Pedagogy Insights
An International Peer reviewed Journal of Multidisciplinary research
Vol. 1, Issue. 2, July-September 2026, 11–20
ISSN: 3139-843X
DOI: https://doi.org/10.5281/

EdTech and Equity: The Role of Technology in Democratising Education in India

Dr. Poonam Srivastava
Assistant Professor, Department of Education, University of Lucknow, poonamjrf6@gmail.com

Abstract

The rapid proliferation of educational technology (EdTech) in India has transformed the landscape of learning, offering unprecedented opportunities to democratize education across socioeconomic and geographic divides. This paper critically examines the role of EdTech in promoting equity within India's education system. It explores the evolution of EdTech, its impact on access and quality, and the persistent challenges of digital exclusion. (Sharma et al., 2025).Drawing on government initiatives, private sector innovations, and grassroots interventions, the paper highlights both the successes and limitations of technology-driven reforms. Through case studies and policy analysis, it argues that while EdTech has the potential to level the educational playing field, its equitable implementation requires a nuanced, context-sensitive approach that addresses infrastructural, linguistic, and pedagogical barriers. The paper concludes with recommendations for policymakers, educators, and EdTech providers to ensure that technological advancements translate into meaningful educational equity for all Indian learners.

Keywords: EdTech, Equity, India, Digital Divide, Education Policy, Technology in Education, Inclusive Learning, Digital Literacy, National Education Policy.

ARTICLE HISTORY
Received: 10 September 2026; **Accepted:** 12 September; **Published:** 20 September

CITATION
Srivastava, P., (2026). EdTech and Equity: The Role of Technology in Democratising Education in India. *Pedagogy Insights*, 1(2), 11-20.
DOI: https://doi.org/ 10.5281/

1. Introduction

Education has long been regarded as the cornerstone of social and economic mobility in India, a country marked by vast diversity and deep-rooted inequalities. For decades, policymakers and

ISSN: 3139-843X

educators have grappled with the challenge of providing quality education to a population exceeding 1.4 billion, spread across urban centers and remote rural communities. The advent of educational technology, or EdTech, has been heralded as a potential game-changer in this context, promising to bridge gaps in access, quality, and outcomes. The COVID-19 pandemic, which forced the closure of schools and colleges nationwide, catalyzed the adoption of digital learning platforms, thrusting EdTech into the mainstream of Indian education.(Rani et al., 2023; Sihag & Vibha, 2024)

Yet, the promise of EdTech is not without its paradoxes. While technology can democratize access to knowledge, it can also reinforce existing disparities if not implemented thoughtfully. The digital divide-rooted in differences in connectivity, device ownership, digital literacy, and language-remains a formidable barrier for millions of Indian learners. This paper seeks to unpack the complex interplay between EdTech and equity in India, asking: To what extent has technology democratized education, and what barriers remain to achieving true educational justice?(Lata, 2026)

Background: The Evolution of EdTech in India

Historical Context

India's education system is one of the largest in the world, comprising over 1.5 million schools, 8.5 million teachers, and nearly 300 million students (Ministry of Education, 2023). Despite significant progress in enrollment and literacy rates since independence, disparities persist along lines of caste, gender, region, and income. The Right to Education Act (RTE) of 2009 enshrined free and compulsory education for children aged 6–14, (Pathak et al., 2025) but implementation has been uneven, especially in rural and marginalized community.

The integration of technology into Indian education began in the late 20th century with initiatives such as the Computer Literacy and Studies in Schools (CLASS) project and the Information and Communication Technology (ICT) in Schools scheme. However, these early efforts were limited in scale and impact, often hampered by inadequate infrastructure and teacher preparedness.

The EdTech Boom

The past decade has witnessed an unprecedented surge in EdTech innovation, fueled by the proliferation of affordable smartphones, expanding internet penetration, and a vibrant startup ecosystem. According to a 2023 report by KPMG, India's EdTech market is projected to reach $10 billion by 2025, with over 4,500 startups offering a range of products and services-from online tutoring and test preparation to coding bootcamps and adaptive learning platforms.(Suvalagna, 2025)

The COVID-19 pandemic accelerated this trend, as schools and universities pivoted to online instruction. Government platforms such as DIKSHA (Digital Infrastructure for Knowledge Sharing),

ISSN: 3139-843X

SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds), and E-Pathshala provided free digital resources to millions of students and teachers. Simultaneously, private players like Byju's, Unacademy, Vedantu, and Toppr scaled rapidly, attracting millions of users and significant venture capital investment.

The Promise of Democratization

Proponents argue that EdTech can democratize education by transcending traditional barriers of geography, cost, and language. Digital platforms can deliver high-quality content to remote areas, personalize learning based on individual needs, and enable self-paced study. For students in under-resourced schools, EdTech offers access to expert teachers, interactive simulations, and global knowledge networks. For girls, children with disabilities, and marginalized communities, technology can provide alternative pathways to learning and empowerment.(Hernández et al., 2024)

Persistent Inequities

However, the rapid digitization of education has also magnified existing inequities. The 2021 National Sample Survey (NSS) found that only 24% of Indian households had internet access, with wide disparities between urban (42%) and rural (15%) areas. Device ownership is similarly skewed, with many students relying on shared or outdated smartphones. Digital literacy remains a challenge, particularly for first-generation learners and teachers unfamiliar with online tools. Language barriers persist, as much EdTech content is available primarily in English or Hindi, excluding speakers of India's many regional languages.(Garg, 2025)

EdTech Initiatives, Bridging the Digital Divide, and Personalized Learning

EdTech Initiatives in India

The Indian government has played a pivotal role in promoting the integration of technology into education, especially to reach marginalized populations. The flagship DIKSHA platform, launched by the Ministry of Education, serves as a national digital infrastructure for teachers and students, offering thousands of free e-books, lesson plans, and interactive resources in multiple languages. As of 2023, DIKSHA had over 150 million users and provided content in more than 30 Indian languages, making it one of the largest digital education platforms in the world.(Karthikeyan, 2025)

Other government-led initiatives include SWAYAM, which offers Massive Open Online Courses (MOOCs) for higher education and skill development, and E-Pathshala, which provides digital textbooks and supplementary materials for K-12 students. The National Repository of Open

Educational Resources (NROER) further supports the creation and dissemination of open-access digital content. These platforms are complemented by state-level projects such as the Haryana government's E-Adhigam scheme, which distributed tablets and internet data to over 500,000 students to facilitate online learning during the pandemic.(Sıngh & Meena, 2022)

The private sector has also been instrumental in expanding the reach and diversity of EdTech offerings. Companies like Byju's, Unacademy, Vedantu, and Toppr have developed adaptive learning apps, live tutoring sessions, and test preparation modules that cater to students from primary school to competitive exams. Startups such as Interval EdTech have focused on hyperlocal content, offering courses in regional languages and on topics relevant to local economies, such as agriculture and vocational skills.(Tiwari, 2022)

Non-profit organizations and philanthropic initiatives have filled critical gaps, particularly in underserved communities. The Bharat EdTech Initiative (BEI), for example, partners with EdTech companies and grassroots organizations to provide subsidized devices, digital resources, and teacher training to low-income students. BEI's interventions have reached over 200,000 students and demonstrated measurable improvements in engagement and learning outcomes.

Bridging the Digital Divide

Despite these advances, the digital divide remains a significant obstacle to equitable access. The divide is not only technological but also socioeconomic, linguistic, and cultural. Rural areas, which house nearly 65% of India's population, often lack reliable electricity, affordable internet connectivity, and adequate digital infrastructure. According to the National Family Health Survey (NFHS-5), only 25% of rural households have access to the internet, compared to 50% in urban areas. Device ownership is another critical barrier. Many students in low-income families share a single smartphone among multiple siblings or rely on basic feature phones that are ill-suited for interactive learning. The cost of data plans can be prohibitive, particularly for families living below the poverty line. These challenges were starkly highlighted during the COVID-19 lockdowns, when millions of students were unable to participate in online classes, leading to significant learning losses and increased dropout rates.(Yeh & Tsai, 2022)

To address these issues, both government and non-government actors have implemented a range of strategies:

- **Infrastructure Expansion:** The Digital India initiative aims to provide broadband connectivity to 250,000 village clusters (Gram Panchayats) through the BharatNet project. The expansion of public Wi-Fi hotspots, community learning centers, and solar-powered digital classrooms has helped extend connectivity to remote areas.

- **Affordable Devices and Data:** State governments have partnered with EdTech companies to distribute low-cost tablets and smartphones preloaded with educational content. Subsidized data plans and zero-rated educational apps have reduced the financial burden on families.
- **Localized Content:** Recognizing the linguistic diversity of India, EdTech platforms have increasingly offered content in regional languages. DIKSHA, for example, provides resources in 31 languages, enabling students to learn in their mother tongues and improving comprehension and retention.
- **Community Engagement:** Non-profits such as Pratham and Teach for India have leveraged local volunteers and community centers to facilitate blended learning models, combining digital resources with face-to-face support. These efforts have been particularly effective in reaching girls, children with disabilities, and out-of-school youth.

While these interventions have narrowed the digital divide, significant gaps remain. A 2022 study by the Azim Premji Foundation found that nearly 60% of students in rural areas still lacked access to digital devices, and only 30% of teachers felt confident using technology for instruction. Bridging the divide will require sustained investment, innovative partnerships, and a focus on the most marginalized learners.(Shen et al., 2025)

Personalized Learning and Artificial Intelligence

One of the most promising aspects of EdTech is its ability to personalize learning experiences. Unlike traditional classroom models, where instruction is often standardized and teacher-student ratios are high, digital platforms can adapt to the individual needs, pace, and interests of each learner. Artificial intelligence (AI) and machine learning algorithms analyze student performance data to identify strengths, weaknesses, and learning gaps, enabling targeted interventions.

For example, the Mindspark platform uses AI to provide customized math exercises, instant feedback, and adaptive difficulty levels. A randomized controlled trial in Delhi found that students using Mindspark improved their math scores by 28% compared to those in traditional classrooms. Similarly, platforms like Khan Academy and Byju's offer personalized learning paths, interactive quizzes, and gamified assessments that motivate students to take ownership of their learning.(Rincón et al., 2026)

Personalized learning is particularly valuable for students who have fallen behind or who face barriers to traditional instruction, such as children with disabilities or those in multi-grade classrooms. By allowing students to progress at their own pace and revisit challenging concepts, EdTech can reduce dropout rates and improve learning outcomes.

However, the effectiveness of personalized learning depends on several factors:

- **Quality of Content:** Adaptive platforms are only as effective as the quality and relevance of their content. Localization, cultural sensitivity, and alignment with national curricula are essential.
- **Teacher Facilitation:** Technology should complement, not replace, skilled teachers. Professional development and ongoing support are needed to help educators integrate digital tools into their pedagogy.
- **Ethical Considerations:** The use of AI in education raises concerns about data privacy, algorithmic bias, and the potential for reinforcing existing inequalities. Transparent governance and ethical guidelines are necessary to ensure that personalized learning benefits all students.

Policy Frameworks, Case Studies, and Challenges

Policy Frameworks Shaping EdTech and Equity

The Indian government has recognized the transformative potential of EdTech for democratizing education, as reflected in progressive policy frameworks such as the National Education Policy (NEP) 2020 and its ongoing updates through NEP 2024 and beyond. These policies emphasize digital inclusion, foundational literacy, and the integration of technology at all levels of education. NEP 2024, for instance, highlights the need for all schools to be digitally equipped and underscores the role of technology in ensuring equity, accessibility, and quality in education. The policy advocates for the use of digital platforms, such as DIKSHA, which now hosts over 6,500 energized textbooks in 77 Indian languages and has facilitated more than 530 million learning sessions, making educational content accessible to lakhs of learners daily.

The NEP's implementation is a shared responsibility between the central and state governments, with flagship initiatives like the PM SHRI scheme aiming to develop over 14,500 exemplar schools and the NIPUN Bharat mission targeting foundational literacy by Grade 2. Assessment frameworks such as PARAKH (Performance Assessment, Review, and Analysis of Knowledge for Holistic Development) and platforms like Vidya Samiksha Kendra provide real-time data on educational progress, enabling data-driven decision-making and continuous improvement. The government's commitment is further demonstrated by increased funding for digital infrastructure, AI-driven education programs, and support for EdTech startups through the 2025 education budget.

Case Studies: Success Stories and Lessons Learned

Several EdTech initiatives in India illustrate the sector's capacity to drive equity, while also highlighting persistent challenges.

Byju's: As a leading EdTech company, Byju's has leveraged interactive films, customized information, and adaptive technologies to reach millions of students, particularly those preparing for

ISSN: 3139-843X

competitive exams. Its model of personalized, engaging content has had broad appeal and set benchmarks for the industry. However, Byju's recent financial difficulties and integration challenges with Aakash underscore the need for sustainable business models and robust quality assurance.

Bharat EdTech Initiative (BEI): BEI's partnership-driven approach has provided subsidized devices, localized content, and teacher training to underserved students. By focusing on community engagement and parental involvement, BEI has improved student engagement and reduced dropout rates in low-income regions. The initiative's emphasis on "nudging" students through WhatsApp reminders and offline access modes has proven effective in resource-constrained settings.

State-Level Digital Programs: The Haryana government's E-Adhigam scheme distributed tablets and internet data to over 500,000 students, facilitating continuity of learning during the pandemic. Similarly, iDream Education's deployment of smart classrooms with NCERT content and digital boards has helped bridge the digital divide in government schools, supporting NEP's vision for technology-enabled, inclusive education.

Emerging Startups: New entrants such as WhiteHat Jr, Infinity Learn, EduGorilla, and TrainerCentral are democratizing access to digital skills and coding education, although they continue to grapple with quality assurance and access gaps. These startups exemplify the sector's dynamism and its responsiveness to evolving learner needs.

Persistent Challenges in Achieving Equity

Persistent challenges in achieving equity in India's education system are multifaceted and deeply entrenched, spanning infrastructural, socioeconomic, cultural, and technological dimensions. Despite significant policy efforts like the National Education Policy (NEP) 2020 and its ongoing updates aimed at inclusivity and digital integration, disparities in access remain stark, especially for rural, economically disadvantaged, and marginalized communities. The digital divide is a critical barrier, as only about a quarter of rural households have reliable internet access, limiting students' ability to benefit from online and hybrid learning models. Affordability of digital devices and data plans further compounds exclusion, with many students lacking personal access to smartphones or computers.

Additionally, teacher shortages and inadequate training in digital pedagogy hinder effective technology adoption, while quality concerns persist due to underfunded institutions, outdated curricula, and insufficient alignment with industry needs. Language barriers also restrict equitable learning opportunities, as much digital content remains predominantly in English or Hindi, sidelining speakers of regional and tribal languages. Socio-cultural factors, including gender biases that limit girls' access to digital tools, exacerbate inequities.

Moreover, systemic issues such as high dropout rates, especially at secondary levels, and the prioritization of quantity over quality in educational expansion continue to undermine equity goals.

ISSN: 3139-843X

These challenges underscore that while technology offers promising avenues for democratizing education, its potential can only be realized through sustained investments in infrastructure, teacher capacity building, localized content development, and inclusive policies that address the complex realities of India's diverse learner population. Without such comprehensive efforts, the vision of equitable education remains aspirational rather than attainable.

Future Directions, Conclusion, and References

The future of EdTech in India is set for remarkable growth and transformation, propelled by technological advancements, supportive policy frameworks, and a rising demand for inclusive education. By 2025, the industry is expected to reach $10 billion, with a substantial increase in users from rural and semi-urban areas. Central to this evolution is the integration of artificial intelligence, which enables personalized learning experiences by analyzing student performance in real time and providing tailored content and feedback. Immersive technologies such as virtual reality and augmented reality are making education more interactive, allowing students to engage with complex concepts through simulations and gamified experiences. Additionally, the expansion of high-quality, localized content in regional languages is breaking down linguistic barriers, making learning accessible to a broader and more diverse population. Government initiatives like the Digital India campaign and the Digital University project, along with strategic public-private partnerships, are further accelerating digital infrastructure development and innovation in the sector.

Despite these promising trends, several challenges must be addressed to ensure equitable access to EdTech's benefits. Persistent issues such as inadequate funding, gaps in digital infrastructure, and the digital divide, especially in remote and low-income communities, continue to impede progress. Ethical concerns around data privacy, algorithmic bias, and misleading advertising also require robust regulatory oversight and industry standards. As the sector increasingly focuses on skill development and lifelong learning, there is a growing need for investment in teacher training and the creation of affordable, accessible solutions. By prioritizing these areas, India can harness the full potential of EdTech to democratize education and equip its population with the skills needed for a dynamic, knowledge-driven economy.

Conclusion

EdTech has emerged as a powerful catalyst for democratizing education in India, offering scalable solutions to age-old challenges of access, quality, and equity. Through government initiatives, private sector innovation, and community-driven interventions, millions of students now have access to personalized, engaging, and high-quality learning experiences. The integration of AI, immersive

technologies, and vernacular content is reshaping the educational landscape, making it more inclusive and adaptable to diverse learner needs.

However, the journey toward true educational equity is far from complete. Bridging the digital divide requires sustained investment in infrastructure, affordable devices, and localized content. Teacher training and ethical governance must keep pace with technological advancements to ensure that EdTech serves as a tool for empowerment rather than exclusion. Public-private partnerships, regulatory oversight, and community engagement will be crucial in realizing the vision of an equitable, future-ready education system.

As India stands at the cusp of an EdTech revolution, the challenge and opportunity lie in ensuring that technology not only reaches every learner but also uplifts those most at risk of being left behind. With strategic investment, innovation, and a relentless focus on equity, EdTech can fulfill its promise of transforming India's education system into a truly democratic and inclusive force for social progress.

References

1. Garg, P. J. S. (2025). *Pedagogical Impact of Digital Education in Indian Rural Areas*. *Journal of Informatics Education and Research*, *5*(2).
2. Hernández, R. M., Campos-Ugaz, W. A., Tarrillo, S. J. S., Vásquez, S. J. A., Ordoñez, S. E. L., Montenegro, R. A., Martínez, D. E. E., Guillén, D. E. F., & Guillén, Dr. D. E. F. (2024). *Exploring Software Infrastructures for Enhanced Learning Environments to Empowering Education*. *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications*, *15*(1), 231–243.
3. Karthikeyan, P. (2025). *Exploring awareness and impact of NCERT's DIKSHA platform in Indian schools*. *i-Manager's Journal on School Educational Technology*, *21*(1), 33–33.
4. Lata, S. (2026). *EdTech and the Gender Divide* (pp. 235–258).
5. Pathak, P., Nandini, V., Yadav, D., Kaur, S., Sen, R. K., & Riang, S. (2025). *Realizing human rights in rural Punjab of India: A study of enforcement of selected human rights*. *Frontiers in Sociology*, *10*, 1619603.
6. Rani, K., Dilip, N., Ware, Ramírez, E., Bronzetti, G., Sicoli, G., Ippolito, D., Dhawan, S., Dama, C., Langford, M., Uehara, D., Scherer, R., Kundu, A., Bej, T., Roy, B., Roy, A., Singh, M., Adebayo, S., Saini, M., … Chhetri, R. (2023). *The Impact of COVID-19 on Indian Education Technology: Challenges, Innovations, and Future Directions*. *International Research Journal of Modernization in Engineering Technology and Science*.
7. Rincón, Y. R., Muñárriz, A., & Magreñán, Á. A. (2026). *Escape from mathematical-skill deficiencies: Gamified interactive platforms to reinforce quantitative skills*. *International Journal*

of Educational Technology in Higher Education, *23*(1).

8. Sharma, V., Dixit, M., & Jaiswal, V. (2025). *Technology in Education: Platforms like DIKSHA and SWAYAM for Digital Learning, Bridging the Digital Divide, and Ensuring Equitable Access to Technology*. *International Journal of Science and Research (IJSR)*, 205–209.
9. Shen, Y., Huang, G., Le, H., Yu, S., Xu, M., Ouyang, J., Fan, Y., & Wang, Q. (2025). *Cloud for Youth: An implementation research of cloud-based solutions for bridging the digital divide in rural China*. *British Journal of Educational Technology*.
10. Sihag, P., & Vibha, V. (2024). *Transforming and Reforming the Indian Education System with Artificial Intelligence*. *Digital Education Review*, *45*, 98–105.
11. Singh, A., & Meena, M. K. (2022). *Challenges of virtual classroom during COVID-19 pandemic: An empirical analysis of Indian higher education*. *International Journal of Evaluation and Research in Education (IJERE)*, *11*(1), 207–207.
12. Suvalagna, C. (2025). *Case Study on Digital India and Fintech Growth*. In *Zenodo (CERN European Organization for Nuclear Research)*.
13. Tiwari, S. P. (2022). *Information and communication technology initiatives for knowledge sharing in agriculture*. *arXiv (Cornell University)*.
14. Yeh, C.-Y., & Tsai, C. (2022). *Massive Distance Education: Barriers and Challenges in Shifting to a Complete Online Learning Environment*. *Frontiers in Psychology*, *13*, 928717.