

## **Bridging the Digital Divide in Education in India : Problems and Prospects**

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*'Digital divide', a multi-dimensional concept, is widely debated and researched globally, particularly during COVID-19 in context of online education for its economic, social and political consequences in the respective societies. Empirical studies have revealed that the existing gap between haves and have-nots in respect to access to ICTs and digital devices has led to exclusion, endangering social integration and hampering economic growth at global, regional and national levels. There exist multiple divides between men and women (gender), young and elderly (age grades), rich and poor (economic strata or classes), rural and urban (community background), lower and higher social strata (ethnic and caste categories), tribal and non-tribal, and most importantly between educated and non-educated ones at national level. The present paper is an attempt to explore the problem of digital divide in general and particularly with reference to online education during corona virus pandemic, to find out its causes and consequences as well as measures helpful in bridging digital divide. It has been revealed that there are*

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many reasons and negative consequences of this digital divide. Though it is not impossible, still is a very difficult job requiring sincere efforts on the part of government, non-governmental organizations and more importantly community participation and commitment to the deprived and disadvantaged sections of society. Thrust has to be laid down on the development of infrastructures; increasing literacy level and connectivity provision; cost reduction, content creation, capacity building and augmentation; creation of core technologies etc. to bridge the gap of digital divide.

[**Keywords :** Digital divide, Digital inequality, COVID-19 pandemic, Online education, Deprived and weaker sections]

Despite very rapid increase in the use of information and communication technologies (ICTs) in India, there is a substantive level of inequality in use of digital technology in India. The extent of digital inequality across the rural-urban divide, across the economic classes, across the various social groups, and across the geographic regions in the form of States and districts is clearly visible. This has become more explicit now during the corona pandemic at various levels of educational institutions among students who can afford digital devices and access ICTs (haves) and those who can't afford (haves-not). This digital divide has resulted in widening the gap between men and women (gender), young and elderly (age grades), rich and poor (economic strata or classes), rural and urban, lower and higher social strata, educated and non-educated ones, tribal and non-tribal communities, deprived and weaker sections of societies like women, Scheduled Castes, Scheduled Tribes and most importantly between those students who have easy access to devices and high speed internet facilities and those who are deprived of such facilities in India. This paper has been divided into following seven broad categories : *first*, meaning of digital divide; *secondly*, types of digital divide; *thirdly*, causes of digital divide; *fourthly*, consequences of digital divide; *fifthly*, manifestations of digital divide in education during pandemic; *sixthly*, the measures for bridging the digital divide in India; and *lastly*, conclusion.

## 1. Meaning of Digital Divide

The problem of digital divide or digital inequalities is global in nature that affects everyone from all walks of life. It has emerged as a growing concern in modern societies. This digital divide relates to disparities in access, actual use and use efficacy of digital resources. It is a multifaceted issue, but two main characteristics define this gap:

*first*, access to high-speed internet and *secondly*, access to reliable devices. Many of the individuals who struggle from the digital divide face both of them. In simple words, the digital divide or technology gap is defined as the gap that exists between those who have reliable internet access and devices and those with very limited access to both or none at all. In other words, it refers to the gap that exists between those who benefit from the Digital Age and those who don't. This is considered a problem as it increases the existing gap between gender, race and ethnicity, caste and class as well as rural and urban communities, or we may say haves and have-nots. This gap doesn't exist only in education and work places, but also between different individuals, households, business firms/enterprises and geographic areas at various socio-economic levels with regard to both the opportunities to access information and communication technologies (ICTs) and to use the Internet for a wide variety of activities in their respective fields.

According to Gunkel (2003), the origin of the term 'digital divide' remains uncertain and ambiguous.<sup>1</sup> The term digital divide dates back to mid-1990s when it replaced similar concepts such as 'information inequality', 'information gap' or 'knowledge gap', 'computer literacy' and 'media literacy'. Since then, this issue remains an important public policy debate that encompasses social, economic and political issues. Social scientists refer it to a broad range of social differences in accessing and using digital equipment and services (affecting 52% of women and 42% of men worldwide) increasing existing gap between different social strata. It is believed that this term was first used by the US Department of Commerce's National Telecommunications and Information Administration<sup>2</sup> as a deeply ambiguous term in the sharp dichotomy that separates those having access to new forms of ICTs from those who do not.

According to OECD (2001), the term "digital divide" refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities.<sup>3</sup> In other words, it is a divide between "haves" and "have-nots" so far as the use of the Internet is concerned. The digital divide reflects various differences among and within countries.

Recent COVID-19 pandemic, as stated by Beaunoyer et al. (2020)<sup>4</sup>, has highlighted digital divide in various fields, including

education, globally as many countries, individuals, households, countries and educational institutions have not been able to take advantage of the opportunities offered by digital technologies in online classes during long periods of successive lockdowns. This digital divide refers to the gap in access to, use of or impact of information and communication technology between individuals and households. In the field of education, it relates to students from various socio-economic background, including their gender and community backgrounds. Digital divide is definitely a reflection of existing socio-economic divide as well as divide between different politico-geographic regions in most of the developed and largely all the developing countries. It is worth mentioning that the digital divide has to be defined in terms both of access and of the use of ICT as well as affordability, quality and relevance as this divide in one field exacerbates divides in other fields. It has been emphasized that a multi-pronged strategy is required to handle the challenge and develop a resilient strategy in the long term in all the fields where this divide exists.

Van Dijk<sup>5</sup> has criticized the underlining assumptions that it is a simple divide which is difficult to bridge; this divide is about absolute and not relative inequalities; and this divide is a static condition. Many scholars have emphasized that the term digital divide, in fact, echoes some kind of technological determinism having its origin in the inequalities in getting physical access to digital technology. Once these inequalities are overcome and there is such technology access for all in any society, the problem of digital divide would become redundant for that particular society.

We may say that the digital divide is probably one of the first concepts reflecting on the theme of the social impact caused by Information and Communication Technologies (ICTs) on different segments of society. It is a problem that affects people from all walks of life. Hence, digital divide is labelled as a multifaceted issue. However, two prominent characteristics define the digital divide : firstly, access to high-speed internet and secondly, access to reliable devices. Many of the individuals who struggle from the digital divide globally do face both of them. These two characteristics are further related to affordability, quality and relevance. Another related issue is about capability to utilize available technology. The global digital divide is still seen as a consequence of socio-economic development and is often seen to exist between rich and poor

countries, between those in cities and in rural areas, between males and females, between the rich and the poor individuals, between literates and illiterates, between marginalized and well-off sections, between physically challenged and those without any disability.

## 2. Types of Digital Divide

The digital divide between any two entities is of various types. In fact, there are numerous types of the digital divide that influence users efforts in accessing the internet. Eszter Hargittai (2002)<sup>6</sup> as well as Dewan and Riggins (2005)<sup>7</sup> has categorized it in the following two types :

1. **First order digital divide** : This digital divide refers to the difference in access to and utilization of technologies. In other words, this type of digital divide deals with access to digital infrastructure and online tools. For instance, internet penetration rates in different countries or access rates between rich (“haves”) and poor (“haves-not”) sections of society within the same country.
2. **Second order digital divide** : This digital divide refers to the difference in skills or capabilities to use devices among those who have access to ICTs and can benefit from their effective use. In other words, this digital divide deals with the development of digital literacy and digital capabilities. Here the focus is on possible gaps in the use of the internet, online tools and digital environments. An example of second order digital divide is the gap in online capabilities of younger and older people or rural and urban students during online classes.

The digital divide is also categorized in the following two types :

1. **Gender divide** : according to this divide, women are still lagging in access to the internet as compared to men globally, especially in most of the developing countries. In certain countries (such as Africa or the Arab States), the gender gap is more pronounced.
2. **Social divide** : Internet access and usage has influenced social stratification which is evident in societies among those who are connected to the internet and those that are not. This creates social divide among people with shared interests. For, example, social media platforms like Twitter and Facebook create online

peer groups based on similar interests. This leads to exclusion of non-connected groups.

3. **Universal access divide** : This divide is related to those people who lack digital literacy skills, low education levels, and inadequate broadband infrastructure. Even those with physical disabilities are often disadvantaged when it comes to accessing the internet.
4. **Access and usage gap** : This is related to certain population groups being unable to access ICTs and lack sufficient digital skills to use ICTs on a personal or professional level.
5. **Generation gap** : This is related to inter-generational access and usage of digital skills. It has been shown evidently that aging population (between 65 and 74 years of age) has low digital skills as compared to younger generation. This gap is also related and manifested in economic as well as rural-urban divide.

### **3. Causes of Digital Divide**

It is true that the access to computers and the internet continues to grow unabated, still the digital divide dramatically also continues to persist at an alarming rate due to the following reasons :

1. The digital divide stems from the gradual spread of the latest technologies. Rich countries have enough resources to make use of these new technologies as compared to those developing countries who not only lag behind the spread of the latest technologies, but also don't have sufficient resources and skills for taking advantage of these technologies. Language, political and cultural customs are the main reasons for the inability to use them. Not only this, lack of physical infrastructure, network, software, etc. is also responsible for the digital divide in most of the developing countries.
2. Sometimes government policies are not conducive for the expansion and development of technology resulting in delays in the expansion of latest data technology creating a visible digital divide not only in developing and developed countries, but also the "haves" and "have-nots" within the same country.
3. The digital divide is also a matter of private choice as it depends on the motivation and desire to use latest internet technologies.

This results, in somewhat ambiguous digital gap. It has been shown that there is a portion of the global population that has the necessary income, education and computer literacy, but have zero interest to learn about the potential of the internet due to their apprehension that this is a luxury and also too complicated to comprehend.

4. Another important cause of widening the digital divide is low literacy levels among some sections of the society who are deprived and marginalized. It has been proved time and again that highly educated people do have much more capabilities to tap into the full potential of the internet and computers in their day-to-day lives as compared to those who have low literacy levels. Digital literacy is said to be dependent upon level of education, higher the level of education, higher is the digital literacy and vice versa.
5. Besides low literacy levels, the income gap also plays a considerable role in magnifying the digital divide. High-income earners and wealthy families do own computers and high-speed internet connection at home than low-income families whose earnings are channeled towards basic needs and computers and high-speed internet are luxury for them.
6. Geographical restrictions like rural-urban divide and areas near international borders also widen the digital divide. Urban regions are more likely to have access to 4G, 5G or fiber optic internet network as compared to rural regions, border regions or mountainous zones.

#### **4. Consequences of Digital Divide**

Digital divide has created significant distinctions globally. Some of the most important consequences of digital divide are as follows :

1. **Increase in inequalities among different groups** : Differential accessing and use of ICTs has resulted in manifold inequalities among various groups. Digital divide prevents part of the population from getting benefits of ICTs. This has been amply demonstrated during the lockdown due to COVID-19 pandemic when a number of students suffered from their online classes as they lacked the right tools and high speed

internet facilities. Similar has been the case for some adult people during work from home.

2. **Difficulty in accessing education** : the lack of access to ICTs makes it difficult for both children and adults to access education. According to a report by the International Telecommunication Union (ITU), published together with UNICEF, 63% of young people between 15 and 24 years of age do not have an internet connection at home.
3. **A barrier to accessing work** : people face greater difficulties in finding a job, not only because digital know-how is increasingly necessary but also because they are unable to check online job websites where these offers are published.
4. **Social isolation** : Social isolation, especially as a result of the pandemic, has increased among people who do not have access to the Internet. Additionally, people living in rural areas without reception are virtually cut off from communication services.
5. **Social differences** : The obstacles to connecting to the digital world make the differences between groups more evident. Digital divide reinforces existing social inequality and social differences. Today, it has been revealed that the divisions of age, gender, ethnicity, labour, education and nation or region are the most important factors in explaining digital inequality in all societies.
6. **Geographical differences** : Digital divide leads to geographical differences as these are also intensified between regions and countries, which directly affects their possibilities for growth. It is not only limited to the differences in developing and developed countries, but geographical restrictions within a country also widen the digital divide. This is the reason that the urban regions are said to be more likely to have access to fast internet than rural or mountainous zones.
7. **Dependence and vulnerability** : Digital divide and technological discrimination means that some people have less independence in performing certain tasks, which in turn makes them more vulnerable (e.g., digital crime). Vulnerable segments of the population in a society risk falling further behind in accessing socio-economic opportunities.



8. **Economic recession** : COVID-19 pandemic led to the complete restrictions on people's socio-economic activities globally to limit its spread, resulting in the slowdown of economic growth and even recession. The economic gap widened especially within developing countries which lack adequate ICT integration. Scenes of migrant labourers walking on foot to reach their native villages hundred of miles away was terrible in India. Lakhs of people lost their jobs and the government packages helped the poor families.
9. **Impact of digital divide on society** : With socio-economic divisions already present in today's societies, the digital divide has compounded the effects. It has contributed to the segregation of individuals and groups in the society based on ethnicity, age, race, and gender due to the differential access and use of ICTs. Technology has created new alignments among groups with access to the internet and those without access. Those with limited access continue to lag hindering their growth and development.

Besides the above consequences of digital divide, it is also said to lead to change in political behaviour, especially political participation, job opportunities, communication, consumer satisfaction, health information, community involvement, e-governance, and emergency information, Its consequences on cultural practices has been well documented. Even some social scientists like W. F. Ogburn<sup>8</sup> hold that the cultural lag appears when technological innovations move faster than social innovations.

## **5. Manifestations of Digital Divide in Education during Pandemic**

COVID-19 has massively disrupted people's lives and livelihoods, and has one of the most profound impacts on education. The digital divide between students and educational institutions at various levels has increased alarming. Factors like necessary technology, lack of internet access and up-to-date devices, lack of technology-based skills among teachers and students, varying teaching styles etc. contribute to digital divide in education. This divide was clearly evident during online classes at the time of pandemic when all the educational institutions were closed for successive periods of lockdowns. It is estimated that more than 276

million children have been out of school for extended periods of lockdowns since March 2020 in India.

The access and use of ICTs are closely associated with academic success at various levels and robust research activities in higher education. The inadequacy of ICT equipment has made the already weak education system in the developing countries even more ineffective. The rapid shift to e-learning prompted by the coronavirus pandemic has resurfaced long-standing issues of inequality and a digital divide in India. As a consequence, the education system in India is facing a new crisis.

According to recent UNICEF-supported surveys<sup>9</sup>, it has been revealed that nearly 40 per cent of families expressed concerns about the damages that the COVID-19 crisis had on the education of their children. Not only this, half of the parents also revealed that distance learning or online education was ineffective for many reasons like lack of resources, limited access to internet, lack of support from adult family members and difficulties to connect with teachers. It has to be underlined that online education is inimical to inclusivity and access. Not only this, a move towards online education is likely to dismantle the transformational potential of university spaces, and usher in a commodification of learning. Besides, a thrust for online education hides access disparities caused by the digital divide, but also fails to provide a space for active teacher–student and student–student socialization, which plays an important role in the process of learning. the commutative impact of all these hurdles makes the bridging of digital divide a more difficult task.

Reddy et. al. (2020) have rightly concluded in the above context that “the double whammy of low access and deep digital divide will possibly exclude a large majority of students from actively participating in and benefitting from online education.”<sup>10</sup> This is due to the fact that we don’t have the availability of strong internet connectivity and modern-day electronic gadgets, which are the fundamental requirements for the success of online teaching. It is well-known fact that India ranks very low with respect to digital infrastructure available in developed and some of the developing countries

## **6. The Measures for Bridging the Digital Divide in India**

To bridge the digital divide, it is necessary to act on all fronts and apply measures from different sectors. However, it must be emphasized that the digital divide can’t be bridged completely. When when

the whole world population would reach access to the digital media such as the internet, inequalities of digital skills, usage and outcomes or benefits will remain and even tend to grow. The only solution is to hit hard on the root causes of digital divide, which is not an easy task. The state governments as well as central government have to hammer on infrastructural barriers, literacy and skill barriers, economic barriers, content barriers, and language barriers etc.

The push towards online classes and use of digital technology in primary, secondary and higher education predates the pandemic, but it has garnered greater public attention due to pandemic-induced curbs on physical meetings and spaces. It dates back to 2011, when the BharatNet project was launched to connect 0.25 million panchayats through an optical fibre (100 MBPS) and connect India's villages. It was further reinforced by National Digital Literacy Mission and the Digital Saksharta Abhiyan in 2014; Digital India campaign and Internet Saathi Program in 2015; PM Gramin Digital Saksharta Abhiyan and DIKSHA (Digital Infrastructure for Knowledge Sharing) platform in 2017; and Gyandoot service in 2000 etc. Some of the other notable schemes/programmes include Optical Fibre Network (NOF-N) for panchayats, eVidya, Unnati project, Gyandoot, digital mobile library, Online Massive Open Online Course (MOOC), on air Shiksha Vani, DAISY by NIOS for differently-abled, e-Path Shala etc.

The New National Education Policy announced by the government in July 2020 has, inter alia, evangelized "online" tools as a game-changer in education and has encouraged their adoption. It is evident from its objective of making "India a global knowledge superpower". However, all these initiatives have proved insufficient. There is urgent need for developing infrastructure necessary for promoting digital literacy among all sections of society and also the content creation for students in regional languages. India has to adopt more realistic policy for digital literacy keeping in mind the diversity of population.

## **7. Conclusion**

The unequal access to ICTs has led to the digital divide globally. Although India has made encouraging efforts to bridge the gap by initiating a number of projects and programmes for rural and remote locations, a lot more needs to be done to bring the people into the information society. Digital divide policy has to focus both on

physical access as well as improving digital skills. There is urgent need to foster e-learning. It must be mentioned that the bridging of the digital divide is the best way to overcome socio-economic differences also. Though, the Government of India had started taking significant steps towards acquiring competence in ICTs to cope with India's digital divide, still much more serious and honest efforts are needed to achieve the goal.

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