Chapter 1
AI-Driven Inclusive Learning for Rural India:
A Framework for Equity, Access, and Digital Literacy

D. Deepak
https://orcid.org/0009-0004-8493-1474
Jain University, India

R. Arun
https://orcid.org/0009-0001-1571-3201
Jain University, India

H. C. Purushotham
https://orcid.org/0000-0002-2035-2965
Jain University, India

K. Sowmya
Aditya College of Engineering and Technology, India

Y. Sharath Kumar
St. Francis College, India

Pavendhan Madhivanan
https://orcid.org/0000-0001-8183-8793
Aditya College of Engineering and Technology, India

ABSTRACT

The chapter discusses AI as a transformation agent for inclusive digital education in rural India. While ed-tech has made strides in urban India, India being a developing nation, rural communities are still left isolated with their struggles—lack of infrastructure, low digital literacy, lack of socio-economic opportunities—all leading to accessibility issues in quality education. We propose the RAI (Rural AI for Inclusion) Framework, a contextualised model based on an inclusive pedagogy, participatory approach, and ethical AI implementation. Drawing on mixed-methods research in three districts of Karnataka, the study assesses the deployment of low-cost AI tools implementing surface accessibility in vernacular and support for teachers. Abstract: Findings show benefits regarding student engagement and instructional

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efficiency, as well as barriers related to infrastructure and ethics. The chapter ends with policy recommendations for implementing AI at scale, with equity and cultural responsiveness in regions with service access gaps.

INTRODUCTION

Overview of Digital Learning in India

India's rapid digital transformation in education has opened new avenues for personalised learning, content delivery, and data-driven pedagogy. However, this digital shift has also intensified disparities, especially between urban and rural learners. Despite hosting over 1.5 million schools and 265 million students.No, A. (2023)., rural India faces systemic obstacles to digital participation, including limited device availability, poor internet connectivity, and language mismatches. While national platforms like DIKSHA and SWAYAM have extended digital resources, their reach remains uneven—only 28.2% of rural students had consistent device access, and just 8% engaged regularly with online content as of 2021 ASER. (2021).. Beyond technology, barriers include socio-economic inequities, linguistic diversity, gendered exclusions, and caste disparities. Goyal, J. K., Daipuria, P., & Jain, S. (2021). EdTech solutions are often designed for English-speaking, well-connected users, rendering them ineffective in rural India. Sinha, K. K. (2022). The rural-urban gap in education is not just a digital divide. Instead, it is a multi-faceted problem driven by socio-economic, geographic, and cultural issues. Rural students go to under-performing schools that lack sufficient teaching, have fewer textbooks, and have less access to digital content in India. These challenges are further compounded because of gender discrimination, linguistic diversity, caste-based inequities, and parental illiteracy. Goyal, J. K., Daipuria, P., & Jain, S. (2021). Such factors lead to low secondary education enrolment, high dropout rates, and poor learning outcomes. The new NEP 2020 has acknowledged the importance of inclusive and equitable quality education and highlighted the need to harness technology to bridge the learning gap. That said, tech-based solutions have to be implemented in a rural context. Most of the EdTech solutions that are available for rural learners today are made for learners in urban settings, having the presumption of a static internet connection, English speakers, or uninterrupted electricity, all of which are rarities in the case of rural India. Sinha, K. K. (2022). Consequently, rolling out these solutions without adjustments will only deepen educational inequities. Moreover, the search for good teachers continues. Rural schools are often chronically short of teachers and usually rely on those not highly qualified or well-prepared. Even the pressure of well-meaning digital interventions is ineffective without professional development opportunities. Modi, K.,