



Use of Educational Technologies to Promote Gender Inclusivity in Classrooms

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Abstract

COVID'19 pandemic led to increased use of digital technologies in education. It also revealed the gender gaps in access and use of digital technology around the globe, suggested the UNICEF Report in 2021. The report also discussed the digital exclusivity throughout the technological world. "Globally, women are seven percent less likely than men to own a mobile phone and 15 percent less likely to use internet in low- and middle-income countries," the report said. To understand the use of technology in promoting gender inclusivity in classrooms while considering the above context in mind, the researcher would use secondary data and literature. This paper will also attempt to reveal the challenges and gaps that appear consistently while discussing digital learning. It will also try to address some of the issues regarding the same. This paper will specifically focus on how using digital technology could be used to promote gender inclusivity in classrooms. It will also try to understand the policies and its implications that could be helpful in strengthening digital infrastructure within the Indian context.

Keywords: Digital Technology, Inclusive Education, Digital Inclusion, Classroom Learning, Gender Digital Divide, Educational Technology.



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1. INTRODUCTION

The UNICEF report, 2021 considered pandemic as an opportunity to embrace digital learning. The pandemic revealed that learning can happen anywhere and anytime. However, the report also revealed some shocking statistics. The report said that women were less likely to possess advanced digital skills than men. It also revealed that female workers constitute only 26 percent of workforce in Data and Artificial Intelligence roles, 15 percent in engineering roles and 12 percent of workforce in Cloud Computing roles. Thus, the

report suggested that girls need to be digitally literate. Further, the report also argued that digital learning could become an excellent opportunity to bridge the digital gender divide and provide quality education to every girl. To resolve this issue, UNICEF "promotes gender-responsive digital teaching and learning by investing on gender-responsive digital pedagogy, removing gender bias and stereotypes from curricula, digital books and learning materials and STEM education and digital skills development for girls," said the report. Online experiences and digital learning

opportunities are important for children's and young people's development. It would help them to access formal and informal learning, information, support their health and well-being, engage with creative and cultural practices, find employment, career information, and others (UNICEF EAPRO, n.d.). UNICEF East Asia and Pacific argued that digital products and services were usually ignorant of what a young girl needs. Therefore, their products and services were usually built for men. Further, they also elaborated how girls were left out of co-creation, design and product testing. Therefore, female users were unable to access these digital products and services. Thus, they ended up engaging less with digital solutions. That was the primary reason for the increased gender digital divide. Therefore, this paper would attempt to bridge the digital divide and address how digital learning could be seamlessly used in classrooms and promote higher inclusivity.

2. REVIEW OF LITERATURE

According to Syed (2022), an inclusive classroom was a place where every student was treated fairly and was given equal opportunity. So, successful inclusive education was accepting and understanding student's differences and their physical, social, academic, cognitive and emotional diversities (Syed, 2022). Further, she argued that due to digital learning opportunities, students were able to find good mentors online. In India, girls from remote areas are still not sent outside to pursue higher studies. So, digital learning helps these students to access open-source educational courses from universities like Yale, Harvard and others at affordable costs (Syed, 2022). However, I would argue that not many girls from rural areas are aware of such educational courses. The information about such courses should be broadcasted in TV or via other channels. Syed (2022) asserted technology made classroom environment more interesting with the use of audio-visual aids, modern software and apps. It helped children overcome challenges in a streamlined pattern without discrimination. However, it would be essential to understand the accessibility of such technologies with respect to gender dynamics as UNICEF report stated. In this paper, I have focused only on the gender-based discrimination existing between heteronormative

structures. However, the Stanford University's Gender Data Enablement Project stated:

“Creating an affirming classroom for trans and non-binary students allows them to learn, grow, explore and collaborate. Trans and non-binary students have shared that repeated misgendering and lack of inclusivity places an additional mental and emotional burden on them. Gender inclusivity and pronoun practice are critical to creating a thriving academic community where all students are included.”

Hence, the teacher training should also focus on these points while deciding the curriculum for the same. It would be equally pertinent to understand that gender inclusivity is not gender neutrality as stated by Anil & Mainkar (2022).

Syed (2022) argued that learners were actively participating in the classrooms when technologies were deployed. To a certain extent, technology also accommodated different learning styles, increased collaborative activities, increased connection with students and helped in preparing them for a better future, argued Syed (2022). However, Jha and Arora (2020) also raised a significant point by highlighting that e-learning posed an adaptability risk for young brains. Several studies revealed that “multi-method screen exposure led to structural changes including, reduced volume of cortex with loss of integrity with pertaining to white matter region and decreased grey matter in prefrontal regions,” asserted Jha and Arora (2020). These alterations impeded processing speed, verbal intelligence, attentional competence and sustained attention respectively (Jha & Arora, 2020). They also argued that locating, searching, reading content online reduced the “functional connectivity of regions around temporal gyrus, responsible for long-term memory formation and retrieval of learned material” (Jha & Arora, 2020). They also revealed that overuse of visual modality and exposure to computer screen for long hours could affect visual system adversely (Jha & Arora, 2020). The visual stimuli presented were usually complex and multi-method based, which resulted in digital multitasking, leading to impaired recall. Jha & Arora (2020) commented that this occurred due to overload upon working memory, which could become an obstacle to register, process, and remember information with

accuracy. Besides this, absence of physical classrooms impaired 'social cognitive abilities like empathy, teaming, and peer relationships among children' (Jha & Arora, 2020). Thus, educators could provide individualized goals, scope for individual discussions and provide visual reminders to combat virtual distractions. They also argued that teachers should be sensitized 'for dealing with the heterogeneity of executive functioning at the grade level by custom designing the contents to be delivered' (Jha & Arora, 2020). Further, they recommended that daily screen time and access to devices by children should be carefully regulated and supported by all stakeholders (Jha & Arora, 2020).

According to Heemskerk et.al (2009), the use of a particular educational technologies in class might affect both girls and boys differently. Therefore, these technologies may be less inclusive to either boys or girls, which in turn might result in different learning experiences and different learning results (Heemskerk et.al, 2009). They also argued that most teachers would agree that these technologies should not discourage specific groups of students unintentionally. As a result, they ought to provide students with the best opportunities to relate to the material and the manner in which it is presented, and when using an educational tool, every student ought to experience both comfort and challenge. As a result, both boys and girls should find the instructional tools' content and interface appealing. Furthermore, the program's design and the learning activities it supports should take into account the different learning styles and skill levels of the student body (Heemskerk et.al, 2009). The study concluded that "girls who worked with the more inclusive tools reported that they learned more and showed more enthusiasm about what they learned compared to girls who worked with the less inclusive tools and to boys. In general, girls seemed to value more inclusive tools because of the feedback and support of self-esteem these tools provide" (Heemskerk et.al, 2009). In this study, they considered the tool more inclusive when they provided more ways for students to identify with the subject matter and different ways of working and learning (Heemskerk et.al, 2009).

3. PROMINENT SCHEMES LAUNCHED BY THE GOVERNMENT OF INDIA

Government launched a comprehensive programme named **PM E-Vidya** in 2020 to unify digital and online learning with educational programmes for better reach and accessibility to e-learning. The scheme targeted around 25 crore school students across India (TOI, 2022).

Another app "**DIKSHA**" was launched in 2017 for grades 1 to 12. This app could be operated through web portal or mobile app (TOI, 2022).

SWAYAM Prabha TV included 32 channels that focused on educational programmes with the objective of 'one class, one channel'. For anybody, anywhere, at any time, to use asynchronously, the curriculum and topics were arranged similarly as DIKSHA. The government has tied up with Tata Sky and Airtel to telecast these programmes (TOI, 2022).

Vidyadaan was launched in 2020 to seek donations and contributions for digital education resources for the schools from educational institutions, individuals and corporates (TOI, 2022).

E-Pathshala provides e-textbooks with 3,500+curriculum content in Hindi, Urdu, English and Sanskrit that can be accessed via web portal or mobile app. It can be used by both teachers and students (TOI, 2022).

In 2017, the government launched the **Pradhan Mantri Gramin Digital Saksharta Abhiyan** to promote digital literacy in rural settings. The scheme focused on educating one person from each rural household to become digitally literate. Like **Sarva Shiksha Abhiyan** and **Beti Bachao, Beti Padhao**, the scheme promoted women's education and enrollment of girl children in schools. It is pertinent to note that the scheme caters to "non-smartphone users, Antyodaya households, college drop-outs, and Participants of the adult literacy mission, digitally illiterate school students from class 9th to 12th, provided facility of Computer/ICT Training is not available in their schools" (myScheme, n.d.). Further, the scheme would allow citizens to learn basics of operating computer, send/receive emails, browse internet, access government services, search for information, make digital payments. Thus, the scheme would try to address the digital divide, specifically targeting rural women, scheduled castes, scheduled tribes, differently-abled persons

and minorities ([myScheme, n.d.](#)). However, the impact of the programme is unknown.

4. ANALYSIS AND DISCUSSIONS

Keeping the above literature in mind, I have conducted secondary data analysis. However, the scope of the paper remains limited. I have simply tried to understand the how ICT tools or educational technologies could bridge the gender digital divide and create an inclusive classroom. After reviewing the literature, I would suggest that the ICT tools or educational tools should be used as per the learning requirements of the learners as Heemskerk and others have pointed out that girls and boys learn differently even if the same ICT tools are used while girls learn more when inclusive tools are used. To address the question of digital divide, it is imperative to understand the nature of handsets, devices women are using. UNICEF EAPRO's Gender and Innovation team developed a toolkit to address the gender digital divide. As per the guide prepared by the team, girls and young women were using basic handsets and older operating systems when compared to their male counterparts. The smartphone used by girls were mostly low-end with limited and slower functionality. Thus, the guide suggested that the new digital products must consider the range of handsets and older operating systems that girls use. Therefore, the apps should be light weight so that they use less space and could run on low-end devices. They should accommodate lower screen resolutions and old software (Android 5 or above). The developers and innovators should consider using app designs and interfaces that work on all screen sizes and did not crash on older operating systems ([UNICEF EAPRO, 2020](#)).

The guide also identified that complex features of smartphones and unclear instructions could discourage female users from engaging with digital solutions. Therefore, the guide suggested that the developers should create user simple user journeys and use clear instructions so that they could follow the actions that they need to complete. For instance, in India, Jio launched the Jio Phone, a low-end smartphone, catering to a wide range of users. It was affordable 4G-enabled handset and the team considered the needs of female users with lower levels of digital literacy and had not used internet previously. Further, the JioPhone had a simple interface and user experience. The smartphone also had a text-to-

speech feature for illiterate and semi-literate users ([UNICEF EAPRO, 2020](#)).

The UNICEF toolkit also claimed that in some education systems, girls and women were having lower levels of writing and reading skills than their male counterparts. Therefore, audio and visuals could support and retain female users. Therefore, text-to-speech features could enable female users to hear written content read aloud. Further, the guide also recommended creating in-app tutorials that could be visualized with images and video links. The apps supporting Interactive Voice Response (IVR) could be used more accessible by women with less digital skills as IVR runs on any phone. Thus, it could be used by users who could not access smartphones or the Internet ([UNICEF EAPRO, 2020](#)).

The toolkit also distinctly stated that many digital products or services were not safeguarding their personal information or data. As young women and girls were possessing lower levels of digital literacy and knowledge about risks, they were unable to understand issues of consent to subscriptions and sharing of personal data. Thus, women and girls encountered far greater risk than males as their personal privacy was closely monitored by their guardians, especially if they share their devices ([UNICEF EAPRO, 2020](#)).

As female users' privacy was often monitored so they did not frequently used online services or products and had limited access to internet. Often, girls living in rural areas had limited network connectivity and have low-end devices. They were more price-sensitive about data costs ([UNICEF EAPRO, 2020](#)). The guide also recommended designing multiple user logins, by which different users could use that one app on one device but with unique accounts and passwords as female users share or borrow devices from family members or friends more frequently than boys. Internet usage by boys and girls were quite different, suggested the UNICEF EAPRO in the guide. It reported that only a few young women and girls were not having email accounts so they could not access Google Play store, which required an account and email address to download apps. Thus, it suggested that developers and others should make products available in multiple locations, not only the Google Play Store.

The initiatives taken by the Indian government to promote digital education are quite

praiseworthy. However, it becomes equally important to seek an understanding of the impact these programmes are having on students. The teacher training must focus on also understanding the reach of such policies and asking students to seek support when required. It is quite evident that most of the policies are mandated on paper but when it comes to ground reality, we are far behind. Therefore, the impact needs to be analyzed on six-monthly basis so that corrective measures could be affirmed as soon as possible.

It is equally important for the teachers to understand neuro-psychological impact caused by the educational technologies and regulate screen time when using such technologies inside classrooms (Jha & Arora, 2020). It will be better that a common educational technology is deployed as per the preference of the student as suggested by Heemskerk and others (2009).

5. CONCLUSION

Educational technologies are assistive tools and they should use judiciously by both teachers and students. They could serve as an attractive tool in classroom for promoting inclusivity. However, the act of inclusivity is better achieved when a teacher is consciously making an effort to transform the worldview of the student. For that, they need to have a critical eye towards tech-pedagogy and use it effectively for creating gender inclusive classrooms. It is pertinent to understand learner's interests and use tools accordingly otherwise learners might feel that their voices do not matter. It is a teacher's responsibility to encourage learners to embrace an empathetic approach toward their peers and collaborate with them. Thus, educational technologies could help them to build a more empathetic classroom. For that, a teacher needs follow the doctrines of empathy and compassion to understand what his or her students prefer.

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