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Investigating Digital Citizenship Literacy Skills: Development of Perceived Knowledge of Students at Postgraduate Level

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Abstract

The ability to effectively navigate the digital world and promote responsible digital citizenship among distance learners is crucial for educators. Digital citizenship refers to standards of behavior when using technology. Present study was conducted to investigate the perceived knowledge of postgraduate students on digital citizenship literacy. The study was quantitative in nature which used survey method. The study was based on the digital citizenship framework of Ribble and Park (2022). The tool was developed under three scales of this framework a) collaboration with others, b) respect for oneself and others, and c) keeping themselves and others safe. Under these three scales, there were nine dimensions of digital citizenship literacy. Population comprised of postgraduate students who were studying at Allama Iqbal Open University in district Muzaffarabad AJK. The sample of this research study was 370 which was drawn using random sampling technique. Major findings of the study revealed that students had good perceived knowledge of digital citizenship literacy in all three scales of Ribble's framework (perceived knowledge in collaboration-related areas, including digital literacy, ICT skills, communication, and online commerce). Respondents demonstrated adequate awareness of keeping themselves and others safe, especially in digital health, safety practices, and online security measures. It is concluded that study revealed that postgraduate students had ample amount of awareness on digital citizenship literacy (etiquette, law, online commerce, and communication, digital health, safety, security practices etc.). Based upon results of relatively low mean score in perceived knowledge in digital access and literacy dimensions, it's recommended to deliver targeted educational interventions by stakeholders of digital learning environments.

Keywords: *Digital Citizenship Literacy Skills, Postgraduate Students, Perceived Knowledge*

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Introduction

Technological interventions are taking place in each sector of education, especially students who interact in online environment are most exposed to digital challenges and pressures. They need to have perception on digital citizenship literacy and related skills. Students in a variety of educational contexts still exhibit deficiencies in their comprehension of fundamental aspects of digital citizenship, such as online safety, digital law, digital etiquette, and responsible digital involvement. Research from a variety of educational settings has shown that students frequently fail to behave appropriately in digital settings and are unaware of their rights and responsibilities. Their academic performance, online communication, and general digital wellness may all suffer because of these gaps. Because distance learners rely so largely on digital platforms for communication, coursework, and access to educational materials, digital citizenship becomes even more crucial in this setting. Students may encounter difficulties including false information, privacy hazards, cyberthreats, and unethical online behavior when they are ill-prepared to navigate digital worlds. There is no local data on how effectively learners comprehend digital citizenship, despite the growing reliance on digital learning platforms at establishments like AIOU. To influence policy decisions, enhance instructional techniques, and promote safer and more responsible digital learning practices, it becomes necessary to look at their current level of knowledge and attitudes.

These concerns emphasize how crucial it is to complete the current investigation. The study intends to fill a vacuum in the literature by investigating postgraduate distance learners' perceived knowledge and attitudes about digital citizenship. The results may be used to guide institutional choices and future digital citizenship activities. Distance education is a form of learning in which instructors & learners employ multiple technologies to communicate with each other. These technologies may be electronic, print, and digital media and gadgets as well. Distance education is a kind of second opportunity for those who drop out of school without completing a formal education (Altawalbeh & Al-Ajlouni, 2022). It is particularly a chance for girls at home who, for cultural, economic, or other reasons, cannot receive an education through the official system (Guglielmi et al., 2021).

Digital literacy refers to the capacity to comprehend how to use and maintain safety when utilizing digital resources, technologies, as well as additional network installations. Digital literacy includes the skills necessary to use the readily available digital tools carefully and effectively to share or work with others as well as to better comprehend, learn, create,

and manipulate information (Ahmad et al., 2021). Skills are the ability to apply knowledge to action, which in turn shows personal proficiency. Additionally, the ability to speak on scientific matters and the application of ideas taught to solve problems. Those who have the know-how to create and consume digital information, interact with others to participate in society, and use digital technology effectively are considered digital citizens. The goal of digital citizenship is to use digital technology with assurance and hope. In this study, students' abilities in the areas of online learning, online security, and online welfare are referred to as "digital citizen skills" (Mahadir et al., 2021). Digital citizenship is the skill to use available digital technology with confidence and positivity. It is stated that, to ensure online safety, cybersecurity, digital responsibility, digital health and safety, as well as to help staff and learners attain and comprehend digital literacy, digital citizenship education which encompasses awareness, literacy, and skills is crucial (Ribble, 2015). We live in a society that is changing quickly due to technological advances that have not only opened new experiences but also given everyday life a completely other dimension through the ethereal internet realm. Many were not "digital natives" from birth like today's youth, and as a result, they do not automatically embrace the digital world as a necessary and essential component of modern demands (Logan, 2016). Having an online presence was crucial, when someone maintains their online presence while including their holistic social attributes for a digital identity and reputation, this is known as their digital presence. There are both direct and indirect scenarios in the digital presence. Individuals must appropriately manage their direct and indirect digital presence, as noted by (Heath, 2018; Jones & Mitchell, 2016; Snezana, 2022). Digital citizenship education becomes crucial in tackling the issues brought about by the global nature of the internet, stressing the importance of safeguarding personal information and online identities for a technologically advanced and culturally varied community (Snezana, 2022). For schools to remain with current trends in our increasingly digital culture, most administrators and teachers believe that implementing new technology for tutoring and learning is essential. However, providing students with the required hardware and an internet connection is insufficient to increase the efficacy of technology in the classroom (Snyder, 2016). To improve their educational experience and foster self-awareness and comprehension, students must consider how they might use personal technology. By guiding students' exploration of the digital world, schools may show that they support their learning (Walters et al., 2019).

The idea of digital citizenship is derived from the technological environment and its rapidity
advancement and development over the past two decades. This idea can be applied to anyone who is a citizen of the country or country and has their nationality (Ribble & Park, 2022). Due to the rapid development of new technologies, everyone now plays the role of a digital citizen. Despite many of the significant interpretations put forth by professional researchers, a firm assumption regarding the importance of digital citizens both domestically and internationally has not yet been established (Yang et al., 2016). Digital individuals should possess traits, like being aware of social, economic, and personal issues pertaining to technology. In addition, engaging in legal and responsible activities encourages, and putting into practice the prudent, reasonable, and healthful use of information and technology (Ribble & Park, 2022). Teaching students how to use technology responsibly and safely is the aim of digital citizenship education in the educational system. To successfully navigate the digital world, learners need to acquire several critical skills, such as recognizing trustworthy online information, spotting dubious content, understanding privacy policies pertaining to online data collection, and utilizing technology by working responsibly with people worldwide. A digital citizen needs to have several qualities, such as the capacity to understand and act morally and ethically, to advocate for the responsible, ethical, and safe use of information and technology, to use technology in a way that encourages collaboration, learning, and creativity, to demonstrate personal responsibility for lifelong learning, and to demonstrate leadership in the field of digital citizenship (Ribble, 2015). Given the activities occurring in digital environments, citizens need to be aware of their obligations to both their local communities and the global community. This means that people can live their life in the digital era safely by engaging in good digital citizenship practices (Akcil & Bastas, 2020). Numerous research papers have highlighted the significance of Digital Citizenship (DC) recognition. According to Hollandsworth et al. (2017), research, low levels of Digital Literacy and education can and have led to disruptive, even destructive, student behavior. Similarly, Kim and Choi (2018) youth's ability to use the internet for education may be limited if they lack the skills to explore it, use it infrequently in a flimsy way, and restrict their research to a small number of subjects that they think are important. Adequate instruction and comprehension of digital citizenship empower user groups to make morally sound decisions that are responsible, courteous, and responsible when interacting with one another in an online setting.

To apply the Ribble (2015) model for Digital Citizenship (DC) in Philippine schools, research was conducted on teachers' and students' awareness of the concept in a particular study area for the sample. The research study found that while a significant number of teachers and students were conscious of the idea, there was still deficiency in the areas of Digital safety and Digital law, which increased the risk factor (Suson, 2019). An investigation into civic education within the digital culture framework was carried out by (Nikolaeva & Kotliar, 2019). They recognized the issue that nations with comparatively smaller media footprints run the risk of falling behind in the context of Digital Citizenship (DC), and that the only way to keep up with the times is to comprehend this problem and seek to bridge the gaps that these nations are experiencing. An investigation into students' understanding and opinions of Digital Citizenship (DC) in higher education was carried out by (Al-Abdullatif & Gameil, 2020). To test the population's awareness and implementation of nine components of digital citizenship, the research involved 204 undergraduate students who were chosen by purposeful sampling. Although many students understand the idea of Digital Citizenship (DC), the study found that there is a significant knowledge and practice gap among students on informa tion security and authenticity. The findings indicated that while improper use of the internet does not improve one's digital citizenship, academic specializations and expertise do enhance one's digital literacy. In their study Preschool teachers' attitudes toward and proficiency in digital citizenship. The study included 80 teaching candidates and used both quantitative and qualitative methodologies, including instruments and interviews to gain a deeper understanding of respondents' attitudes. The study's findings indicated that while respondents' conceptions of digital citizenship were above average, there were deficiencies in terms of digital rights and responsibilities as well as digital security. In today's technologically advanced world, digital education is crucial, with the primary goal being to prepare young people for the challenges that will inevitably arise. In the twenty-first century, several aspects help pupils become digital citizens. Academic achievement, the atmosphere in which students learn and behave, and students' lives outside of school are the important aspects (Elmalı et al., 2020). Young people and technology, two characteristics that are commonly linked to social media issues are youth and technology, both of which are equally important. Despite all the advantages, the current technological era is not without its share of drawbacks. The internet allows easy access to anything, wherever (Martin et al, 2019). Although it is evident that the online world is essential to daily operations, the influence

of the internet may also cause disruptions and even be advantageous. Young people are the group that has adapted to the consequences of technological advancements and advances the easiest over the past several decades (Wook et al., 2019). According to the article by Clough and Closier (2018) the UK (Open University) library has implemented strategies to ensure that remote learners have all the Digital skills they need to research study at the university, work as professionals, and dedicate themselves to lifelong learning. Indicating a comprehensive approach that reflects the steps made by university administrations in developed nations to guarantee that their students acquire digital citizenship is this impression of the Open University library.

However, the significance of online wellbeing which is important to teaching digital citizenship is not emphasized by the newly presented digital literacy paradigm. A fundamental component of digital regulation education, this idea is more correct when connected to instructive or instructional components. It is believed that educational components teach and foster digital citizenship in kids, teens, and adults to guarantee that the entire idea of digital citizenship education is understood at a deeper level. Because digital citizenship education prepares pupils to be responsible technology users and comprehends responsible and civilized digital citizens, this scenario occurred (Mahadir et al., 2021). The idea of digital citizenship is derived from the technological environment and its rapid advancement and development over the past two decades. This idea can be applied to anyone who is a citizen of the country or country and has their nationality (Ribble & Park, 2022). Due to the rapid development of new technologies, everyone now plays the role of a digital citizen. Despite many of the significant interpretations put forth by professional researchers, a firm assumption regarding the importance of digital citizens both domestically and internationally has not yet been established (Yang et al., 2016). Digital individuals should possess traits, like being aware of social, economic, and personal issues pertaining to technology. In addition, engaging in legal and responsible activities encourages, and putting into practice the prudent, reasonable, and healthful use of information and technology (Ribble & Park, 2022). Digital literacy refers to the capacity to comprehend how to use and maintain safety when utilizing digital resources, technologies, as well as additional network installations. Digital literacy includes the skills necessary to use the readily available digital tools carefully and effectively to share or work with others as well as to better comprehend, learn, create, and manipulate information (Ahmad et al., 2021). With the help of digital citizenship skills individuals learn social responsibility, privacy and ethics, cyber security, and

Information Technology regulations. A person who possesses the information and abilities needed to use the internet and other digital technologies efficiently is considered a digital citizen. Individuals use digital technology and the internet in appropriate and ethical ways to engage in social interaction and political participation (Bombardelli, 2021). Citizenship benefits come along with the corresponding and reciprocal set of duties that lay out the responsibilities of the citizens. Digital citizenship literacy skills encompass attitudes and understanding regarding the usage of digital technologies. Digital citizenship, or the social perspective on the proper and responsible use of technology, was made by Ribble (2015) and Ribble & Park (2022). Nine (9) components of good digital citizenship were listed, which were as under:

- Digital Access: Promoting equitable access and rights to the internet
- Digital Etiquette: Guidelines for proper behavior over the internet
- Digital Law: The fact that it is unlawful to steal or infringe against another person's digital rights must be understood by users.
- Digital Communication: Digital communication requires users to
- communicate and make decisions in a suitable manner
- Digital Literacy: Teaching distance learners how to learn about and participate in a digital society is known as digital literacy
- Digital Commerce: In a digital economy, internet purchases must be successful
- Digital Rights and Responsibilities: Individuals are informed about their fundamental freedoms and rights.
- Digital Security: Utilizing electronic safety measures to guarantee
- Digital Health & Safety: Keeping yourself and others mentally and physically healthy in the digital age.

Theoretical Framework

Digital citizenship refers to the acceptable values of conduct related to the collaborative movement of digital literacy and citizenship. Digital citizenship abilities foster critical and moral reflection on what has been said and communicated when utilizing media technology as a communication tool. The behavioral standards of a digital citizen can thereby shield teenagers against inappropriate online and offline behavior,

including cybercrime and cyberbullying (Mahadir et al., 2021). The need to set rules for proper and responsible technology use so that students may collaborate and communicate in a safe and responsible way has prompted discussions on digital citizenship (Ranchordás, 2020; Ribble, 2015). There are nine fundamental components of digital citizenship, which is the online demonstration of behaviors that guarantee the lawful, secure, moral, and responsible use of information and communication technologies (Ribble, 2015). The optimum use of technology in society is ensured by identifying these components, which also serve as a framework for teaching digital citizenship. The nine components of digital citizenship are analyzed under three primary areas Respect for oneself and others, self-education and social interaction, and self-and other protection are these three by (Ribble & Park, 2022); (Ribble, 2015). With the fast-paced advancement of new technologies, every individual now has a role to play as a digital citizen (Yang et al., 2016).

The online (digital presence), being good online (empathy), and having rights online (ethically active) are the three spaces (Muhammad & Suleiman, 2024); (Snezana, 2022), reflect this framework of competencies of the digital environment in which today's youth grow up. Preserving one's health and wellbeing both virtually and physically, thinking critically, interacting positively online, and having empathy are all components of acting as a good digital citizen. In addition, meaningful and moral engagement in the digital world requires an awareness of rights and obligations, including those related to privacy, security, and freedom of expression (Snezana, 2022).

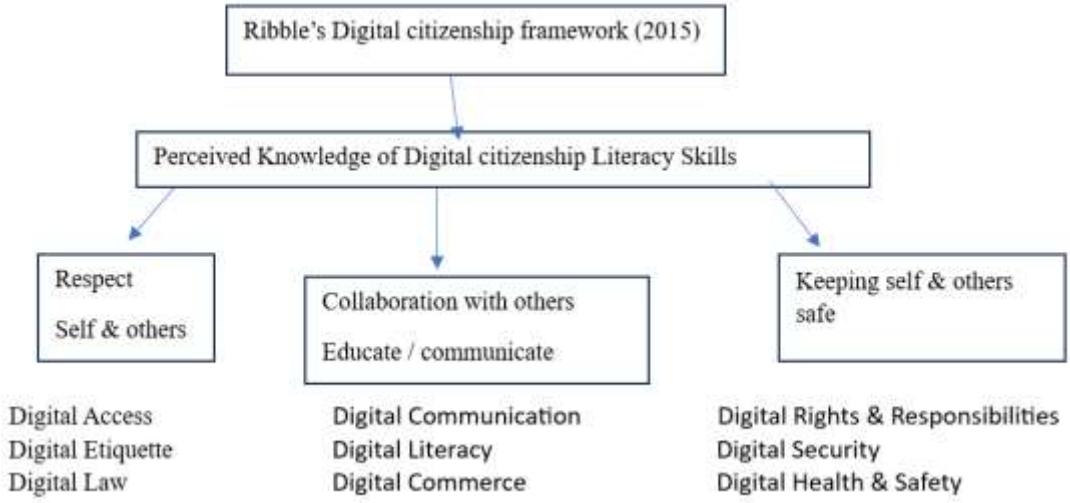
Distance learners in the digital era need to be aware of the fundamentals of digital citizenship literacy skills, as they utilize online platforms for education, communication, and daily activities. Different skills are included in digital citizenship, such as digital literacy, online safety, moral use of internet, and responsible online behavior. However, many students show a lack of understanding and awareness of these concepts, especially those who are enrolled in distance learning programs. Thus, it is necessary to investigate the degree of digital citizenship literacy knowledge among distant learners and to investigate how educational initiatives might better equip learners to perform better in the digital world. The extent of digital citizenship literacy knowledge among AIOU distance learners requires further investigation to build a base for distance education sector stakeholders, which can be used to create policies and action plans that ensure the responsible and appropriate use of technology tools for teaching and learning.

Conceptual Framework

The study's conceptual framework is based on Mike Ribble's widely recognized framework, the nine elements of Digital Citizenship (Ribble, 2015). This model serves as the theoretical underpinning because it offers a thorough and organized understanding of digital citizenship, especially related to educational contexts and student digital behavior. This model was chosen because it offers a comprehensive and structured knowledge of digital citizenship, encompassing a broad variety of technological, ethical, and behavioral concepts important to both distance learners and teachers in online learning environment.

Figure 1

Conceptual Framework



Respect for Oneself and Others: This element relates to students' awareness of ethical and responsible behavior in online environments. It contains:

- Digital Access: Equal digital participation
- Digital Etiquette: Appropriate online behavior
- Digital Law: Understanding of ethical and legal online actions

Collaboration With Others (Educate & Communicate): This dimension emphasizes students' proficiency with digital technologies for online involvement, communication, and information processing. It comprises:

- Digital Communication: Successful digital interaction

- Digital literacy: is the ability to understand and utilize digital technology.
- Digital commerce: secure and knowledgeable digital purchasing and selling

Keeping Oneself and Others Safe: This component evaluates students' understanding of protecting others and themselves in online settings. It contains:

- Digital Rights & Responsibilities: Awareness of freedom and obligations
- Digital Security: Protecting devices and personal information
- Digital Health & Safety: Maintaining physical and psychological well-being online

The nine dimensions that comprise Ribble's (2015) framework are as follows:

- "Digital access
- Digital etiquette
- Digital law
- Digital communication
- Digital literacy
- Digital commerce
- Digital rights and responsibilities
- Digital security
- Digital health & Safety"

These components were selected because they closely relate to the goals of the study, which are to evaluate the knowledge, practices, and difficulties of distant learners in demonstrating responsible digital behavior. The nine components that are divided into three main categories (Respect for oneself and others, collaboration with others and keep others and yourself safe) comprise the digital citizenship that Ribble (2015) outlined. It offers a foundation for comprehending technology practically. This framework helps learners, do well academically, interact with others, change their behavior, and feel emotionally and psychologically well both within and outside of the classroom.

Problem Statement

Technology has reshaped higher education and students' learning. The way students communicate, learn and conduct research demands digital literacy skills. It is often assumed that the digital skills and digital proficiency students possess do not necessarily equate them for appropriate level of digital citizenship literacy. Competence in use of

digital literacy skills may coexist with limited understanding of ethical behavior, legal responsibilities, digital well-being, and online safety. There are certain frameworks through which students can know their level of digital citizenship literacy, most importantly one such given by Ribble & Park (2022). However, most research by using this framework is conducted primarily on students of primary level. Which left a significant gap in understanding how postgraduate students perceive their knowledge of digital citizenship literacy. Moreover, in higher education, students are frequently involved in research, online study and digital learning platforms which demand them to be aware of "digital access, etiquette, law, communication, literacy, commerce, rights and responsibilities, security, and health and safety" to function responsibly in digital learning environments. Therefore, there is a critical need to investigate the perceived digital citizenship literacy skills of postgraduate students, grounded in the nine-component model of Ribble & Park (2022). Addressing this gap will contribute to a deeper understanding of students' strengths and deficiencies and support the development of informed educational strategies that foster ethical, safe, and effective participation in the digital society.

Research Objective

1. To measure perceived knowledge of distance learners on digital citizenship literacy skills.

Research Questions

RQ1: To what extent do distance learners have perceived knowledge about respect for oneself and others (digital access, digital etiquette and digital law)?

RQ2: To what extent do distance learners have perceived knowledge about collaboration with others (digital Communication, digital literacy, and digital commerce)?

RQ3: To what extent do distance learners have perceived knowledge about keeping themselves and others safe (digital rights & responsibilities, digital security, and digital health & safety)?

Research Methodology

This part explains the research approach, method, design, population, data collection and data analysis of this research.

Research Design

This study was descriptive in nature because the main purpose of the

research was to measure and describe the current level of postgraduate students' perceptions about digital citizenship. When the goal is to accurately depict present circumstances, traits, or attitudes of a group without changing factors, descriptive research is a suitable method. Descriptive design is the best method as the study objective aims to ascertain the degree of students' perceived knowledge or attitudes about various facets of digital citizenship. It enables the researcher to convey the current state of digital citizenship literacy among distance learners, summarize trends, and spot patterns. A survey technique was used to investigate the distance learners perceived knowledge about digital citizenship literacy skills. The design was chosen according to Creswell and Creswell (2017), as it was stated that Survey research describes trends, attitudes, or opinions quantitatively or numerically using a sample of the population. One more reason of selecting this design was that it "systematically describes the characteristics, perceptions, or conditions of a population as they naturally occur, without manipulating variables or establishing cause–effect relationships". Since the focus of this study was to investigate the students' existing perceived knowledge on digital citizenship literacy that's why this was most suitable design.

Population

There was a total of 9520 distance learners who enrolled in the 2022-2023 session at AIOU, Muzaffarabad region of AJK, according to data provided by the regional office in Muzaffarabad.

Sample and Sampling Technique

The sample size was 370 students (with a 95% confidence level and a 5.0% margin of error). After determining the required sample size, respondents were selected randomly by using table of random numbers. The list of enrolled learners was obtained from the Regional Office after formally requesting permission for research purposes. The population list was in soft form and respondents were randomly selected. This procedure allowed every member of the population an equal chance of being included in the study.

Research Instrument

A research instrument was developed keeping literature review in view. The main tool used to collect data was the survey questionnaire. It was made up of closed-ended questions based on digital citizenship elements. The particularly the three major dimensions reflected in the study's results. These dimensions were: (1) respect oneself and others, (2) collaboration

with others, and (3) keeping oneself and others safe. A five-point Likert scale was used to rate each questionnaire item ranging from Strongly Disagree to Strongly Agree where 1 to 5 scoring criteria were followed. Respondent's mean score in each scale of the tool was computed to check the perceived level of digital citizenship literacy. A low or restricted degree of agreement with the statement was indicated by mean values below 3. Higher levels of agreement were indicated by mean values which were over 3.

The research instrument was developed in three phases. In the first stage, the researcher created a tool with dimensions based on the topic's primary construct and parameters, "investigating digital citizenship literacy skills: development of perceived knowledge of students at postgraduate level in district Muzaffarabad, Azad Jammu and Kashmir at Allama Iqbal Open University". In the second stage, the researcher asked six experts for their opinions to determine the instrument's content and face validity. In the third stage, the researcher and the supervisor reviewed the scale's language and design. The validity of the research instrument was ensured by six experts. Cronbach's Alpha value was 0.82*. Justification for use of Likert Scale is that "The Likert scale was appropriately used because the study exclusively aimed to measure attitudes toward Digital Citizenship, which fall within the affective domain and are best captured through attitudinal scales. The study does not claim to assess knowledge or competency, as these constructs require different measurement approaches beyond the scope and objectives of the research".

Data Collection Procedure and Analysis

The researcher adhered to the research ethics guidelines. In this regard, before data collection, the regional office of AIOU was approached by researcher personally and the list containing details of distance learners who enrolled in postgraduate level of session 2022-2023 at AIOU in the Muzaffarabad region. Then, the sample was selected and the researcher obtained consent from participants to participate in the study. They were briefed about the objectives of the study and told that their confidentiality would be maintained and the information they would provide would not be leaked out. The data were collected in-person (using the survey form) from a stratified random sample of distance learners. Respondents were asked frequently to fill the scale which took 6 weeks to complete data collection. The researcher analyzed data in terms of descriptive statistics (percentage, mean.

RESULTS

Results based upon the objective and research questions are given and discussed in the section below:

Table 1

Distance Learners Perceived Knowledge about Digital Citizenship Literacy, (N = 370)

Digital Citizenship Literacy Scales	Sub-Scales	Items	Mean Score	S.D
Perceived knowledge about collaboration with others	Digital Literacy	I have ample amount of understanding to use digital information efficiently to enhance my academics.	3.5	.86
	Digital Commerce	I know digital commerce and related online applications.	3.8	.82
	Digital Communication	Sufficient knowledge about online communications through different apps.	3.9	.80
Perceived knowledge about respect for oneself and others	Digital Etiquette	I have knowledge of digital etiquette of using ICT/digital tools and applications.	3.9	.78
	Digital Law	I have knowledge on digital laws to use ICT applications for online buying/selling.	3.9	.82
	Digital Rights and responsibility	I have clear understanding of digital literacy in terms of my digital rights and responsibilities while communicating online	3.8	.77
	Digital Health and Safety	I have sufficient understanding of	3.9	.73

Perceived knowledge about keeping themselves and others safe		digital health and safety.		
	Digital Security	I understand using digital security and use of Internet to support activities inside and outside the university.	3.8	.72
	Digital Access	I understand significance and ethics of digital communication and access.	3.6	.71
Overall Digital Citizenship			3.8	.48

This table indicates that overall, students had good perception on digital citizenship literacy skills (M = 3.8, SD = .48) with relatively low variability among responses. This indicates that their higher level is good for the academic, research and learning demand postgraduate online learning environments. Following is the detailed interpretation of results under all the three categories and subcategories of Ribbles (2022) model:

Regarding "**Perceived Knowledge about Collaboration with Others**", students indicated a moderately high to high level of perceived knowledge. In the Digital Communication sub-construct, there was highest mean score (M = 3.9, SD = .80) which suggested that distance learners are confident in using different digital applications while they communicate through various applications online. The lowest Mean is reflected in the Digital Literacy domain (M = 3.5, SD = .86) which implies that in this area distance learners are less confident and have lea perceived knowledge to use digital information effectively. Overall, it indicates that the values are near to 4 indicating that respondents agreed that they have perceived knowledge on collaboration with others when they are in online learning and digital citizenship environment.

In the next scale "**Perceived Knowledge about Respect for Oneself and Others**", respondents indicated highest consistent mean score on digital etiquette and digital law (M = 3.9) reflecting their strong perceived understanding in these areas [Digital Etiquette (M = 3.9, SD = .78) and Digital Law (M = 3.9, SD = .82)]. Similarly, in the sub-domain of Digital Rights and Responsibilities respondents indicated a slight low but considerably high mean score (M = 3.8, SD = .77) suggesting their good perception on it.

The third scale elaborated in this table is "**Perceived Knowledge about Keeping Themselves and Others Safe**" which also indicated that students had good digital citizenship literacy to work with others in open digital environment. They demonstrated consistently high perceived knowledge in Digital Health and Safety (M = 3.9, SD = .73), Digital Security (M = 3.8, SD = .72) and Digital Access (M = 3.6, SD = .71) reflecting their perceived knowledge in this area. Overall, it is concluded that they possess high levels perceived knowledge on digital citizenship literacy.

Findings and Discussion

The following are the findings:

- In digital Communication, Digital Etiquette, Digital Law, and Digital Health and Safety respondents demonstrated highest perceived knowledge levels.
- Respondents possess overall high levels of perceived digital citizenship literacy.
- Digital Literacy and Digital Access respondents have a bit low mean score as compared with digital Communication, Digital Etiquette, Digital Law, and Digital Health and Safety. But overall, it was a good mean score indicating potential gaps in students perceived understanding.
- In behavioral and safety-related aspects of digital citizenship than in academic and access-related dimensions, students perceived themselves as more knowledgeable.

According to the results, students showed moderate to high agreement on tasks including handling fundamental web operations and utilizing the internet for academic purposes. According to research like Mahadir et al. (2021) and Suson (2019), which also found that students typically feel confident in fundamental digital operations, this implies that they have functional ICT abilities. The item on removing undesired promotional emails, however, just represents a basic, user-level digital activity and shouldn't be interpreted as having extensive understanding of digital security. Similar research, such as Al-Abdullatif and Gameil (2020), have highlighted that students frequently demonstrate confidence in activities related to digital safety at the surface level but lack a deeper comprehension of topics like data privacy, information authenticity, and cyber-threat prevention. As a result, this result should only be applied to basic email security awareness and understood with caution.

Conclusions

The findings of this research study provide important insights into postgraduate students' knowledge related to digital citizenship literacy. This leads to conclude that postgraduate students possess a strong perceived knowledge of digital citizenship literacy, particularly in areas related to ethical behavior, online communication, legal awareness, and digital safety. However, students have overall high, but relatively lower perceived knowledge in digital literacy and digital access. Here are conclusions on each scale and dimension of Ribble's framework on which the study was based:

- **Respect for Oneself and Others.**
  Based on descriptive statistical findings, it is concluded that students revealed enough awareness of the overall concept and dimensions of digital citizenship literacy.
- **Collaboration with Others.**
  It is concluded that students showed stronger knowledge in collaboration-related aspects of digital citizenship, particularly in ICT skills, online commerce, digital communication, and general digital knowledge.
- **Keeping Oneself and Others Safe.**
  Based on descriptive statistical findings, it is concluded that students indicated adequate awareness of digital health and safety, along with practical knowledge of digital security, indicating that they are generally capable of keeping themselves and others safe online.

Recommendations

This research study was conducted to investigate the perceived knowledge regarding digital citizenship literacy skills of postgraduate students, based upon the findings and conclusions, it is recommended that:

2. Since relatively low mean score was recorded in students perceived knowledge in digital literacy and digital access that's why it is recommended that targeted educational interventions may be planned and implemented by stakeholders of postgraduate level education focusing on effective academic use of digital information and equitable access to digital resources.
3. It is recommended that students be trained to improve their digital literacy, helping them develop basic skills and practice safe and responsible online behavior.

4. It is recommended that there may be integrate digital citizenship training into the LMS (Aaghi Portal) through short interactive modules.
5. There should be a discussion of various cultural concepts, information security, privacy, and the rights and responsibilities of both technology providers and users when it comes to the measures that must be taken to consider when integrating digital citizenship.
6. It is recommended that distance learners may be guided to practice good digital behavior, promoting responsible actions in communication, commerce, and etiquette.
7. It is recommended that distance education courses may be updated to incorporate and align with government policies on digital citizenship.

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