

Impact of Digitalisation on Higher Education: The Concept of Digital Divide

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Abstract: The digitalisation of education led to digital divide that affected access to higher education, creating disparities between students belonging to different classes and different geographical locations. Students from rural areas and low-income groups faced challenges in accessing online learning platforms, digital libraries, and virtual classrooms, limiting their educational opportunities. The Covid-19 pandemic further highlighted these inequalities, as remote learning became essential. This article addresses the problem of digital divide and tries to find ways to reduce the gap, through government intervention, for ensuring equal access to higher education. It also studies the impact of introducing digitalisation and blended learning in education.

Keywords: Digital Divide, Online Education, Inequality, Equity in Education, Digital Literacy, Digital Infrastructure, Educational Technology

Introduction

The onset of Corona virus opened up a plethora of problems in India leading to sudden suspension of all activities including running of educational institutes. Technology came to rescue in educational institutions especially in Higher Education institutions (HEIs). New methods of teaching were introduced. Teachers and students had to adapt to new technologies to continue classes. The necessity to use technology for attending classes raised issues among student community. Most of the students hailing from rural areas had issues of internet connectivity, data accessibility and accessibility of smartphones and laptops. This gave rise to the usage of the term, 'Digital Divide.' Digital Divide refers to the gap between individuals or communities who have access to modern information and communication technology (ICT) and those who do not. This divide seems to greatly impact access to technologies used in higher education thus affecting the ability

of students to learn, engage, and succeed in their academic pursuits. As higher education institutions increasingly integrate digital learning resources, the disparities caused by the digital divide become more evident, necessitating urgent action to ensure equitable access.

The term digital divide originated in an unknown source in the middle of the 1990s and was first used officially by the US Department of Commerce's National Telecommunications and Information Administration (NTIA, 1999). [See Gunkel (2003)].

The article aims at understanding the effects of digitalisation of education in India; its effect on students of rural and urban areas. The study tries to find about the assumption on Digital Divide that it has been widening the gap between the haves and have nots. This article is predominantly based on secondary resources.

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Scope and Significance

The study tries to understand the impact of digitalisation of education in India. The study tries to observe the impact of digitalisation of education on different sections of students cutting across socio-economic barriers. The study also tries to offer recommendations to make blended learning and use of ICT more inclusive thus reducing the gap of Digital Divide.

Framework for Understanding the Digital Divide

The digital divide is not a singular issue but rather a complex phenomenon influenced by multiple factors, including economic status, geographic location, education level, and technological infrastructure. It can be broadly categorised into three levels:

1. **Access Divide:** Access Divide means the differences in access to hardware, software, and internet connectivity. Lower-income families often struggle to afford the necessary devices and internet connectivity for accessing educational technologies.
2. **Usage Divide:** Usage Divide is the difference in the ability to effectively use digital tools and platforms. Rural and remote areas frequently lack the infrastructure for high-speed internet, making it difficult for residents to utilise digital educational resources. Rural and remote areas frequently lack the infrastructure for high-speed internet, making it difficult for residents to utilise digital educational resources. Most of the students studying in Government educational institutions cannot afford to have high speed internet facility.
3. **Quality Divide:** Disparities in the quality of internet services, digital literacy, and available support systems. Rural and remote areas frequently lack the infrastructure for high-speed internet, making it difficult for residents to utilise digital educational resources.

Even the institutes that need to use digital equipment lack good internet facilities that makes digital education inaccessible to students in rural areas.

The combination of these divides results in unequal opportunities for students in higher education, making it essential to examine its consequences and potential solutions in depth. In terms of access, the research on digital divide can be categorised into four types of access: motivational, physical, skills, and usage (van Dijk, 2006). However, this study highlights the accessibility of digital equipment to students in higher education in India which is leading to marginalisation of the marginalised. To understand this in Marxist terminology, we can infer that education is becoming more and more capitalistic by increasing corporatisation of education.

Methodology

The study is based on review of secondary sources and newspaper articles. It has examined the impact of digitalisation of education in foreign countries in comparison with India. The study focuses on identifying the reasons behind the digital divide in rural and urban higher education institutions. It explores various perspectives on the causes of this divide and also suggests strategies to help bridge the gap.

Digitalisation of Higher Education—Digital Divide

Digitalisation of Higher Education led to several challenges in various countries. However, there is an unambiguous difference between the use of digitalisation in developed, developing and underdeveloped countries. While the developed nations were able to reap its benefits the underprivileged nations had to struggle with the problems encountered. Some of the problems highlighted by the studies conducted are as follows.

Limited Access to Online Learning Platforms

Many higher education institutions have transitioned to online learning platforms, but students without reliable internet access or appropriate digital devices struggle to participate fully. This digital gap disproportionately affects students from low-income backgrounds and rural areas, limiting their ability to access course materials, attend virtual lectures, and submit assignments on time. Studies have shown that students in underprivileged communities often rely on outdated devices or public internet access, which can be inconsistent and unreliable.

Limited access to digital resources can result in a poorer quality of education, as students are unable to participate in interactive and multimedia-rich learning experiences. As per India Development Review (2023), access to the internet through any kind of device was found to be far better in urban India at 44 percent than in rural areas at 17 percent. Scheduled Castes and Scheduled Tribes accounted for only 4 percent of students who had access to a computer and the internet. The richest 10 per cent has access to both digital appliances as well as internet facilities. Students mostly from the third world countries lack resources. Adnan and Anwar (2020) found that online learning may not produce desired results in underdeveloped countries such as Pakistan, where most students lack internet access due to technical and financial problems. The same applies to India and other third world countries.

Equity in Education: The digital divide exacerbates existing educational inequalities, as disadvantaged students fall further behind their more privileged peers. Nikore (2022) found an income-based digital divide between households. They also specifically raised the issue of gender gap in accessing mobile phones and internet. Nikore claimed that during Covid when most of the teaching learning process went online, boys

were more favoured rather than girls. Urban area (61%) is found to be more digitally literate rather than rural areas (25%). Lack of skills also hampers equity in education.

Teacher Preparedness: Digitalisation of education has affected teachers as well. Teachers need to integrate digital tools into their teaching for practicing teaching. They need training in utilising ICT for educating students. A lack of resources hampers their ability to provide a modern, engaging education. Teachers are adapting to the new ways of classroom teaching with the help of innovative methods. Technology has been supporting them in bringing in the knowledge and information from all the possible resources available.

Hortovyani and Ferincz (2015), suggested that successful integration of technology in the classroom depends on the teacher's perception about using technology with the teaching. Attitude of the teacher also plays an important role in analysing the use of ICT by teacher. There are technology savvy teachers who try to adapt themselves to changing technologies and there are teachers who are rigid and resist change.

The Indian government has also been collaborating with tech players like Microsoft and Dell Technologies. India's All India Council for Technical Education (AICTE) has partnered with Microsoft on the Microsoft Learn for Educator (MSLE) platform. The platform empowers learners and educators with future-ready skills. Sharma (2021) emphasises the importance of training the teaching faculty on use of technology in classroom. She reiterated Government's commitment to train teachers by collaborating with different technological giants in the field of education. The objective is to improve the digital literacy of the teachers and bridge the digital divide in the country.

Institutional Challenges: Higher education institutions must invest in technology infrastructure and support services to bridge the digital divide among their student populations. This can be a significant financial burden, particularly for underfunded institutions. Use of ICT in Institutions starts with the use of ICT in administration. Teaching and Learning process has shifted from classroom to online mode. Even after the end of covid, the mixed mode of teaching is being carried on. Learning has become student-centred with teacher acting as mentor. Traditional learning is displaced by computer-based learning which makes learning more feasible. Research became easier because of availability of plenty of material online. Institutes of higher learning also started contributing to the economy through innovation. The institution had to face significant challenges in terms of pecuniary inputs.

A review of different sources either papers published in journals or working papers of different prestigious institutes gives us insights into different perspectives. It is observed that the ICT is supported for a more inclusive approach whereby a student can get access to online education wherein he can have access to lectures by renowned scholars. But there is problem with the availability of infrastructure. The following points are observed in the course of study of different papers published.

1. It is observed that a significant proportion of students in rural areas experienced connectivity issues due to the lack of broadband infrastructure apart from absence of devices. This sabotaged learning process thus making rural students unable to participate in real-time.
2. Even when students have access to technology, differences in digital literacy levels create barriers. Some students may not have prior experience using educational software, research databases, or collaboration tools, making it difficult for them to keep up with coursework

compared to their digitally proficient peers. Digital literacy includes skills such as:

- Navigating online learning management systems (LMS)
- Conducting research using digital libraries
- Utilising communication tools like email, video conferencing, and discussion forums
- Understanding cybersecurity and data privacy principles

Educational institutions must recognize the importance of digital literacy and integrate training programmes to help bridge this knowledge gap.

Financial Constraints on Technological Resources

The cost of devices such as laptops, tablets, and high-speed internet can be a significant burden for financially disadvantaged students. Higher education institutions often require students to use specialised software or hardware, further widening the gap between those who can afford these resources and those who cannot.

Many universities have implemented financial aid programmes, device lending schemes, and subsidised internet packages to assist students in need. However, these measures often fall short of addressing the full scale of the problem. A long-term approach would involve collaboration between educational institutions, governments, and private companies to ensure sustained access to digital resources.

Impact on Academic Performance and Engagement

Students facing digital divide challenges often experience lower academic performance due to difficulties in accessing essential resources. Dumford et al. (2018) say that they may also struggle with engagement in collaborative projects, virtual

discussions, and research activities, leading to isolation and reduced participation in academic communities. As there is a divide in students coming from disadvantaged sections and the advantaged, separated by economic conditions, class and other criteria, it is observed that students coming from economically disadvantaged groups cannot cope with the competition thus leading to lower academic performance. The students who studied in mother tongue have been facing further disability as there is a language barrier since most of the lectures available online are in English.

Psychological and Emotional Impact

The digital divide not only affects academic performance but also contributes to mental stress (Mahmood, 2016). Students who constantly struggle to keep up with their peers due to technological limitations may experience anxiety, frustration, and a sense of exclusion. The students who are techno savvy and for whom there is availability of laptops and those who are skilled in operating computers and laptops are in better position while rest of the students faced psychological problems in their effort to meet up to the expectations. Lack of social interaction among students, poor communication, lack of ICT resources impact learning outcomes. Therefore, a supportive learning environment is needed.

Institutional and Policy Interventions to be made

To bridge the digital divide, educational institutions and policymakers must implement solutions such as:

1. **Providing free or subsidised internet access and digital devices** to students in needed. Governments may tie up with companies to provide affordable devices and internet plans for low-income families. At the institutional level, the student to computer ratio may be such that all students can have

access to internet facilities during leisure hours.

- **Offering training programmes on digital literacy** to ensure all students can effectively use educational technologies. A general observation among college students about digital literacy is that students pursuing sciences are more skilled in using digital applications rather than students pursuing courses in social sciences. However, the middle class who have access to digital devices in household have no problems because the Gen Z students who are born after 1996 are characteristically not allergic to technology.
 - **Integrating hybrid learning models** that combine digital and traditional teaching methods to accommodate all students. Blended learning has to be incorporated in educational institutes.
2. **Training to Teachers should be provided** for making teaching online easier for educators. Teachers may be trained to make them adapt to use of technology in education system. The constant need to keep updating with the new innovations makes it an overwhelming experience for the teachers.

Conclusion

Digitalisation of education helps students receive quality education at their door step enabling access to lectures from prestigious universities as well as making available material for students. Muthuprasad et al. (2021) studying about 'Students' perception and preference for online education in India during the Covid-19 pandemic' felt that digital education enhances the skills of students, but it is also reiterated that digitalisation of education imposes a significant challenge to equitable access to higher education.

Digitalisation of education brought in issues that requires a collaborative effort from educational institutions, governments, and technology providers to ensure that all students, regardless of their socioeconomic background and sex can benefit from digital learning opportunities. More inclusive policies may be formulated for improving digital literacy by investing in infrastructure development and minimise digital divide and thus reduce the digital divide in HEIs.

The digital divide is caused due to digitalisation of education which involves access to technology and internet which is controlled by capitalist structures. While the developed nations struggled through during early 2000 when computerisation spread rapidly in the West, it is experienced in the developing nations much later. Students in wealthier nations and wealthier students in third world countries seem to have better access to digital education compared to marginalised groups of the third world countries.

Looking at the whole scenario in the Marxist perspective, it can be seen as Capitalism at work because the companies producing digital technologies prefer profit rather than equal access. The whole system exacerbates the class differences by making online learning more accessible to the wealthy rather than to the underprivileged class.

Apart from bringing the changes in the form of digitalised education, there is a need to shift from profit driven nature of digital access to promotion of digital education among children.

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