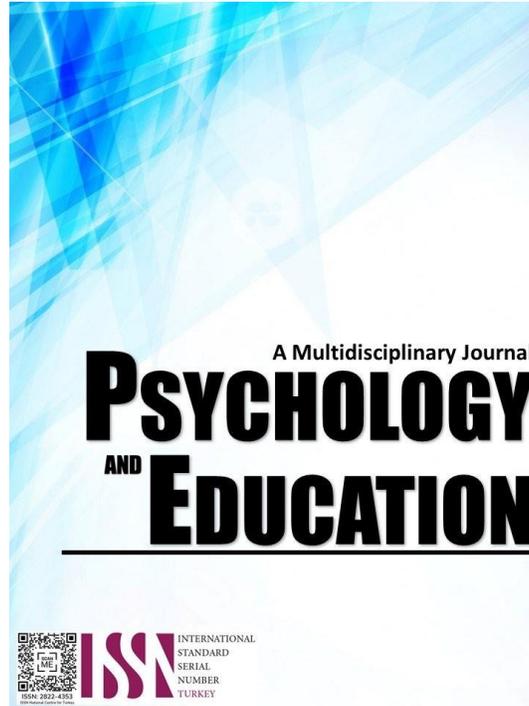


UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY AND DIGITAL CITIZENSHIP OF SOCIAL SCIENCES STUDENTS



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Utilization of Information and Communication Technology and Digital Citizenship of Social Sciences Students

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Abstract

The study aimed to investigate the relationship between ICT utilization and digital citizenship among social sciences students at Valencia College Inc., Valencia City, Bukidnon, during the second semester of the 2023-2024 school year. It involved 205 college students selected through simple random sampling. Employing a descriptive-correlational research design, the study utilized questionnaires adapted from PISA (2009) and Nordin (2026) to measure ICT utilization and digital citizenship, respectively. Mean, standard deviation, and Pearson product-moment correlation were used for data analysis. Results indicated frequent internet usage and ICT purpose among students, suggesting a high engagement level with digital technology for various tasks and activities. However, device preferences and digital skills were rated as sometimes, indicating variability in device usage and proficiency levels. Nonetheless, students spent a significant amount of time utilizing digital devices, reflecting technology's pervasive integration into their daily routine. Additionally, students demonstrated a high level of digital citizenship, exhibiting responsible, ethical, and respectful behavior in online interactions. A significant relationship was found between ICT utilization and digital citizenship, with strong correlations observed for internet usage, device preferences, ICT purpose, digital skills, and time spent. Therefore, instructors are encouraged to continue promoting digital citizenship education within their curriculum, emphasizing the importance of responsible online behavior and providing guidance on proper social media etiquette.

Keywords: *communication technology, digital citizenship, social sciences, college student, digital device*

Introduction

In school, digital citizenship among students can encompass a range of challenges related to their online behavior, digital interactions, and responsible use of technology. One significant problem is the spread of misinformation and the lack of digital media literacy. Students, despite their education level, can still struggle with distinguishing accurate information from falsehoods in the vast sea of information available online. This issue of fake news perpetuation and the dissemination of misleading content significantly contributes to the spread of misinformation within educational environments. In light of these challenges, it is crucial for schools to take proactive steps in promoting digital literacy, instilling critical thinking skills, and nurturing a culture of respect and responsibility in the online environment.

The importance of utilizing Information and Communication Technology (ICT) resources in today's interconnected world cannot be overstated. ICT resources encompass a wide range of tools, technologies, and platforms that facilitate communication, access to information, and the ability to perform various tasks efficiently. The significance of ICT utilization is well-supported by numerous studies. For example, the World Bank's report on ICT in education highlights how ICT resources can enhance learning outcomes, improve access to education, and foster digital literacy (World Bank, 2019).

To address digital citizenship concerns, implementing interventions that integrate ICT resources becomes crucial for promoting responsible and ethical behavior online. Such interventions aim to foster the responsible use of technology and the internet, recognizing ICT utilization as a cornerstone of this endeavor. Through structured ICT incorporation, individuals are empowered to engage in safe and respectful online interactions, critically evaluate digital information, and safeguard their online privacy and security. By deploying ICT resources effectively within interventions, college students, for example, can acquire the digital skills essential for becoming responsible and informed digital citizens in today's increasingly digitized world (Ribble, 2021). Ultimately, such interventions contribute significantly to cultivating a digitally literate and responsible citizenry.

A notable research gap exists concerning the intersection of the utilization of Information and Communication Technology (ICT) and the development of digital citizenship among social sciences students. While there is extensive literature exploring the impact of ICT on educational outcomes and digital citizenship in general, there is a paucity of research specifically focusing on social sciences students. Understanding how social sciences students engage with ICT tools and platforms within the context of their discipline and how this utilization influences their development of digital citizenship is crucial.

Hence, this study aims to investigate the extent of social media usage among college students at Valencia Colleges Incorporated and explore the potential consequences of misuse, such as cyberbullying, harassment, and the dissemination of false information. By understanding the current patterns of social media utilization and its associated challenges, the research seeks to justify the importance of promoting responsible digital citizenship within the college community. Ultimately, the findings will inform the development of strategies and resources aimed at guiding students in utilizing social media responsibly, respecting privacy and rights, and critically evaluating online content to foster a culture of ethical and respectful online behavior.

Research Questions

This study aimed to find out the relationship between ICT utilization and digital citizenship among social sciences students in Valencia College Inc., Valencia City, Bukidnon, for the second semester, School Year 2023-2024. Specifically, this study sought to answer the following questions:

1. What is the level of students' ICT utilization in terms of internet usage, device preference, ICT purpose, digital skills, and time spent?
2. What is the level of students' digital citizenship?
3. Is there a significant relationship between students' ICT utilization and their digital citizenship?

Methodology

Research Design

This study employed a descriptive-correlational research design, which is geared towards outlining the relationships among variables, rather than seeking to establish causality (Strangor, 2014). Data collection was carried out through a survey questionnaire that focuses on students' usage of Information and

Communication Technologies (ICT) and their grasp of digital citizenship. Subsequently, the collected data underwent a quantitative analysis to provide a comprehensive description of the data and to ascertain the existence of any significant associations between the independent and dependent variables. Specifically, the independent variables were examined for correlations with the dependent variables in order to investigate potential meaningful connections

Respondents

The study employed the simple random sampling technique, and the sample size, consisting of 205 students, was determined using the Slovin formula. This approach guarantees that each respondent had an equal opportunity to be selected, ensuring a representative sample for the study. By randomly selecting participants without any specific pattern or preference, the potential for selection bias is minimized, and the sample accurately reflects the diversity of the entire population. It is worth noting that the final sample size of 205 students were derived from an initial pool of 241 potential participants.

Instrument

In this study, a questionnaire adapted from PISA (2009) was used to gauge ICT utilization. This questionnaire is designed to evaluate students' internet usage patterns, device preferences, ICT purposes, digital skills, and the time they spend on digital platforms. Furthermore, the assessment of students' digital citizenship was adapted from Nordin (2016). The research instrument underwent a rigorous validation process to ascertain its accuracy and reliability. Additionally, its consistency and reliability were assessed using Cronbach's alpha, and the results are expected to demonstrate satisfactory values, affirming that the instrument effectively measures the intended constructs.

Procedure

In this study, the researcher adhered to ethical principles and obtained the necessary permissions from relevant authorities. Permission was sought from the School President to ensure full compliance with the educational institution's guidelines. Collaborative efforts with social sciences instructors were initiated, with their assistance in administering the questionnaire to the learners based on provided instructions and guidelines to maintain standardization. Subsequently, the collected questionnaires were coded, recorded, and organized into a tabular format with precision and completeness. The collected data were subjected to statistical analysis using appropriate tools to summarize, interpret, and draw conclusions. The results were discussed, analyzed, and presented in a readerfriendly manner, providing meaningful insights and conclusions aligned with the study's objectives and research questions. The researcher acknowledged the study's limitations and provided recommendations for future research. Overall, the study was conducted ethically, following established protocols and aiming to generate valuable findings.

Data Analysis

In the study, the researcher employed various statistical tools to analyze the data. To gauge the level of students' ICT utilization concerning aspects such as internet usage, device preference, ICT purpose, digital skills, and time spent, mean and standard deviation were utilized. These measures provided a clear understanding of the central tendency and the degree of variability in the data.

For assessing the level of students' digital citizenship, mean and standard deviation were also applied, enabling the researcher to determine the typical values and the extent of variation in this context.

To explore the significant relationship between students' ICT utilization and their digital citizenship, Pearson product-moment correlation was computed. This statistical technique helped uncover any potential associations or dependencies between these two crucial aspects under investigation, shedding light on the strength and direction of the relationship.

Ethical Considerations

The researcher meticulously adhered to ethical protocols throughout the research process. Prior to commencing the study, the necessary permissions were obtained from the School President and social science instructors to ensure that the study was conducted with proper authorization. Additionally, consent was sought from all participants, and they were fully informed about the study's objectives and any potential risks involved. While active encouragement was provided to participate, participants were never coerced or pressured into joining the study against their will. It is essential to note that all respondents willingly filled out the questionnaires, signifying their voluntary participation.

Moreover, the researcher prioritized the privacy and confidentiality of the respondents. Great care was taken to ensure that personal information was kept confidential and not disclosed to anyone unauthorized. Similarly, an unequivocal commitment was maintained to the principles of data integrity, refraining from falsifying or fabricating any data in the study. Strict avoidance of any form of deception was ensured, guaranteeing transparency and honesty throughout the research process.

To guarantee the originality of their work, an additional step was taken by subjecting their manuscripts to plagiarism detection software. This measure underscored their commitment to producing an academically sound and ethically grounded study.

Results and Discussion

In this section, the analysis and interpretation of the data collected revolve around the relationship of ICT utilization and digital citizenship among social sciences students in Valencia College Inc., Valencia City, Bukidnon, for the second semester, School Year 2023-2024.

ICT Utilization in terms of Internet Usage

Table 1 presents the students' ICT utilization in terms of internet usage with an overall mean score of 3.93 (SD=0.54), described as "often." This suggests that students frequently rely on digital resources for various educational activities such as research, communication, and accessing learning materials. It can be noticed that students frequently access online platforms for research purposes, communication with peers and instructors via email or messaging apps, and utilizing digital resources like online textbooks, academic databases, and educational websites for learning. Additionally, the integration of technology into classroom activities, such as using laptops or tablets for note-taking and accessing online course materials during lectures, signifies the extent of students' reliance on ICT. Furthermore, their engagement with online collaborative tools for group projects and discussions, as well as participation in virtual learning environments and online forums, reflects their active utilization of internet resources for educational purposes.

Table 1. *Level of Students' ICT utilization in terms of Internet Usage*

<i>Indicators</i>	<i>Mean</i>	<i>SD</i>	<i>Descriptive Rating</i>
1. I use the internet daily for various purposes.	4.45	0.79	Always
2. I connect with friends and family online regularly.	4.24	1.11	Always
3. I rely on the internet for information and communication.	4.22	0.80	Always
4. I use the internet to research and learn new things.	4.19	0.95	Often
5. I use the internet to stay updated on current events.	4.19	0.96	Often
6. I use the internet for work or school-related tasks.	4.04	1.05	Often
7. I frequently browse social media and websites.	3.88	0.95	Often
8. I often download or stream content from the internet.	3.48	1.14	Often
9. I shop online for a significant portion of my purchases.	3.31	1.00	Sometimes
10. I often participate in online forums or communities.	3.28	1.08	Sometimes
Overall Mean	3.93	0.54	Often

The indicator, "I use the internet daily for various purposes," obtained the highest mean of 4.45 (SD=0.79), described as "always." This implies that college students have pervasive integration of digital resources into their everyday lives. They rely heavily on the internet for a wide range of activities, including academic research, communication, entertainment, and information-seeking. Observable manifestations of this high frequency of internet usage can include students accessing online platforms and resources throughout the day via smartphones, laptops, or tablets, engaging in online discussions and collaborations with peers and instructors, utilizing digital tools for studying and completing assignments, and seeking information and entertainment on diverse topics from online sources. The smooth integration of internet-based technologies into formal and informal learning settings, as discussed by Pöntinen et al (2017), highlights how much students rely on the internet for both academic and personal activities.

Meanwhile, the indicator, "I often participate in online forums or communities," got the lowest mean of 3.28 (SD=1.08), described as "sometimes." This implies a moderate level of engagement in virtual discussions and communities compared to those who rate it as "often" or "always." This suggests that while students occasionally seek out and contribute to online discussions and communities, they may not prioritize or regularly participate in such platforms. Observable behaviors include sporadic involvement in online forums related to academic subjects, hobbies, or interests, occasional contributions to online communities for information-sharing or peer support, and intermittent interactions with peers or experts in virtual spaces. Reasons for this level of participation could include time

constraints, preference for face-to-face interactions, or a lack of awareness or interest in available online forums and communities. According to Lewin and Charania (2018), students might prefer using alternative channels like social media or direct communication with peers to gather information or interact with others, which could result in reduced engagement in online forums or communities.

Table 2. *Level of Students' ICT utilization in terms of Device Preference*

<i>Indicators</i>	<i>Mean</i>	<i>SD</i>	<i>Descriptive Rating</i>
1. I favor using a smartphone for quick access to information.	4.12	1.22	Often
2. I like using a laptop because of its portability.	3.44	0.91	Always
3. I prefer using multiple devices depending on the task.	3.31	1.16	Always
4. I have a strong preference for a specific brand of device.	3.28	1.20	Often
5. I prefer using a desktop computer for most tasks.	3.21	1.04	Often
6. I prefer e-readers for reading books and documents.	3.20	1.18	Often
7. I use a gaming console for gaming and entertainment.	3.12	1.24	Often
8. I like using a smartwatch for its convenience.	3.01	1.34	Often
9. I prefer using a tablet for leisure and entertainment.	2.82	1.08	Sometimes
10. I use a smart TV for streaming content.	2.62	1.34	Sometimes
Overall Mean	3.21	0.66	Often

Table 2 shows the students' ICT utilization in terms of device preference with an overall mean score of 3.21 (SD=0.66), described as "sometimes." This implies that while students do use ICT devices, it is not a constant or predominant mode of engagement in their academic or daily activities. This could be due to various factors such as access limitations to technology resources, competing demands on their time, or personal preferences for alternative learning methods. Additionally, cultural and socioeconomic factors might influence students' comfort and proficiency with ICT, impacting their utilization patterns. The observed preference for ICT devices may vary based on factors such as access to technology, familiarity, and individual learning styles. It indicates a potential opportunity for teachers to further integrate ICT into teaching methodologies to harness its full potential in enhancing learning outcomes and digital literacy among students.

The indicator, "*I favor using a smartphone for quick access to information,*" earned the highest mean of 4.12 (SD=1.22), described as "often." This implies that students strongly depend on mobile devices for immediate information retrieval. This preference likely stems from the convenience and portability of smartphones, allowing for quick and easy access to a wealth of information anytime, anywhere. Such behavior is observed through students frequently consulting their smartphones to look up facts, definitions, or other information needed for academic or personal purposes, demonstrating a preference for on-the-go access to knowledge over more traditional methods like textbooks or computers. Ng et al. (2017) noted that students often turn to smartphones for quick access to information, indicating a preference for the convenience and portability of these devices.

However, the indicator, "*I use a smart TV for streaming content,*" got the lowest mean of 2.62 (SD=1.34), described as "sometimes." This implies that although they utilize this technology, it is not their main method for accessing digital content. This rating could be influenced by factors such as limited access to smart TVs, preference for other devices like laptops or smartphones for streaming, or varying content availability across different platforms. Observations include students occasionally using smart TVs for specific entertainment purposes or when gathering with friends or family for group viewing sessions, indicating that while smart TVs offer a convenient way to access content, they may not be utilized as frequently or consistently as other digital devices. As per Darko-Adjei (2019), students occasionally utilize smart TVs for streaming content, driven by factors including sporadic group viewing or entertainment, restricted access, or a preference for alternative devices.

Table 3. *Level of Students' ICT utilization in terms of ICT Purpose*

<i>Indicators</i>	<i>Mean</i>	<i>SD</i>	<i>Descriptive Rating</i>
1. I use ICT for educational purposes, such as online courses.	4.07	0.99	Often
2. I use ICT primarily for communication with others.	3.78	1.04	Often
3. I rely on ICT for accessing news and information.	3.70	1.14	Often
4. I use ICT for creative purposes, such as digital art or music production.	3.40	1.05	Often
5. I use ICT for a variety of purposes, including those not listed here.	3.37	1.15	Sometimes
6. I rely on ICT for entertainment, like streaming and gaming.	3.30	1.10	Sometimes
7. I use ICT for productivity and work-related tasks.	3.22	1.09	Sometimes
8. I use ICT for home automation and smart devices.	3.16	1.12	Sometimes
9. I utilize ICT for health and fitness tracking.	3.12	1.13	Sometimes
10. I use ICT for financial transactions and online banking.	2.97	1.25	Sometimes
Overall Mean	3.40	0.72	Often

Table 3 illustrates the students' ICT utilization in terms of ICT purpose with an overall mean score of 3.40 (SD=0.72), described as "often." This suggests that students heavily depend on ICT for academic, professional, and personal activities, indicating a significant integration of digital tools into their daily routines. They utilize ICT for various purposes, driven by factors such as the increasing availability and accessibility of ICT devices and services, the growing emphasis on digital literacy in education and the workplace, and the convenience and efficiency offered by ICT tools for communication, research, and productivity. Notably, students frequently

engage with ICT for tasks like online research, communication via email or social media, collaborative work on digital platforms, and accessing educational or entertainment content, underscoring the pervasive role of technology in contemporary society.

The indicator, “*I use ICT for educational purposes, such as online courses,*” received the highest mean of 4.07 (SD=0.99), described as “often.” This indicates that the students utilize Information and Communication Technology (ICT) primarily for educational pursuits, particularly through online courses. It implies a recognition of the value of ICT in facilitating learning, suggesting a preference for digital platforms as a means of accessing educational resources and opportunities. During the pandemic, ICT played a crucial role in facilitating remote learning, enabling students to continue their education from home through online platforms and tools. Additionally, ICT facilitated communication and collaboration among students, teachers, and educational institutions, ensuring continuity in teaching and learning processes despite physical distancing measures. According to Ghavifekr et al. (2022), ICT offered access to diverse educational resources and materials, assisting in alleviating the disruptions caused by the closure of schools and universities.

Conversely, the indicator, “*I use ICT for financial transactions and online banking,*” obtained the lowest mean of 2.97 (SD=1.25), described as “sometimes.” This implies that although students participate in these activities digitally, it is not their primary or sole means of managing their finances. Students choose not to rely solely on digital methods for managing their finances due to concerns about security and privacy breaches associated with online transactions. Additionally, some students prefer the tangible aspect of traditional methods, such as cash or physical bank visits, for better control over their spending habits. According to the World Bank (2022), the preference for non-digital methods of financial management among some individuals could stem from limited access to digital banking services or unfamiliarity with online financial tools. Socio-economic factors, including income levels and geographical location, play a role in determining access to and comfort with digital financial services, further influencing individuals' choices in managing their finances.

Table 4. *Level of Students' ICT utilization in terms of Digital Skills*

<i>Indicators</i>	<i>Mean</i>	<i>SD</i>	<i>Descriptive Rating</i>
1. I am proficient in using social media and online communication tools.	3.66	1.06	Often
2. I am highly proficient in using digital tools and software.	3.60	2.34	Often
3. I can adapt quickly to new digital technologies.	3.57	1.09	Often
4. I have basic digital literacy but not advanced skills.	3.42	0.95	Often
5. I am skilled at using productivity software like Microsoft Office.	3.33	1.03	Sometimes
6. I am knowledgeable about cybersecurity and online safety.	3.22	1.06	Sometimes
7. I can set up and configure various digital devices.	3.18	1.05	Sometimes
8. I am confident in using graphic design and video editing software.	3.05	1.12	Sometimes
9. I have advanced skills in programming or coding.	3.00	1.07	Sometimes
10. I can troubleshoot and solve common digital problems.	2.98	1.01	Sometimes
Overall Mean	3.30	0.74	Sometimes

Table 4 reveals the students' ICT utilization in terms of digital skills with an overall mean score of 3.30 (SD=0.74), described as “sometimes.” This suggests a varying level of proficiency and comfort with technology use among students, indicating that while they possess some degree of digital literacy and competence, they may not consistently apply these skills across all ICT-related tasks. Possible reasons for this include variations in individual familiarity with different types of technology, specific software applications, or digital platforms, as well as differences in learning experiences and access to training or educational resources. As observed, students occasionally demonstrate advanced digital skills in certain contexts, such as creating presentations or programming, while relying on more basic skills or seeking assistance for other tasks, highlighting the need for ongoing support and development of digital competencies in educational settings.

The indicator, “*I am proficient in using social media and online communication tools,*” got the highest mean of 3.66 (SD=1.06), described as “often.” This implies that students exhibit a high level of comfort and expertise in navigating these digital platforms. This rating suggests that students regularly engage with social media platforms and online communication tools for various purposes, such as staying connected with peers, sharing information, or networking. These ratings likely stem from the widespread integration of social media into daily life, extensive reliance on online communication for personal, academic, and professional needs, and the inherent ease of use of these platforms for students who have grown up in a digital-centric environment. Marjit (2023) observed that students often engage in activities such as posting updates, messaging friends or colleagues, participating in online discussions, or using social media for academic research or networking purposes, demonstrating their proficiency in effectively utilizing these digital tools.

On the other hand, the indicator, “*I can troubleshoot and solve common digital problems,*” obtained the lowest mean of 2.98 (SD=1.01), described as “sometimes.” This implies that although they have some proficiency in handling technical issues, they may not consistently apply these skills in every situation. This rating could be influenced by factors such as the complexity of the problem, familiarity with the technology or software involved, or access to resources and support. As revealed, students can independently resolve basic digital issues or with minimal assistance in some instances, but they may seek help or face challenges with more complex problems, suggesting a fluctuating level of confidence and experience in troubleshooting digital issues. According to Jacobs and Castek (2018), the capacity to troubleshoot and resolve common digital issues is critical as it enables individuals to navigate technology-dependent environments with greater independence and efficiency.

Table 5 elucidates the students' ICT utilization in terms of time spent with an overall mean score of 3.56 (SD=0.60), described as "often." This suggests that students allocate a considerable amount of time to various ICT-related tasks, such as browsing the internet, using social media, completing academic assignments, or consuming digital entertainment. Some of these reasons include the integral role of technology in modern life, the convenience and accessibility provided by digital devices, and the evolving nature of educational and professional environments, which increasingly depend on digital tools and resources. As seen, students frequently use smartphones, laptops, or tablets throughout the day for a wide range of activities, highlighting the pervasive influence of ICT on their daily routines and behaviors.

Table 5. Level of Students' ICT utilization in terms of Time Spent

Indicators	Mean	SD	Descriptive Rating
1. I spend a significant amount of my day using the internet.	3.82	1.05	Often
2. I check my smartphone or devices within minutes of waking up.	3.82	1.02	Often
3. I use digital devices for most of my waking hours.	3.61	0.95	Often
4. I can easily go without using the internet or devices for extended periods.	3.61	1.09	Often
5. I often lose track of time while using the internet or digital devices.	3.60	0.91	Often
6. I spend more time on the internet than engaging in physical activities.	3.59	1.00	Often
7. I am online for a large portion of my leisure time.	3.47	0.92	Often
8. I spend less time on traditional offline activities due to digital usage.	3.40	0.98	Often
9. I dedicate a substantial amount of time to ICT-related activities.	3.37	1.00	Sometimes
10. I frequently multitask with multiple digital devices.	3.31	1.06	Sometimes
Overall Mean	3.56	0.60	Often

The indicator, "I spend a significant amount of my day using the internet," obtained the highest mean of 3.82 (SD=1.05), described as "often." This indicates that students demonstrate a high level of reliance on the internet for various purposes, including academic research, communication, entertainment, and accessing information. This is because of the widespread availability of internet access, the growing integration of digital technologies into daily life, and the diverse range of online activities that appeal to students. It is observed that students regularly used the internet for tasks such as checking emails, browsing social media, streaming content, conducting online research, and participating in virtual classrooms or collaborative projects, reflecting the pervasive influence of the internet on their lifestyle and behaviors. According to Jacobs and Castek (2018), the internet plays a pervasive role in daily life, serving as a primary tool for communication, information retrieval, entertainment, and productivity.

Meanwhile, the indicator, "I frequently multitask with multiple digital devices," got the lowest mean of 3.31 (SD=1.06), described as "sometimes." This suggests that students occasionally engage in multitasking, influenced by factors like the complexity of tasks, personal preferences for focused attention versus multitasking, and limitations in device accessibility or compatibility. It can be observed that students sometimes multitask across various digital devices, like browsing the internet on a laptop while texting on a smartphone simultaneously, but may also choose single-device usage or sequential task completion in other instances. This indicates a flexible approach to digital multitasking based on task demands and individual preferences. According to Becerra (2022), frequent multitasking with multiple digital devices can enhance productivity and efficiency by enabling individuals to tackle multiple tasks simultaneously, maximizing time utilization, and facilitating the seamless integration of various activities.

Level of Students' Digital Citizenship

Digital citizenship among students encompasses the responsible, ethical, and safe use of digital technologies and online platforms. It involves understanding and upholding principles of respect, integrity, and empathy in online interactions, as well as demonstrating awareness of one's digital footprint and the potential consequences of online actions. Digital citizenship also entails practicing critical thinking and media literacy skills to evaluate online information critically and combat misinformation and cyberbullying.

Table 6 showcases the students' digital citizenship with an overall mean score of 3.73 (SD=0.53), described as "agree," and interpreted as "high." This implies that students demonstrate a strong sense of responsibility, ethics, and safety in their online behavior. They exhibit respectful and empathetic communication in digital interactions, actively contribute to creating a positive online environment, and uphold principles of integrity and honesty in their online activities. Moreover, students with high digital citizenship are adept at navigating digital platforms critically, discerning reliable information from misinformation, and effectively managing their digital footprints to protect their privacy and security. This means that the high level of digital citizenship among students signifies a mature and conscientious approach to engaging in the digital world, fostering a culture of trust, collaboration, and ethical conduct in online communities.

The indicator, "I follow responsible social media etiquette and engage in respectful online interactions," got the highest mean of 4.03 (SD=0.94), described as "agree," and interpreted as "high." This implies that students prioritize ethical and considerate behavior in their digital interactions. This further suggests that students demonstrate awareness of appropriate online conduct, such as refraining from cyberbullying, harassment, or spreading misinformation, and actively contribute to fostering a positive and inclusive online environment. As noticed, students consistently post constructive and respectful comments on social media, engaging in meaningful discussions, and demonstrating empathy and understanding towards others' perspectives, thereby cultivating a culture of mutual respect.

and civility in digital spaces. Generally, the high rating in this regard reflects students' commitment to upholding digital citizenship principles and promoting a healthy online community. According to Bouamor et al. (2020), adhering to responsible social media etiquette and participating in respectful online interactions is crucial for nurturing a positive digital environment, fostering healthy relationships, and mitigating cyberbullying and other harmful online behaviors.

Table 6. *Level of Students' Digital Citizenship*

Indicators	Mean	SD	Descriptive Rating
1. I follow responsible social media etiquette and engage in respectful online interactions.	4.03	0.94	Agree
2. I securely manage and store my passwords to protect sensitive information.	3.93	0.97	Agree
3. I express my reasons when I disagree with something.	3.90	0.84	Agree
4. I maintain a clutter-free and organized digital workspace for improved efficiency.	3.86	0.91	Agree
5. I prioritize data backup to prevent loss and ensure data integrity.	3.80	1.05	Agree
6. I proactively install and keep my antivirus software up to date for enhanced protection.	3.78	0.99	Agree
7. I am conscious of copyright regulations and avoid infringement.	3.72	0.92	Agree
8. I promptly address software updates to maintain system reliability.	3.72	0.91	Agree
9. I support the authority of network administrators to monitor the computer and Internet activities.	3.70	1.09	Agree
10. I regularly update my web browser to ensure security and performance.	3.70	0.98	Agree
11. I install and update anti-spyware software on my computer to safeguard my privacy.	3.69	0.97	Agree
12. I avoid engaging in online conflicts, opting for constructive dialogue instead.	3.64	0.89	Agree
13. I adhere to the specified computer usage timeframes set by instructors.	3.62	1.04	Agree
14. I comply with mobile phone usage restrictions.	3.60	0.98	Agree
15. I activate the firewall on my PC to bolster security measures.	3.34	1.09	Undecided
Overall Mean	3.73	0.53	Agree

Conversely, the indicator, “*I activate the firewall on my PC to bolster security measures,*” got the lowest mean of 3.34 (SD=1.09), described as “undecided.” This suggests that students possess a reasonable level of awareness and action regarding cybersecurity measures, but perhaps not a comprehensive or consistently applied approach. This stems from varying degrees of understanding about the importance of firewalls in protecting against unauthorized access and malware threats. Observations include students activating the firewall on their PC occasionally or in response to specific security concerns, such as connecting to public Wi-Fi networks or downloading unfamiliar files, indicating a reactive rather than proactive approach to cybersecurity.

Reasons for this moderate rating could include factors such as limited knowledge about firewall functionality, competing priorities, or perceptions of the firewall as an optional rather than essential security measure. According to Dastres and Soori (2021), activating the firewall on a PC is crucial for bolstering cybersecurity, as it serves as a barrier against unauthorized access and potential threats, thereby protecting personal and sensitive information from malicious attacks.

Correlation Analysis between Students' ICT Utilization and their Digital Citizenship

Table 7 indicates a highly significant relationship between ICT utilization and digital citizenship, as evidenced by the correlation coefficients and p-values. Specifically, Internet usage ($r=.507$; $p=.000$), device preferences ($r=.458$; $p=.000$), ICT purpose ($r=.498$; $p=.000$), digital skills ($r=.469$; $p=.000$), and time spent ($r=.562$; $p=.000$) all showed strong associations with digital citizenship, with all p-values being less than 0.01. This statistical analysis underscores the importance of various factors, including internet usage patterns, device preferences, ICT purposes, digital skills, and time allocation, in shaping individuals' digital citizenship. Hence, the hypothesis asserting that there is no significant relationship between students' ICT utilization and their digital citizenship is rejected.

Table 7. *Test of Significant Relationship between Students' ICT Utilization in terms of Internet Usage, Device Preferences, ICT Purpose, Digital Skills, Time Spent, and Digital Citizenship*

Indicators	r	p-value	Interpretation
Internet Usage	.507**	.000	Highly Significant
Device Preferences	.458**	.000	Highly Significant
ICT Purpose	.498**	.000	Highly Significant
Digital Skills	.469**	.000	Highly Significant
Time Spent	.562**	.000	Highly Significant

Furthermore, the highly significant correlation coefficient of 0.507 suggests a strong relationship between internet usage and digital citizenship. This indicates that individuals who frequently utilize the internet are more likely to exhibit behaviors aligned with good digital citizenship, such as respecting others online, protecting personal information, and engaging in positive online interactions. Moreover, regular internet usage provides individuals with ample opportunities to practice and develop digital citizenship skills through various online activities and interactions.

With a correlation coefficient of 0.458, device preferences show a notable association with digital citizenship. This suggests that individuals' choices in digital devices, such as computers, smartphones, or tablets, influence their behaviors and attitudes towards digital citizenship. For example, those who prefer devices with advanced security features or accessibility options may demonstrate greater awareness and responsibility in their online activities, contributing positively to digital citizenship practices.

Similarly, the correlation coefficient of 0.498 indicates a strong connection between the purpose of Information and Communication Technology (ICT) usage and digital citizenship. This implies that individuals who primarily use ICT for educational, professional, or constructive purposes are more likely to exhibit positive digital citizenship behaviors compared to those who predominantly engage in leisure or entertainment-related activities online. Effective and purposeful use of ICT fosters the development of digital skills and encourages responsible online behavior, thereby promoting good digital citizenship.

With a correlation coefficient of 0.469, digital skills demonstrate a significant relationship with digital citizenship. This suggests that individuals with higher levels of digital proficiency, including competencies in using digital tools, navigating online platforms, and critically evaluating digital content, are more likely to demonstrate responsible and ethical behavior online. Digital skills equip individuals with the knowledge and abilities necessary to engage safely, responsibly, and productively in digital environments, contributing positively to their digital citizenship practices.

Finally, the highly significant correlation coefficient of 0.562 highlights the strong relationship between time spent online and digital citizenship. This indicates that individuals who allocate more time to online activities are more likely to develop and demonstrate behaviors associated with good digital citizenship, such as respecting others' privacy, practicing digital literacy, and promoting online safety. However, it is essential to consider the quality and purpose of the time spent online, as excessive or unproductive internet usage may have adverse effects on digital citizenship practices.

Generally, these correlations suggest that various factors, including internet usage patterns, device preferences, ICT purposes, digital skills, and time spent online, are closely intertwined and collectively contribute to individuals' digital citizenship behaviors and attitudes. Individuals who engage in frequent, purposeful, and skillful use of digital technologies are more likely to exhibit positive digital citizenship traits, fostering a safer, more respectful, and more inclusive online environment. In this respect, Livingstone and Helsper (2018) investigated parental mediation of children's internet use and highlighted the importance of parental involvement in guiding and supervising children's online activities to promote positive digital citizenship behaviors. Also, Ribble (2015) outlined nine essential elements of digital citizenship that students should know, emphasizing the importance of developing skills and attitudes conducive to responsible and ethical behavior in digital environments. Wang, Zhang, and Liu (2019) explored the influence of digital literacy on the digital citizenship behavior of college students, suggesting that higher levels of digital literacy are associated with more responsible and ethical online behavior.

Conclusions

Based on the findings of the study, it can be concluded that students demonstrate active engagement with digital technology, as evidenced by frequent internet usage and purposeful ICT use, even though variability exists in device preferences and digital skills. This suggests that while technology is deeply integrated into students' daily lives, there remains a need to enhance digital proficiency to ensure more consistent and effective utilization.

Additionally, the students' high level of digital citizenship reflects responsible, ethical, and respectful behavior in online interactions, contributing positively to the digital environment. The significant relationship found between ICT utilization and digital citizenship highlights the influence of digital access, usage patterns, and skills on shaping students' attitudes and behaviors in the digital space.

In light of these findings, several recommendations are proposed. Students are encouraged to enhance their digital competencies by engaging in targeted learning opportunities, such as online tutorials or workshops, to improve their proficiency and confidence in using a range of digital tools. Teachers should continue embedding digital citizenship education into their curriculum, emphasizing responsible online conduct, critical thinking, and social media etiquette. Lastly, further research is recommended to explore additional factors influencing ICT usage and digital citizenship, which can inform the development of educational interventions and policies aimed at cultivating a more responsible and ethically aware generation of digital users.

References

- Anderson, P., & Blackwood, A. (2014). Mobile and PDA technologies and their future use in education. *JISC Technology and Standards Watch*, 4(3), 3–33.
- Annessi, G. J., & Demirta, P. (2019). The teaching of social sciences in primary school analysis of teaching approaches within the digital classroom. *Praxis Education*, 23, 1–13.
- Artola, A. A., Galvez, C., & Gonzalez, A. (2018). Exploring the potential of electronic devices and social networks in the teaching-learning process of university students. *Education Technology*, 64, 18–40.
- Blau, I., Shamir-Inbal, T., & Avdiel, O. (2020). How does the pedagogical design of a technology-enhanced collaborative academic

- course promote digital literacies, self-regulation, and perceived learning of students? *The Internet and Higher Education*, 45, 100722. <https://doi.org/10.1016/j.iheduc.2019.100722>
- Becerra, I. (2022, August 16). *Forbes: The myth of multitasking in a hybrid world*. Marymount University. <https://marymount.edu/blog/forbes-the-myth-of-multitasking-in-a-hybrid-world/>
- Bouamor, S., Djaber, N. E., & Adil, M. (2020). Digital etiquette on the social network Facebook: Psychosocial study of the contents of facebook pages. *Aydın İnsan ve Toplum Dergisi*, 6(2), 215-237. Retrieved from <https://dergipark.org.tr/en/download/article-file/1570834>
- Cain, M. (2018). PDA: Paradigm-disrupting appliance? *Journal of Academic Librarianship*, 29(1), 44–88. [https://doi.org/10.1016/S0099-1333\(02\)00398-1](https://doi.org/10.1016/S0099-1333(02)00398-1)
- Chamarro, A., Carbonell, X., Manresa, J. M., Munoz-Miralles, R., OrtegaGonzalez, R., Lopez-Morrón, M. R., ... & Toran-Monserrat, P. (2014). The questionnaire of experiences related to video games (CERV): An instrument to detect problematic video game use in Spanish adolescents. *Addictions*, 26, 303.
- Chatterjee, I., & Chakraborty, P. (2021). Use of information communication technology by medical educators amid COVID-19 pandemic and beyond. *Journal of Educational Technology Systems*, 49(3), 310-324.
- Cheung, A. C., & Slavin, R. E. (2018). The effectiveness of educational technology applications for enhancing mathematics achievement in K-12 classrooms: A meta-analysis. *Educational Research Review*, 9, 88–113. <https://doi.org/10.1016/j.edurev.2013.01.001>
- Clinefelter, D. L., Aslanian, C. B., & Magda, A. J. (2019). *Online college students 2019: Comprehensive data on demands and preferences*. Wiley Education. Retrieved from <https://edservices.wiley.com/wp-content/uploads/2019/07/OCS-2019-FINAL-WEB-Report.pdf>
- Darko-Adjei, N. (2019). The use and effect of smartphones in students' learning activities: Evidence from the University of Ghana, Legon. *Library Philosophy and Practice (e-journal)*. DigitalCommons@University of Nebraska - Lincoln. <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=6260&context=libphilprac>
- Dastres, R., & Soori, M. (2021). A review in recent development of network threats and security measures. *International Journal of Information Sciences and Computer Engineering*, Advance online publication. <https://doi.org/10.1016/j.ijis.2021.03.001>
- Dowler, L. (2016). College students' technology use and academic performance. *Journal of College Student Development*, 57(4), 505-521.
- Ecker, U.K.H., Lewandowsky, S., Cook, J., Schmid, P., Fazio, L.K., Brashier, N., Kendeou, P., Vraga, E.K., & Amazeen, M.A. (2022). The psychological drivers of misinformation belief and its resistance to correction. *Nature Reviews Psychology*, 1, 13-29.
- Eshet-Alkalai, Y. (2014). Digital literacy: A conceptual framework for survival skills in the digital era. *Journal of Educational Multimedia and Hypermedia*, 13(1), 93-106.
- Eshet-Alkalai, Y. (2022). Thinking in the digital era: A revised model for digital literacy. *Issues in Informing Science and Information Technology*, 9(2), 267–276. <https://doi.org/10.28945/1621>
- García-Martín, S., & Cantón-Mayo, I. (2019). Use of technologies and academic performance in adolescent students. *Comunicar*, 27, 73–81.
- Ghavifekr, S., Kunjappan, T., Ramasamy, L., & Anthony, A. (2022). Teaching and learning with ICT Tools: Issues and challenges from teachers' perceptions. *Malaysian Online Journal of Educational Technology*, 4(2), 38-57. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1096028.pdf>
- Hava, K. (2018). The impact of digital citizenship instruction through flipped classroom model on various variables. *Contemporary Educational Technology*, 9(4), 390-404.
- Heitin, L. (2016). What is digital literacy? *Education Week*. Retrieved from <https://www.edweek.org/teaching-learning/what-is-digital-literacy/2016/11>
- Hu, X., Gong, Y., Lai, C., & Leung, F. K. S. (2018). The relationship between ICT and student literacy in mathematics, reading, and science across 44 countries: A multilevel analysis. *Computers & Education*, 125, 1–13. <https://doi.org/10.1016/j.compedu.2018.05.021>
- Jacobs, G., & Castek, J. (2018). Advancing digital equity in public libraries: Assessing library patrons' problem solving in technology rich environments. *PDXScholar*. https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1002&context=digital_equity_findings
- Kakkar, A. (2015). Impact of internet addiction on the academic performance of college students. *International Journal of Applied*

Research, 1(10), 139-143.

Kim, M., & Choi, D. (2018). Development of youth digital citizenship scale and implication for educational setting. *Educational Technology & Society*, 21(1), 155–171. <https://www.jstor.org/stable/10.2307/26273877>.

Kokka, I., Mourikis, I., Nicolaidis, N., Darviri, C., Chrousos, G., KanakaGantenbein, C., & Bacopoulou, F. (2021). Exploring the effects of problematic internet use on adolescent sleep: A systematic review. *International Journal for Environmental Research and Public Health*, 18, 760.

Krull, G., & Duart, J. M. (2019). Supporting seamless students: Exploring patterns of multiple device use in an open and distancing learning context. *Research in Learning Technology*, 27. <http://dx.doi.org/10.25304/rlt.v27.2215>

Lewin, C., & Charania, A. (2018). Bridging formal and informal learning through technology in the twenty-first century: Issues and challenges. In C. Lewin & A. Charania (Eds.), *Second Handbook of Information Technology in Primary and Secondary Education* (pp. 199–215). Springer. https://doi.org/10.1007/978-3-319-71054-9_13

Livingstone, S., & Helsper, E. J. (2008). Parental mediation of children's internet use. *Journal of Broadcasting & Electronic Media*, 52(4), 581-599. <https://doi.org/10.1080/08838150802437396>

Magda, A. J., Capranos, D., & Aslanian, C. B., (2020). *Online college students 2020: Comprehensive data on demands and preferences*. Wiley Education Services. <https://edservices.wiley.com/ocs2020/>

Marjit, U. (2023, June 26). Best digital tools for academic research every researcher needs to know. *Researchers Site*. <https://researchersite.com/best-digital-tools-for-academic-research-every-researcher-need-to-know/>

Medlin, B.D. (2021). *The factors that may influence a faculty member's decision to adopt electronic technologies in instruction* (Doctoral dissertation, Virginia

Polytechnic Institute and State University, 2021). ProQuest DigitalDissertations. (UMI No. AAT 3095210).

Ng, S. F., Che Hassan, N. S. I., Mohammad Nor, N. H., & Abdul Malek, N. A. (2017). The relationship between smartphone use and academic performance: A case of students in a Malaysian tertiary institution. *Malaysian Online Journal of Educational Technology*, 5(4), 58–70. <https://files.eric.ed.gov/fulltext/EJ1156718.pdf>

Olatokun, W. M. (2022). The impact of the internet on students' academic performance. *International Journal of Economic Development Research and Investment*, 3(1), 148-159.

Parisot, A.H. (2015). *Technology and teaching: The adoption and diffusion of technological innovations by a community college faculty* (Doctoral dissertation, Montana State University, 2015). ProQuest DigitalDissertations. (UMI No. AAT 9542260).

Petko, D., Cantieni, A., & Prasse, D. (2017). Perceived quality of educational technology matters: A secondary analysis of students' ICT use, ICT-related attitudes, and PISA 2012 test scores. *Journal of Educational Computing Research*, 54(8), 1070–1091. <https://doi.org/10.1177/0735633116649373>

Pöntinen, S., Dillon, P., & Väisänen, P. (2017). Student teachers' discourse about digital technologies and transitions between formal and informal learning contexts. *Education and Information Technologies*, 22(1), 317–335. <https://doi.org/10.1007/s10639-015-9450-0>

Rahim, M. N. (2021). The relationship between the time spent on Facebook and GPA scores of post-graduates. *International Journal of Multidisciplinary: Applied Business and Education Research*, 2(1), 94-102. Retrieved from <http://ijmaberjournal.org/index.php/ijmaber/article/view/74>.

Ribble, M. (2017). *Digital citizenship in schools: Nine elements all students should know*. Washington, DC: International Society for Technology in Education.

Ribble, M. S. (2021). *Digital citizenship in schools: Nine elements all students should know*. International Society for Technology in Education.

Rideout, V. J., & Robb, M. B. (2018). The common sense census: Media use by tweens and teens. *Common Sense Media*. Retrieved from <https://www.common sense media.org/research/the-common-sense-census-media-use-by-tweens-and-teens-2019>

Robinson, L., Cotten, S. R., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., Schulz, J., Hale, T. M., & Stern, M. J. (2015). Digital inequalities and why they matter. *Information, Communication & Society*, 18(5), 569–582. <https://doi.org/10.1080/1369118X.2015.1012532>

Roztock, N., Soja, P., & Weistrofer, H. R. (2019). The role of information and communication technologies in socioeconomic development: Towards a multidimensional framework. *Information Technology for Development*, 25(2), 171–183.

Sahin, I. (2020). Problems and challenges of integrating ICT into education. *Journal of Educational Technology & Society*, 13(2), 90-

- 101.
- Simsek, E., & Simsek, A. (2018). New literacies for digital citizenship. *Contemporary Educational Technology*, 4(2), 126-137.
- Siraj, S. (2015). Internet usage and academic performance: A study on the university students of Bangladesh. *Journal of Modern Education Review*, 5(1), 42-53.
- Skryabin, M., Zhang, J., Liu, L., & Zhang, D. (2015). How the ICT development level and usage influence student achievement in reading, mathematics, and science. *Computers & Education*, 85, 49–58. <https://doi.org/10.1016/j.compedu.2015.02.004>
- Smith, A. (2017). Record shares of Americans now own smartphones, have home broadband. Pew Research Center. Retrieved from <https://www.pewresearch.org/fact-tank/2017/01/12/evolution-of-technology/>
- Sousa, M. J., & Rocha, A. (2019). Skills for disruptive digital business. *Journal of Business Research*, 94, 257–263. <https://doi.org/10.1016/j.jbusres.2017.12.051>
- Statistics National Institute. (n.d.). Survey on equipment and use of information and communication technologies in homes. Retrieved from http://www.ine.es/prensa/tich_2017.pdf
- Tinmaz, H., Fanea-Ivanovici, M., & Baber, H. (2022). A snapshot of digital literacy. *Library Hi Tech News*, (ahead-of-print)
- Torres, M. M. (2016). Internet use and academic performance among students. *European Journal of Academic Essays*, 3(8), 80-85.
- Van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2015). Internet skills and the digital divide. *New Media and Society*, 13(6), 893–911. <https://doi.org/10.1177/1461444810386774>
- Wang, W., Zhang, Y., & Liu, W. (2019). Research on the influence of digital literacy on the digital citizenship behavior of college students. *IEEE Access*, 7, 171078–171086. <https://doi.org/10.1109/ACCESS.2019.2955521>
- Wittwer, J., & Senkbeil, M. (2018). Is students' computer use at home related to their mathematical performance at school? *Computers and Education*, 50(4), 1558–1571. <https://doi.org/10.1016/j.compedu.2007.03.001>
- World Bank. (2019). Realizing the potential of digital education in schools: The role of government policy. Retrieved from <https://openknowledge.worldbank.org/bitstream/handle/10986/31267/Realizing-the-Potential-of-Digital-Education-in-Schools-The-Role-of-Government-Policy.pdf>
- World Bank. (2022). Understanding poverty and financial inclusion. *Digital Financial Inclusion*. <https://www.worldbank.org/en/topic/financial-inclusion/publication/digital-financial-inclusion>
- Yuan, C., Wang, L., & Eagle, J. (2019). Empowering English language learners through digital literacies: Research, complexities, and implications. *Media and Communication*, 7(2), 128–136. <https://doi.org/10.17645/mac.v7i2.1912> UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY AND DIGITAL CITIZENSHIP OF SOCIAL SCIENCES STUDENTS

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