

Reviewing the impact of digital citizenship on academic performance of students

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ABSTRACT

The need to develop digital citizenship skills has become crucial in the ever-changing realm of education. To understand how digital citizenship education equips students with the skills they need for ethical behavior, responsible technology use, and productive online participation, it is important to study this topic. The study worked on two objectives a) to explain the concept of Digital Citizenship Education, b) to reveal the impact of digital citizenship education on academic success by reviewing literature. This paper embarks on a comprehensive review of existing literature, comprising studies and research articles published in various academic journals. The findings show that programs promoting digital citizenship are increasingly acknowledged to have a positive impact on students' academic performance, cognitive abilities, and general learning outcomes. Education is the key to driving society's digital transformation, and technology is essential to enhancing educational outcomes and processes.

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Introduction

Despite its differences from traditional citizenship, digital citizenship is nevertheless strongly related to how we participate in civic life offline (Choi, 2016). In the ever-evolving landscape of education, the pervasive influence of digital technologies has fundamentally transformed the way students engage with information, collaborate, and navigate the complexities of the modern world. As educational institutions increasingly integrate digital tools into their pedagogical approaches, the necessity to foster digital citizenship skills becomes crucial. Digital citizenship, encompassing responsible and ethical technology use, holds significant implications for students' holistic development and academic success. Undoubtedly, technology plays an important role in every sphere of life (Bakan et al., 2023; Singh, 2021). The National Education Policy (NEP) 2020 proposes that the integration of ICT in educational programs should foster innovation, create novel learning opportunities, and facilitate self-paced, student-centered learning. It will result in better classroom instruction, preparing students for the workforce and advancing their technological literacy (Kaur & Ahuja, 2023). The International Society for Technology in Education has included concepts of digital citizenship into its standards about the proper and moral use of digital media and information by students, instructors, and administrators (Bircan & Akman, 2023; Crompton, 2017; Trust, 2018). The distinction between online and offline life would vanish in technological societies, according to philosopher Luciano Floridi's mid-1990s prediction. Floridi's theory amounted to "re-ontologizing" reality by proposing that all interactions among people would seamlessly transition to an exchange between interconnected informational organisms (Floridi, 2007). By utilizing technology in and out of the learning environment, students can acquire modern technical expertise for their future employment (Nithish, 2023). It is possible that educators of all ability levels lack an understanding of successful technology utilization. As a result, it is imperative that educators and students join the digital citizenry. Schools should provide initiatives and integrate digital citizenship in the curriculum to provide a responsible digital citizen (Capuno et al., 2022). As a result of World Education's initiative, digital citizenship is now a recognized subject that is taught in official education settings (Acedo & Hughes, 2014). It is the duty of administrators to impart knowledge about digital citizenship since it guarantees that all

pupils are aware of inappropriate usage of technology and how to avoid it (Farmer, 2011). The world of today combines social networking tools, digital media, and real-world experiences in a complex way. People now have to deal with a whole new set of opportunities and problems, including living, acting, and making decisions as digital citizens.

Objectives

1. Explain the concept of digital citizenship education.
2. Reveal the impact of digital citizenship education on academic success of students by reviewing literature.

Method

The primary method involved a comprehensive review of secondary data from various sources. The comprehensive review method facilitates an extensive analysis of various studies, concepts, and perspectives regarding digital citizenship, responsible technology use and impact of digital citizenship on scholastic achievement. The review of literature was conducted following three stages; Planning, conducting, and reporting (Kitchenham & Stuart, 2007; Xiao & Watson, 2017). Published studies in educational journals, official government documents, and other relevant sources were examined to get additional evidence concerning the connection between digital citizenship and academic performance.

Search strategy

The key terms used to search for published research papers included 'Digital citizenship,' 'Digital citizenship education,' 'scholastic achievement,' 'academic achievement,' 'students' scholastic achievement,' 'digital citizenship and students' scholastic achievement,' 'impact of digital citizenship on scholastic achievement.' The literature was searched on databases like Google Scholar, Academia, ResearchGate, and PubMed. The search encompassed not only empirical studies but also theoretical papers and book chapters. Academic achievement and scholastic achievement are terms that are used interchangeably (Bhatti & Bart, 2013; Khan, 2005). Following a search for the key terms, the chosen articles were carefully examined and added to the review according to their relevance to the topic and defined objectives.

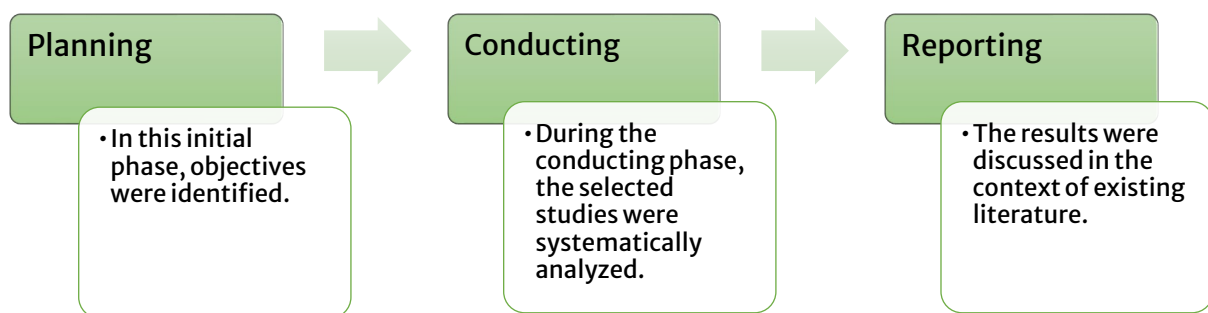


Figure 1 Stages of the review process

Digital citizenship education

Because children use technology so much every day and need to be taught appropriate online collaboration and communication techniques, the idea of digital citizenship has gained popularity (Öztürk, 2021). The idea of digital citizenship has come up due to the necessity of developing safe and responsible online communication and collaboration (Ribble, 2008; Shelley et al., 2004). Digital citizenship refers to the guidelines for appropriate and ethical technology use that teach students how to navigate the online environment in both their personal as well as academic life rather than only as citizens of a nation (Ranchordas, 2020; Tan, 2011). In the present era, being a digital citizen holds significant importance. Given this context, Isman and Canan Gungoren (2014) mentioned that several indispensable elements in education need incorporation to enable students to fulfil the objectives of digital citizenship in the twenty-first century. These critical components encompass academic achievement and learning, student behavior and environment, and the aspects of student life beyond the classroom. According to Farmer (2010) those who are classified as digital citizens are engaged in the digital sphere and exhibit consideration while choosing and arranging electronic data. Most people define digital citizenship as having the skills necessary to contribute meaningfully to online networks. Given the critical role that information and communications technology plays in societal development and engagement, digital citizenship is an important concept (Ghosn-Chelala, 2019). The capacity of citizens to interact with digital technologies in a positive and

competent manner is referred to as "digital citizenship" (Frau-Meigs et al., 2017). Youth involvement and participation in bigger communities may rise because of digital citizenship courses. Instructors are already utilizing the internet in innovative ways to get students involved in community service and civic engagement projects (Jones & Mitchell, 2015). Social media, technology, the online world, and users' responsible behavior on these platforms are all crucial elements of digital citizenship. As the world's technology continues to advance, it is reshaping various aspects, such as the requirements of students, the structure of classrooms, and the criteria set by stakeholders for employability (Rahim, 2021). The term "digital citizenship" is often used to describe a wide range of skills. This involves using a variety of channels to access digital content and activities, keeping up with the latest technological developments, making efficient use of digital tools, and handling computer-related or security-related issues (Kim & Choi, 2018). It is essential for educators, students, and the educational system to work together effectively in order to foster civic engagement in the digital age. To provide effective education and promote culturally appropriate online behaviour, this cooperative effort is crucial (Nosko & Wood, 2011).

Need to use technology responsibly

Utilising digital tools to engage in one's societal roles is a typical definition of digital citizenship. For this reason, it has democratising and empowering qualities (Hintz et al., 2017). With a growing emphasis on teaching tolerance and respect, digital citizenship education programs and books already place a strong emphasis on appropriate online conduct. However, a stronger focus on civic engagement is required to guarantee that students take an active part in their communities and make responsible contributions in the digital sphere (Jones & Mitchell, 2016). Since technology is always changing, responsible use necessitates continuing education. People can adjust to the shifting digital landscape and utilise technology wisely if they stay up to date on the newest technical trends, best practices, and any risks. To effectively employ technological resources in educational settings, "teaching" must give way to "learning," which calls for sufficient technical assistance, training in the field of technology, and knowledge of different styles of learning (Rogers, 2000). Additionally, teaching digital citizenship could boost young people's involvement and engagement in broader communities (Jones & Mitchell, 2016). Teaching youngsters' digital competencies and how to use technology ethically is one of parents' main responsibilities for shielding them from the harmful effects of technology (Kaluarachchi et al., 2020). Teaching children digital citizenship is a holistic process that aims to provide them with the skills they need to manage a world full of technological breakthroughs, rather than just teaching them how to utilise digital technologies (Kim & Choi, 2018). It appears that institutions of learning are placing an increasing amount of emphasis on the promotion of digital citizenship. It is reasonable to state that educational institutions are not doing enough to solve these problems, even in light of how crucial it is for students to acquire competencies in digital citizenry in both official and private education environments. Given that citizenship is practiced both in real life and virtually, it is imperative to think about how the educational system might assist citizenship instruction through digital means (Arredondo Trapero et al., 2020).

Digital well-being: The mechanisms that cause people to encounter issues with their usage of digital media can be better understood by taking a dynamic system perspective to digital wellbeing (Vanden Abeele, 2021). Using technology responsibly is essential to preserving both physical and mental health. Overusing screens can cause eye strain, weariness, and general discomfort, especially if it is done without breaks. A more lasting and healthy relationship between people and technology can be achieved by establishing boundaries and taking regular pauses.

Privacy and security: It is crucial to provide kids the information and abilities to be active, moral, and critical users in the online world rather than merely emphasizing risk prevention techniques (Nansen et al., 2012). Protecting personal data is critical in today's linked society. To prevent unwanted access, responsible technology use is being aware of privacy settings and actively managing them. Through the implementation of two-factor authentication, frequent software upgrades, and strong passwords, people can reduce their exposure to cyber-attacks and data breaches.

Critical thinking: There is an abundance of erroneous or misleading information available on the internet. To utilise technology responsibly, one must develop critical thinking abilities to evaluate the reliability of internet content.

Digital footprint: The term "digital footprint" refers to the numerical imprints that people leave behind from their both on and offline actions when they interact with computer databases (Lambiotte & Kosinski, 2014). Each thing a person does online adds to their digital footprint, which shapes their online identity and reputation. Utilising technology responsibly is being aware of the data that is shared, comprehending the possible repercussions, and taking action to successfully manage one's digital identity.

Responsible innovation: It is critical to promote and support technological advancements that are in line with moral principles and the interests of society as a whole as it continues to advance. Using technology

responsibly entails keeping up with the possible ethical and social ramifications of new developments in the field and advancing advancements in technology.

Cybersecurity awareness: The safety of information may be threatened by cyberattacks. Cyber awareness has become more and more critical as usage of data and internet access rates rise (Zwilling et al., 2022). Technology-savvy, responsible people understand the risks connected to the internet and take precautions to keep themselves secure. Maintaining awareness, exercising caution when using the internet, and implementing safe online behaviours all contribute to an individual's and society's overall cybersecurity.

Balance in technology use: Technology may really be a distraction from students' academic pursuits, despite its appearance of stimulating their enthusiasm in learning (Tahir, 2024b). A healthy lifestyle requires striking a balance between online and outside activities. It is important to prioritise in-person contacts, participate in real-world activities, and refrain from overly relying on digital gadgets for amusement and social connection when using technology responsibly.

Impact of digital citizenship education on academic success

The need for novel technological abilities and the availability of innovative methods for acquiring and remembering them provide significant challenges for education in the future. The result of educational experience is achievement in academics, which measures how well a student, instructor, and institution have met their learning objectives. Academic success is the degree to which students pick up the abilities, expertise, and skills that the teacher aims to impart or assign (Salvia & Ysseldyke, 2000). Academic achievement is the most accurate predictor of success in higher education. Students' personal growth and opportunities are shaped by it, which reflects their aptitudes, expertise, and capabilities (Tahir & Jan, 2024). All parties involved in the learning process must possess digital competency in order to fully realize the promise of future ICT-enabled education (Ala-Mutka, 2008). Even in cases where students feel comfortable using technology, their use could not conform to proper standards. In a similar vein, teachers, no matter how skilled they are, could not have a thorough grasp of how to use technology. Teachers and students must come to a mutual understanding in order to work together to develop ways to support one another in becoming engaged participants in the digital citizenship movement (Ribble, 2015). The structure of the digital footprint course positively impacts the academic success associated with digital citizenship, and this influence is substantial (Karyeli & Dağhan, 2019). Netwong (2013) documented a strong correlation between digital citizenship and academic achievement, indicating a high level of association. Technology is changing education in a dynamic way that is affecting stakeholder expectations, classroom structures, and student requirements. IoT (internet of things) gadgets open minds of youngsters to new ideas, viewpoints, and experiences, which stimulates their curiosity (Dar et al., 2024). To effectively integrate information and communication technology (ICT) into education, it is imperative that these ongoing demands be met. This includes adhering to local and national policies, developing infrastructure, improving educational environments, and managing cybersecurity and privacy responsibilities for both teachers and students (Rahim, 2021). Because it gives students the information and abilities to appropriately navigate the digital environment, digital citizenship education has an important effect on academic success. Here are ways in which this objective can be fulfilled:

Digital literacy skills

Technical proficiency in using digital devices and a range of cognitive abilities to carry out tasks in digital contexts are prerequisites for digital literacy (Kaeophanuek et al., 2018). Through digital citizenship education, students acquire critical thinking and digital literacy skills such as assessing online material critically, appreciating the value of trustworthy sources, and differentiating between trustworthy and false information. These skills enhance academic research and information comprehension.

Online research competence

Students learn to conduct effective and ethical online research. They understand the importance of citing sources properly, avoiding plagiarism, and utilizing digital tools for academic purposes. This contributes to the development of robust research and analytical skills.

Ethical use of information

that ethics are crucial for Information System (IS) practice in the 21st century and, as a result, are extremely pertinent to IS research and instruction (Mingers & Walsham, 2010). Digital citizenship education instils a sense of ethical responsibility in students, guiding them to use information ethically and respect intellectual property rights. This fosters a culture of academic integrity and responsible information sharing.

Effective communication

The ability to communicate effectively in digital environments, such as online discussion boards and collaborative programs, is taught to students. Academic performance is largely dependent on these abilities, which are essential for group assignments, online discussions, and academic collaboration.

Online collaboration and teamwork

Students who receive instruction in digital citizenship are encouraged to behave responsibly online and learn the value of cooperation and teamwork in virtual settings. These abilities improve productivity and cooperation in academic group assignments.

Critical thinking in digital spaces

Cultivating global citizenship requires critical thinking as a necessary first step (Perry et al., 2015). Students learn how to critically think in order to assess the reliability of information found online. This is crucial for academic success, enabling them to make informed decisions, analyse complex issues, and engage thoughtfully in academic discussions.

Cybersecurity awareness and prevention of cyberbullying

Education in digital citizenship emphasizes cybersecurity awareness, teaching students how to protect themselves and their academic work online. Understanding the risks associated with cyber threats ensures a secure online environment for academic pursuits. Understanding the principles of digital citizenship helps students recognize and prevent cyberbullying. A safe and respectful online environment positively impacts students' emotional well-being, creating a conducive atmosphere for academic focus and achievement.

Responsible social media use

Most users of social media do not consider the impact, whether beneficial or detrimental, that it has on their life (Tahir et al., 2022). Education in digital citizenship guides students on responsible social media use. This includes understanding the potential impact of online presence on academic and professional opportunities, fostering a mindful approach to digital communication.

Preparation for the future

Students who get instruction in digital citizenship are better equipped to meet the demands of both the professional and higher education environments. Their chances of success in education and in the future are improved by this preparation.

In a nutshell equipping students with the abilities, information, and mindsets required for success in the digital age can be achieved by integrating digital citizenship education into academic curriculum. It fosters a holistic approach to learning that includes ethical participation in online places and responsible digital behaviour, going beyond the scope of traditional academic disciplines.

Discussion

When someone can properly balance their activities both online and offline and use the digital world appropriately, they are regarded as a digital citizen (Prasetyo et al., 2021). Teachers and students alike must adopt the mindset of a digital citizen (Capuno et al., 2022). Taking responsibility for one's online activity and embracing positive attitudes and habits are key components of digital citizenship (Mossberger et al., 2007). It is now crucial for students to learn how to collaborate and communicate online in a responsible and safe manner because they utilize technology on a daily basis. Because of this, digital citizenship is now a major priority (Akman et al., 2023; Öztürk, 2021). Digital citizenship has a comprehensive impact on education, covering a range of abilities and proficiencies essential to academic success of students. Students that use technology responsibly are able to preserve their privacy, it promotes moral conduct, analytical reasoning, and productive teamwork (Marcial et al., 2021). Because digital citizenship education cultivates critical abilities like digital literacy, online research competency, and the ethical use of information, it has a substantial impact on students' academic performance. Additionally, it fosters critical thinking, collaboration, and effective communication in digital environments, supporting responsible social media use. These skills equip students for success in education and in their careers in the future. Instructors must create precise criteria for assessing the breadth and depth of their curricula in order to impart in students the principles of responsible digital citizenship (Kim & Choi, 2018). To guarantee genuine inclusivity in digital citizenship, it is essential to investigate the problems that young people encounter in online communities and actively participate in public discussions about cyberspace (Arredondo Traperero, 2020). Providing fair access to quality education has long-term advantages enhancing both the nation's development and the well-being of its people for the long term (Tahir, 2024a). Students with digital literacy

abilities can use digital resources for learning and manage them with ease. Their ability to conduct online research enables them to effectively collect and evaluate data from the internet. Proficiency in communication is crucial when engaging with classmates and teachers via online mediums. The 21st-century education equips students with life-long skills including critical thinking and collaborative abilities (Tahir et al., 2022). Students are encouraged to critically assess internet content and make educated decisions by using critical thinking in digital domains. Students are protected from online threats and a safe learning environment is promoted via cybersecurity awareness and the prevention of cyberbullying. Maintaining a healthy digital profile and striking a balance between online and offline activities are made easier with responsible social media use. Lastly, preparing for the future gives students the abilities they need to live in a technologically advanced society and makes sure they are prepared for obstacles in their future academic and professional lives.

Conclusion

In the contemporary age, using digital devices safely has become crucial (Barragán-Sánchez et al., 2020). Using technology to its full potential allows for interactive, personalized learning that accommodates a variety of learning preferences. This not only helps students perform better academically but also develops critical 21st-century abilities like digital literacy, problem-solving, and teamwork. Digital citizenship faces greater challenge not due to problems of access or use, but because of inadequate training and instruction (Pérez-Escoda et al., 2016). However, insufficient teacher training in facilitating online activities and restricted access to technology lead to gaps in students' comprehension of digital citizenship, impeding their capacity to acquire critical digital skills and behave responsibly online. Addressing these inequities requires both trained teachers and sufficient resources (Logan, 2016). To properly incorporate the concepts of digital citizenship into the curriculum, policymakers, parents, and educators must take a comprehensive approach. It is more important than ever to understand and promote digital citizenship as we go forward across the digital frontier. Apart from being ethical obligations, they are crucial elements in creating a conducive atmosphere for students to achieve academic success.

Limitations

As with literature-based research, this review has limitations. Findings depend on the quality and extent of existing research, and the lack of primary data gathering limits the capacity to draw conclusions about causality. It is also possible that publication biases or search settings excluded some relevant studies.

Disclosure statement

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