digital citizenship in education and its implication

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ABSTRACT.

Nowadays, billions of people across the world communicate with one another using a variety of technological means. As a result of this connection, we now live in a digital world where people can learn, work, play, and socialize with ease. Likewise, educators of all skills levels may not understand how to use technology effectively. Hence, both students and teachers need to become a member of a digital citizenry. Findings revealed that in terms of the elements of digital citizenship, teachers are significantly higher than students. The results indicate that students are at risk in this digital environment along with the covid-19 pandemic. This critical aspect addresses the schools to provide initiative and integrate digital citizenship in the curriculum in order to provide a responsible digital citizen.

Keywords: Digital citizenship, Basic Education, Digital education, Self-education, Responsible citizen

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1. Introduction

COVID-19 has altered the educational landscape. The online environment has substantially increased business, communication, and knowledge accessibility, while also highlighting what it means to be global digital citizens (Norris, 2001; Logan, 2016; Collins, 2018). According to prior study, the digitization of the global community necessitates training individuals for active participation in the virtual environment, critical assessment of information content, and safe online conduct (Fediy Et al., 2021; Choi, 2016; Ferrari, 2013).

For instance, the simplicity with which some internet technologies may be used has enabled certain individuals to steal, harass, and cause issues for others online. Given that technology is regarded a product of the twenty-first century, one of the current challenges of being a digital citizen is the disregard for norms and the right use of the internet and technology in general (Manjikian, 2016; Czaja et al., 2006; Al-Hunaiyyan et al., 2018).

Prior to and during the COVID-19 pandemic, kids began to utilize digital tools extensively in class and at home, and their use has become a requirement (Ranchordas, 2020). Students who make heavy use of digital technologies should be prepared to communicate and cooperate safely and responsibly online (Parent and Community Impact, Technology, 2018; Tan, 2011).

2. Related Research

Moreover, the requirement for safely communicating and cooperating online has spawned the notion of digital citizenship (Ribble et al., 2004; Ribble, 2008; Shelley, 2004; Ozturk, 2021). Historically, essential values of citizenship have included being courteous and polite, responsible, and contributing positively to society (Impero Software & Digital Citizenship Institute, 2016). Digital citizenship concepts are not dissimilar to those of conventional citizenship (Somyürek, 2019). As with all children throughout human history, today's young people, dubbed digital natives, require supervision to learn how to apply civic ideals in the digital environment (Impero Software & Digital Citizenship Institute, 2016; Fingal, 2020).

The purpose of digital citizenship education in the educational system is to educate students with an understanding of how to utilize technology safely and appropriately. Several critical skills that students must develop in order to effectively navigate the digital world include the ability to locate reliable information online, identify suspicious content, understand the privacy policies that apply to information collected online, and take advantage of what technology has to offer by cooperating responsibly with others worldwide.

The relevance of digital citizenship has long been acknowledged as a need for K-12 (Herold 2016) and, in certain cases, post-secondary education (Herold 2016). (Almekinder et al. 2017). Numerous large technology businesses, like Google1 and Microsoft2, also provide online curricula to assist teachers and parents in teaching their children about digital citizenship. Additionally, the International Society for Technology in Education incorporates notions of digital citizenship into its guidelines for students, teachers, and administrators around the appropriate and ethical use of information and technology (ISTE 2017).

Additionally, the subject of scientific research is relevant since the information society has been supplanted by the digital society, and digital technologies have become an important component of human social life (Bykovet al., 2017; Fediy, 2019; Ruenphongphun et al., 2021). Hui and Campbell (2018) noted that the value of digital citizenship has been widely acknowledged and included into standardized school curricula. However, relatively few empirical studies have been conducted to assess the success of these new efforts.

Responsible citizenship is currently a 'hotly contested subject' in educational circles in the United States, having been ranked third on the Tech Trends for (2017). The Children's Internet Protection Act (CIPA), enacted in 2000, is at the core of the debate (Noakes, 2017). The European Union launched a slew of new events in February 2018 under the banner of Safer online day. It is designed to ensure that children, adolescents, parents, educators, and other EU nations develop into proficient and empowered computerized clients (Eurostat, 2015).

Recent studies have shown that a large number of young kids are picking up socially undesirable behaviors online from other young students as well as socially awkward adults. This raises serious questions about the safety and privacy of students' online identities and personal information. (Festl, 2021; Buchanan et al., 2018; Kircaburub et al., 2019; Allison, 2018; Graafland, 2018; Alghamdi et al., 2021). Outside of classroom settings, students' personal usage of technology has the ability to shape their future in terms of public safety, internet privacy, and socially acceptable behavior. (2017) (Levy).

Public awareness-raising about online privacy and security is only getting begun in the Philippines. Department of Information and Communication Technology (DICT) has started constructing computer centers with ICT literacy programs and activities in selected barangays with the help of local government entities (DICT,n.d.). Seminars on protecting one's online identity are offered by the DICT (DICT, 2015). Before this year's 8th of February, Globe Telecom, Facebook, and the Department of Education (DepEd) once again joined together to develop trustworthy digital citizenship among teachers and students.

For a long time, educators in the Philippines have known that state-funded schools want to educate pupils how to utilize mechanical gadgets while simultaneously instilling in them a sense of moral responsibility when making use of technological developments. Technical progress is also speeding, making it necessary to take suitable measures or enhance methods of cultivating conscientious individuals (Globe, Facebook and Dep-Ed ,2018).

2.1 Nine Elements of Digital Citizenship

Recent research indicates a decline in the number of studies presenting suggestions for teaching digital citizenship and its components, as well as examples of related activities (Buchholz et al., 2020; Cunningham, 2018; Gleason & Von Gillern, 2018; Hays, 2019; Krutka & Carpenter, 2017; Lynch, 2017; zer & Albayrak zer, 2020), and an increase in the number of studies presenting examples of related activities (Buchholz et al., As a result, one could argue that the value placed on teaching digital citizenship has grown.

The fact that students and instructors must utilize digital tools during the COVID19 epidemic necessitates a greater emphasis on the problem of teaching digital citizenship and its components. As a result, in order to educate digital citizenship and its components, relevant curriculum should be developed, and activities should be organized in accordance with published research.

Ribble ‘s (2011, 2015) nine elements of digital citizenship are digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights and responsibilities, digital health and well-being, and digital security (and safety), each defined below.

Digital Law. With new trends, new rules and limitations are enacted. As science progressed, regulation sped up to keep up, resulting in ever-changing rules and regulations. Teachers and students alike desire to be informed and current on what is lawful and appropriate. Digital law is concerned with determining what constitutes improper behavior and what constitutes a violation of actual laws, and so has a strong resemblance to problems of intellectual property and copyright (Curran & Ribble, 2017). This code will ensure that everyone who wants to utilize digitally disseminated content may do so without fear of being harmed in any way (such as downloading, changing, or reusing it). As part of their digital legal education,

students learn how to do Internet research and properly cite sources for a wide range of media, including images, articles, and videos.

Digital Security. We teach children to look both ways before crossing the street, to avoid conversing with strangers, and to know who to call in a crisis. Comparable security measures are critical inside an advanced network, including how to create strong passwords, manage infection, and decide on site security. Additionally, security flaws typically occur not as a result of flaws in the equipment but rather as a result of how humans use it. Protecting one's equipment is a personal duty that also contributes to the community's protection. Digital security refers to the methods, rules, and processes that individuals employ to guarantee that their Internet use does not adversely affect other parts of their lives.

This aspect stresses the measures that individuals must take to avoid having their private information compromised or stolen as a result of internet interactions. Individuals who practice good digital safety and security have habits and practices such as purchasing and installing virus protection on their computers, creating backup systems for valuable documentation via external hard drives or cloud storage, and sharing sensitive and personal information only on sites with clearly defined security protocols (Ribble, 2015). Teachers must have specialized knowledge and expertise in computer security in order to comprehend and pass on certain behaviors (Jagasia, Baul, & Mallik, 2015).

Digital Etiquette. Just as it is critical for children to understand how to behave appropriately in the classroom, on the playground, and during the school day, they must also explore how to be wonderful online. More than just establishing guidelines for acceptable behavior, kids must be taught the value of respect for their online peers and how to conduct themselves properly.

Sensible digital citizens communicate and engage with decency to the degree that they are likely to state their reasons when disagreeing with anything online, avoid online battles when they come across them, and adhere to mobile phone restrictions. When they are online, sophisticated digital inhabitants exhibit appropriate manners. They adhere to the digital world's routinely recurring rules, conventions, and expectations, the majority of which are unwritten (Hollandsworth, Dowdy, & Donovan, 2011; Lenhart & Madden, 2007; Suson et al., 2020).

Digital Literacy. Being an educated citizen is a critical component of being a responsible citizen, not to mention that the more technologically literate kids are, the more equipped they will be for the workplace or postsecondary education. The ability to do online research, identify reliable sources, and utilize phrase processing software program are all critical abilities. Additionally, one of the most critical components of technology is an understanding of how that science works in order for it to be employed in the most beautiful manner possible.

Digital literacy, which is also referred to as new literacies, media literacies, or information literacies, is essentially an individual's basic understanding of computer functions and technology use through the ability to apply digital skills to specific situations in order to participate in the online world (Curran & Ribble, 2017). Teachers who provide opportunities for students to develop high-quality digital literacy skills such as navigating and evaluating online platforms and comprehending the fundamentals of computer and device use such as email, search engines, word processing, and producing prepare students to be more effective 21st-century workers (Curran & Ribble, 2017). Digital citizenship necessitates the acquisition of new literacy skills (Simsek & Simsek, 2013).

Digital Communication. With email, text messaging, and video chat, communication is easier than ever. With the click of a mouse, sensitive statistics might be transmitted in a dangerous manner. College students should be warned about what is appropriate to communicate via digital media to avoid humiliating, costly, and dangerous situations. Digital communication refers to both the process through

which humans connect via digital means and the flow and exchange of information obtained via technology.

Moreover, when people are lifelong learners, their conduct changes as a result of personal and professional experiences. Being a lifelong learner entails acquiring skills such as knowledge retrieval and acquiring the ability to interact intelligently, appropriately, and efficiently using technologies such as email and cell phones (Ozdamli & Ozdal, 2015).

Digital Access: As rapidly as internet access and technology have advanced, socioeconomic status and geographic location continue to play a role in preventing some from gaining digital access. It is critical to keep in mind that some people continue to confront these obstacles and to work to ensure that digital technologies continue to become more accessible. Additionally, digital access provides science with an equal chance of grasping the beneficial application of technology.

Digital access refers to the concept of having equitable access to technology resources that enable persons with disabilities to participate fully in society. Digital access can be utilized in the classroom to assist students with impairments in accessing traditional curriculum information. Choi's (2016) concept analysis discovered that several studies identify a lack of access to digital resources, often referred to as the digital divide, as a barrier to developing media and information literacy abilities as a citizen.

Digital Commerce. Everything from groceries and toys to automobiles and gadgets is conveniently available for purchase online. Consumers, particularly students, must be educated and aware of the hazards associated with internet shopping. Secure payment methods and websites that protect consumer information are critical concepts to educate. According to (Mossberger, Tolbert, & Hamilton, 2012), prudent purchasers are aware of the proper online purchasing and selling techniques. Students are easy target in the world of online commerce unless they learn how to protect themselves against scams and unjustified debts. Simultaneously, reflective digital citizens are aware of, and vigilant against, e-predators (Nuccetelli, 2011).

Digital Health and Wellness. Six billion of the world's projected seven billion people now have access to mobile phones (Source: TIME Newsfeed). These statistics demonstrate how many of us spend our days staring at displays, typing on keyboards, and conversing on mobile phones. Safe ergonomic techniques and eye protection are physical concerns that must be addressed. Additionally, conscientious users of digital technology are likely to be concerned with their physical well-being (Ohler, 2011) when using computers and digital devices. These are safe ergonomic practices (Hollandsworth et al., 2011) that reduce the chance of acquiring chronic eyestrain, poor posture, discomfort, numbness, and various nerve-related issues as a result of computer use.

Digital Rights and Responsibilities. Just as citizens of many countries enjoy basic rights, persons who engage in online activities enjoy similar liberties in their digital surroundings. Privacy and freedom of expression are frequently discussed and viewed as essential. Additionally, law-abiding users of digital science bear responsibility for their online actions and acts. They understand what is acceptable and what is not acceptable behavior when engaged in online activities (Curran, 2012; Oxley, 2010).

3. Research Purpose

The purpose of this research is utilizing the digital citizenship model of Mike Ribble to measure the awareness of the teachers and students in terms of how to use digital tools, gadget as support to their educational journey it also examines the consistency of this model through the empirical evidence.

3.1 Method and Materials

The main objective of the study is to understand the current awareness of the respondent groups in relation to the elements of digital citizenship as requirement to be a responsible digital citizen. Being a good digital citizen is about more than having the technical skills to use online technology. Essentially, being a responsible digital citizen is the same as being a good citizen only online (Auld, 2020). This study used the descriptive-normative research method to gather facts relevant to awareness of the respondent groups on being a responsible digital citizen in terms of the elements of digital citizenship by Mike Rible (2013).

According to Shields and Rangarajan (2013), descriptive research was used to describe the characteristics of a population being studied. It does not define what caused a situation. The technique used under the descriptive method is a survey approach that is normally used to explore opinions according to respondents representing a whole population. The survey is appropriate in this study because it enables the researcher to formulate generalizations. This research utilized the input-process-output approach. The respondents of this study comprise two groups: Teachers group and Learners group. 3-point likert scale was used in order to measure the awareness of the respondent groups.

For the test of significant difference, we are interested to find out if there is a significant difference between the awareness to digital citizenship between teachers and their students. We will therefore perform the independent sample t-test for means, and our hypothesis will be as follows:

H_0: There is no significant difference between teachers' awareness and that of the students

H_1: There is a significant difference between teachers' and students' awareness.

4. Results and Discussion

1. The tables below show the data indicating the means and standard deviations of respect for self, and other people for the teachers and students.

Table 1. Respect for self and other People

	Teachers		Students	
	Mean	SD	Mean	SD
Digital Access	2.48	0.82	1.90	0.65
Digital Etiquette	2.86	0.75	1.98	0.90
Digital Law	2.30	0.62	1.62	0.71
Overall Mean	2.55	0.73	1.83	0.75

In terms of the perceived awareness of the group respondents as to respect for self and other people as expressed in table 1, the teacher's group were fully aware on how to give respect in this digital age, while students on the other hand, data shows that more than half were only moderately aware on the aspects of digital access with a mean score of 1.90 (sd=0.65), digital etiquette (1.98, sd=0.90), and digital law (1.62, sd=0.71). Overall, the data in terms of digital access, etiquette, and law showed that teachers were fully aware with a mean score of 2.55 (sd=0.73), while students were only moderately aware with a mean score of 1.83 (sd=0.75). This indicates that learners were at risk in using technology as means of delivery mode of learning.

2. The tables below show the data indicating the means and standard deviations of self-education and connecting to other people for the teachers and students.

Table 2. Self-education and connecting with other people

	Teachers		Students	
	Mean	SD	Mean	SD
Digital communication	2.62	0.92	2.11	0.78
Digital literacy	2.80	0.86	1.71	0.80
Digital commerce	2.42	0.90	1.79	0.69
Overall Mean	2.61	0.89	1.87	0.76

The extent to which the respondent groups perceived self-education and connecting with other people as to digital communication, literacy, and commerce were displayed in table 2. Data shows that there is a need for the students to elevate their awareness in terms of the digital literacy as the lowest mean score of 1.71 (sd=0.80). This indicates that students are lacking of the skills in using digital tools in learning and communication. Moreover, data in terms of teacher's awareness showed that teacher respondents were fully aware on how to connect people with respect. Overall, data showed that teachers are fully aware with a mean score of 2.61 (sd=0.89) while students got a final weighted mean of 1.87 (sd=0.76). This indicates that there is a need for the school to provide training and skills development as part of the subject course in order to help students to become a responsible digital citizen in terms of digital communication, literacy and commerce.

3. The tables below show the data indicating the means and standard deviations of protecting self and other people for the teachers and students.

Table 3. Protecting self and other people

	Teachers		Students	
	Mean	SD	Mean	SD
Digital rights and responsibilities	2.92	0.92	1.89	0.74
Digital security	2.86	0.84	1.75	0.69
Digital health and wellness	2.63	0.78	1.84	0.82
Overall Mean	2.80	0.85	1.83	0.75

Table 3 shows the data in terms of protecting self and other people as to the 3 elements of digital citizenship: Digital rights and responsibilities, security and health and wellness. Data shows that teachers were fully aware on how to protect themselves and other people when using technology, while students got a rating of moderately aware in terms of protecting self and other people, this indicates that students are at risk on their health and wellness, and their rights and responsibilities in this digital world. Overall, data shows that teachers were fully aware with a mean score of 2.80 (sd=0.85), while students were moderately aware. Moreover, findings have shown, that students were at risk in using technology in their study.

Test of Significant Difference

1. Respect for Self and other People

Table 4. Independent sample t-test for equality of means

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Mean	Equal variances assumed	.615	.477	3.605	4	**.023**	.71333
	Equal variances not assumed			3.605	3.468	.029	.71333

From Table 4 above, the significant value is 0.023 which is below the alpha level (0.05) of significance at 95%. We therefore fail to accept the null hypothesis of no significance. There is therefore a significant difference between the mean for teachers and that for students in terms of respect for self and other people. From the overall means in Table 1.1, it is evident that the average awareness for teachers is significantly higher than that of students.

2. Self-education and connecting with other people

In terms of self-education and connecting with other people, Table 2.1 below shows the average awareness for the teachers and the students.

Table 5. Independent sample t-test for equality of means

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Mean	Equal variances assumed	.165	.706	4.526	4	**.011**	.74333
	Equal variances not assumed			4.526	3.955	.011	.74333

Table 5 shows that the significant value is 0.011. This is below the alpha value of 0.05 at 95% level of significance. We therefore fail to accept the null hypothesis of no difference and conclude that there is a significant difference between the mean levels of awareness for teachers and students. From the overall means in Table 2.1, it is evident that the average awareness on self-education and connecting with other people is higher for teachers as compared to students.

3. Protecting self and other people

Table 6 Independent sample t-test for equality of means

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Mean	Equal variances assumed	2.757	.172	10.026	4	**.001**	.97667
	Equal variances not assumed			10.026	2.821	.003	.97667

From Table 6, the significant value is 0.001. This value is below 0.05. We therefore fail to accept the null hypothesis of no difference and conclude that the mean difference between average awareness for teachers and for students is significant. From table 3.1, we see that the overall mean for teachers' awareness is higher than that of students in this category.

4. Discussion

Digital citizenship has been a buzz word in the Philippines education and other countries. For example, world education has taken the initiative to establish a specialized curriculum for digital citizenship, allowing it to become a taught subject (Acedo & Hughes, 2014). By the same token, understanding the fundamental functions of one's gadgets is important; users should be aware of the procedures required to safeguard their online profile and sensitive data (Pusey & Sadera, 2012). Teachers must have a strong understanding of technology use and the possible dangers connected with incorrect use in order to deliver teaching focused on technology security (Skutil, 2014).

Educators have a professional duty to teach digital citizenship in order to guarantee that everyone acquires a knowledge of inappropriate technology usage and the necessary steps to combat it (Farmer, 2011). Similarly, primary school instructors require specialized professional development to prepare them for digital integration in the classroom and to guarantee that kids have opportunity to learn required safe technological habits (Baumann, 2016).

Due to the paucity of study on digital citizenship, several academics have sought to design tools to aid scholarly comprehension of digital citizenship knowledge and attitudes. Ribble (2015), Suppo (2013), Isman and Canan (2014), Gungoren (2014), and Choi et al. (2017) have sought to design instruments to measure particular knowledge of digital citizenship concepts, components, and aspects (as cited by: Walters et al., 2019). This initiatives by the scholars have elevated the awareness of the society in order to become a responsible digital citizen. The school as the primary provider of knowledge and awareness has huge contribution in order to fulfil these initiatives.

5. Conclusion

It is not undeniable that students began to utilize digital tools extensively prior to covid-19, while during the pandemic it skyrocketed with huge amount of usage. This becomes the norms and the environment of our society. This led to the conclusion that the schools and other stakeholders need to prepare teachers and students to be a responsible digital citizen. Based on the findings of the study, the average awareness for teachers is significantly higher than that of students. This indicates that students are at risk when they connect to the digital world. Data also suggest that there is a need to elevate the school's participation in order to provide globally responsible digital citizen in this pandemic. This further implied that schools should integrate digital citizenship in education.

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