Digital Citizenship Education in Higher Education: A Study in Indian Perspective

Neha Kumari
Amity University Uttar Pradesh

Mitima Sachdeva
Amity University Uttar Pradesh

Kalpana Verma
Rama Degree College, Lucknow

In recent years, higher education in India has undergone significant changes and advancements, particularly with the integration of technology and innovation into the learning process. With the increasing use of digital tools and platforms, individuals must understand the responsibilities and ethics associated with the use of technology. This is where digital citizenship education comes into play. In the context of higher education, digital citizenship education can play a crucial role in preparing students to become responsible and informed digital citizens. The purpose of this study is to examine the technological innovation in higher education in India, with a special emphasis on digital citizenship education, and to analyse the factors that influence its integration. The study aims to provide insights into the challenges and opportunities related to the implementation of digital citizenship education in Indian universities and to make recommendations for its effective integration into the higher education curriculum.

Keywords: higher education, digital citizenship, digital citizenship education, technology

INTRODUCTION

The integration of technology into our daily lives has resulted in a significant shift in the way we communicate, learn, and access information. With the increasing use of digital tools and platforms, individuals must understand the responsibilities and integrity associated with the use of technology. This is where digital citizenship education comes into play. In the context of higher education, digital citizenship education can play a crucial role in preparing students to become responsible and informed digital citizens. India's higher education system has grown to become the world's third largest, trailing only China and the United States in terms of student population (World Bank). The sector has expanded significantly since the country gained independence, with a notable rise in the number of universities and colleges. The introduction of the 'Right to Education Act' has brought about a revolution in the education system by ensuring free and compulsory education for all children aged between 6 and 14 years. Private sector involvement has driven significant changes in the field, with over 60% of higher education institutions now

promoted by private entities. This has led to the establishment of numerous institutes in the last decade, making India the country with the highest number of higher education institutions in the world and the second-highest student enrolment.

India, being one of the largest and fastest-growing economies in the world, has made significant investments in technology and digital infrastructure. Higher education institutions in India are no exception, with a growing number of universities adopting technology to enhance teaching and learning. However, despite the rapid growth of technology in higher education, there has been limited research on the integration of digital citizenship education in Indian universities.

HIGHER EDUCATION

According to the University Grants Commission (UGC) of India, "Higher education in India refers to education beyond secondary school, usually in the form of college or university education." (Ministry of Education, n.d.). The main aim of higher education is to provide advanced knowledge and skills in a particular field of study or profession and prepare students for further education, career opportunities, and personal development. It is a diverse system that encompasses universities, colleges, and other institutes of higher learning, both public and private, offering a range of courses in arts, science, engineering, medicine, and many other disciplines.

Higher education has been defined as "postsecondary education leading to the award of an academic degree or professional qualification" (OECD, 2019). According to the Organisation for Economic Co-operation and Development (OECD), higher education has become increasingly important in today's knowledge-based economies and societies, as it plays a crucial role in promoting economic growth, social mobility, and personal development.

According to the All India Survey on Higher Education (AISHE) (https://aishe.nic.in/), the GER in higher education in India was 26.3% in the academic year 2019-2020. This indicates that out of 100 eligible students in the age group of 18-23 years, 26 were enrolled in higher education institutions.

In recent years, higher education in India has undergone significant changes and advancements, particularly with the integration of technology and innovation into the learning process. There have been several technological advancements in higher education in India over the past few years. One of the most significant changes has been the increased use of online learning platforms and digital resources. This shift was accelerated due to the COVID-19 pandemic, which forced institutions to adopt online teaching and learning methodologies. According to a report by Bengaluru-based market research firm RedSeer Consulting, the online higher education market in India is expected to reach $5 billion by 2025, indicating the growing acceptance and popularity of online education (Indian Global Business, 2021). Another significant development has been the use of artificial intelligence (AI) and machine learning (ML) in education. Artificial Intelligence (AI) is a new technology that has the potential to revolutionize the education industry by transforming the learning experience. The impact of AI on the education sector is significant, and there are several reasons why this technology is forcing transitions in the global education industry. According to Blaylock (2019), AI brings the following changes to the education sector: an adjustable learning environment, new opportunities, improved efficiency, and AI-driven education platforms. Institutions are using AI and ML to develop adaptive learning systems, which personalize the learning experience for students by analyzing their strengths and weaknesses (Bhutoria, 2022). The All India Council for Technical Education (AICTE) has also introduced an initiative called NEAT (National Educational Alliance for Technology) to promote the use of AI in education and facilitate the creation of AI-based learning platforms. The NEAT initiative, a joint venture between the Government of India and Education Technology companies, is designed to offer learners access to the best technological products in education via a national portal. The scheme also includes free seats for students from disadvantaged backgrounds currently enrolled in higher education. (Ministry of Education, Gov of India)

Furthermore, the use of virtual and augmented reality (VR/AR) technologies is also gaining popularity in higher education in India. These technologies offer immersive learning experiences that can enhance

student engagement and understanding of complex concepts. Several institutions have started using VR/AR to simulate real-world scenarios, such as medical procedures and engineering designs (Dhar et al., 2021).

The surge in e-learning and use of technology in higher education can be attributed to various factors.

- Rapid growth in Internet connectivity
- Improvement in internet cost due to low 4g data
- Growth in smartphones
- The cost of online education is less compared to traditional programs
- Favorable e-learning facilities such as SWAYAM and Digital India
- The advent of cloud infrastructure
- Peer-to-peer problem solving
- Open content creation
- The rapid expansion of the target audience
- Rising demand among working professionals due to flexibility of time

The boom in e-learning in India has been driven by various factors, including rapid growth in internet connectivity, the advent of cloud infrastructure, and the flexibility of online programs. However, with the increasing integration of technology and innovation into higher education, the need for digital citizenship education has become more critical than ever. As students become more reliant on digital technologies for their learning and communication, they also need to develop the necessary skills and knowledge to navigate the digital world safely and responsibly. This highlights the need for higher education institutions in India to integrate digital citizenship education into their curricula. UNESCO (2015) recommended in its report "Fostering Digital Citizenship Through Safe and Responsible Use of ICT" that more awareness and practical effort are required to combat various physical, social, and ethical issues that arise along with the use of ICT. By implementing digital citizenship education, we can equip students with essential skills such as critical thinking, media literacy, and ethical decision-making, which are necessary for their success in the digital age.

DIGITAL CITIZENSHIP EDUCATION

The European Council defines digital citizenship as "the knowledge, skills, attitudes, and values that enable individuals to participate in the digital world in a responsible, competent, and confident manner." This definition emphasizes the importance of not only having technical skills but also possessing a set of values and attitudes that promote responsible and ethical behavior online. Digital citizenship education is a comprehensive educational program aimed at teaching individuals about the responsible and ethical use of technology and the Internet. According to Ribble (2015), digital citizenship education covers a range of topics, including online privacy and security, responsible online behavior, and the ability to critically evaluate and use digital information. The goal of digital citizenship education is to equip individuals with the skills and knowledge they need to participate in the digital world in a safe, responsible, and ethical manner, and to help them make informed decisions about their use of technology. It can be taught in a variety of settings, including schools, community organizations, and online forums, and can be integrated into the existing curriculum or taught as a standalone course. The focus of digital citizenship education is not only on technical skills, but also on values such as respect for others, ethical decision-making, and responsible communication (Ribble, 2015).

REVIEW OF RELATED LITERATURE

Choi (2016) conducted a concept analysis of digital citizenship and highlighted its importance in promoting socially responsible citizenship in the Internet age. The author identified four major categories that construct digital citizenship: ethics, media and information literacy, participation/engagement, and critical resistance, highlighting the multidimensional and complex nature of the concept. It was emphasized that the development of digital citizenship skills should not only focus on online behavior but also the

broader context of democratic citizenship education, considering the interrelated yet non-linear relationship between digital and physical spaces. Therefore, digital citizenship should be understood in connection with offline civic lives, and the development of digital citizenship skills should consider offline civic education as well.

Goswami (2016) in his study highlighted the different opportunities and challenges of the digital India program in India. The Digital India program introduced by the government of India helps in transforming the country into a digitally empowered economy. India has different languages, cultures, customs, food habits, laws, and traditions. The purpose of the Digital India program is to integrate the whole country digitally but languages are the main challenge in the implementation of the digital education programme.

Sazili and Rushli (2017) in their research paper "Influence of Internet Usage on Students' Academic Performance" found that students' academic performance was significantly impacted by their use of the Internet. They concluded that teaching students how to use the internet productively and effectively could lead to an improvement in their academic achievement.

In the book "Potentially Negative Effects of Internet Use," Quaglio and Millar (2020) provide valuable insights into the various factors that shape internet use and the potential negative effects associated with it, with a specific focus on the STOA project. The authors discussed internet addiction and its different types, the harm it can cause to cognitive development, the risks associated with information overload, and the negative impact on social relationships and communities. Moreover, the book offers recommendations for policy options aimed at reducing the potential risks and harm associated with internet use.

Suleiman and Danmuchikwali (2020) explored the opportunities, threats, and challenges associated with digital education in India. The authors emphasize the significant changes brought about by the digitalization of the educational system, particularly in response to the COVID-19 pandemic. They provide valuable perspectives on the benefits and risks of incorporating ICT and digital education into the academic system, as well as the potential for vast online open courses. The article also highlighted the profound impact of internet technologies on the way we interact and generate knowledge.

Al-Abdullatif and Gameil (2020) aimed to investigate undergraduate students' knowledge and practice of digital citizenship in higher education. The study utilized purposeful sampling and involved 204 undergraduate students. The results of the study indicated that undergraduate students have an insufficient level of knowledge about good digital citizenship. The study also revealed concerns among participants regarding security and safety, such as verifying the reliability and credibility of digital resources and reporting irresponsible behavior to appropriate authorities. The study offers several recommendations for future research, policy development, and practice to enhance undergraduate students' knowledge and practice of digital citizenship in higher education.

Ballid et al (2022) provide an overview of the scope and challenges of digital education in India. The study suggests that digital education has the potential to transform higher education in India by making it more accessible, interactive, and personalized. However, there are several challenges, including inadequate infrastructure, lack of trained personnel, and resistance to change, that need to be addressed to ensure the successful integration of digital education in higher education institutions in India.

Verma and Verma's (2022) study provides an insightful comparative analysis of the transition from traditional to digital teaching and learning in India, due to the COVID-19 pandemic. The study collects data from students and educators in both rural and urban regions to identify the digital technologies that were widely used, the practical challenges encountered, and the strengths and weaknesses of this method. The study finds that the shift to digital teaching and learning has been challenging for both students and educators, with practical challenges such as lack of access to technology, network issues, and lack of digital literacy being major concerns. However, the study also highlights the potential of digital teaching and learning to create new opportunities and enhance the quality of education.

Aditi Bhutoria (2022) in her study "Personalized Education and Artificial Intelligence in the United States, China, and India: A Systematic Review Using a Human-In-The-Loop Model" explored the potential of artificial intelligence (AI) in the field of education. The article argues that the traditional education system, which is based on a "one size fits all" approach, fails to meet individual student needs. Therefore, education systems are leaning towards a more personalized, student-centered approach that can be

facilitated by AI technologies such as Big Data, Machine Learning, and AI-enabled personalized systems. The use of AI in education also augments educational content and customizes it for individual needs while raising the flag of caution for anticipated learning difficulties. However, the article also highlights the challenges that come with the implementation of AI in education. These include data privacy issues, availability of digital resources, and affordability constraints. Therefore, the study emphasizes the importance of finding effective solutions to these challenges to promote the use of AI for personalized education.

Imran et al. (2023) examine the impact of the pandemic on teaching and learning in higher education, with a particular focus on management education and other disciplines. The review of 68 studies reveals that blended teaching, which combines the benefits of face-to-face and online teaching methods, has emerged as a promising approach for higher education in the post-COVID-19 era. The authors emphasize the importance of flexible and adaptable learning modes in higher education and the need for institutions to continue promoting and creating diverse learning modes that meet the needs of all students. The use of technology is expected to continue to be integrated into teaching and learning, with a greater focus on blended learning modes.

Based on the reviews, it can be inferred that digital citizenship is a multidimensional and complex concept that is essential for promoting socially responsible behavior in the digital age. While the digitalization of education has brought about significant changes and benefits, it has also brought with it several challenges, including the need for adequate infrastructure, trained personnel, and digital literacy. The use of technology, including artificial intelligence, has the potential to revolutionize education, but it also comes with concerns about data privacy and affordability constraints.

ORGANIZATIONS WORKING TOWARDS DIGITAL CITIZENSHIP EDUCATION IN INDIA

Digital Empowerment Foundation (DEF)

DEF has been working towards digital literacy and digital rights in India since 2002. The organization aims to democratize access to technology and empower underrepresented groups such as women, youth, persons with disabilities, and the elderly through digital literacy and up-skilling programs in various areas including agriculture, business, health, education, and entrepreneurship. They have trained more than 5 million people in digital literacy and digital citizenship and have implemented several programs to promote responsible and ethical use of technology.

Internet Governance Forum (IGF) India

IGF India is a platform for discussions and collaboration between various stakeholders to address internet-related policy and governance issues in the country. It facilitates to find solutions to the issues arising from the use and misuse of the Internet, of particular concern to everyday users. It has been working towards promoting digital citizenship and responsible use of the internet in India.

Cyber Crime Awareness Society (CCAS)

Cyber Crime Awareness Society is an IT Consulting Company managed by Ethical Hackers & IT professionals, working with Police Agencies and the Cyber Crime Cell of the Government in India. CCAS is a non-profit organization that works towards promoting cybercrime awareness and digital citizenship in India. It conducts workshops and training programs for students, teachers, and the general public on responsible use of technology and the Internet.

Microsoft's 'Digital Civics' Program

Microsoft has launched the 'Digital Civics' program in India to promote digital literacy and responsible use of technology among students. Microsoft has teamed up with the Ministry of Skill Development & Entrepreneurship (MSDE) and the Capacity Building Commission (CBC) to help improve the computer skills of around 2.5 million civil servants in India. The project is called "Capacity Building by MSDE in

Microsoft Digital Productivity Skills" and aims to equip civil servants with the necessary skills to provide better services to underprivileged communities.

The Indian Institute of Technology (IIT) Bombay offers a course on digital citizenship as part of its M.Tech program in Computer Science and Engineering. The course covers topics such as online privacy and security, digital rights and responsibilities, and ethical use of technology.

Amity University has also implemented the DCE curriculum and offers a course on cyber safety and security as part of its B.Tech program in Computer Science. The course covers topics such as online privacy, digital footprint, cyberbullying, and digital rights and responsibilities.

DCIM (Digital Citizenship and Internet Maturity) is an organization dedicated to promoting awareness, training, and education in digital citizenship for students, teachers, and parents. They have launched several campaigns, including the "Digital Discipline Mission," "digiTEEN_2K23," and "Every Child Internet Maturity," to provide education and training in digital citizenship and internet safety. These campaigns are being conducted in various schools and colleges in Bhopal to create a safer and more responsible digital community.

The current state of digital citizenship education in higher education institutions in India is in a developing stage, with a growing recognition of the need for students to be equipped with digital skills and knowledge to navigate the digital world.

CHALLENGES IN IMPLEMENTING DIGITAL CITIZENSHIP EDUCATION

There are many challenges faced in implementing digital citizenship education effectively in higher education institutions in India.

- **Limited availability of resources**: One of the major challenges faced in implementing digital citizenship education in higher education institutions in India is the limited availability of resources, such as technology, internet connectivity, and trained faculty. This can limit the opportunities for students to engage in hands-on learning experiences and can also impact the quality of digital citizenship education offered.
- **Lack of awareness**: Another challenge faced in implementing digital citizenship education in higher education institutions in India is a lack of awareness among educators and students about the importance of digital citizenship and its impact on their lives. This can lead to a lack of commitment and support for digital citizenship education initiatives.
- **Integration into the curriculum**: Integrating digital citizenship education into the curriculum can be a challenge in higher education institutions in India, especially in the absence of a clear and comprehensive framework for digital citizenship education. This can result in a fragmented and inconsistent approach to digital citizenship education, making it difficult for students to gain a comprehensive understanding of the topic.
- **Ensuring quality and relevance**: Ensuring the quality and relevance of digital citizenship education in higher education institutions in India can be challenging, as the rapidly changing digital landscape requires continuous updates and modifications to the curriculum. This can put pressure on educators to keep up with the latest developments and to provide relevant and up-to-date digital citizenship education.

SCOPE OF DIGITAL CITIZENSHIP EDUCATION

The scope of digital citizenship education in higher education in India is vast and covers various aspects of responsible and ethical use of digital technology. Digital citizenship education aims to equip students with the knowledge and skills to use technology safely, effectively, and responsibly. The scope of digital citizenship education in higher education in India includes:

1. Digital Literacy: Students are taught the basics of technology, including computer hardware, software, and internet use.

2. Online Safety: Students are taught how to protect themselves from online threats, such as cyberbullying, identity theft, and online fraud.
3. Digital Responsibility: Students are taught about responsible online behaviour, such as respecting intellectual property rights, avoiding plagiarism, and avoiding cyberbullying.
4. Digital Ethics: Students are taught about ethical considerations in the use of technology, such as privacy, freedom of speech, and digital security.
5. Digital Identity Management: Students are taught about creating and maintaining a positive online identity, including the use of social media and other online platforms.

RECOMMENDATIONS FOR THE EFFECTIVE INTEGRATION OF DIGITAL CITIZENSHIP EDUCATION (DCE) IN HIGHER EDUCATION

The scope of digital citizenship education in higher education in India is constantly evolving as technology and the digital landscape continue to change. The goal of digital citizenship education is to prepare students for life in a digital world and to help them become responsible and ethical digital citizens. By incorporating innovative practices, such as technology-enhanced learning, into their teaching, higher education institutions can provide students with opportunities to develop digital skills and knowledge. At the same time, by emphasizing digital citizenship education, higher education institutions can help students understand the ethical and responsible use of technology. Dhavala (2018) highlights the need for such a holistic approach to tackling threats related to the digital world effectively.

The present scenario of Digital Citizenship Education (DCE) in India is that it is being implemented in schools and higher education institutions voluntarily. Many organizations and institutions are taking initiatives to promote DCE and equip students and citizens with the knowledge and skills to be responsible digital citizens.

However, DCE is still in its early stages in India and there is room for improvement. To strengthen the current scenario and promote DCE in India, the following future remedies can be suggested:

- **Government support** - The government can play a key role in promoting DCE in India by making it a part of the educational curriculum and providing support to institutions and organizations working towards promoting DCE.
- **Collaboration between stakeholders** - Collaboration between government, institutions, organizations, and other stakeholders can help to promote DCE effectively and create a culture of responsible and ethical use of technology and the internet.
- **Awareness campaigns** - Awareness campaigns can be organized to educate the public about the importance of DCE and promote responsible and ethical use of technology and the internet.
- **Integration with teacher training programs** - DCE can be integrated into teacher training programs to equip educators with the knowledge and skills to impart DCE effectively.

By implementing these remedies, the scenario of DCE in India can be improved and a culture of responsible and ethical use of technology and the Internet can be created.

DISCUSSION

Technology in higher education has advantages such as enhancing learning experiences, providing access to information, offering flexibility, promoting collaboration, and personalizing learning. However, it also has disadvantages such as causing distraction, fostering dependence, being expensive, exacerbating inequality, and posing privacy and security concerns. The integration of technology and innovation into higher education in India has undoubtedly brought numerous benefits; however, with the growing reliance on digital technologies, the need for digital citizenship education in higher education has become more critical than ever. As students become increasingly dependent on digital technologies for learning, communication, and socialization, they also need to be equipped with the necessary skills and knowledge to navigate the digital world safely and responsibly. Digital citizenship education can help students develop

skills such as critical thinking, media literacy, and ethical decision-making, which are essential for their success in the digital age. The current state of digital citizenship education in higher education institutions in India is in a developing stage; therefore, higher education institutions in India should consider integrating digital citizenship education into their curricula to ensure that students are prepared to face the challenges and opportunities of the digital world.

CONCLUSION

Digital Citizenship Education (DCE) refers to the acquisition of skills, knowledge, and values that enable individuals to engage in safe, ethical, and responsible use of technology. In today's increasingly digital world, individuals must possess a strong understanding of the impact of technology on society and their own lives. In higher education institutions in India, there is a growing need to integrate DCE into the curriculum to prepare students for their roles as responsible digital citizens. This research paper examined the current state of DCE integration in higher education institutions in India and provided insight into the challenges and opportunities for its implementation. The results of the study highlighted the importance of incorporating DCE into the higher education curriculum to prepare students for responsible digital citizenship. This research provides valuable insights into the need for DCE in higher education institutions in India and serves as a foundation for future research in this area.

REFERENCES

Al-Abdullatif, A.M., & Gameil, A.A. (2020). Exploring Students' Knowledge and Practice of Digital Citizenship in Higher Education. *International Journal of Emerging Technologies in Learning (iJET)*, *15*(19), 122–142. https://doi.org/10.3991/ijet.v15i19.15611

Ballid, C., Kambale, P., Chowhan, V., & Bhatthad, R. (2022). An Overview of Digital Education in India. In *Contemporary Development Issues in South Asia* (pp. 139–149). Krishna Publication House.

Bhutoria, A. (2022). Personalized education and Artificial Intelligence in the United States, China, and India: A systematic review using a Human-In-The-Loop model. *Computer Aided Education and Artificial Intelligence*, 100068. https://doi.org/10.1016/j.caeai.2022.100068

Bishop, J.L., & Verleger, M.A. (2013). The flipped classroom: A survey of the research. In *ASEE National Conference Proceedings*. Atlanta, GA.

Blaylock, J. (2019, December 18). The top five changes that occur with AI in Education. *Analytics Insight*. Retrieved from https://www.analyticsinsight.net/the-top-5-changes-that-occur-with-ai-in-education/

Choi, M. (2016). A Concept Analysis of Digital Citizenship for Democratic Citizenship Education in the Internet Age. *Journal of Educational Technology & Society*, *19*(3), 565–607. https://doi.org/10.1080/00933104.2016.1210549

Common Sense Education. (n.d.). *Digital citizenship*. Retrieved from https://www.commonsense.org/education/digital-citizenship

Dataquest India. (n.d.). *How VR/AR is changing the Indian higher education landscape*. Retrieved from https://www.dqindia.com/vr-ar-changing-indian-higher-education-landscape/

Dhar, P., Rocks, T., Samarasinghe, R.M., Stephenson, G., & Smith, C. (2021). Augmented reality in medical education: Students' experiences and learning outcomes. *Medical Education Online*, *26*(1), 1953953. https://doi.org/10.1080/10872981.2021.1953953

Dialani, P. (2019, March 30). Use of AI and VR in the Indian Education Sector. *Analytics Insight*. Retrieved from https://www.analyticsinsight.net/use-of-ai-and-vr-in-the-indian-education-sector/.

Goswami, H. (2016, November 11). Opportunities and challenges of digital India programme. *International Education & Research Journal [IERJ]*, *2*(11). E-ISSN No: 2454-9916.

Imran, R., Fatima, A., Elbayoumi Salem, I., & Allil, K. (2023). Teaching and learning delivery modes in higher education: Looking back to move forward post-COVID-19 era. *The International Journal of Management Education*, *21*(2), 100805. https://doi.org/10.1016/j.ijme.2023.100805

Jindal, A., & Chahal, B.P.S. (2018). Challenges and opportunities for online education in India. *Pramana Research Journal*, *8*(4), 99–106.

Ministry of Education. (2020). *All India Survey on Higher Education 2019-2020*. Retrieved from https://aishe.nic.in/

Ministry of Education. (n.d.). *Higher Education in India*. Retrieved February 4, 2023, from https://www.ugc.ac.in/higher-education-in-india.html

National Educational Alliance for Technology (NEAT). (n.d.). *About NEAT*. Retrieved April 23, 2023, from https://neat.aicte-india.org/aboutNeat

National Institution for Transforming India (NITI) Aayog (2022). *Technology in education*. Retrieved from https://niti.gov.in/topic/technology-education.

Ribble, M. (2015). Digital citizenship in schools: Nine elements all students should know. *International Society for Tech in Ed*.

Shahibi, M.S., & Ku Rusli, K.N.K. (2017). The Influence of Internet Usage on Student's Academic Performance. *International Journal of Academic Research in Business and Social Sciences*, *7*(8), 353–367. doi: 10.6007/IJARBSS/v7-i8/3301

Suleiman, M.M., & Danmuchikwali, B.G. (2020). *Digital education: Opportunities, threats, and challenges*. Kano State Polytechnic.