3 Using AI to Support Students with Learning Disabilities: An Indian Perspective

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Abstract

In India, an estimated 10-12% of school-age children have learning disabilities (LDs) such as dyslexia, attention deficit hyperactivity disorder (ADHD), and autism spectrum disorder (ASD). These students face numerous barriers to equitable education due to delayed diagnosis, insufficient access to trained special educators, and persistent societal stigma. With the rapid digitization of India's education ecosystem driven by national initiatives like Digital India and the National Education Policy (NEP) 2020 there is a growing opportunity to leverage Artificial Intelligence (AI) in addressing these systemic gaps. This article explores the emerging role of AI in supporting students with LDs across Indian schools and educational institutions. It highlights how AI-powered tools—such as adaptive learning platforms, early screening and diagnostic systems, speech-to-text technologies, and regionally localized assistive applications are helping to identify, teach, and engage learners with cognitive and communication challenges more effectively. Startups like CogniAble and Thinkerbell Labs, as well as government-backed platforms like DIKSHA, are innovating context-specific solutions tailored to India's socio-cultural and linguistic diversity. The paper also examines the alignment of AI integration with national policies such as the Rights of Persons with Disabilities Act (2016) and NEP 2020, and discusses the role of NITI Aayog in promoting AI for social good. Despite the potential, key implementation challenges persist including the digital divide, affordability, teacher preparedness, and ethical concerns related to data privacy and algorithmic bias. In conclusion, while AI is not a standalone solution, it can significantly enhance inclusive education efforts in India when developed ethically, deployed equitably, and supported by robust infrastructure

and stakeholder collaboration. The integration of AI in special education represents a transformative step toward realizing the vision of inclusive, accessible, and personalized learning for every Indian child.

Keywords: Artificial Intelligence, Learning Disabilities, Inclusive Education, India, NEP 2020, Assistive Technology, Educational Equity.

Introduction

Inclusive education has long been a focus of India's educational policy landscape, with government initiatives like the Right to Education (RTE) Act and the National Policy for Persons with Disabilities aiming to create learning environments that cater to all students, regardless of their abilities. Despite these progressive frameworks, children with learning disabilities (LDs) continue to face significant barriers within the mainstream education system. Gaps in early diagnosis, lack of teacher preparedness, societal stigma, and limited awareness about LDs result in many students falling behind or dropping out of school altogether.

Learning disabilities such as dyslexia, dysgraphia, dyscalculia, and ADHD are often misunderstood or overlooked, especially in rural or under-resourced schools. Teachers may lack the training to recognize early signs of LDs, and even when issues are identified, schools frequently do not have the infrastructure or specialized resources needed to provide appropriate interventions. These challenges contribute to a growing need for innovative, scalable solutions that can bridge the gap between policy intent and classroom reality.

Against this backdrop, India's rapid digital transformation, accelerated by the Digital India initiative and reinforced by the National Education Policy (NEP) 2020, is creating new possibilities. Technology, particularly Artificial Intelligence (AI), is emerging as a powerful tool to reshape how education is delivered and accessed especially for students with special needs.

AI has the potential to address the core challenges faced by students with LDs by personalizing learning experiences, automating routine assessments, and providing real-time feedback. Tools powered by AI can help identify learning gaps early, adapt instructional materials to individual learning styles, and offer assistive technologies such as speech-to-text, text-to-speech, and visual recognition software. These innovations are especially crucial in a diverse country like India, where linguistic, regional, and economic differences add layers of complexity to inclusive education.

As India's EdTech sector grows and digital infrastructure expands, integrating AI into the education system could become a game-changer for students with learning

disabilities. However, this journey is not without its challenges. Concerns around data privacy, accessibility, affordability, and teacher training must be addressed to ensure that AI serves as an inclusive, equitable solution rather than reinforcing existing disparities.

This article explores how AI is being applied to support students with learning disabilities in India, the opportunities it presents, and the challenges that must be navigated to make inclusive education a lived reality.

AI Innovations Supporting Indian Students with LD

Adaptive Learning and AI Tutoring in Indian EdTech

Leading Indian EdTech companies like BYJU'S, Toppr, and Embibe use AI to personalize learning based on student performance. While originally not designed for LDs, these platforms are now integrating speech-to-text, multimodal content, and adaptive scaffolding to support neurodiverse learners. Embibe, for instance, analyzes student responses to identify learning gaps and provide personalized remedial content. Dost Education delivers voice-based learning through WhatsApp in multiple Indian languages reaching children in low-resource settings, including those with cognitive delays. These innovations make it easier for students with LDs to learn at their own pace and in formats suited to their needs.

Assistive Technologies and Speech Interfaces

AI-powered assistive technologies are helping bridge accessibility gaps for Indian students with LDs: Thinkerbell Labs developed Annie, the world's first Braille self-learning device, helping visually impaired students learn independently. Apps like Dyslexia Buddy use text-to-speech (TTS) and word prediction to support reading and writing. Assistive Technology Innovation Centres (ATICs), backed by the Government of India, are working on tools for students with cognitive and language impairments. These tools are increasingly being localized in regional languages, improving access for children across India's linguistic and cultural spectrum.

Early Screening and Diagnosis

Early intervention is key to supporting students with LDs. AI is now enabling timely and cost-effective screening in Indian schools: CogniAble, a Gurugram-based startup, uses video-based behavioral analysis to detect early signs of autism. It's been deployed in pilot programs across Delhi and Tamil Nadu. AI tools are being used in mobile applications to screen for dyslexia, dyscalculia, and language delays—flagging concerns earlier than traditional methods. Psychometric systems leveraging AI assess test scores, response time, and engagement data to detect LDs even without formal clinical evaluations These innovations hold promise for scalable, low-cost diagnostic support in India's under-resourced public schools.

Policy, Research, and Indian Initiatives

NEP 2020 and RPWD Act Alignment

The National Education Policy (NEP) 2020 stresses inclusive education, proposing universal screening for learning disabilities and integration of assistive technology from the foundational stage. It aligns with the Rights of Persons with Disabilities (RPWD) Act, 2016, which mandates accessible and equitable education for all.

NEP also promotes the use of AI, data analytics, and multilingual digital content, providing a framework for AI integration in special education.

NITI Aayog and AI for Social Good

NITI Aayog's national strategy for AI, titled #AIforAll, prioritizes education and social inclusion. In partnership with tech firms like Microsoft, IBM, and academic institutions like IIT Delhi, several projects are testing AI-based learning interventions for students with disabilities. These include: Language translation tools for students with speech or communication difficulties. AI-based recommendation systems for personalized learning pathways.

Academic Research and Innovations

Institutions like IIT Delhi, NIEPID, and NCERT are leading research on localized AI solutions:

- Vision models. Natural Language Processing (NLP) in Indian languages is enabling more inclusive digital content. Tools are being designed to function in low-resource environments, including offline and low-bandwidth settings.

These efforts are crucial to building context-aware and culturally sensitive AI tools for Indian learners.

Implementation Challenges in India

While AI offers transformative potential, its effective use in Indian special education faces several barriers:

Digital Divide and Infrastructure

Many rural and tribal regions still lack internet access, devices, and stable electricity. As a result, AI-powered solutions remain inaccessible to a significant segment of the population. Bridging this divide is essential for AI to support equity in education.

Cost and Localization

Despite falling costs, many AI tools require upfront investments—for software, hardware, and training. This can strain budgets of government and low-income private schools.

Moreover, localization is a major challenge: Most tools are built in English or Hindi, limiting utility for students who speak Tamil, Marathi, Odia, and other regional languages. Cultural sensitivity is often missing in global solutions, necessitating India-specific content and design.

Data Privacy and Ethical Concerns

AI tools collect and analyze vast amounts of student data, raising critical issues around privacy, consent, and algorithmic bias. The Digital Personal Data Protection Act, 2023 is a step forward but lacks specific guidelines for educational AI.

There is also concern about: Over-diagnosis or misdiagnosis due to poorly trained AI. Bias against students from marginalized communities if datasets lack diversity.

Teacher Training and Professional Development

Indian teachers, particularly in government schools, often lack exposure to AI tools. Without proper training and ongoing support, AI risks becoming underutilized or misused. Teachers may struggle to interpret AI feedback. There is a need to embed inclusive pedagogy and AI literacy into teacher education. Successful implementation requires capacity building at all levels teachers, administrators, and school leaders.

Case Studies and Grassroots Innovation

Several promising examples demonstrate the practical impact of AI in Indian special education: Project Prayatna (Maharashtra) developed AI-enabled dyslexia screening tools deployed in district schools. Karadi Path, a language learning platform, uses audio storytelling and AI to support students with reading difficulties. The Diksha platform, by NCERT, is evolving to include accessibility tools, including screen readers and AI-based personalization.

These projects show how collaboration between government, startups, and communities can drive innovation in inclusive learning.

Conclusion

Artificial Intelligence has the potential to fundamentally redefine the landscape of inclusive education in India. By offering scalable, personalized, and accessible learning experiences, AI can provide much-needed support for students with learning disabilities (LDs) who have traditionally been underserved by the mainstream education system. From early screening tools that detect signs of LDs to assistive technologies that adapt to individual learning needs, AI is already making an impact in bridging learning gaps and enhancing classroom participation for neurodiverse learners.

However, to truly realize this potential at a national scale, several foundational challenges must be addressed. Infrastructure investment is critical particularly in rural and remote areas to ensure reliable access to digital tools and internet connectivity.

The digital divide remains one of the greatest barriers to equitable access, and without robust infrastructure, the benefits of AI will remain limited to urban or privileged regions.

Equally important is the development of localized and culturally relevant AI solutions. India is a linguistically and socially diverse country, and AI tools must reflect this diversity by supporting multiple languages, regional dialects, and contextually appropriate content. One-size-fits-all solutions are unlikely to be effective in addressing the nuanced needs of learners with disabilities across different states and communities.

Further, the integration of AI in education must be guided by clear ethical frameworks, with strong data protection and privacy safeguards. Students with LDs often share sensitive information during assessments and interventions, and it is imperative that AI systems are transparent, secure, and free from bias.

Finally, capacity building among educators is essential. Teachers are the frontline agents of inclusive education, and they must be empowered with the training and tools necessary to effectively integrate AI into their classrooms. This includes not only technical skills but also a deep understanding of how AI can be used to support diverse learners without replacing the human element of teaching.

With thoughtful design, strong public-private partnerships, and alignment with policies such as the NEP 2020, India has the opportunity to lead by example in using AI to create a truly inclusive education system. In doing so, the country can move beyond improving learning outcomes to fulfilling a deeper commitment: upholding the right to quality education for every child, regardless of ability or background.

References

CogniAble. (2024). *AI-powered autism detection tool*. Retrieved from https://www.cogniable.tech

Ministry of Human Resource Development (MHRD). (2020). *National Education Policy 2020*. Government of India. https://www.education.gov.in

NITI Aayog. (2018). *National Strategy for Artificial Intelligence: #AIforAll*. Government of India. https://www.niti.gov.in

RPWD Act. (2016). *The Rights of Persons with Disabilities Act, 2016*. Ministry of Social Justice and Empowerment, India. https://legislative.gov.in

Thinkerbell Labs. (2025). *Annie: Braille literacy device*. Retrieved from https://thinkerbelllabs.com

Wikipedia contributors. (2025). Adaptive learning. In *Wikipedia*. Retrieved from https://en.wikipedia.org/wiki/Adaptive_learning

Toyokawa, T., & Patiño-Toro, N. (2023). The impact of artificial intelligence on inclusive education: A systematic review. *Education Sciences, 15*(5), 539. https://www.mdpi.com/2227-7102/15/5/539

Aliu, T. V. (2024). *Artificial intelligence in special education: A literature review*. *Systemic Analytics*. https://doi.org/10.31181/sa22202424

Cesaroni, V. et al. (2025). A participatory strategy for AI ethics in education and rehabilitation grounded in the Capability Approach. *arXiv*. https://doi.org/10.48550/arXiv.2505.15466.

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