

Meta Analysis: Students-Teachers Perception on Digital Divide

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Abstract:

Recently, the COVID pandemic struck all of us. In this pandemic, the masses faced the issue of digital divide. Therefore, the researcher tries to investigate the students-teachers perception on digital divide with the help of a systematic search of the research literature from 2015-2022 reveals a ground reality. We are all aware that the pace of life has altered as a result of information and communication technologies (ICTs). Digital learning is gradually transforming the educational system that is offline mode to online mode. Both students and teachers need to know how to effectively incorporate technology into their teaching and learning processes. But it has been figure out that students-teachers faced difficulties while integrating ICT into their education practices. A meta-analysis of the relevant literature revealed that students-teachers faced issues of digital divide such as (i) there is a clear digital divide, with prospective teachers having significantly higher levels of digital literacy and competency, (ii) Disparities in internet access for households with higher levels of poverty and in rural regions were noted, (iii) Technological difficulties, pedagogical difficulties and social issues. The analysis noted that students' lack of engagement and motivation, and teachers' absence from social and cognitive interactions. The analysis also highlighted that three factors—geographical discrepancies, the cost of technology deployment, and socioeconomic factors—all contributed to the growth of the digital divide

Keywords: Digital Divide, Students, Teachers, Perception

INTRODUCTION

Information and communication technology (ICT) plays a crucial part in life in the twenty-first century. Practically all world economies have acknowledged that ICT is improving in its ability to catalyze economic activity, in efficient governance, in empowering society, and in bringing about significant socio-economic transformations in societies as a result of the direction and pace of development in ICT (Bist, 2007). ICTs play a significant role in social and economic development (Hardy, 1980; Madden and Savage, 1998; Roller and Waverman, 2001;

Jacobsen, 2003; Waverman, Mesch and Fuss, 2005).

Digital education was a relatively minor component of the teaching and learning process prior to the pandemic, but after COVID-19 was discovered in Wuhan, China, in December 2019, its global spread accelerated the digitization of the education sector. On March 11, 2020, the WHO promptly declared the situation to be pandemic. The corona pandemic had an impact on a number of sectors, namely academia, business, corporate, etc. Education institutions were closed as a result of the

prolonged lockdown, which had negative effects on both students and teachers. Digital learning environments were challenging; both students and teachers had to deal with issues including inadequate infrastructure, mental stress, and inaccessibility of ICT tools. The effectiveness of digital education is totally relies on the performance of the students-teachers. According to recent studies, insufficient institutional amenities cause teachers to have unequal teaching opportunities. Teachers have a difficult time teaching pupils who come from

lower-income families because of the ominous digital inequities and lack of access to contemporary technology.

The capacity to use a computer and the internet differs significantly between the male and female populations in rural and urban areas, according to data from the NSSO's 75th round nationwide survey (2017–2018). Table 1 demonstrates that just 8.5% of rural Indian women have access to the internet, compared to 17.1% of their male counterparts.

Table 1: Share of persons able to operate computer and use the internet in India

Ability	Rural		Urban	
	Male	Female	Male	Female
Able to operate a Computer	12.6%	7%	37.5 %	26.9%
Able to use Internet	17.1%	8.5%	43.5%	30.1%

Source: Ministry of Statistics and Programme Implementation 2019

REVIEW OF DIGITAL DIVIDE STUDIES

The studies cited below discuss the potential and challenges in front of students-teachers regarding digital education.

According to data research by **Peceno-Capilla et al (2022)**, 46% of student’s access virtual classes using their mobile devices, and more than 50% are unsatisfied with their internet connection. It was therefore required to modify the teaching style. Following that, more than half of the students indicated that they preferred the flipped classroom model over the conventional one. Additionally, accessing the internet has no negative effects on the course's quality (60%), and the technique had positive effects on learning (72%).

This study, by **Hoorani et al. (2022)**, looked into how instructors felt about the digital divide in public schools. The study used van Dijk's (2005) access model's four levels of access-

motivational access, material access, skills access, and use access-as a theoretical framework to tackle its research topics. Data was gathered through online surveys and semi-structured interviews. The results demonstrated that while most teachers are comfortable and like using computers, most do not have a strong interest in using them for educational purposes. Additionally, the budget does not allow for the use of ICT in classrooms. The participants' levels of ICT skill varied, with some having a highly developed understanding and others having absolutely no background. The participants thought that the most fundamental abilities were lacking in the schools as well.

Wang et al study (2022) examines online teaching and learning from this perspective to reevaluate whether the previous digital divide has been effectively closed and whether a new

digital divide still exists. 359,519 valid data were evaluated using analysis of variance and multiple regressions employing data from a large-scale online study in a province as a carrier. According to the study, families and teachers generally offer helpful support for online learning, and pupils perform better. The gap between devices has essentially narrowed. Both the level of teacher IT proficiency and family involvement varied across urban and rural areas. Notably, rural students are more likely than urban students to own a cell phone. Compared to urban students, rural pupils consistently demonstrate a stronger sustained willingness to learn online. However, the ability to learn independently, learn psychology, and learn internet communication in rural areas is not as good as anticipated. The supposed value of online learning clouded the learning process for students in rural places.

The purpose of this study, conducted by **Youssef et al. in 2022**, is to investigate the digital gap in France as well as the effects of ICT use and digital literacy on students' academic achievement. 1323 students enrolled at three French universities were given face-to-face questionnaires to complete in order to collect the data. Four primary conclusions were drawn from the data analysis using principal component analysis, non-hierarchical k-means clustering, and multilevel ordered logistic regression. The results of kids who get inadequate ICT funding; and second, third, innovative and collaborative ICT use boosts student achievement. Fourth, acquiring digital skills improves students' academic success. ICT training provided by universities has minimal bearing on students' results. The findings demonstrate that the digital divide still exists, which calls into question the efficiency of French educational policy. Additionally, they contend that universities must undergo organizational reform in order to utilize ICT.

ICT is utilized to broaden teaching and learning outside of the classroom, thus teachers

must have sufficient access to ICT (**Chisango and Marongwe, 2021**)

The fundamental components of networking and information technology for fairness in basic education were distilled by **Shan et al. in 2021**. Information technology teaching skills at the teacher level, hardware facilities, teaching resources, management mechanisms at the school level, and information literacy at the student level are all included.

Muthuprasad et al (2021) results indicated that majority of the respondents (70%) are ready to opt for online classes to manage the curriculum during this pandemic. Majority of the students preferred to use smart phone for online learning. Using content analysis, we found that students prefer recorded classes with quiz at the end of each class to improve the effectiveness of learning. The students opined that flexibility and convenience of online classes makes it attractive option, whereas broadband connectivity issues in rural areas makes it a challenge for students to make use of online learning initiatives.

According to the findings of **Prasad et al. (2021)**, the majority of respondents (70%) are prepared to choose online classes to handle the curriculum during this pandemic. Most teachers and students favored using smartphone for online learning. Using content analysis, we discovered that student teachers prefer recorded lessons with a quiz at the conclusion of each lesson to enhance learning. According to the student teachers, the flexibility and convenience of online classes make them an appealing alternative, but problems with internet connectivity in remote locations make it difficult for students to use online learning efforts.

They adapt the action potentials of the digital artifacts to local contexts and use them in the best ways to facilitate their communication and enhance pupil teacher learning in challenging situations, according to **Shrestha et al (2021)** study of 147 pupil teachers, 76 teachers, and interviews with a sub-sample of 17

participants. Their move to online education is hampered by, among other things, a poor network, a lack of digital literacy, and a lack of institutional support for technology.

According to **Basu (2021)**, the analysis revealed that three factors—geographical discrepancies, the cost of technology deployment, and socioeconomic factors—all contributed to the growth of the digital divide. This study shows that the digital divide may be addressed from a social standpoint and is not just a technological divide. This institutional reality encourages marginalized groups to remain socially excluded and necessitates action from politicians to rectify equitable inequalities in educational possibilities.

Zhang (2020) noted that the new digital gap has emerged as a concern that impedes the growth of education in underdeveloped areas.

Soomro et al. (2020) looked at the digital inequalities among Pakistani faculty in relation to their personal and positional categories (at the physical, motivational, skills, and usage levels). In relation to their personal and positional categories, the study found that there were notable disparities in the faculty's access to technology at the four levels.

The research by **Ferri et al. (2020)** identified a number of technological, pedagogical, and societal issues. The technological difficulties are mostly caused by the unpredictability of Internet connections and the lack of appropriate electronic equipment among many classroom teachers. The pedagogical difficulties are mostly caused by teachers' and students' lack of digital literacy, a lack of structured content in comparison to the wealth of online resources, students' lack of engagement and motivation, and teachers' absence from social and cognitive interactions (the ability to construct meaning through sustained communication within a community of inquiry). The social issues are mostly caused by the lack of human interaction between teachers and students, as well as among the latter, the absence of classroom space at home and the lack of parental support

for parents who typically work remotely in the same locations as their children.

Nachimuthu (2020) this study aims to ascertain how student instructors felt about online learning throughout the Covid-19 period. Google Forms, a survey-type tool, was employed in this study. Student opinions about online learning via computers are dependent variables, while online learning aided instruction is an independent variable. 130 student instructors make up the sample, and an online learning attitude measure is employed to collect the data. The results of the investigation show that regular classroom behavior has little bearing on students' attitudes about online learning, and there is no discernible difference between male and female student teachers' views toward online learning in Covid-19.

According to **Yusuf (2020)**, organizations should offer more suitable e-learning platforms to broaden Internet access and foster an interactive learning style. For teachers and student teachers to develop their technological and pedagogical competencies in online learning, workshops or training are also required. When we think of emergency remote instruction, the issue of inclusivity is crucial. Depending on the country, inclusion may have different characteristics. For instance, in South Africa, decolonization processes are linked to inclusiveness.

According to **Stelitano et al (2020)** study, schools and teachers encountered difficulties with student involvement and internet access during school closures. Prior to the start of the epidemic, disparities in internet access for households with higher levels of poverty and in rural regions were noted. For the 2020–2021 academic years, teachers' ability to provide high-quality remote education will still be seriously hampered by their lack of internet access.

By bridging the digital gap between teacher educators and aspiring teachers, **Khalil et al. (2020)** undertook this research study to assess the need for and potential approaches to

bringing digital transformation to teacher education. The sample for this descriptive study, which used a quantitative methodology, was made up of aspiring teachers and teacher educators from the education departments of three Lahore universities. The study found that there is a critical need for digital transformation in teacher education and that there is a clear digital divide, with prospective teachers having significantly higher levels of digital literacy and competency. It was also discovered that digital transformation and digital divide are strongly associated, and that the implementation of solutions to address the digital divide is necessary for digital transformation to occur.

The research conducted by **Periasamy (2019)** aims to provide a response to the question of whether students have an attitude toward the development of e-learning technology and whether they will be prepared to use it in colleges and classrooms in the future. Students pursuing a degree in education understand the benefits of more modern technologies in the classroom and are at ease with e-learning. They haven't, however, completely tapped into the potential of these more recent technologies to boost their own productivity, cultivate the proper knowledge attitude to tailor learning, or influence students' accomplishment. The 200 B. Ed. candidates enrolled at the self-finance college of education in Trichy district, Tamil Nadu, have been chosen as the study's population. The investigator used the descriptive survey method and a simple random methodology to collect data from them. The 't' test for this study demonstrates that there are substantial differences between first-year and second-year B.Ed. trainees, rural residence and urban residence, and undergraduate and postgraduate student teachers. The "F" test used in this study reveals a substantial difference between the groups of B.Ed. trainees who specialize in different subjects.

With the increased usage of ICT comes a worsening of the "digital gap," which is defined as "the social inequality between persons regarding access to ICT, frequency of technology use, and capacity to use ICT" (**Ercikan, Asil, and Grover, 2018**).

There is a critical need to equip faculty members for cutting-edge teaching techniques since an increasing number of colleges are integrating technology into teaching and learning (**Ranieri, Raffaghelli, & Pezzati, 2018**)

Contrarily, limited access to technology can further compel a group of people who are already marginalized (**Rogers, 2016**).

According to **Crews et al. (2016)**, the results indicate a modest impact size for the difference in means between the frequency of Internet access among urban, suburban, and rural pupils. The difference in means between the students' opinions of the idea that access to the library can be increased through the Internet in remote areas was also determined to have a modest impact size. The findings also show that there is a medium impact size for the difference in means between the students' judgments of the item regarding how important social service Internet applications are in rural areas. The findings also demonstrate that students hold the same opinions about how the information superhighway is failing rural communities.

The most important difficulty in addressing all of these problems is ensuring digital disparity among students, teachers, and administrators. Launching programmes and regulations that give teachers and students equal access to digital technology is necessary for ICTs to empower education (**Resta & Laferrière, 2015**).

DISCUSSION AND CONCLUSION

- ✚ The majority of teacher educators don't seem to be interested in using ICT-based tools in their instruction. They don't use these tools because they are uninterested in doing so or because they don't perceive a

compelling reason to. Another factor is the generational gap.

- ✚ The majority of institutions do not have access to the internet, which results in a digital divide among teachers. One of the causes of the digital divide is the lack of internet access.
- ✚ There are no ICT resources available at institutes that train teachers. Without these resources, teachers lack the motivation to employ ICT in the teaching and learning process.
- ✚ In India, the majority of state boards do not require students to take computer classes. Additionally, teach them in their native tongue. Therefore, teachers with histories in these state boards have trouble using computers.
- ✚ 8.5% of rural Indian women have access to the internet, compared to 17.1% of their male counterparts
- ✚ 46% of student's access virtual classes using their mobile devices, and more than 50% are unsatisfied with their internet connection. It was therefore required to modify the teaching style
- ✚ Most teachers are comfortable and like using computers, most do not have a strong interest in using them for educational purposes.
- ✚ Budget does not allow for the use of ICT in classrooms
- ✚ ICT skill varied, with some having a highly developed understanding and others having absolutely no background.
- ✚ However, the ability to learn independently, learn psychology, and learn internet communication in rural areas is not as good as anticipated.
- ✚ Inadequate ICT funding.
- ✚ Teachers must have sufficient access to ICT.
- ✚ Broadband connectivity issues in rural areas make it a challenge for students to make use of online learning initiatives.
- ✚ Their move to online education is hampered by, among other things, a poor network, a

lack of digital literacy, and a lack of institutional support for technology.

- ✚ Three factors—geographical discrepancies, the cost of technology deployment, and socioeconomic factors—all contributed to the growth of the digital divide.
- ✚ The study found that there were notable disparities in the faculty's access to technology at the four levels (at the physical, motivational, skills, and usage levels)
- ✚ Technological difficulties are mostly caused by the unpredictability of Internet connections and the lack of appropriate electronic equipment among many classroom teachers.
- ✚ The pedagogical difficulties are mostly caused by teachers' and students' lack of digital literacy, a lack of structured content in comparison to the wealth of online resources, students' lack of engagement and motivation, and teachers' absence from social and cognitive interactions (the ability to construct meaning through sustained communication within a community of inquiry).
- ✚ The social issues are mostly caused by the lack of human interaction between teachers and students
- ✚ Disparities in internet access for households with higher levels of poverty and in rural regions were noted
- ✚ That there is a clear digital divide, with prospective teachers having significantly higher levels of digital literacy and competency. It was also discovered that digital transformation and digital divide are strongly associated
- ✚ limited access to technology can further compel a group of people who are already marginalized

A method to closing the digital divide: An environment with abundant ICT resources Blended learning may help close the digital divide if teachers had access to an ICT-rich setting.

Training of stakeholders - We need to give teachers thorough instruction and a strong support system. To teach teachers how to use various types of software and how to seamlessly integrate technology into the everyday curriculum, technology trainers must speak to them on their level. Technology demands a big change in teaching methods that won't occur immediately.

Utilize media and technology-enabled strategies -In spite of the advent of smart classrooms, India's classrooms continue to employ blackboards, chalk, and the lecture technique as their primary teaching tools. The digital divide cannot be closed until media and technology-based teaching strategies are implemented in the classrooms.

Promoting the growth of a highly effective digital education ecosystem

Increasing digital competencies and abilities for the digital transformation

Leadership is required to decide how the new technologies can be employed most effectively given their nation's culture, requirements, and economic situation. The digital gap is a current issue that most students-teachers must deal with. Technology-savvy instructors are incredibly hard to find. As a result, there is currently a digital divide between students and teachers, rural-urban areas, fight of accessibility and better ICT infrastructure revealed through Meta analysis technique.

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