

A Study on Impact of Digitalisation in the Education System

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Abstract:

Digitalization in Indian education process has revolutionized learning by increasing access to excellence resources through the platforms like **SWAYAM, SWAYAM PRABHA, DIKSHA**, and e-Pataskala. It has facilitated hybrid learning, interactive tools (AI, animations), and remote educational process, particularly accelerated by COVID-19. Though promoting flexibility and skill development, it also faces challenges like the digital divide and digital platform.

The Digitalization of the education process has resulted in a digital divide that has impacted access to the higher education system, the leading to inequalities among students from different social classes and geographical regions. Learners from urban and rural areas economically weaker sections have faced difficulties in accessing free online learning platforms, digital libraries, and virtual classrooms, which have restricted their educational opportunities. The COVID-19 pandemic situation further exposed these disparities, as remote learning became a necessity during this period. This research, based on an empirical study, examines the issue of the digital divide and attempts to identify ways to bridge this gap through government intervention to ensure equal access to higher education. It also analyses the impact of digitalization and blended learning in the field of education system.

Keywords: Digital Divide, Digitalization, Digital Challenges, Educational Technology, Digital Literacy, the effectiveness of online learning, digitalization of the educational process.

Introduction:

Digitalization is the flagship program of India launched by the government of India on 1st July 2015 to transform the country into a digitally empowered country (Wikipedia). Digitalization went its peak point during COVID 19, people were compelled to use digital processes in every sphere of life, whether it would be health care, government service, economic system, including the education sector as well. The outbreak of the coronavirus created numerous challenges in India, resulting in the sudden halt of all activities, including the functioning of educational institutions. In such a situation, technology emerged as a crucial support system, particularly across all sectors of education. The digitalized world is explained using numerous terminologies like information society (**Dijk 2006**).

Bill Gates: Nowadays, we don't imagine our lives without technology because it is a necessity of today's time. In the 21st century, one of the most essential technologies is the influence of digitalization.

“The use of technology is combined with bold decisions can help India leapfrog into inclusive education growth and improve the quality of health and education system.”

Every coin has two sides same as digitalization has both positive and negative impacts on the education sector. India is the seventh-largest country in terms of land area and has achieved remarkable advancement in science and engineering. It is steadily emerging as a strong economy on the global stage. The higher education system in India ranks third in the world, following the United States and China. In the coming years, India is expected to become one of the leading global centres for education (Gawande, 2020). The World Bank’s 1994 report on higher education, “The Lessons of Experience,” highlights that higher education holds lasting significance for both economic growth and social development. This clearly shows that higher education is widely acknowledged as a key factor in national development (**Kaur, 2019**).

Digital technology has significantly improved the quality of education by enabling computer-assisted learning and supporting teachers in their instructional roles. Teachers guide students in exploring diverse resources on relevant topics, encouraging innovation and collaborative learning. The digitalisation of education has led to the development of concepts such as virtual universities, smart universities, digital universities, e-universities, agile universities, and university 4.0. Both students and teachers can now access their work and communicate anytime from anywhere through Learning Management Systems (LMS) like Moodle, Blackboard, and Piazza. Additionally, tools such as Visme, Google Classroom, Zoom, and Skype facilitate interactive teaching and effective communication. Slideware is used for creating presentation slides, while Online Discussion Forums (ODF) promote interactive learning.

In India, more than 70% of teachers believe that digital tools make teaching and learning easier, and around 60% actively use them in teaching and research (Srivastav and Srivastav, 2022). Over the years, the internet has brought significant changes to the education system. Traditional classrooms with blackboards and chalk have been gradually replaced by smart boards, virtual classrooms, and e-textbooks. The 21st century is rightly called the digital era, as technology has become an essential part of everyday life, even for simple tasks. According to the World Economic Forum, the demand for technological and computational thinking skills is expected to increase by around 20% by 2025. But many students from rural areas faced difficulties such as poor internet connectivity, limited access to data, and a lack of smartphones or laptops. This situation led to the emergence of the term “digital divide.” The digital divide refers to the gap between people or communities who have access to modern information and communication technology (ICT) and those who do not. This gap significantly affects access to technology in higher education, thereby influencing students’ ability to learn, participate, and achieve academic success. As higher education institutions continue to adopt digital learning tools, these inequalities become more visible, highlighting the urgent need to ensure equal access for all students.

The article seeks to examine the impact of digitalization on education in India, particularly its effect on students in both rural and urban areas. It also attempts to explore the assumption that the digital divide has been increasing the gap between those who have access to resources and those who do not. The study is mainly based on secondary sources of information. The term “digital divide” first appeared around the mid-1990s, though its exact origin is not clearly known. It was officially recognized and used by the U.S. Department of Commerce’s National Telecommunications and Information Administration (NTIA) in 1999 (**Gunkel, 2003**).

Objective:

- To analyse the effect of digitalization in the educational sector.
- To understand the concept of digital divide.
- It analyses how digital education affects students from different socio-economic backgrounds.
- The research focuses on understanding disparities among various sections of students.
- It highlights how digitalization influences access to education across diverse groups.
- The study also provides recommendations to make blended learning more inclusive.
- It suggests effective use of ICT (Information and Communication Technology) to bridge gaps.

Methodology:

This study is based on secondary sources such as newspapers, magazines, articles, journals, and the available literature on websites. Various government reports have also been given. The paper to evaluate the impact of digitization of education process on online platform in India. Through a qualitative research design. Qualitative research is an iterative process in which improved consideration of the methodical community is realized by making new significant distinctions resulting from getting closer to the sensation studied. The qualitative research method was adopted to understand and evaluate the consequences or implications of the transition to online modes of teaching from a teacher's perspective.

Results and Discussion:**Meaning of Digital Education:**

Digital technologies have evolved from stand-alone projects to networks of tools and programs that connect people and things across the world, and help address personal and global challenges. It can enhance the quality and relevance of learning, strengthen inclusion, and improve education administration and governance. In times of crises, distance learning can mitigate the effects of education disruption and school closures. **(According to the UNESCO report)**

Digitalization refers to the process of converting information into digital or electronic forms, making it easier to access and share. For example, historical documents or monuments can be digitized through images, videos, or recordings, allowing people around the world to view and preserve them without the need to visit the actual location **(Kaur, 2019; Jiten Kumar, 2024)**.

Digitalization of education Digital Divide:

The digitalization of higher education has created many challenges across different countries. However, there is a clear difference in how it is used in developed, developing, and underdeveloped nations. Developed countries have been able to benefit from digitalization, while less privileged countries have faced difficulties and struggled with various issues. Several studies have pointed out some of these challenges, which are discussed below.

Limited access to online learning platforms:

Limited access to online learning platforms remains a major challenge in higher education. Many institutions have shifted to digital modes, but students without reliable internet or proper devices struggle to participate effectively. This issue mainly affects students from rural areas and low-income backgrounds, restricting their ability to attend classes, access materials, and submit assignments on time. Research shows that students in underprivileged communities often depend on outdated devices or unstable public internet, leading to a lower quality of learning. For example, internet access in urban India (44%) is much higher than in rural areas (17%). Only a small percentage of Scheduled Castes and

Scheduled Tribes have access to both computers and the internet, while the richest groups enjoy better digital facilities.

Studies also indicate that in developing countries like India and Pakistan, online learning often fails to deliver expected outcomes due to financial and technical limitations faced by students.

Teacher's Preparedness:

Digitalization of education has also brought major changes for teachers. They are now expected to use digital tools and ICT in their teaching, which makes proper training very important. However, a lack of resources and technical support often makes it difficult for them to provide modern and engaging learning experiences. Despite these challenges, many teachers are gradually adapting to new teaching methods with the help of technology, which allows them to access and share knowledge from a wide range of sources.

Research by Hortovyani and Ferincz (2015) highlights that the successful use of technology in classrooms largely depends on teachers' attitudes and perceptions. Some teachers are comfortable with technology and actively update their skills, while others are less willing to change, which affects the effective use of ICT in teaching.

To support teachers, the Indian government has collaborated with technology companies like Microsoft and Dell Technologies. Initiatives such as AICTE's Microsoft Learn for Educators platform aim to equip both teachers and students with future-ready skills. As pointed out by Sharma (2021), training teachers in the use of technology is essential. These efforts reflect the government's commitment to improving teachers' digital literacy and reducing the digital divide in the country.

Institutional challenges:

A review of various journal articles and research papers provides different perspectives on digital education. It shows that ICT can promote inclusive learning by allowing students to access online classes and learn from well-known scholars. However, a major challenge is the lack of proper infrastructure.

Studies highlight that many students in rural areas face poor internet connectivity and a lack of devices, which prevents them from participating in live classes and affects their learning. Even when technology is available, differences in digital literacy create difficulties. Some students are not familiar with using learning platforms, digital libraries, or communication tools, making it harder for them to keep up with others.

Digital literacy includes skills like using learning management systems, conducting online research, communicating through digital tools, and understanding cybersecurity. Therefore, educational institutions need to focus on providing proper training to improve these skills and reduce the knowledge gap.

Financial constraints on technological resources:

The high cost of devices like laptops, tablets, and reliable internet creates a major challenge for students from low-income backgrounds. Many higher education institutions also require specialized software or equipment, which increases inequality between students who can afford these resources and those who cannot.

Although universities have introduced measures such as financial aid, device loan programs, and subsidized internet, these efforts are often not enough to solve the problem completely. A more effective long-term solution would require cooperation between educational institutions, governments, and private companies to ensure continuous and equal access to digital resources.

Impact on Academic Performance and Engagement:

Students affected by the digital divide often perform poorly in academics because they struggle to access important learning resources. According to studies, they also face difficulties in participating in group work, online discussions, and research activities, which can lead to isolation and less involvement in academic life. Economic inequality creates a gap between advantaged and disadvantaged students, making it harder for those from weaker backgrounds to compete. Additionally, students who studied in their mother tongue face extra challenges due to language barriers, as most online educational content is available in English.

Psychological and Emotional Impact:

The digital divide affects not only students' academic performance but also their mental health. According to Mahmoud (2016), students who face technological limitations often struggle to keep up with others, leading to anxiety, frustration, and feelings of exclusion.

Students who are technologically skilled and have access to devices like laptops are in a better position, while others experience psychological pressure as they try to meet academic expectations. Additionally, limited social interaction, poor communication, and a lack of ICT resources negatively affect learning outcomes. Therefore, it is important to create a supportive and inclusive learning environment.

Institutional and policy interventions to be made:

To reduce the digital divide, educational institutions and policymakers need to adopt effective measures such as:

- **Provide free and subsidized internet access and digital devices:**

Governments can collaborate with companies to make digital devices and internet services more affordable for families with low incomes. At the same time, educational institutions should ensure there are enough computers available so that every student gets a chance to use internet facilities, even during their free time.

- **Offering training programs on digital literacy:**

Providing digital literacy training programs can help ensure that all students are able to use educational technologies effectively. It is generally observed that students in science streams tend to be more skilled in using digital tools compared to those studying social sciences. However, middle-class students usually do not face such difficulties because they have access to digital devices at home. Moreover, students from Generation Z, born after 1996, are naturally comfortable and familiar with technology.

- **Integrating hybrid learning models:**

Teaching approaches should combine both digital and traditional methods so that the needs of all students are met. Educational institutions should adopt blended learning to create a more inclusive and effective learning environment.

- **Training for teachers should be provided:**

Teachers should be given proper training to make online teaching easier and more effective. This will help them adapt to the use of technology in the education system. However, the continuous need to keep up with innovations can often feel overwhelming for many teachers.

Conclusion:

Digitalization of education enables students to access quality learning from their homes, including lectures from reputed universities and a wide range of study materials. According to Muthuprasad et al.

(2021), in their study on “Students’ perception and preference for online education in India during the Covid-19 pandemic,” digital education helps in improving students’ skills. However, the study also highlights that digitalization creates significant challenges in ensuring equal access to higher education for all students.

Digital education has a very positive impact on education, and at the same time, may also pose negative effects. In the present time, teachers and students should take advantage of this in the good light and eliminate the drawbacks which are pulling back many students as well as schools from achieving excellence.

The digitalization of education has created several challenges that require joint efforts from educational institutions, governments, and technology providers to ensure that students from all socioeconomic backgrounds and genders can benefit equally from digital learning. To address this, more inclusive policies should be developed, focusing on improving digital literacy and investing in better infrastructure to reduce the digital divide in higher education institutions.

The digital divide arises because access to technology and the internet—key components of digital education is often influenced by economic systems and unequal resource distribution. While developed countries faced these challenges earlier, during the rapid spread of computerization in the early 2000s, developing nations have encountered them much later. As a result, students in wealthier countries, as well as affluent students in developing nations, tend to have better access to digital education in comparison to marginalized groups in less developed regions.

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