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Resource Distribution and Access: How Digital Initiatives can overcome Educational Inequalities

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Abstract
Education has been recognized as an important component of human development, making a positive impact on people's lives by increasing their skills, knowledge, abilities etc. Even in the development policy of a nation, education plays an immense role. In countries with demographic & geographic disparity like India the equal distribution and access to educational resources is challenging. Unequal resource availability and access among the learning community is not a positive sign of building a fairer and inclusive society. Strengthening the digital education and availability of digital platforms has now introduced new opportunities to bridge the gap of educational inequality wrt. Resource allocation, access etc. Digital education has the potential for inclusivity in education by making it possible to provide access to large members of learner's community with fewer resources. Various initiatives by Government of India like DIKSHA, epathshala, OLabs, e-PG Pathshala, MOOCs, SWAYAM, SWAYAM PRABHA, e-Vidhya etc. are the possibilities to ensure equal distribution of educational resources and educational opportunities to the learners. The present paper reflects various digital platforms and initiatives that can be the possibilities for inclusivity in education. Further, the authors of the present research paper tries to recommend some suggestive educational implications regarding professional competencies of teachers, teacher educators and administrators within the educational institution.

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Introduction

Education is an important component of national development. It accelerates the development of any nation by providing quality information, knowledge, skills etc. The welfare of the future generations fully depends on the accessibility of the quality education to its citizens. Education is thought to be vital for preparing today's youth to lead the next generation and offers a framework for integrating the apparent conflicts between social, economic, and environmental growth into a coherent idea and hence achieving the targets of SDGs. Sustainable Development Goals (SDGs) are the set of globally applicable objectives for advancing the economy, society, and environment. When it comes to education, major objective of SDG 4 is to promote lifelong learning opportunities and provide inclusive and equitable quality education. Also, in order to promote access to inclusive and equitable education and to deliver high-quality education that meets both student needs and labor market demands, SDG4 encourages the use of ICT. This guarantees that people have possibilities to learn new things in their lives. Technology, however, serves a purpose and is not an end in and of itself. In turn the future generation of the learners can become more knowledgeable and skilled if the resources have been shared equally among the learners.

Infrastructure and resources for education are unequally dispersed between rural and urban areas in emerging nations like India, where there is a noticeable gap in educational achievement between the rural and urban population, between men and women, and between socioeconomic classes and religions. Due to the lack of schools, their limited accessibility, and the low quality of their education, students in rural areas have to travel long distances.The concentration of secondary and higher education institutions in urban regions restricts the participation of rural people in education, which is another key cause for concern regarding educational disparities among learners (Agrawal, 2014) [1]. In the state of Jammu and Kashmir, the multiple regional disparities and geographical barriers in the smooth and equitable distribution of the resources of education, leads to the gap generation among the learners. Such inequalities because of the unequal distribution and access among the learners devoid them of quality education, skills etc.

Aforementioned concerns can be mitigated by the usage of ICT. By equipping teachers with multimedia teaching materials and involving students in learning techniques that make use of digital resources like smartboards, LCD panels, films, etc. to teach them various ideas, education can be digitalized in rural areas. Interactive digital media will also assist in tackling the teacher shortage in these institutions by enabling one teacher to remotely deliver information across several sites. Digital Education ensures a consistent user experience by providing access to education through several media, including mobile apps, websites, TV channels, radio, and podcasts. The emphasis here is laid on the usage of technological applications in order to offer "anytime, anywhere" access and enhance penetration. Therefore, in addition of considering pedagogical methods, education must also take into account a set of principles based on respect for people's basic right and inclusivity to education. The *New Education Policy 2020 (NEP)* too acknowledges the use of technology in assisting instructors, removing language barriers between teachers and students, building digital libraries, and popularizing language instruction, as well as improving access to education. Access to the quality educational resources via the digital initiatives helps in the intergenerational transmission of the knowledge, information, traditional knowledge, cultural assets etc. The future of education and learning in India can apparently be seen in Digital education.

Digital education

Any sort of learning that is supported by technology or involves instructional strategies that effectively utilize technology is referred to as digital learning. It includes the use of a variety of techniques, such as blended learning and online education (Wikipedia, 2018).

Traditional classroom approach doesn't offer as such quick learning environment, evaluations, or more engagement. On contrary, technology and online learning resources close this gap. Traditional learning approaches just cannot compete with some of the efficiencies that these technologies offer (Haleem *et al*, 2022) [3]. Digital education is a technique of learning which involves use of technology and digital devices. This is a new technical field that will assist any student in learning from any location. All learning domains and disciplines of study are affected by digital learning. It provides opportunity for everyone to win. Digital education has quickly increased enrollments and, on the other side, students see it as a flexible, alternative choice that make them capable of studying at their own pace and at a time that is convenient for them (Gonda and Gupta, 2017). A digital education is crucial for kids because we need to be able to use technology to function in the world we live in. Technology is being used by teachers in India to support their students' learning, connection, and growth in novel ways. The use of numerous programmes, such as online learning software, virtual tutoring, and video conferencing technologies, has increased. To bring interaction between students and instructors as near to a real, in-class experience as feasible, teachers are using virtual classrooms. Digital technologies aid in the development of skills like problem-solving, thinking abilities, structure building, and process comprehension that will be necessary for students. Additionally, they are getting ready for a more uncertain and dynamic future where technology will be indispensable. The learned attributes and skills of students will be crucial to their success in the workplace. Digital learning tools and educational materials enhance the classroom environment and add interest to the teaching-learning process.

Role of Digital Education in improving Access and Inclusivity

Digital learning presents opportunity to change the way we teach and to tackle many of the inclusion-related issues that students frequently encounter. Though there has been a significant acceptance of digital media in education amongst learners across the Indian subcontinent, access to the finest content has not been inclusive. For the majority of middle-class families, digital learning platforms are too expensive and out of their price range. Private and public school vary greatly in terms of access to digital resources and instructional tools. The gap between students in urban and rural areas is also widened by the dearth of quality education. To bridge these disparities, an inclusive education eco-system is urgently needed. Learning to include all these sections of people into our instruction is a great concept to uphold our commitments of making education more equitable. Inclusivity in education "enables learners to be educated in a diversity of spaces at all times, reducing barriers and bias regarding their learning potential." The main barriers in the pathway of digital equity and inclusivity are related to the three main components of access that are- adoption, accessibility, and affordability.

Availability: here refers to the level and sufficiency of coverage of reliable, high speed wired or wireless internet services. A typical understanding of "access" focuses on whether or not students and their families/caregivers can connect to dependable, high-speed broadband through a device and the required physical infrastructure from home and in their communities.

Affordability: Ability to pay for the cost of high-speed, dependable internet connection and digital tools for learning are both considered to be within the realm of affordability.

Adoption: It describes the procedure through which a person has regular access to broadband at the required speed, quality, and capacity, along with the digital literacy needed to participate online, on a personal device, and on a safe and practical network.

To achieve digital inclusivity and remove the systemic, structural, and human-level barriers to equitable access, it is crucial to address all these three aspects of access through a series of interconnected strategies involving the training of

all concerned. Resource distribution and access to the quality resources could only bring digital inclusion among the learners community.

Digital inclusion: The efforts required to guarantee that all learners have access to and make use of relatively affordable information and communication technology, such as

- Internet-enabled devices that suit user needs
- Dependable fixed and wireless broadband internet connectivity, and
- Applications and online materials intended to promote cooperation, involvement, and self-reliance.

It also includes having access to instruction in digital literacy, receiving technical support, and gaining a fundamental understanding of the cybersecurity and privacy concerns.
With the advancement of the technology and its application in the field of education like distance education, digital education, lifelong learning etc. becomes a hope for the learners to access quality education and learning resources as well. In order to harness the potential of ICT in addressing educational inequalities and bringing inclusivity, firstly we need to revamp our approach to overcome digital divide in terms of its access and resource reach. ICT in education benefits all sorts of learners by removing some of the access hurdles they face. The learning environment is no longer restricted to a traditional classroom. ICT has helped a lot in bringing educational delivery within everyone's grasp. Education may become more inclusive by using digital technologies to engage more students with fewer resources. In light of staff shortages, online seminars and courses help educational institutions to maximize the use of their personnel resources. The ability to attend classes remotely also helps students manage their studies and employment.
All study materials, including video courses that have already been filmed, can be accessed by to students online. Additionally, they have the choice to take programmes virtually rather than physically attending a facility, which adds convenience and flexibility.
For students who, for instance, struggle with sustained concentration or have health issues that cause weariness, digital learning helps them to learn at their own speed and convenience. Forum discussions can facilitate flexible participation with teachers and other students.

Digital Education initiatives in India

In order to ensure that every student has ongoing access to education, a multi-prolonged approach has been adopted. Government of India has taken many digital initiatives and developed many applications to provide learning materials and access to the learners where distribution of the resources in the form of books etc. are still lacking due to barriers like geographical disparity etc. Moreover, to ensure that digital content reaches all areas of the country, recently developed digital platforms are also being adjusted to make it available in regional languages. It is worth noting that aside from the efforts of the Indian Central government, each state has various digital initiatives regarding education that are tailored to their needs.

PM eVIDYA

In May 2020, PM-eVIDYA, a broad project to promote and improve digital education in India and provide access to e-learning for Indian students and instructors, was launched as a component of Atma Nirbhar Bharat Abhiyan. The programme expected to help 25 crore school students and intends to bring together all online and digital education-related activities. The initiative includes-

Diksha (One country, one digital platform): Digital Infrastructure for Knowledge Sharing and Access (DIKSHA) is the nation's digital infrastructure for delivering high-quality e-content for classroom instruction. Along with offering radio/podcasts, QR-coded digital textbooks, and original digital content to students in grades one through twelve, this will also include producing material specifically for blind or deaf students.

Swayamprabha: Swayamprabha (One Class, One channel) is an earmarked TV channel for class 1 to 12. The initiative also includes the extensive use of radio, community radio, and CBSE Podcast-Shiksha Vani. Using the GSAT-15 satellite, (DTH) television channels are broadcast continuously to all instructors, students, and people of the country who are engaged in lifelong learning. The students can choose when they want to learn new material each day for at least four hours, which will then be repeated five more times during the day. The uplinking of the channels begins at BISAG in Gandhinagar. The ten UG/PG level DTH channels of CEC/UGC cover curriculum-based course materials at the post-graduate and undergraduate levels in a variety of subject areas, including the arts, sciences, commerce, performing arts, social sciences and humanities, engineering, technology, law, medicine, agriculture, etc.
Other Indian OER initiatives include NROER (National Repository of Open Educational Resources), A-VIEW (Amrita Virtual Interactive E-learning World), e-gyankosh, Flexilearn, NCERT, NIOS-OER, NPTEL, OER4S (Homi Bhabha Centre for Sc Ed.), OSCAR (IIT Bombay, Mumbai under Ekalavya Project), Sakshat, e-pathshala, Spoken Tutorial, Virtual labs and NDL (National Digital Library) of India. The Central Board of Secondary Education (CBSE) podcast, sign language resources on the National Institute of Open Schooling (NIOS) website/YouTube, the Digitally Accessible Information System (DAISY) for students who are blind or deaf to access specialized e-content, and Free Open-Source Software for Education are additional examples of government-sponsored digital initiatives (FOSSEE).

O-Labs

For individuals without access to physical labs, the government launched O-Labs in November 2014 to provide students with lab learning experiences online. To improve the learning experience of undergraduate and graduate students (pursuing science and engineering courses), the Government of India launched a pilot virtual lab in 2009 and a full virtual lab in 2010. A Learning Management System, as well as different study aids like video lectures, online resources, self-evaluation, and animated demonstrations, are available to students in the virtual labs.

e-Pathshala: The National Council of Educational Research and Training (NCERT) and the Ministry of Human Resource Development (MHRD) of the Government of India have developed a joint initiative called e Pathshala for showcasing and disseminating all educational e-resources, including textbooks, audio, video, periodicals, policy documents, and a variety of other print and non-print materials. The platform

solves the combined difficulty of crossing the digital divide (geographical, generational, and economic) and connecting to broad clientele groups form different socio-cultural and linguistic backgrounds, offering electronic information of equivalent quality in a variety of languages, and ensuring that it is always free to access. On this platform, you may also find electronic books from other states in addition to NCERT textbooks. Books are currently offered in Hindi, English, Urdu, Mizo, and Kannad. Parents, instructors, teachers, and students, all can access e-books via a variety of technological platforms, such as mobile phones from the web via laptops and desktops (as ipbooks), and on tablets (as epub).
Users of e Pathshala can download and carry as many books as their device will allow. These books have features that let readers read online, choose, zoom, bookmark, highlight, navigate, look up information, read in day or night mode, and take digital notes.

E-PG Pathshala: A single platform called e-PG Pathshala houses high-quality, curriculum-based, interactive content in a variety of disciplines across all disciplines in the humanities, fine arts, natural sciences, mathematics, linguistics, and languages are being developed. The content and the quality is the core element of the educational system. MHRD, under its National Mission on Education through ICT (NMEICT), has given the responsibility of fulfilling the curriculum and course requirements of the post-graduate students. A student who may not be studying at reputed institutions like IIT, NIT, IIM, AIMS, IISC etc. but wants to gain knowledge from learned faculties or students belonging to such institutes. For them the ease has arrived at just a click away by visiting e-learning platforms or by subscribing on channel partners. One can privilege themselves of learning and performing live discussions with an expert team of faculties (Bhushan, 2018) [2]. It is a boon to all postgraduate students, irrespective of financial backgrounds. The top class of subject specialists is available to assist the student to learn. These educators are from different colleges and universities. They are responsible for creating interactive e-content sessions and courseware between pupils and a website. The e-PG Pathshala digital library portal makes sure to uphold the highest standards across seventy subjects.
E-content is created in four different quadrants. E-text is in Quadrant 1, includes textual documents, PDFs, e-books, illustrations, videos, documentation, and interactive simulations. Quadrant 2 consists of organized e-tutorial video and audio content, animation, simulations, and virtual labs. Web resources in Quadrant 3 include Related Links, Wikipedia Course Development, and online information, Case studies, anecdotes, articles and the content related to historical development of subject. Quadrant 4 is for self-evaluation and contains MCQs, problems, quizzes, assignments, and solutions. Feedback is received online via discussion boards, the creation of a FAQ, and clarifications of common misunderstandings.

MOOCs: A Massive Open Online Course, or MOOC, is an open enrollment educational programme that is entirely conducted online. Through video lectures, computer-graded quizzes, and discussion boards, anybody, anywhere can participate. It is referred to by various names in the Cyberspace includes online research, open educational materials, video lectures, online education, and more. Coursera.org, edx.org, canvas.net, udacity.com, open2study.com, online.standford.edu/courses, openculture.com, alison.com, iversity.com, khanacademy.com, swayam.gov.in, etc. are the most well-known MOOC providers. Higher education institutions and academics will be able to experiment with new online learning models and cutting-edge teaching and learning techniques through technological interventions presenting new opportunities for innovation. While the institution supplies the course content and reputational value, MOOC platforms give institutions cloud-based hosting environments for delivering courses. These environments offer size and capability. Flipped learning, a technique that allows teachers to prioritize active learning in class by providing students with lecture materials and presentations to view at home or outside of class for convenience and necessity, is found to be more preferred in the current online education modes because it provides students with the background knowledge they need for the material to be covered during live sessions. They are both regarded as transformative teaching techniques that are supported by HEIs and government education policies, along with MOOCs (Xiong *et al*, 2021) [6].

Swayam

Study Webs of Active-Learning for Young Aspiring Minds, or SWAYAM. The three guiding principles of the Indian government's education policy—access, equity, and quality—were the motivation behind the SWAYAM project. This project aims to provide everyone, including the most disadvantaged, with access to the best teaching and learning resources. For students who have not yet experienced the digital revolution and are unable to engage in the information economy, Swayam desires to bridge the digital divide. This is accomplished by using a platform that enables hosting of all classroom-taught courses from Class 9 to Post-Graduation, allowing access by anybody, anywhere, at any time. Every course is interactive, created by the top instructors in the nation, and offered to all students without charge. These courses have been prepared by more than 1,000 faculty members and instructors who were carefully selected from across the nation.
Despite of so many efforts taken on the part of Central and state governments to encourage digital education, it has been demonstrated in studies that how a disturbing lack of digital proficiency among instructors, students, and their parents is impeding digital learning. Researches indicate that the teachers mostly encounter difficulties such as limited experience with digital tools, exposure to technology, and reluctance to try new teaching methods. For conventional teachers, it could be a difficult technique to manage at first and are reluctant to use modern technology and gadgets in the classroom and they see them as a distraction rather than an intelligent aid (Haleem *et al*, 2022) [3]. A number of technological problems including inadequate infrastructure for training teachers, an internet problem, a lack of a well configured mobile devices and a lack of technical understanding had been reported as obstacles hindering digital learning. In order to leverage e-learning resources, teachers need to be up-skilled. Therefore, it is essential to provide teachers with adequate technical training. This can be accomplished by means of training initiatives launched by the government, Non-governmental Organizations (NGOs), and Corporate Social Responsibility CSR departments.
While concluding it can be said that because of the transformative power of education technology. Teachers can

continue to expand their knowledge and be able to access learning wherever they are teaching. The emphasis of teacher training programmes has also changed in order to give educators a comprehensive understanding of the various media, their advantages, and their limitations. In this regard, certain recommendations have also been suggested by the investigators to develop professional competencies of teachers, teacher educators and administrators within the educational institution so that the dream of improving the learning of all by means of educational technology can be possible.

Recommendations

It is imperative to concentrate on building stronger infrastructure and selecting technical facilitators to train instructors and students on how to use technology, the internet, and various e-learning programmes in order to assure the quality of digital education.

Sustainable funding should be provided to Tribal communities and their schools in order to have access to services.

The access and availability to different digital resources like the tablets, mobile phones, computers for all the learners from different backgrounds also needs to be thought of by the collaborative funding from state and central governments.

Another critical intervention is to provide teachers with capacity building programmes and t raining in the area of online education, as there is a need for fresh and potent pedagogical strategies for inspiring and involving students in digital learning.

Governments should work together with educators and students to design future policies and curricula that emphasize on wellbeing and mental health as well as free resources for closing the resource allocation and access gap.

Last but not least, thorough study into the difficulties experienced by educators, students, and administrators can help in the development of more focused initiatives for improving the accessibility, impact, and reach of digital education in India.

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