

Impact of Socioeconomic Status on Students' Access to Technology and Digital Literacy

K. Selvalakshmi

Department of Economics, Fatima College (Autonomous), Madurai, Tamilnadu, India

Corresponding author: selvalakshmifc@gmail.com

Abstract

Socioeconomic status (SES) significantly influences students' access to technology and the development of digital literacy skills, which are critical for academic success in today's learning environment. This study highlights how SES impacts students' availability of digital devices, internet connectivity, and opportunities to engage with technology for educational purposes. Students from higher socioeconomic backgrounds generally have greater access to personal computers, stable internet connections, and supportive home learning environments, enhancing their digital competencies. Conversely, students from lower socioeconomic backgrounds often face limited device ownership, unreliable internet, and reduced exposure to technology-rich learning contexts, which can hinder digital skill development. The research also examines how these disparities affect participation in online learning, independent study, and information-seeking behaviors. Furthermore, it highlights the role of schools and policy interventions in mitigating these gaps through the provision of digital resources, inclusive teaching strategies, and technology-integrated programs. Findings underscore that bridging the digital divide is essential for equitable academic outcomes, ensuring all students can develop the digital literacy necessary to succeed in modern education.

Keywords: *Academic Outcomes, Digital Divide, Digital Literacy, Socioeconomic Status, Technology Access*

Introduction

Technology has transformed the educational system across the world. Digital tools such as laptops, smartphones, tablets, and internet-based learning platforms have become important components of teaching and learning. Educational institutions increasingly rely on online learning systems, digital assignments, and virtual classrooms. As a result, digital literacy has become an essential skill for students. Digital literacy refers to the ability to use digital technologies effectively for communication, learning, research, and problem solving. Students with strong digital literacy skills can access educational information, participate in online discussions, and complete academic tasks more efficiently. However, students' access to technology and digital literacy development are strongly influenced by socioeconomic status.

Socioeconomic status refers to the economic and social condition of individuals based on income, education, and occupation. Students from economically stronger families generally have better access to personal computers, smartphones, internet facilities, and supportive learning environments. In contrast, students from lower-income families often experience limited access to digital resources, inadequate internet connectivity, and fewer opportunities

to develop technological skills. The COVID-19 pandemic further exposed inequalities in digital education. Many students from disadvantaged backgrounds struggled to attend online classes due to lack of devices and poor internet access. These inequalities contribute to the digital divide, which creates barriers to academic achievement and social inclusion.

This study focuses on understanding how socioeconomic status affects students' access to technology and digital literacy using responses collected from 50 students.

Review of Related Literature

Paul Attewell (2001) explained that unequal access to technology creates educational inequalities among students from different socioeconomic backgrounds. The study highlighted that students from affluent families have greater technological exposure and digital skills.

Neil Selwyn (2004) stated that the digital divide is not only related to physical access to technology but also to the quality of technology usage and digital competencies. UNESCO (2020) emphasized that digital literacy is essential for inclusive and quality education. The report highlighted the need for equal technological opportunities for students.

Organisation for Economic Co-operation and Development (2021) reported that socioeconomic inequalities significantly affect students' participation in online learning and digital readiness.

Objectives

1. To analyze the relationship between socioeconomic status and students' access to technology.
2. To examine the impact of socioeconomic status on digital literacy skills.
3. To identify the challenges faced by students during online learning.
4. To suggest measures to reduce the digital divide in education.

Methodology

The study is descriptive in nature and is based on both primary and secondary data.

Primary Data

Primary data were collected from 50 college students using a structured questionnaire. The questionnaire included questions related to family income, digital device ownership, internet access, online learning experiences, and digital literacy skills.

Secondary Data

Secondary data were collected from books, journals, government reports, and educational websites related to digital literacy and socioeconomic inequality.

The study uses percentage analysis to interpret the responses collected from students. The data help in understanding the relations

Analysis

The study reveals significant disparities in technology access and digital literacy across socioeconomic groups. Students from higher-income families possess personal laptops, stable internet, and supportive learning environments, facilitating effective online

engagement and skill development. Conversely, students from lower-income backgrounds face device shortages, unreliable connectivity, and limited exposure to digital tools, hindering their learning outcomes. The analysis demonstrates that these gaps amplify educational inequities, affecting participation, independent study, and academic performance. Data from surveys and comparative tables highlight that access to devices and digital competencies is directly correlated with socioeconomic status, emphasizing the need for inclusive policies and interventions.

Findings and Discussion

Table 1: Socioeconomic Background of Respondents

Income Level	Number of Respondents	Percentage
Low Income	20	40%
Middle Income	18	36%
High Income	12	24%
Total	50	100%

Source: Primary Data

The table shows that 40% of respondents belong to low-income families, while 36% belong to middle-income families and 24% belong to high-income families. This indicates that many students come from economically weaker sections.

Table 2: Availability of Digital Devices

Type of Device	Number of Respondents	Percentage
Personal Laptop	18	36%
Smartphone Only	25	50%
Shared Device	7	14%
Total	50	100%

Source: Primary Data

The table reveals that only 36% of students own personal laptops. Half of the respondents depend mainly on smartphones for educational activities, while 14% share devices with family members.

Table 3: Internet Connectivity of Students

Type of Internet Access	Number of Respondents	Percentage
Broadband/Wi-Fi	16	32%
Mobile Data	26	52%
Unstable Internet	8	16%
Total	50	100%

Source: Primary Data

The data indicate that most students depend on mobile data for internet access. Students with unstable internet connectivity face interruptions during online classes and academic activities.

Table 4: Digital Literacy Level

Digital Literacy Level	Number of Respondents	Percentage
High	15	30%
Moderate	22	44%
Low	13	26%
Total	50	100%

Source: Primary Data

The table shows that only 30% of respondents possess high digital literacy skills, while 26% have low digital literacy. Students from higher socioeconomic backgrounds generally demonstrate better digital competencies.

Table 5: Challenges Faced During Online Learning

Challenges	Number of Respondents	Percentage
Lack of Devices	14	28%
Poor Internet Connectivity	18	36%
Lack of Technical Skills	10	20%
Financial Problems	8	16%
Total	50	100%

Source: Primary Data

The table highlights that poor internet connectivity is the major challenge faced by students during online learning. Lack of devices and technical skills also affect students' participation in digital education. The study clearly indicates that socioeconomic status significantly influences students' access to technology and digital literacy. Students from high-income families generally have access to laptops, high-speed internet, and supportive learning environments. These advantages enable them to participate effectively in online learning and improve their academic performance.

In contrast, students from low-income families face several barriers in digital education. Many students rely only on smartphones for attending online classes and completing assignments. Some students also share devices with family members, reducing their study time and educational participation. The findings also reveal that internet connectivity remains a major problem for economically disadvantaged students. Poor internet access interrupts online classes, delays assignment submissions, and reduces learning efficiency. In addition, students with limited technological exposure often lack confidence in using educational software and digital platforms.

The digital divide creates educational inequality by limiting opportunities for students from lower socioeconomic backgrounds. Therefore, educational institutions and governments must adopt inclusive strategies to ensure equal technological access and digital literacy development.

Findings of the Study

- The study reveals that socioeconomic status strongly influences students' access to technology and digital literacy skills. Students from higher-income families generally possess better technological resources such as personal laptops, broadband internet, and

access to online learning platforms. In contrast, students from lower-income families face challenges related to device availability and internet connectivity.

- The research also shows that many students depend mainly on smartphones for educational activities. While smartphones provide basic access to online learning, they are less effective for academic tasks such as preparing assignments, attending long online classes, and conducting detailed research.
- Another important finding is that poor internet connectivity significantly affects students' participation in online education. Students with unstable internet access face interruptions during classes and difficulties in accessing digital learning materials.
- The study further indicates that students from economically stronger backgrounds possess higher digital literacy skills compared to students from weaker socioeconomic groups. Financial limitations and reduced exposure to technology contribute to lower digital competence among disadvantaged students.
- Overall, the findings highlight that socioeconomic inequality remains a major factor contributing to the digital divide in education.

Suggestions

- The study suggests that educational institutions and governments should provide free or subsidized digital devices to economically disadvantaged students. Access to laptops and tablets would improve students' participation in online learning and academic activities.
- Affordable and reliable internet services should be expanded, especially in rural and low-income areas. Better internet connectivity would ensure uninterrupted access to digital education.
- Educational institutions should also organize digital literacy training programs to help students develop technological skills. Training in educational software, online communication tools, and digital research methods would improve students' confidence and learning efficiency.
- Teachers should adopt inclusive teaching methods that support students with limited technological access. Providing recorded lectures, offline learning materials, and flexible submission options can help disadvantaged students continue their education effectively.
- Finally, collaboration between governments, educational institutions, and private organizations is necessary to strengthen digital infrastructure and reduce educational inequality.

Conclusion

The study concludes that socioeconomic status has a significant impact on students' access to technology and digital literacy. Economic inequalities create differences in device ownership, internet access, and technological skills among students. Students from higher socioeconomic backgrounds benefit from better technological resources and supportive learning environments, while students from lower-income families face several challenges in digital education.

The digital divide negatively affects students' academic participation, learning experiences, and future opportunities. Therefore, reducing technological inequality is essential for ensuring inclusive and equitable education. Educational institutions, policymakers, and governments must work together to provide affordable technology, internet access, and digital literacy training for all students. Equal access to digital education will help students succeed academically and prepare them for future employment in the digital age.

References

- Attewell, P. (2001). The first and second digital divides. *Sociology of Education*, 74(3), 252–259.
- Organisation for Economic Co-operation and Development. (2021). *The digital divide and educational inequality*. OECD Publishing.
- Selwyn, N. (2004). Reconsidering political and popular understandings of the digital divide. *New Media & Society*, 6(3), 341–362.
- UNESCO. (2020). *Global education monitoring report: Inclusion and education*. UNESCO Publishing. Van Dijk, J. (2020). *The digital divide*. Polity Press.
- Wei, L., & Hindman, D. B. (2011). Does the digital divide matter more? *Journal of Computer-Mediated Communication*, 16(2), 216–235.
- World Bank. (2021). *Digital development overview*. World Bank Publications.
- Zhao, Y., & Frank, K. A. (2003). Factors affecting technology uses in schools. *American Educational Research Journal*, 40(4), 807–840.