



## **Digital Citizenship Education: Mitigating Internet and Communication Technology Threats in Adolescents**

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### **Abstract**

This paper examined the potential risks and challenges associated with adolescents' use of the internet and communication technologies, especially in light of the COVID-19 pandemic. While these technologies offer many benefits, such as facilitating remote learning, they can also have negative effects on young people. The study aims to classify and consolidate the various threats and challenges related to internet use for adolescents. In response to these challenges, the paper advocates for the need to teach digital citizenship education as a critical skill for students to navigate the online world safely and responsibly. Overall, the study aims to raise awareness of the potential risks and highlight the importance of digital citizenship education in mitigating these threats.

**Keywords:** Social media; Classification of internet risks; Digital natives; Digital citizenship; Digital citizenship Education; Internet Maturity

### **Introduction**

In the 21st century, media and technology have revolutionized the field of education, making the internet and social media the most powerful tools for teaching and learning. With the rise of online learning applications, such as BYJU'S, Coursera, Udemy, and Unacademy, education has transformed from blackboard-based teaching to screen board-based learning. The COVID-19 pandemic has further highlighted the importance of these technologies, with the internet becoming the primary means of delivering education during school closures. While the internet offers unparalleled accessibility and the ability to learn at one's own pace, it also has limitations. The internet does not distinguish between relevant and irrelevant

information, right and wrong knowledge, or harmful and beneficial content. As such, students must be equipped with 21st-century super skills, specifically digital citizenship education, to navigate the online world responsibly and safely. This paper aims to explore the importance of digital citizenship education and its potential to address the challenges associated with the use of the internet in education.

## **Literature**

The literature presents challenges associated with the use of the internet, media, and technology for individuals and social settings and digital citizenship education as a sustainable practice for the potential implication of acceptable and appropriate behavior in the digital world.

### **Literature in the context of digital citizenship education as sustainable practice**

Tangül and Emrah (2021) investigated the level of digital citizenship among teacher candidates in the last year of classroom teaching and primary school classroom teacher programs. The study found that classroom teachers had higher scores on digital citizenship sub-dimensions compared to teacher candidates, indicating a need for digital citizenship education among the latter.

Snyder (2016) explored how global collaboration and social media can contribute to students' growth as digital citizens. The study used Ribble's theory of digital citizenship and Siemens' theory of connectivism as the conceptual framework. Through research questions, the study investigated how students' digital citizenship grew as they engaged in social media and major global collaborative projects. The findings demonstrated that global collaborative projects and social media can motivate students to take action as digital citizens, overcome barriers, use social media for learning and collaboration, and adopt less ethnocentric views of the world. Overall, these studies highlight the importance of digital citizenship education in promoting responsible and ethical behavior online and the potential of global collaboration and social media to enhance digital citizenship skills.

The rapid growth and pervasive use of internet and communication technology (ICT) have led to an increasing number of social, ethical, and health concerns among individuals and societies worldwide. These concerns range from online security and safety, misuse of information to health hazards, and addiction. UNESCO (2015) has emphasized the importance of active research and practical efforts in addressing these issues, particularly in developing countries. In line with this, Clifton J. Boyle (2010) conducted a study on the effectiveness of the Digital Citizenship curriculum, based on Ribble and Bailey's (2004) guide, among urban school students in Northeast America. The study, which used a quasi-experimental design involving a treatment group exposed to the curriculum and a control group not exposed to it, found that digital citizenship education has a significant impact on students' normative behavior towards technology use. These studies highlight the importance of digital citizenship education in fostering responsible and safe use of ICT.

## **Literature in the context of challenges associated with the use of the internet and technology**

Zhu et al. (2021) conducted a comprehensive systematic review of cyberbullying among adolescents worldwide between 2015 and 2019. The review included 63 studies that investigated the prevalence of cyberbullying and its associated risk factors. Results indicated that verbal violence was the most common form of cyberbullying experienced by adolescents. The prevalence rates of cyberbullying perpetration ranged from 6.0% to 46.3%, while victimization rates ranged from 13.99% to 57.5%. Promising strategies for preventing cyberbullying were identified from the perspectives of youths, parents, and schools.

Quaglio and Millar (2020) provided a comprehensive analysis of the potential negative effects of internet use, with a particular focus on the STOA project. Their book discussed the factors that shape internet use and highlighted the different types of internet addiction and their harmful effects, including cognitive development, information overload, and social relationships. The authors also proposed policy options that can help reduce the risks and harms associated with excessive internet use. Overall, their study provides valuable insights into the potential negative consequences of internet use and ways to mitigate these effects.

Merdam (2020) points out the harmful consequences of cyberbullying that have become prevalent with the increasing use of social media. To combat this issue, it is crucial to take precautions and create awareness to reduce the negative impact on individuals' physiological, psychological, and mental well-being.

Appeal, Marker, and Gnambs (2019) conducted a meta-analysis of cross-sectional studies on the effects of social media on three debated topics: well-being, academic achievement, and narcissism. The results showed that the average associations with social media use are small, and there is no evidence to suggest that social media use has severe detrimental consequences.

Peled (2019) conducted a survey on 638 Israeli undergraduate students to investigate the impact of cyberbullying on their academic, emotional, and social development. The study found that 57% of the students had experienced cyberbullying through various types of media. The results indicated that cyberbullying had a negative influence on the academic, social, and emotional development of undergraduate students.

In 2019, a study titled "The Online Brain: Exploring the Impact of the Internet on Cognition" examined how the internet is potentially affecting attention capacities, memory processes, and social cognition. The study suggests that the internet may cause both immediate and long-term changes in these cognitive domains, which could manifest in alterations in brain function.

In their qualitative study, Scheerder et al. (2019) aimed to investigate the possible reasons behind the unequal impact of internet use on different social groups. They found that highly

educated individuals tended to take more control over negative outcomes they experienced as a result of their internet use, while less educated individuals were more likely to simply endure negative outcomes without taking corrective action.

In their collaborative research paper titled "The Impact of Internet Usage on Students' Academic Performance" (2017), Sazili and Rushli examined the relationship between internet usage and academic achievement. Their findings revealed that students' academic performance is significantly affected by their internet usage, and that proper guidance and instruction on how to use the internet can lead to improved academic outcomes. In conclusion, their study suggests that promoting responsible and beneficial internet usage among students can enhance their academic success.

Diomidous, Chardalias, and Magita (2016) conducted a study to examine the various social and psychological effects that can arise from the widespread use of the Internet. Their findings indicated that there are several potential negative impacts on individuals and society as a whole, including cyber racism, cognitive impairment, Internet addiction, online grooming, electronic gambling, cyber suicide, and more.

Zheng et al. (2016) conducted a study to identify the physical health problems associated with internet use and investigate the correlation between physical health and the frequency of internet use. The study surveyed 513 participants in China and found that there is a positive relationship between physical health and frequency of internet use. The most common physical health problems reported were cervical pain, dry eyes, decreased vision, and lower back pain, which were strongly associated with the number of hours spent on the internet and using digital devices.

## **Objectives**

- To address and classify the various risks and challenges associated with the use of media and technology.
- To assess the need for digital citizenship education as a 21st-century skill for the students to deal effectively with such risks.

## **Design**

The design of this paper involved conducting a comprehensive review of literature on the risks and challenges associated with internet and social media use, as well as the role of digital citizenship education in mitigating such risks. Through this review, key issues were identified, categorized, and analyzed in order to present a comprehensive and informative paper.

## **Social Media and the Internet**

The Internet is a global network that connects millions of computers, allowing social media to thrive all over the world. It has been defined as the communication superhighway that

connects, hooks, and transforms the entire world into a global village where different individuals can easily communicate, see, or speak to one another, as well as exchange information instantly from one point of the globe to another (Shitta, 2002). This technology has reshaped tertiary educational practice by improving academic learning (Apuke and Iyendo, 2017; Manasijevi et al., 2016; Iyendo and Halil, 2015) and will become more feasible in the future. According to Hussain (2012), the internet and its use in higher education have improved educational development and research.

The Internet is the global network that connects millions of computers creating the opportunity for social media to thrive all over the world. Today 4.66 billion people use social media, according to Digital 2021: Global Overview Report as of October 2021. The term social media refers to a web-based technology that allows the sharing of ideas, thoughts, and information through virtual networks to a large number of people. Some social media communities are Facebook, YouTube, Twitter, and Instagram. Social media is internet-based and gives users quick electronic communication of content, such as personal information, documents, videos, and photos.

### **Types of Social Media**

- Social networks: these are the sites that facilitate people to connect and share with individuals who have similar interests and backgrounds. Example: Facebook.
- Bookmarking sites: these are the sites that allow users to store and organize links or bookmarks to any number of online resources and websites. Example: Stumble Upon.
- Social news: These are the sites that permit users to post news links, discuss, and rate the content and other items to outside articles. Example: Reedit.
- Media sharing: these are the sites that allow users to store and share multimedia files, such as pictures, music, and videos. this is the most common type of social media that most adolescents use. Example: YouTube.
- Microblogging: These sites, allow users to submit short or small elements of contents, that can include links to products and service sites as well as links to other social media sites. Example: Twitter.
- Blog comments and forums: These are the sites' platforms that let users engage in conversations by posting and responding to community messages.

Nowadays social media become a vital part of a student's social life. It is now regarded as a learning platform that enhances student engagement and capabilities in many schools. These platforms offer school children the chance to connect, get in touch, access information, and explore. Social media is a powerful medium of communication that helps people to connect from far-off places.

The use of social media in education has climbed in recent years, leading to numerous opportunities and challenges. Some of the potential opportunities are collaboration and connectivity among users, an approach to subject experts, access to information from different sources, and the ability to disseminate information. The development of content

within social media, learning to concisely communicate through Twitter, etc. can also help develop technical and other valuable skills. Social media and the internet offer plenty of opportunities but those who failed to adapt and do not see the opportunities available may fall into the risk zone.

## **Types of Online Threats**

On the basis of review of related literature risk can be categorized as

### **A.Outside Internet Threats**

These types of threats are targeted by cyber predators to hunt everyone but teens are especially vulnerable. They are unauthorized entity outside the security domain that has the potential to harm individuals and information system.

**1. Physical threats due to online mistakes:** Children unwittingly post their location and personal information on social media platforms. Cybercriminals look for opportunities to gain physical access to victims. Posting personal data online provides fertile ground for a hacker to commit cybercrimes. They find their online window to reach physically to victims.

**2. Threat of online harassment, bullying, and stalking:** 2018 survey of children's online behavior found that approximately 60% of children who use social media have faced some form of cyberbullying. The bullying carried out by using mobile phone or interne. Cyberbullying includes sending or posting negative, harmful, wrongly mean content about someone else. A child harasses another child, here attackers are children and victims are children. In 2015, the Central Board of Secondary Education(CBSE), issued anti-bullying guidelines due to rising case of bullying in schools.

**3. Threats of cyber Crime:** Hacking, Phishing, Ransomware, and other malicious software are some examples of cybercrimes. Cybercriminals seek to access unlawfully, human or security vulnerabilities to steal passwords, data, or money directly. Cybercrimes are flourishing because students are living, working, and studying on the World Wide Web, but they don't know how to protect themselves.

**4. Threats of Brainwashing:** The Internet is the best programming tool for the mind. This programing tool can make us believe in something different from our traditional sanskar. Political ideology and terrorist ideology are an example of brainwashing through social media.

## **B. Threats that arise due to our carelessness**

**Risk of bad Reputation:** Children make mistakes in schools, and slowly they are forgotten but if they do mistakes in the digital world it remains forever as their digital footprint. Students' educational and professional opportunities have to pass through the filter of a good online reputation so they must be taught to maintain a good online reputation.

### **Risk of Physical and Psychological Problems**

- Physical health problem: Frequent Internet use and wrong posture lead to Headaches, blurred vision, dry eye, and light sensitivity. Cervical pain is the most common problem associated with prolonged use of computers (Zheng et al.,2016) Computer vision syndrome, carpal tunnel syndrome, and severe neck and back pain are long-term effects.
- Psychological Problems

#### Mental Problems

Payam, A.Z,(2019) study supported that there is a positive relationship between online game addiction and cognitive distortion. Violent and destructive thoughts, anxiety, depression, disturbed sleeping patterns, and Insensitive toward serious problems are associated with the overuse of the internet and social media.

#### Social Problems

Addiction to video games and challenges like blue whale games, disorient students from healthy personalities. Isolation from family and physical environment also affect their development of social life skills.

The risk of Mental and Physical Health Problems is strongly associated with teenagers. They ruin their four to five golden years of physiological development by screening social media, Netflix, etc.

**Risk of becoming a Cyber-criminal unknowingly:** According to Norton Cybercrime Report 2011,30 million people in India were victims of cybercrime and the primary reason for this is cyber illiteracy.Children are highly vulnerable to cybercrime. They need to be educated on how to be cyber smart.



**Digital Citizens:** Karen Mossberg, the author of "Digital Citizenship: The Internet, Society, and Participation," defines digital citizens as individuals who regularly and effectively use the internet to engage in society, politics, and government, and contribute to the digital society's growth and progress. These individuals are not just passive consumers but also active participants who use digital tools to collaborate, communicate, and create. They understand the benefits and risks of the digital world and take responsibility for their actions in the online space. As digital citizens, they have the skills and knowledge to navigate the digital world and make informed decisions that positively impact themselves and their communities.

**Digital Citizenship:** In the modern era, digital citizenship is a crucial skill that enables individuals to safely and effectively engage in the online world while optimizing its potential for personal and professional growth. The concept of digital citizenship emphasizes responsible online communication and collaboration, as highlighted by scholars such as Ribble, Bailey, and Ross (2004) and Shelley (2004). Ribble and Bailey (2007) further define digital citizenship as the set of behaviors that ensure the ethical, legal, safe, and responsible use of information and communication technologies. Overall, digital citizenship emphasizes critical thinking, safe practices, and responsible participation in the digital realm.

**Digital Citizenship Education:** Digital Citizenship Education refers to the educational process of equipping children with the necessary knowledge and skills to effectively engage and participate in the digital society. It involves empowering children to become competent and responsible digital citizens who can utilize digital technologies for various purposes such as learning, socializing, communicating, investigating, and playing. Through formal, informal, and non-formal learning settings, children can actively participate in communities at different levels and defend human dignity. "The competent and positive engagement with digital technologies (creating, working, sharing, socializing, investigating, playing, communicating, and learning); participating actively and responsibly (values, skills, attitudes, knowledge) in communities (local, national, global) at all levels (political, economic, social, cultural and intercultural); being involved in a double process of lifelong learning (in formal, informal and non-formal settings) and continuously defending human dignity"(Council Of Europe).

### **Need for Digital Citizenship Education**



Digital Citizenship Education is essential because it equips individuals with the necessary knowledge and skills to engage in responsible and appropriate behavior when using technology. Mike Ribble's book, "Digital Citizenship in Schools," identifies nine key elements of digital citizenship as

Digital access: Advocating for equal and full electronic participation in society.

Digital etiquette: It is the electronic standards of conduct or procedure. Rules and policies aren't enough - we need to teach everyone about appropriate online conduct.

Digital law: Users must understand electronic responsibility for actions and deeds. Are users aware of the rules, and policies that govern the use of digital technology?

Digital communication: Electronic exchange of information. With so many communication options available, students need to learn how to choose the right tools according to their audience and message.

Digital literacy: This involves the process of teaching and learning about technology and the proper use of technology. Digital literacy is about how to find, evaluate and cite digital materials.

Digital commerce: It is the electronic buying and selling of goods. As students make more purchases online, they must have knowledge and protection to buy and sell goods

Digital rights and responsibilities: It is those requirements and freedoms extended to everyone in a digital society. Students must understand their basic digital rights and freedom in the digital world. They should be ready to protect the rights of others and defend their digital rights.

Digital safety and security: Digital citizens need to know how to safeguard their information by controlling privacy settings.

Digital health and wellness: It is the physical and psychological well-being of the digital world. One must know when to unplug. Students need to make informed decisions about making a balance between online and off activities.

These components serve as a framework for educators to understand and address the various issues that arise in the digital world. Digital citizenship education teaches individuals about internet safety, privacy, and security, responsible communication, information literacy, cyberbullying prevention, and the effective use of technology. By promoting responsible and ethical behavior in the digital world, digital citizenship education helps individuals become responsible digital citizens who can navigate the digital world safely and confidently.

### **What we can do**

Digital Citizenship education is crucial in providing students with the necessary tools and resources to thrive in today's digital world. Leading organizations like UNICEF, UNESCO, ISTE, and the Council of Europe have emphasized the importance of digital citizenship education for children and youth. To support this, we can take the following steps:

- Make Digital Citizenship education an integral part of projects, research, training, and counseling programs.
- Develop it as a critical life skill in schools, as an employability skill in colleges, and as productivity and growth skills in the workplace.

To advance our understanding of cyberbullying and other cybercrimes, future research could include conducting qualitative studies to investigate the views of both children and adults on these issues.

### **Future Research Direction**

- A Qualitative study can be conducted on the views of children and adults on cyberbullying and other cybercrimes.
- A Quantitative study can be conducted to determine whether there is a difference according to demographic characteristics such as gender, age, and marital status, or to determine the relationships between cyberbullying, cybercrimes and personality traits, technological tool addiction, or culture.
- The need for Digital citizenship Education can be assessed in different age groups of students and accordingly, the program can be implemented on the students.
- A longitudinal study of the Digital citizenship program can be implemented on small kids/toddlers and the effect of education can be manipulated/checked at the adolescent age.

### **Conclusion**

The internet has revolutionized the way we communicate, learn, and work. However, with this unprecedented connectivity and access to information comes a range of challenges, especially for adolescents. The online world is not always a safe space, and young people can be particularly vulnerable to its risks.

One of the main concerns with internet usage among adolescents is the exposure to inappropriate content such as pornography, violence, or hate speech. This can have a negative impact on their mental health, attitudes, and behaviors. Moreover, the internet can be a source of addiction and distraction, leading to a decline in academic performance and social skills.

Another significant risk is cyberbullying, which can occur through social media platforms, messaging apps, or online gaming. Cyberbullying can cause emotional distress, depression, and even suicide. It can also leave a permanent digital footprint, affecting a person's reputation and future opportunities.

Additionally, the internet can be a breeding ground for criminal activities such as identity theft, hacking, and phishing scams. Adolescents may not always be aware of the dangers of sharing personal information online, making them easy targets for cybercriminals.

To mitigate these risks, it is important for individuals to practice digital citizenship, which involves using technology responsibly, ethically, and safely. Digital citizenship training can help young people to develop critical thinking skills, understand the consequences of their online actions, and respect the rights and privacy of others. It can also teach them how to recognize and report inappropriate behavior or content, as well as how to protect themselves from online threats.

In conclusion, while the internet offers incredible opportunities for learning, creativity, and communication, it also comes with risks. Adolescents, in particular, need to be aware of these risks and equipped with the skills to navigate the online world safely and responsibly. By promoting digital citizenship and providing education and support, we can create a positive and secure online environment for young people to thrive in.

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