Inclusive Learning Through AI: A Comprehensive Review of Assistive Educational Technologies for Students with Neurodevelopmental Disorders and other Disabilities

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***Abstract*—Globally, millions of students with neurodevelopmental disorders and other disabilities face persistent barriers to equitable education that conventional teaching methods rarely overcome. This investigation is unique as it links AI-assisted learning tools to student's needs, to the student's academic results, which fills an important void in inclusive education research. A systematic review of 30 peer reviewed articles (IEEE Xplore; Scopus; PubMed) on AI methods (machine learning; natural language processing; computer vision) and student characteristics (autism spectrum disorder; dyslexia; ADHD; sensory/motor issues), and results were reported using the PRISMA guidelines. The prominent contributions of the study are, an empirical mapping of AI enabled learning tools to student needs and measurable outcomes; a practical guide for aligning the capabilities provided by AI systems to pedagogical requirements and institutional readiness. The findings of this review show that AI-based learning systems can increase student participation, understanding, and ability to develop skills, when they are combined with effective teaching practices and adequate teacher training. Real-world applications have been found to provide increased communication independence for augmentative/alternative communication (AAC) users; to increase reading proficiency among individuals who use text-to-speech and/or speech-to-text technologies; and to enhance understanding in mathematics among students who utilize adaptive learning environments. However, the review also identified several persistent barriers to the adoption of AI-assisted learning systems, such as limited funding; lack of necessary infrastructure; lack of preparation of educators; and mismatch between existing policies and the capabilities provided by AI systems. The report includes recommendations for implementing AI-assisted learning systems at the local level, building educator capacity, ensuring the development of safe and ethical AI systems, and evaluating the long-term impacts on student learning to support scalable and equitable adoption in schools.**

***Keywords*—Artificial Intelligence in Education; Inclusive Learning Technologies; Assistive Educational Tools; Adaptive Learning Systems; Neurodevelopmental Disorders.**

***ICTIEE* Track—Emerging Technologies and Future Skills**
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I. INTRODUCTION

INCLUSIVE education has become a global imperative as it aims to provide equal learning opportunities to all students, regardless of whether they have a neurodevelopmental disorder (NDD) or other disability. Despite the efforts of policymakers to create inclusive education environments, there remain significant barriers to providing students with NDDs and other disabilities with equal access to quality education, including limited personalized instruction; limited availability of assistive technology; and limited educator preparation to effectively teach students with diverse abilities (UNESCO, 2020). For example, the National Education Policy (NEP) 2020 outlines its commitment to inclusive and technology-based education at various levels of schooling in India, indicating that policy makers in India see technology as a viable solution to increasing accessibility and enhancing academic performance of students with disabilities (Government of India, Ministry of Education, 2020).

However, the development of accessible and supportive educational environments for students with NDDs and other disabilities requires more than just a commitment to technology-based solutions. It requires the development of AI based solutions that provide adaptive content, multiple modes of accessing information and scaffolding in real time, which are both aligned to student needs and provide teachers with the support needed to develop the instructional environment required to meet the individualized needs of each student. The two main frameworks for designing and deploying responsibly designed products for children and youth are as follows: (i) The framework of Universal Design for Learning (UDL); (ii) The

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framework developed by UNICEF entitled "Policy Guidance on AI for Children." These two frameworks also emphasize that accessibility should be part of the base line for design of inclusive learning (CAST, 2024; UNICEF, 2021).

There is growing empirical evidence to demonstrate that certain AI-enabled tools can help meet the primary educational and communication goals of learners with disabilities (HN, 2024). For example, Text-to-speech (TTS) technology has been demonstrated to significantly improve the reading comprehension of students with dyslexia and other reading disabilities, as compared to either silently reading the text or listening to the text being read aloud (Keelor, 2023). Similarly, recent studies have shown that modern Automatic Speech Recognition (ASR) technologies can achieve high levels of accuracy in classroom and video environments, under optimal audio conditions, providing students who are deaf or hard of hearing with accurate, real-time captions (Millett, 2021). The research conducted using Augmentative and Alternative Communication (AAC) technology based on eye-gaze has demonstrated both the potential for long-term use of this type of tool during the school age years (Masayko, 2024) and reported gains in communication and participation for parents of children who used this type of technology. AI-powered translation systems can greatly improve classroom inclusion by assisting students from various linguistic origins (Fitas, 2025). In real classroom settings, educators can integrate real-time translation software, such as Google Translate or DeepL, to help with instructional communication.

However, despite the positive findings of such research, there are significant practical constraints to consider when attempting to deploy real world applications of these types of tools, including: protecting the data of minors, ensuring adequate connectivity to all users, ensuring sufficient funding for device purchase and maintenance, accounting for the linguistic diversity of users, and ensuring that teachers receive adequate training and technical support for successful implementation of these tools (Kauanova, 2025). Recent developments in Edge AI/TinyML are directly applicable to meeting some of these challenges because they enable inference on low power devices reducing latency and preserving privacy while allowing the extension of inclusive tools to bandwidth constrained environments common in many schools (Heydari, 2025). These design choices align with UDL's emphasis on barrier reduction and NEP 2020's call for accessible, technology-enabled learning ecosystems.

This study addresses these gaps by conducting a comprehensive, systematic review of AI-enabled learning tools for diverse disability categories, with the following objectives:

1. Identify and categorize AI-enabled learning tools designed for students with NDDs and other disabilities.
2. Evaluate their core functionalities, AI techniques, accessibility features, and documented educational outcomes.
3. Present real-world case studies illustrating successful institutional deployments.
4. Examine institutional challenges—including funding, infrastructure, training, and pedagogy—that influence adoption.
5. Propose actionable strategies for fostering inclusive, AI-driven learning environments.

By integrating technological, pedagogical, and institutional perspectives, this work seeks to advance both scholarly understanding and practical implementation of AI in inclusive education, ensuring that innovations translate into meaningful and equitable learning opportunities for all.

II. Background and Scope

Transforming Technology for Inclusive Education: Technology has the potential to create a much more equal opportunity to learn for all students, including those with NDDs (such as autism, ADHD and dyslexia), sensory and motor disabilities, and others who have been traditionally excluded from accessing quality education. Technology, however, has had very little impact on addressing the barriers to learning that remain for this group, specifically assistive technology, teacher willingness, and content personalization (El Morr, 2024).

Artificial Intelligence (AI) is currently changing the way the classroom learns by providing tools to tailor learning opportunities to meet each learner's needs in real-time. Examples include adaptive tutoring systems, speech-to-text converters, and computer vision-based recognition tools that provide unique paths for each learner to gain access to knowledge and enhance engagement (Kooli, 2025; Kumar, 2025). There is growing research in both engineering and technical education, focused on developing ways to enable students with disabilities to be able to collaborate and work together in a project-based learning environment that is part of today's curriculum.

Integration of AI and inclusive learning, aligns well with goals related to educational transformation such as increasing accessibility, customization and equity for all learners. Additionally, Edge AI and Tiny Machine Learning (TinyML) now make possible the use of AI-powered assistive technologies in classrooms where bandwidth is limited or non-existent due to rural or remote locations (Hwang, 2022). This is particularly relevant in India, where there is significant variability in terms of digital infrastructure across different locations and therefore there is a pressing need for inclusive engineering education to develop affordable, and scalable solutions.

Examples of successful implementation of AI-powered assistive technologies in India include AI powered assistive platforms used in mainstream schools and early learning centers to improve literacy, communication and technical skills of students with disability (Gupta, 2024). While these examples address the issue of access to education, they also support the reform goals of education that includes preparing students to participate in an increasingly AI-driven economy.

Persistent Gaps and the Need for Systematic Analysis: Despite the advancements, challenges remain for effective implementation of inclusive education. Institutional readiness, including finance methods, faculty training, and curriculum integration, remains a significant impediment (Habib, 2024). Many deployments remain small-scale pilots, with little cross-institutional data sharing and evaluation. Furthermore, state-of-the-art research focuses on single-disability use cases or technological prototypes without considering long-term educational results (Rice, 2024).

The proposed review focuses on addressing these gaps systematically by exploring AI-enabled assistive educational tools designed for students with NDDs and other disabilities. The study precisely reports technical capabilities, educational impacts, and the institutional factors that influence the adoption of inclusive education. As a result, it provides a complete empirical base for policy, financial, and pedagogical practices aimed at transforming inclusive education in engineering and beyond.

III. METHODOLOGY

The proposed study employed a systematic literature review (SLR) methodology to acquire highly reliable state-of-the-art methods focused on AI-enabled learning tools for students with NDDs and other disabilities. The methodology was developed following PRISMA standards of transparent reporting of reviews (Page, 2021).

Data Sources

A structured framework was followed to search highly relevant articles in Scopus database, which covers a broader and diverse range of peer-reviewed journals and conference proceedings in the field of education and computer science. In order to reinforce breadth, further selective searches were conducted in IEEE Xplore and Web of Science to locate recent conference papers and high-impact journal articles related to AI in special education.

Search Strategy

The search strings combined AI-related terms with education and disability-related terms using Boolean operators. The final Scopus search query was: (TITLE-ABS-KEY ("artificial intelligence" OR "machine learning" OR "deep learning" OR "natural language processing" OR "computer vision" OR "generative AI" OR “edge computing”) AND TITLE-ABS-KEY("inclusive education" OR "special education" OR "assistive technology" OR "learning disabilities" OR "neurodevelopmental disorders" OR "autism" OR "dyslexia" OR "ADHD" OR "visual impairment" OR "hearing impairment")) AND PUBYEAR > 2018.

Inclusion and Exclusion Criteria

Inclusion criteria:

1. Empirical studies, case studies, or review papers on AI-enabled learning tools for students with disabilities.
2. Focus on educational interventions with measurable or described learning-related outcomes.
3. Published in peer-reviewed journals or conference proceedings.

Exclusion criteria:

1. Studies focusing solely on AI for diagnosis or rehabilitation without an educational component.
2. Articles lacking sufficient methodological detail.
3. Non-peer-reviewed sources, editorials, or opinion pieces

Screening Process

The search initially returned 327 records. After removing duplicates (n=113), 214 titles and abstracts were screened for relevance. Of these, 156 full-text articles were assessed against inclusion/exclusion criteria, resulting in 30 studies being included in the final synthesis.

Quality Assessment

Methodological quality was assessed using an adapted version of the Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018), enabling consistent evaluation of qualitative, quantitative, and mixed-methods studies. Only studies rated as moderate to high quality were included in the synthesis.

IV. RELATED WORK

Intelligent Tutoring Systems (ITS) and Adaptive Platforms

There are many examples of studies regarding both ITS and mastery based educational platforms that provide adaptive content, pacing and feedback to meet the needs of a student's individual profile. In particular, the study (Ahuja, 2022) demonstrates the use of augmented reality (AR) in a model of an ITS to improve the motivation and cognitive abilities of students with and without identified learning difficulties. The authors of this study found that including AR in an ITS helped to improve the memory and cognitive abilities of all students. More importantly, they demonstrated that the inclusion of multimodal presentations may help to increase the level of engagement in learning activities of students who have different learning styles. The study (Dutt, 2022) provides further examples of the architecture of an ITS that uses fuzzy neural networks (FNNs) to identify and classify the characteristics of learning disabilities in students. The authors of this study demonstrated that FNNs allow for the identification of a range of learning disabilities and that these models can be used to develop personalized learning plans. As was noted earlier, the collective findings from these studies demonstrate the need for the development of personalized learning environments through the use of learner models, formative assessment, and fine-grained content adaptation.

Hybrid Human–AI Tutoring in Inclusive Classrooms

While many of the previous studies were conducted in controlled laboratory environments, there are also quasi-experimental studies on the effectiveness of hybrid human-AI tutoring that were conducted in real-world classrooms in low-income middle schools in the United States. The study (Thomas, 2024) reports the effects of combining human tutors with AI in classrooms in which approximately 30% of the students had a disability. While the authors did find that the combination of human tutors and AI, resulted in greater increase in instructional time and skill proficiency compared to either condition alone, they found no difference between the two conditions in terms of the amount of growth observed from the beginning to the end of the school year. The authors suggest that the lack of differences between the two conditions in terms of student growth may indicate that while AI provides some benefits in the area of instructional delivery, it does not replace the value of the teacher as a facilitator of learning.

AI-Enhanced Augmentative and Alternative Communication (AAC)

Finally, while students with disabilities often face barriers to accessing education, recent advances in AI and computer-assisted AAC systems are expanding students' opportunities for expressive and receptive communication. The study (Dada, 2024) reports an implementation of an ITS-delivered AAC curriculum across multiple African institutions, finding statistically significant knowledge gains and positive usability feedback—a demonstration of the potential of AI-supported AAC systems to contribute to professional preparation and support of learners with disabilities in resource-constrained contexts.

Immersive, Multimodal, and Affective Computing Environments

Immersive interfaces — AR/VR paired with AI — provide new paths to explore concepts using multiple senses and to develop and practice social communications. The synthesis of AR with students with intellectual disabilities (Montoya-Rodríguez, 2023), has shown improvements in engagement, personalization and social communication among these students as well as identified barriers related to deployment (ethics, accessibility, teacher training). An evaluation of an adaptive learning system that utilizes multi-modal affect recognition to reduce boredom and increase time spent on task for individuals with intellectual disabilities was conducted (Standen, 2020). While differences in overall performance between the control group and experimental groups were limited, results showed that the affect-responsive aspects of this adaptive technology demonstrate potential to increase long-term engagement of individuals with intellectual disabilities. Tools designed for the classroom, such as Osmo (AI-AR manipulables) and zSpace (AI-augmented VR simulations), are examples of how computer vision, sensor systems and real-time adaptation can be used to create tools that facilitate attention, motor interaction and conceptual understanding for learners who may have difficulty accessing traditional educational tools.

Autism-Focused AI Interventions and Social-Communication Support

In autism education, AI is being utilized to enhance both instruction and the way educators interact with their learners. A study (Lampos, 2021) utilized machine learning to identify effective teacher communication strategies to promote productive student responses, which demonstrated the potential for data-driven teaching practices in ASD classrooms. The authors (Chen, 2021) developed a wearable robot that captures the view of an individual with autism through a first-person perspective camera that utilizes reinforcement learning and emotion-aware analytics to provide personalized interaction to each learner — providing an example of embodied AI that combines assistive functions with therapeutic objectives.

Generative AI, Teacher Preparation, and Instructional Design

While many studies have focused on developing learner-facing tools that are designed to engage learners with cognitive or developmental disabilities, recent research has focused on developing educator-facing enablement tools. The authors (Khazanchi, 2024) discussed the potential for generative AI to enhance special education teacher preparation (e.g. adapting materials, generating feedback, designing scenarios). The study (Ruiz-Rojas, 2023) illustrated how an instructional design matrix could be used to support educators to create consistent, accessible and meaningful educational experiences using AI-enabled tools to improve presentation and reduce the burden of assessing students' learning. Large language models, AI-enabled avatars and empathic features of chatbots are also being developed as multimodal platforms to support caregivers and therapists in developing therapeutic/educational content for learners with NDDs through collaborative creation.

Pedagogical and Institutional Perspectives

Technical capability is necessary but insufficient without pedagogical alignment and institutional readiness. The study (Garg, 2020) emphasizes the inclusive pedagogy as the center of gravity—AI should augment, not replace, human mediation and social learning opportunities. The work (Paseka, 2020) reports parental attitudes toward inclusion, vary by impairment type, influencing acceptance of classroom technologies; the work (Tohara, 2021) underscores educator digital-literacy development as a precondition for effective AI integration. Cross-cutting analyses and policy guidance (e.g., curriculum alignment, professional learning, equity and infrastructure) are consistently cited as limiting factors in scaling effective tools.

Knowledge Graphs, Domain Resources, and Information Access

AI-enabled applications such as sign language translation, real-time captioning, virtual reality, robotic assistance, and brain-computer interfaces are game-changing tools that promote inclusivity and independence for people with intellectual disabilities, paving the way for a more accessible and empowered future (Almufareh, 2023). Complementing classroom tools, AI systems that organize domain knowledge for families and practitioners have emerged. The authors (Singla, 2024) developed a knowledge-graph-driven chatbot for neurodevelopmental disorders that links symptoms, diagnoses, and resources, demonstrating how ontology-guided NLP can surface vetted information and navigation support—critical for equitable access and continuity of care across school and home environments.

V. CASE STUDIES

The AI-Based Learning Tools for Inclusive Education of Students with Neurodevelopmental Disorders and Disabilities is reported in Table 1. Two case studies are elaborated in the following section.

Case 1 — Learning Analytics for Active Reading (LEAF/BookRoll), Japan (Toyokawa, 2023)

1. Tool & Category: Learning & Evidence Analytics Framework (LEAF) with BookRoll — learning analytics–enhanced reading
2. Setting: Public school resource room (Japan), inclusive education context
3. Implementation: Two students used BookRoll for active reading tasks. LEAF collected detailed interaction logs (e.g., time on task, page navigation, annotations/markers), which teachers used to spot stumbling points and strengths. Interviews with teachers/parents triangulated log findings.
4. Targeted Population: Students with mild developmental disabilities in an inclusive setting
5. Outcomes: Logs helped identify reading difficulties (e.g., prolonged summarization time, frequent page flipping) and informed just-in-time support. The study proposes dashboard changes aligned to Universal Design for Learning and highlights needs for data portability and teacher data literacy.
6. Enablers/Challenges: Enablers—continuous logging; teacher reflection dashboards. Challenges—UDL-fit of dashboards for special needs, data sharing/portability, scaling teacher data literacy.

Case 2 — Microsoft Immersive Reader for Dyslexic Learners (Nair, 2023)

1. Tool & Category: Immersive Reader — AI-assisted reading (TTS, formatting to reduce visual crowding, focus tools).
2. Setting: Special school/center for dyslexia; complementary evidence from Microsoft education program materials.
3. Implementation: Small-N intervention with 18 students randomly assigned (experimental vs control). Immersive reader integrated into reading sessions to support decoding and fluency.
4. Targeted Population: Dyslexia (school-age learners)
5. Outcomes: Reported improvements in reading speed and accuracy in the experimental group. Complementary evidence notes reduced reading errors with optimized layout/spacing—design principles used within Immersive Reader.
6. Enablers/Challenges: Early introduction and targeted practice; need for continued sessions and teacher familiarity with features.

TABLE I
AI-BASED LEARNING TOOLS FOR INCLUSIVE EDUCATION OF STUDENTS WITH NEURODEVELOPMENTAL DISORDERS AND OTHER DISABILITIES

Category	Tool	Core Functionality	Inclusive Education Relevance	Evidence Base / Reference
Intelligent Tutoring Systems	MATHia (Carnegie Learning)	Adaptive math tutor that personalizes practice and feedback at the workspace/skill level	One-to-one guidance and pacing support learners who need scaffolded practice and frequent checks for understanding	Carnegie Learning research page summarizing recent efficacy studies and EMERALDS findings; product overview. (Carnegie Learning)
	ALEKS	Mastery-based adaptive platform that continuously assesses knowledge state and assigns targeted topics	Offers personalized remediation and progress monitoring; teachers report usefulness for varied needs	Product page; 2024 study on teacher use and perceived effectiveness. (Aleks, SpringerLink)
	Smart Sparrow	Authoring & delivery of adaptive lessons with branching based on learner responses	Enables individualized pathways for cognitive variability; now part of Pearson's adaptive ecosystem	Platform info; Pearson acquisition news (2020). (Smart Sparrow, EdSurge)
AI TTS / STT tools	Read&Write (Texthelp)	Literacy toolbar: text-to-speech, speech-to-text, word prediction, dictionaries	Widely used accommodation for dyslexia and writing difficulties; supports multimodal literacy	Product page; Texthelp guidance for dyslexia (2024). (Texthelp)
	NaturalReader EDU	AI text-to-speech (web/app) with high-quality voices	Assists learners with visual impairment or decoding challenges to access print content	EDU page. (NaturalReader)
	Google Speech-to-Text API	Real-time speech recognition via API and V2 docs	Live transcription aids deaf/hard-of-hearing students; supports captioning and note-taking	Official documentation. (Google Cloud)
Educational games / simulations	GCompris	Suite of foundational skill games (letters, numbers, logic)	Multiplatform, low-power; officially recommended for schools in several regions; suitable for diverse needs.	Official site + schools page. (GCompris)
	Endless Reader	Sight-word vocabulary app for early reading	Supports beginning readers and some dyslexic learners through multimodal word exposure	Google Play listing; University of Michigan Dyslexia Help note. (Google Play, Dyslexia Help)

Adaptive learning platforms	CogniFit	Personalized cognitive training games	Targets attention/memory/executive functions; can complement IEP goals for some learners	CogniFit overview; 2022 RCT on computerized cognitive training efficacy (context). (cognifit.com, PMC)
	Knewton Alta	Courseware with AI-driven personalized pathways and just-in-time remediation	Supports self-paced progress and reduces cognitive load with targeted explanations	Peer-reviewed overview (2022) describing Alta; Pearson efficacy portal. (ERIC, Pearson)
	DreamBox Learning (Math)	Adaptive K-8 math with embedded formative assessment	Evidence of improved math proficiency—useful for learners needing incremental scaffolds	Evidence for ESSA / research summaries; 2024 evaluation report. (DreamBox by Discovery Education, www-media.discoveryeducation.com)
AR/VR with AI integration	Osmo	Camera+reflector system; tangible pieces + vision AI for hands-on learning games	High engagement for students with autism/attention needs; supports motor planning & literacy numeracy	Official site; special-education practitioner write-up. (Osmo, The Autism Helper)
	zSpace	AR/VR learning with interaction in 3D content	3D visualization can aid concept comprehension for learners with cognitive/sensory challenges	zSpace site; synthesis of AR/VR impact in education. (Zspace, ITIF)
AI-enhanced AAC	Voiceitt	ASR tuned for non-standard/dysarthric speech; personalized training improves recognition	Gives a voice interface to learners with motor-speech disorders; supports participation	Company page; Amazon Science feature; 2024 scholarly article. (voiceitt.com, Amazon Science, Taylor & Francis Online)
	Tobii Dynavox (Eye-gaze)	Eye-tracking access and communication pathway with structured learning activities	Enables access for learners with severe motor impairments; progression from engagement to control	Eye Gaze Pathway; education/learning resources. (Tobii Dynavox Global)
	Predictable (Therapy Box)	Text-to-speech AAC app with smart prediction and multiple access methods	Supports users with ALS/MND, CP, autism, etc.; speeds message generation and independence	Product page; app store listing. (Therapy Box, Google Play)

VI. Discussion and Institutional Challenges

Institutional barriers to deploying AI-enabled learning solutions for students with NDDs in India are reported in the following section. The integration of AI-enabled learning tools in educational settings for students with NDDs in India faces significant institutional barriers. These challenges, while reflective of global trends, are amplified by socio-economic, infrastructural, and systemic disparities unique to the Indian context.

A. Funding Constraints

The insufficient financial support of inclusive education initiatives remains one of the barriers to the implementation of AI-based tools on a large scale. Although the National Education Policy (NEP) 2020 has focused on the use of technology, assistive technology budgets are not sufficient in most cases. Funding allocated by the government under schemes like Samagra Shiksha goes into infrastructure and teacher salaries rather than high-tech AI-enabled tools. Furthermore, private schools with greater financial resources embrace this technology more quickly, exacerbating the digital gap.

B. Infrastructural Gaps

The issue of inequality in digital infrastructure at state levels is still acute. Rural and semi-urban schools might not have a consistent internet connection, enough computing equipment or backup power to support AI-based learning systems. Overcrowded classrooms and shared devices still restrict the successful use of personalized AI tool even in urban schools. This gap is particularly detrimental for NDD students, who benefit most from consistent, uninterrupted tool usage.

C. Teacher Training and Capacity Building

To effectively employ AI-enabled learning tools, educators must possess certain digital competences as well as pedagogical skills. However, teacher training programs in India rarely prioritize AI-based inclusive technologies, resulting in underutilization or misapplication. Initiatives like DIKSHA and NISHTHA offer some digital training, but tailored modules for special educators are still rare.

D. Pedagogical Adaptation Challenges

Implementing AI in current curricula needs to align the functionality of the tools with the learning outcomes of the NDD students. This is usually inhibited by the constraints of strict syllabus, exam-driven approaches to teaching and a lack of curriculum flexibility. Also, not every AI-enabled tool has been adapted into the Indian language, which limits the access of students with other language backgrounds.

The table 2 reports a summary on the key insights from the reviewed studies and organizes them into clear, domain-appropriate guidance for three major stakeholder groups: Government/Policymakers, Educators and Institutions, and Technologists/Developers.

TABLE II
KEY RECOMMENDATIONS TO THE STAKEHOLDERS FOR THE EFFECTIVE IMPLEMENTATION OF INCLUSIVE LEARNING THROUGH AI

Stakeholder	Key Recommendations
Government / Policymakers	Establish national guidelines for ethical and inclusive AI deployment, aligned with UNESCO and OECD principles. Invest in accessible digital infrastructure and subsidize AI-based assistive tools for low-resource schools.

Educators / Institutions	Support large-scale teacher training programs to build AI literacy across special and mainstream education sectors. Integrate AI tools into Individualized Education Plans (IEPs) to support personalized learning for students with NDDs and disabilities. Use AI-driven analytics for early identification of learning or communication challenges. Promote blended human-AI instructional strategies that ensure human oversight and pedagogical appropriateness.
Technologists / Developers	Co-design AI tools with educators, therapists, and caregivers to ensure contextual relevance and usability. Prioritize explainable, transparent model design (e.g., interpretable analytics, user-friendly dashboards). Develop low-cost, mobile-first solutions to address resource constraints in the Global South and underserved communities.

CONCLUSION

The reported study conducted a comprehensive analysis of AI-enabled learning aids focused to meet the educational needs of children with neurodevelopmental disorders and other disabilities. The research reported how AI may bridge gaps in accessibility, customization, and engagement for different learners by methodically assessing existing technologies, rating their functional categories, and examining real-world implementations. The incorporation of case studies has increased the concrete impact of these tools on student participation, skill development, and academic accomplishment, while also identifying important institutional constraints that must be addressed for successful adoption. The findings demonstrate that, when implemented wisely, AI-powered solutions have the ability to improve inclusion, empower educators with adaptable instructional capabilities, and provide students with individualized learning experiences that address their specific strengths and needs.

In the future, the benefits of AI tools that are not only technologically advanced but also morally sound, transparent, and responsive to the socio-cultural backgrounds of diverse schools should be further explored. Particular attention should be given to the development of solutions that can be used in resource-limited environments, e.g., in rural schools, without losing the quality or accessibility. It will be essential to expand teacher training and to incorporate AI literacy, to foster co-design strategies that engage educators and students in the creation of tools, and to develop structures of tracking long-term learning outcomes to achieve sustainability of impact.

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