International Journal of Humanities Social Science and Management (IJHSSM)
Volume 6, Issue 1, Jan.-Feb., 2026, pp: 111-122 ISSN: 3048-6874
www.ijhssm.org

Artificial Intelligence in Special Education: A Comprehensive Review of AI-Powered Tools for Learners with Disabilities

Dr. Md. Mousuf Raza
Assistant Professor
College of Teacher Education, Darbhanga
Maulana Azad National Urdu University, Hyderabad, India

Dr. AftabAlam
Assistant Professor
College of Teacher Education, Darbhanga
Maulana Azad National Urdu University, Hyderabad, India

Date of Submission: 08-01-2026 Date of Acceptance: 20-01-2026

Abstract
Integrating Artificial Intelligence (AI) into educational environments offers significant potential to transform the learning experiences of individuals with disabilities, promoting inclusivity and addressing their varied needs.AI-based educational tools can transform and improve the way that individuals with disabilities receive individualized instruction, social-emotional support, and have access to the general education curriculum, including those with Sensory Impairments, Autism Spectrum Disorder (ASD), Learning Disabilities, and Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder (ADD/ADHD). The use of AI in education provides increased opportunities for personalized learning experiences, resulting in greater levels of academic engagement and improved academic performance. The implementation of AI technologies presents considerable challenges, such as high implementation costs, concerns about data privacy, and the potential for algorithmic bias. However, despite the challenges associated with the use of AI interventions, there is evidence that the use of AI has the potential to improve the reading skills of children with dyslexia, enhance the social skills of students with ASD, and enhance the diagnosis and personalized learning experiences for children with ADHD. This paper explores the evolutionary impact of AI in the education of individuals with disabilities, highlighting both the advantages and challenges. It also emphasizes the necessity of equitable, ethical, and inclusive AI-driven solutions to achieve maximum impact, which is crucial for creating barrier-free educational environments.

Keywords: *Artificial Intelligence (AI), Special Education, Machine Learning (ML), AI-based Interventions, Personalized Learning, Inclusion, AI-powered Tools*

I. Introduction

In 2011, the first World Report on Disability was jointly issued by the World Health Organization (WHO) and the World Bank. The report indicated that approximately one billion people, about 15% of the world's population, live with some form of disability. Moreover, 2-4% of people with disabilities face critical constraints in functioning (Raza, Md&Alam, Aftab., 2023). In response to such a grave scenario, the "United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)" has ensured a gamut of rights, including "the right to life, liberty and security of the person under Article 10 & 14, equality before the law and legal capacity under Article 12, freedom from torture under Article 15, and freedom from exploitation, violence and abuse under Article 16 (UNCRPD, 2006)". However, these rights are reflected in very few national constitutions, indicating that individuals with disabilities may be deprived of opportunities and resources.

To safeguard these rights, there is a need for technology that can serve the interests of individuals and society as a whole. Technology platforms and tools can unleash the creativity in individuals with and without disability. These technological advancements in assistive devices facilitate autonomy for those with disabilities, as demonstrated by the development of learning devices that have increased the learning capacities of children with dyslexia. The advancement in Artificial Intelligence (AI) and Machine Learning has broadened its scope for humankind. Artificial Intelligence technology has been developed to

International Journal of Humanities Social Science and Management (IJHSSM)
Volume 6, Issue 1, Jan.-Feb., 2026, pp: 111-122 ISSN: 3048-6874
www.ijhssm.org

perform complex tasks with the aid of computer tools, thereby alleviating human effort (Alam, A., Hasan, M., & Raza, M. M., 2022). However, it is worth mentioning here that machines cannot replace human beings, but facilitate people to improve the working methods of humans. The progress in AI now has the potential to contribute to bringing about progress in the field of education and learning, empowering individuals with special needs in education (Garg, S., & Sharma, S., 2020).

II. Disabilities

Disability is a part of the human condition that affects almost everyone at some point in their lives, either temporarily or permanently. Various organizations have defined disability in different ways. Still, it generally refers to impairments, limitations, or restrictions in a person's physical, mental, sensory, or cognitive functioning that may impede their full and equal participation in society (Raza, M. M., & Begum, S., 2022). These definitions typically emphasize the importance of accommodating and providing equal opportunities for individuals with disabilities to promote inclusivity and respect for their human rights.

"The International Classification of Functioning, Disability and Health (ICF)" brought to light the prominence of environmental factors that contribute to causing disability. The International Classification of Functioning, Disability and Health (ICF) identifies three categories of disability: Impairment, Disability and Handicap. The definitions from the World Health Organization (WHO) that are used by the United Nations reinforce those categories by defining impairment as "the loss or abnormal physiological structure/function" and disability as "the lack or limitation of the ability (for human beings) to accomplish a specific task or activity as normally done by one's demographic." (WHO 2007)

The WHO definitions above represent the basis of international legal and governmental frameworks to protect the rights and promote participation of people with disabilities. Additionally, as with all laws and regulations, the WHO definitions may differ between countries and even between regions within a country.

III. Artificial Intelligence (AI)

Technological advancements have a huge impact on all aspects of our lives. Over the last ten years, technology has continued to advance every day. The technology we use was once limited to labour market, has now migrated into every aspect of the average person's day-to-day life. One area that has greatly developed witin computer science over the past five decade is the exploration of the many ways that human demonstrate intelligence. This has led to significant progress within the field of artificial intelligence (Drigas, A. S., &Ioannidou, R. E., 2011).

Artificial intelligence comprises the study of algorithms and architectures that replicate intelligent behaviors such as reasoning, adaptation, and object manipulation. The term was coined by John McCarthy (considered as father of artificial intelligence) in 1955 and was formally proposed in 1956. AI is positioned as a subfield of computer science that deals with developing machines that replicate human behaviour (Verma, M. K., 2018). AI is distinct from psychology due to its focus on computational process and sets itself apart from computer science through its concentration on perception, reasoning and action. The objective is to enhance the intelligence and utility of machines by employing artificial neutral networks alongside scientific principles, including "If-then" propositions and logical constructs (Verma, M. K., 2018).

Artificial Intelligence certainly has the potential for changes in almost all spheres of life, including special education. Over the past few years or a decade, one has witnessed increasing interest in the prospect of AI to achieve better results in special education. Special Education refers to teaching individuals with disabilities or learning problems. The goal is to compensate for the special needs resulting from their disabilities. These AI-driven tools and technologies are mainly for personalized learning so that students with exceptional needs can overcome and be empowered to overcome their challenges and attain their full and maximum potential.

1. Artificial Intelligence and Individuals with Disabilities

Artificial intelligence (AI) is making it easier to create an inclusive educational experience for individuals with disabilities by providing personalized instruction, emotional support, and equal access to learning materials. Adaptive assistive technologies such as intelligent tutoring systems provide personalized learning for students with disabilities that account for their unique learning strengths, weaknesses, and pace of learning. This personalization increases understanding and retention of information for students with special needs (Bernal, N.C., &Prados, M.Á.H., 2024; Toyokawa et al., 2023). AI tools can assess attention spans, speech, and hearing capabilities, as well as provide adaptive content to address challenges associated with learning, including assisting children with autism to recognize facial expressions, develop social skills, and navigate unfamiliar surroundings (Gibellini et al., 2023; Knox et al., 2019).

This customization also involves delivering Individualized Education Plans (IEPs), promoting the students to engage withthe general education curriculum with their peers and develop social-emotional skills and self-confidence through active participation (Woolf et al., 2013). Additionally, AI reduces the administrative burden on teachers so that they can devote their time creating accessible resources (e.g., image descriptions) for visually impaired students, providing speech transcriptions for hearing-impaired students, and developing meaningful teacher-student interactions (Zahurin et al., 2024).

Despite these advancements, a few ethical challenges still persist with AI, such as the risk of compromising a student's data privacy when tracking performance, the possibility of algorithmic bias leading to increased inequity, and the cost of implementing AI being prohibitive for many under-resourced communities. However, when implemented fairly, AI helps to distribute valuable resources according to the needs of different learners, removing barriers to an inclusive classroom and ensuring successful outcomes for all learners (Volker et al., 2022; Paglialunga&Melogno, 2025).

2. AI tool for Individuals with Sensory Impairment

Sensory impairment is a condition that affects one or more of the body's sensory functions, primarily vision and hearing.Itrestricted an individual's ability to fully participate in their communities (WHO, 2021). Sensory impairment includes visual impairment (blindness and low vision), hearing impairments (deafness and hard of hearing), as well as speech and language disabilities and dual sensory loss (deaf-blindness), all of which are documented under the "Rights of Persons with Disabilities Act, 2016" (Ministry of Social Justice and Empowerment, Government of India, 2016). Globally, sensory impairment represents a large public health problem. Currently, there are at least 1.5 billion people around the world suffering from hearing loss and more than 2.2 billion people suffering from impaired vision (WHO, 2023; WHO, 2021). As far as concern of India, approximately 19% of 26.8 million people reporting disability have vision impairments; 19% of the population also report hearing impairments (Census of India, 2011). The rate of sensory impairment in India is particularly high in older people (Ministry of Statistics and Programme Implementation, Government of India, 2016). Projections suggest that by 2050 there will be approximately 2.5 billion people will have some degree of hearing loss, and over 700 million people will requirehearing rehabilitation (WHO, 2021).

2.1 Artificial Intelligence (AI) for Individuals with Visual Impairment

The emergence of Artificial Intelligence (AI) has revolutionized educational opportunities for individuals with visual impairment through innovative assistive technologies that provide greater accessibility, independence, and improved learning experiences. AI-based tools help to meet numerouseducational and functional needs by employing technologies such as computer vision, machine learning, natural language processing, and deep learning algorithms (Tsouktakou et al., 2024; Filipova, 2025). Examples of such technologies are, smart glasses like OrCamMyEye and Envision Glasses combine wearable cameras with AI,enabling users with the ability to read text, identify objects, recognize faces, and describe scenes in real time via auditory feedback. These tools significantly increase a user's ability to access printed material and navigate surroundings (Udayakumar et al., 2025; Seiple et al., 2025).

Specialized mobile applicationsare also benefiting the visually impaired individuals. The Play Store of the mobile hosts many highly successful applications that, by combining a mobile phone camera with AI algorithms, enable users to perform text recognition, visual scene description, currency recognition, colour and object identification, and many other tasks. Examples of such applications include, but are not limited to: Seeing AI (achieved or exceeded the highest user satisfaction level of 77.9 on the scale), Google Lookout, Airpoly Vision, TapTapSee, Envision AI, and Be My AI (Seiple et al., 2025; Stephen &Ikbal, 2023).Specialized educational applications such as Animal Watch use AI algorithms to enhance mathematical abilities in visually impaired students through accessible games and verbal problem-solving activities, while KNFB Reader employs optical character recognition (OCR) technology to convert printed documents into audio format (Tsouktakou et al., 2024). Navigation assistive technologies such asDeepNAVIemploy deep learning models through mobile phones to detect obstacles, determine the safest routes to travel, identify locations, and provide auditory and haptic feedback about real-time navigation without requiring internet access, helping users be more independent and mobile (Kuriakose et al., 2023).

Innovative AI tools, such as PeopleLens, an augmented reality system that uses computer vision algorithms, assistvisually impaired individualsin developing social skills via detection and identification of people's positions and gaze through spatial audio cues (Tsouktakou et al., 2024). The development of multimodal AI systems that combine wearable glasses with cameras, bone-conduction headsets to provide auditory commands, and haptic artificial skins worn on the wrist is providing users an increased level of environmental awareness and safety by providing information through multiple sensory channels (Tang et al., 2024). Additional products available that utilize advanced AI/machine learning technology for the visually impaired are; VizLens which is designed to interpret complex control panels and interfaces, Kibo XS devices provide a means of multilingual scanning and digitization of typed and hand-written documents in 60 different languages, OKO AI Copilot provides means to recognize pedestrian signals, and teachable object recognizers that allow users to train machine learning algorithms to assist users in identifying everyday objects (Stephen &Ikbal, 2023; Tsouktakou et al., 2024). Conversational AI tools such as ChatGPT and Call Annieenhance the learning experience of the visually impaired by providing ways for the user to access information without requiring additional action (hands-free text and voice interactions) (Stephen &Ikbal, 2023; Tsouktakou et al., 2024).

While the use of AI promotes educational opportunities for visual impairments individuals, several challenges remain, including the significant costs associated with purchasing such devices, variability in performance across the tasks, dependency on specific accessibility features to maximizethe benefit, limitations in interpreting complex scenes, cognitive load when processing multimodal data, and issues related to the security, social acceptance and privacy of users' data (Tsouktakou et al., 2024; Filipova, 2025; Seiple et al., 2025).

2.2 Artificial Intelligence (AI) for Individuals with Hearing Impairment

The emergence of AI hasbeen a game-changer for individuals with hearing impairments (including those who are deaf or hard of hearing), as ithas opened up new avenues for them inprevention, diagnostics, management and communication (Alkahtani, 2024; Khasiya& Jain, 2024). In particular, the development of AI-based hearing aids powered by machine learning and deep neural networks has enabled users toautomatically adapt to different acoustic environments, distinguish speech from background noise, andreceivecustomized listening experiences based on user preferences and daily activities (Umashankar et al., 2021). The introduction of commercial devices, such asSignia's Own Voice Processing, Widex Evoke with SoundSense Learn, Starkey Livio Edge AI, OpticonSyncro, Med-EI Rondo 3 and Cochlear Nucleus system,has all integrated AI into their products, to enhance speech clarity and reduce background noise (Umashankar et al., 2021).

Real-time communication technologies (based on AI) are rapidly advancing and creating real-time possibilities to communicate. Automatic speech recognition (ASR) technology offers instant conversion of speech to text, for example, with products such as InnoCaption, Otter.ai and Google Live Transcribe, allowing users who are Deaf or hard of hearing to participate in conversations, classes and workplaces and receive accurate real-time information (Khasiya& Jain, 2024). Sign language translation systems, including Hand Talk and the aiDproject's generative AI solutions, provide the ability to translate both text and speech into sign language with the aid of digital avatars, as well as video transcription services with a significant improvement in accuracy and reduction in digital memory footprints (Telefonica, 2024). Also, non-standard ASR products, like Google Project Relate, are enabling people with speech disabilities the ability to communicate independently and have their voice heard by using deep learning to identify and transcribe a wide range of atypical speech patterns (Khasiya& Jain, 2024). AI-powered diagnostic and management systems use machine learning algorithms to predict hearing loss progression, evaluate surgical outcomes (like post-tympanoplasty improvement in hearing and cochlear implant success) and determine optimal rehabilitation techniques through the use of automated audiometry and telehealth, especially in locations where resources are limited (Frosolini et al., 2024).

Despite the many benefits and advancements in AI, many challenges remain, including the variation in ASR accuracy between different languages and accents, the complexity of accurately interpreting sign language, including facial expressions and body language, high cost of devices, lack of accessibility of devices, and lack of comprehensive and diverse data sets to adequately remove bias and provide equitable representation for all linguistic and cultural groups (Frosolini et al., 2024; Alkahtani, 2024). However, with the continued advancements in AI technology, it is anticipated that personalization will increase, the ability to communicate in multiple languages simultaneously in real-time will improve, integration with smart devices will improve and that access to education, jobs, and communication will increase for the Deaf and hard-of-hearing community.

2.3 Artificial Intelligence (AI) for Individuals with Speech and Language Disabilities

The role of artificial intelligence (AI) is crucial inthe assessment and treatment process for individuals with speech and language disabilities, such as articulation disorders, dysarthria, dyslexia, and those who may benefit from augmentative and alternative communication (AAC) (Tbaishat et al., 2025; Georgiou, 2025). Machine learning techniques such as Support Vector Machines (SVM), Convolutional Neural Networks (CNN) and Random Forest Classifiers have demonstrated exceptional diagnostic precision, achieving accuracy rates between 92% and 98% for diagnosing developmental language disorders, dysarthria, stuttering, voice disorders, and aphasia (Tbaishat et al., 2025; Almutairi, 2024). In addition, automatic assessment tools such as AutoRSR and Lexiland provide approximately 90% accuracy and can be scaled for use in early detection in educational settings (Xiong et al., 2025).

Conversational assessments through Natural language processing and automatic speech recognition technologies are viable, but challenges persist in identifying atypical speech patterns across diverse groups (Georgiou, 2025). AI-powered augmentative and alternative communication (AAC) uses neural machine translation, computer vision, and machine learning, improve message construction efficiency through predictive language modeling and context-aware vocabulary support(Sennott et al., 2019). Through the use of neural encoder-decoder frameworks, Dysarthric Speech Reconstruction (DSR) technologies enable clinicians to reduce word errors associated with dysarthric speech compared to the person's original speech patterns. The combination of self-supervised learning and using discrete linguistic units for DSR has enhanced the overall quality of the reconstructed speech and increased resilience to background noise (Chen et al., 2025). In addition to DSR technology, current advancements have included serious game-based practices, mobile app therapy, robot-assisted therapy, and virtual reality-assisted intervention with A.I. technology to create personalized, data-driven therapeutic engagement (Deka et al., 2022).

However, significant challenges remain, including (but not limited to) a lack of diverse data sets for underserved languages and populations, a lack of understanding of "black box" algorithms, which can decrease trust in clinicians, inconsistent quality and outcome among different languages and dialects, a lack of integration with electronic health records, and an overall lack of AI literacy among Speech Language Pathologists (Georgiou, 2025; Tbaishat et al., 2025). In order to ethically implement Artificial Intelligence into practice, it is important to validate prospective data, have clear and transparent explainability, perform fairness audits at each level of data, develop regulatory frameworks to ensure clinical effectiveness, and implement a "human-in-the-loop" approach so that clinicians remain involved in the assessment, planning, and progress monitoring process (Green, J.R., 2024).

IV. AI tools for Individuals with Autistic Spectrum Disorder

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by ongoing challenges in social interaction, communication, and repetitive behaviours (WHO, 2025). A person diagnosed with ASD may experience several issues related to non-verbal communication, social interaction, sensory issues, and adapting to changes (American Psychiatric Association, 2023). It is estimated, that 61.8 million people globally (1 in 127 individuals) were diagnosed with ASD in 2021. The rate in North America is considerably higher than in Asia (1.01% compared to 0.41%) (Santomauro et al., 2025). In India, an estimated 1 to 1.5% of the child population under 10 years has ASD (Arora et al., 2018), which closely aligns with other reviews estimating 1 in 68 children (Chattopadhyay, N. 2024) and 1 in 65 children (Uke et al., 2024). However, early studies have limited their findings to hospital-based data, resulting in an underestimation of ASD (Chauhan et al., 2019). The child-based population estimates suggest that over 2 million people in the general population are likely to be affected by ASD. ASD is one of the 10 leading causes of non-fatal health burdens among those under 20 years of age globally.

The introduction of artificial intelligence has led to new possibilities for individualized and adaptive methods of education and therapeutic support for children with ASD in the areas of diagnosis, intervention, education, and behavioral support (Iannone&Giansanti, 2023; Solek et al., 2025). AI-powered diagnostic tools, including machine learning algorithms (Support Vector Machines, Convolutional Neural Networks and Multilayer Perceptrons) and deep learning models achieve 88 to 100% accuracy in diagnosing ASD using a variety of different data sources, including facial images, eye-tracking patterns, neuroimaging (fMRI, EEG), behavioral questionnaires, genetic markers and micro-biome composition (Solek et al., 2025).

AI-based socially assistive robots, such as the NAO robot and humanoid robots, provide interactive learning support, enhance the development of social skills, model appropriate behavior, and prompt users for joint attention based on individual engagement patterns (Silvera et al., 2022). AI-powered smart glasses interventions, such as the Brain Power Autism System and the Empowered Brain platforms, augmented reality games, facial emotion recognition, and enhance the socio-emotional behaviour of children with ASD through real-time attention monitoring, and have therefore been found to be highly acceptable and useful (Liu et al., 2017; Keshav et al., 2024).AI-based sensory management systems use machine learning and sensor fusion techniques to help identify and reduce the triggers of sensory distress and anxiety and to remove environmental stressors for children with ASD (Banos et al., 2024). Augmentative and alternative communication (AAC) programmmes, which incorporate AI conversational agents, such as Alex, use natural language processing and predictive algorithms to support the communication needs of non-verbal learners through interactive, personalized symbol interactions (Iacono et al., 2016).

The challenges include variability of the diagnostic accuracy across populations, small and limited diverse datasets, ethical privacy issues, administrative barriers in integrating AI into healthcare, and the need to collaborate across multiple disciplines to provide equitable and culturally sensitive AI solutions (Iannone&Giansanti, 2023; Solek et al., 2025). However, there are rapidly developing areas of AI in virtual reality, automated titration of therapeutic doses, and real-time adaptive feedback systems that provide increasingly precise and scalable intervention options to support children with ASD.

V. AI tools for Individuals with Learning Disabilities

Learning Disabilities (LD) are neurodevelopmental disorders that generally cause a person to struggle with the ability to acquire, process, and organize information (whether verbal or nonverbal), resulting in significant difficulties with developing academic skills such as reading, writing, and mathematics (Learning Disabilities Association, 2025). A person with LD may have a range of difficulties, including reading (dyslexia), written expression (dysgraphia), mathematics (dyscalculia), and working memory deficits, despite having average or above average intelligence (Scaria et al., 2023).There are approximately 15% (or "about 1 in 7") of students around the world are affected by learning disabilities; however, their prevalence varies across different regions (Crown Counselling, 2025). As far as India is concerned, the estimated pooled prevalence of learning disabilities (LD) among school-going children is 8-15%, with the estimated prevalence rates of specific LDs: dyslexia (11.2%), dysgraphia (12.5%) and dyscalculia (10.5%) prevalent among the primary school-aged population (Chacko et al., 2020). It is estimated that approximately 40 % of children with LD are unidentified/undiagnosed from their assigned classification, and only 68 % of children with LD actually graduate from high school, compared to 81 % of their peers without the disability(Crown Counselling, 2025).

AI is progressively transforming education for children with learning disabilities by providing adaptive and tailored solutions that are being applied in the case ofdyslexia, dyscalculia, and other specific learning disorders (Paglialunga&Melogno, 2025; Zhang et al., 2024).AI-enabled personalized learning systems, utilizing machine learning algorithms such as Naïve Bayes Classifier (identify errors in student work), Bayesian networks (recommend appropriate interventions based on error patterns), Random Forest (create multiple predictors and combine them into one single predictor depending on error combinations), and Support Vector Machines (creating models that make predictions of how well a student will perform given certain input parameters), modify educational content to individual learning styles and needs, showing significant effect sizes on arithmetic fluency (d=1.63) and reading comprehension (d=1.66) (Paglialunga&Melogno, 2025). ChatGPT-based interventions also offer interactive reading instruction,tailored reading comprehension exercises, and phonological support, demonstrating a high level of effectiveness,resulting in significant improvements in reading comprehension ($p < 0.001$, $d = 1.66$) among Arabic-speaking children with dyslexia (Gharaibeh et al., 2025).

Augmentative Alternative Communication (AAC) systems that integrate AI with visual pictograms lessen students' effort by 36.56% and interaction time by 66.34%, achieving 94.98% accuracy in personalized recommendations (Wang et al., 2022). Recommendation systems using collaborative filtering algorithms (item-based, user-based, weighted-hybrid models) suggest optimal digital tools and learning strategies, leading to an approximately one-point increase in students' marks on a scale of 1-10 (Morciano et al., 2024).VR-integrated AI platforms such as BESPECIAL combine virtual reality with machine learning to provide enhanced visualisation, leading to significant improvements in the academic performance and confidence of university students with dyslexia (Zingoni et al., 2021). Game-based AI interventions increase literacy skills by 39% and learning motivation by 42%, while digital literacy saw the largest increase of 56% (Sukasih et al., 2024). Tutorial agent systems allow students with learning disabilities to programme robots or AI systems, thereby promoting multisensory learning experiences (Zhang et al., 2024).

However, despite numerous benefits, considerable challenges remain, including variability in performance accuracy for different types of LD, limited research on identifying the long-term effectiveness of AI tools, limited access to diverse data sets leading to algorithmic bias, the cost of technology, accessibility of technology for students with disabilities, and insufficient professional development for educators on AI literacy and applications in the classroom(Paglialunga&Melogno, 2025; Zhang et al., 2024).

VI. AI tools for Individuals with ADD and ADHD

Attention-Deficit Hyperactivity Disorder (ADHD) and Attention Deficit Disorder (ADD) are persistent neurodevelopmental disorders that affect people's ability to pay attention, be hyperactive, and impulsive, causing problems in their daily lives at home, at school, and in social environments (NIMH, 2023). Individuals with ADHD/ADD encounter a range of difficulties, including trouble maintaining focus and concentrating on tasks, poor impulse control and decision-making, executive dysfunction affecting organization and time management, and social challenges impacting peer relationships and self-esteem (Cortese et al., 2023; Leafcare, 2024). Globally, the prevalence of ADHD in children and adolescents is approximately 8.0% (95% CI: 6.0-10%), with boys experiencing twice the prevalence of girls; approximately 5-12.4% in various countries, with attention subtypes being the most common (Ayano et al., 2023). The predominantly attention deficit (46.7% of total prevalence) is the most common prevalent subtype of ADHD, followed by hyperactivity/impulsivity type (33.7% of total prevalence) and combined type (20.6% of total prevalence) (Al-Wardat et al., 2024). In India, the pooled prevalence of ADHD among children ranges from 6.3% to 7.1% with regional variations from 1.3% to 28.9%; school-based studies report a 7.5% prevalence, while community-based studies report 1.9% with higher prevalence among lower socioeconomic groups and in males compared to females (Gore et al., 2025).

ADHD often co-occurs with learning disabilities, anxiety, and conduct disorders, complicating diagnosis and treatment. AI is modernizingscholastic and clinical support for pupils with ADHD, proposinggroundbreaking approaches to diagnosis, tailored interventions, and symptom management (Sun et al., 2025; Wang et al., 2025).AI-powered diagnostic tools using machine learning algorithms, including Support Vector Machines (SVM), accomplishing 66.1% diagnostic accuracy, and Convolutional Neural Networks (CNNs), achieving 95.83% accuracy analyze multimodal data such as functional magnetic resonance imaging (fMRI), electroencephalography (EEG), eye-tracking data, and behavioral questionnaire to differentiate ADHD from typically developing children and other neurodevelopmental disorders with high precision (Sun et al., 2025; Srivastava et al., 2024).

Neural network for brain imaging investigation employing Graph Convolutional Network (GCN) have reached up to 95.83% accuracy in distinguishing individuals with ADHD from healthy controls, identifying neural biomarkers and brain connectivity abnormalities (Srivastava et al., 2024).AI-based personalized treatment strategies for individuals diagnosed with ADHD use machine learning to analyze their genetic profiles, medical history, previous treatment responses, and the continuous tracking of data from wearable devices, to predict their responses to medications and help them choose optimal dosage, as well as to reduce side effects and optimize their treatment adherence (Bongurala et al., 2024). AI-based self-management and intervention tools, such as ChatGPT-based platforms and mobile applications, offerindividuals with ADHD personalized reminders, organizational tools for tasks, immediate coaching, and cognitive-behavioral therapy (CBT), thereby improving the patient's executive functions and better managing symptoms in everyday life (Bongurala et al., 2024).

Although there has been significant advancement in AI utilization for diagnosing and treating ADHD, there are still challenges that need to be addressed, including: (1) variability in the quality of data; (2) unclear interpretation of complex machine learning models; (3) lack of generalizability among diverse populations; and (4) inadequate clinical validation through very large datasets (Sun et al., 2025; Wang et al., 2025). Directions for future progress in this area require (a) multi-center studies that are larger in scale and integrate multimodal datasets to be successful; (b) development of explainable AI methods; (c) robust ethical frameworks that address privacy and algorithmic bias; and (d) expanded research around the prediction of treatment responses, prognostic modeling, and the long-term efficacy of treatment intervention. The ultimate success of AI as it pertains to the management and education of individuals diagnosed with ADHD will rely on the successful completion of all of the above.

VII. Conclusion

AI enhances inclusion for individuals with all types of disabilities by personalizing learning across various categories. Sensory tools improve navigation and communication, while autism aids foster essential connections. Learning platforms adjust to individual learning speeds, and ADHD systems help manage focus and impulses. Real-world studies demonstrate significant skill improvements, with notable increases in reading fluency and steady rises in social engagement. However, inequalities still hinder the full realization of potential. Rural areas often lack access to devices, and low-income schools face funding shortages. Local languages are frequently overlooked, and data laws vary widely by region. Bias in datasets can skew results, and teachers require practical AI training. Families should have a say in tool design, and policymakers must enforce strict standards, mandating transparency in all algorithms and requiring regular audits for fairness. Funding scalable solutions for under-resourced areas is essential, as is prioritizing human oversight. Integrating AI with educator expertise and forming cross-sector teams can drive ethical progress. Safeguards are crucial to unlocking true opportunities, making barrier-free education a reality where all learners can drive equitably.

References

[1]. Alam, A., Hasan, M., & Raza, M. M. (2022). Impact of artificial intelligence (AI) on education: Changing paradigms and approaches. Towards Excellence, 14(1).

[2]. Alkahtani, B. N. (2024). The impact of artificial intelligence on quality of life for deaf and hard of hearing students. American Annals of the Deaf, 169(4), 329-347.

[3]. Almutairi, M. (2024). Application of artificial intelligence in assessing speech, language, and voice disorders: A scoping review. International Journal of Recent Research in Social Sciences and Humanities, 11(1), 109-119.

[4]. Al-Wardat, M., Etoom, M., Almhdawi, K. A., Hawamdeh, Z., &Khader, Y. (2024). Prevalence of attention-deficit hyperactivity disorder in children, adolescents and adults in the Middle East and North Africa region: a systematic review and meta-analysis. BMJ open, 14(1), e078849.

[5]. American Psychiatric Association. (2023). Diagnostic and statistical manual of mental disorders (5th ed., text rev.). Arlington, VA: American Psychiatric Publishing.

[6]. Arora, N. K., Nair, M. K. C., Gulati, S., Deshmukh, V., Mohapatra, A., Mishra, D., . . .& INCLEN study group. (2018). Neurodevelopmental disorders in children aged 2–9 years: Population-based burden estimates across five regions in India. PLOS Medicine, 15(7), e1002615. https://doi.org/10.1371/journal.pmed.1002615

[7]. Ayano, G., Demelash, S., Gizachew, Y., Tsegay, L., &Alati, R. (2023). The global prevalence of attention deficit hyperactivity disorder in children and adolescents: An umbrella review of meta-analyses. Journal of affective disorders, 339, 860-866.

[8]. Banos, O., Comas-González, Z., Medina, J., Polo-Rodríguez, A., Gil, D., Peral, J., ...&Villalonga, C. (2024). Sensing technologies and machine learning methods for emotion recognition in autism: Systematic review. International Journal of Medical Informatics, 187, 105469.

[9]. Begum, S., & Raza, M. (2023). Evolution of community based rehabilitation in India: A review. Community Development Journal, 8, 146–153.

[10]. Bernal, N. C., &Prados, M. Á. H. (2024). Impacto de los sistemas de tutoríainteligente. Unarevisiónsistemática. Edutec,

RevistaElectrónica de TecnologíaEducativa, (89), 121-143.

[11]. Bongurala, A. R., Save, D., &Virmani, A. (2024). Revolutionizing attention deficit hyperactivity disorder with artificial intelligence. PLOS Mental Health, 1(6), e0000181. https://doi.org/10.1371/journal.pmen.0000181

[12]. Chacko, Deenu&Vidhukumar, Karunakaran. (2020). The Prevalence of Specific Learning Disorder among School-going Children in Ernakulam District, Kerala, India: Ernakulam Learning Disorder (ELD) Study. Indian Journal of Psychological Medicine. 42. 250. 10.4103/IJPSYM.IJPSYM_199_19.

[13]. Chattopadhyay, N. (2024). Autism Screening in India: Many a Chasm to Bridge. Indian Pediatrics, 61(4).

[14]. Chauhan, A., Sahu, J. K., Jaiswal, N., Kumar, K., Agarwal, A., Kaur, J., Singh, S., & Singh, M. (2019). Prevalence of autism spectrum disorder in Indian children: A systematic review and meta-analysis. Neurology India, 67(1), 100–104. https://doi.org/10.4103/0028-3886.253970

[15]. Chen, X., Yang, D., Wu, W., Wu, M., Xu, J., Wu, X., ...&Meng, H. (2025). DiffDSR: Dysarthric Speech Reconstruction Using Latent Diffusion Model. arXiv preprint arXiv:2506.00350.

[16]. Cortese, S., Song, M., Farhat, L. C., Yon, D. K., Lee, S. W., Kim, M. S., ...&Solmi, M. (2023). Incidence, prevalence, and global burden of ADHD from 1990 to 2019 across 204 countries: data, with critical re-analysis, from the Global Burden of Disease study. Molecular psychiatry, 28(11), 4823-4830.

[17]. Crown Counseling. (2025). Learning disabilities statistics: An overview for 2025. Retrieved from https://crowncounseling.com/statistics/learning-disabilities/

[18]. Deka, C., Shrivastava, A., Abraham, A. K., Nautiyal, S., & Chauhan, P. (2025). AI-based automated speech therapy tools for persons with speech sound disorder: a systematic literature review. Speech, Language and Hearing, 28(1), 2359274.

[19]. Drigas, A. S., &Ioannidou, R. E. (2011). A review on artificial intelligence in special education. World Summit on Knowledge Society, 385-391.

[20]. Filipova, E. (2025). Enhancing educational accessibility for visually impaired individuals through artificial intelligence: Challenges and opportunities. International Journal of Computer Applications, 186(67), 25–32. https://doi.org/10.5120/ijca2025924481

[21]. Frosolini, A., Franz, L., Caragli, V., Genovese, E., de Filippis, C., &Marioni, G. (2024). Artificial intelligence in audiology: A scoping review of current applications and future directions. Sensors, 24(22), 7126.

[22]. Garg, S., & Sharma, S. (2020). Impact of artificial intelligence in special need education to promote inclusive pedagogy. International Journal of Information and Education Technology, 10(7), 523–527.

[23]. Georgiou, G. P. (2025, September). Transforming Speech-Language Pathology with AI: Opportunities, Challenges, and Ethical Guidelines. In Healthcare (Vol. 13, No. 19, p. 2460). MDPI.

[24]. Gharaibeh, M., &Basulayyim, A. (2025). ChatGPT enhances reading comprehension for children with dyslexia in Arabic language. Disability and Rehabilitation: Assistive Technology, 1-14.

[25]. Gibellini, G., Fabretti, V., &Schiavo, G. (2023, April). Ai education from the educator's perspective: Best practices for an inclusive ai curriculum for middle school. In Extended abstracts of the 2023 CHI conference on human factors in computing systems (pp. 1-6).

[26]. Gore, M., & Morgan, J. (2025). Children with attention deficit hyperactivity disorder in India: Strengthening diagnosis, support, training and research. Journal of Indian Association for Child and Adolescent Mental Health, 21(1), 17-22.

[27]. Green, J. R. (2024). Artificial intelligence in communication sciences and disorders: Introduction to the forum. Journal of Speech, Language, and Hearing Research, 67(11), 4157-4161.

[28]. Iacono, T., Trembath, D., & Erickson, S. (2016). The role of augmentative and alternative communication for children with autism: current status and future trends. Neuropsychiatric disease and treatment, 12, 2349–2361. https://doi.org/10.2147/NDT.S95967

[29]. Iannone, A., &Giansanti, D. (2023). Breaking barriers—The intersection of AI and assistive technology in autism care: A narrative review. Journal of Personalized Medicine, 14(1), 41.

[30]. Khasiya, C., & Jain, Y. C. (2024). Catalyst for inclusive communication: The role of artificial intelligence in enhancing accessibility. International Journal of Research Publication and Reviews, 5(2), 975–980.
[31]. Knox, J., Wang, Y., & Gallagher, M. (2019). Introduction: AI, inclusion, and 'everyone learning everything'. In Artificial intelligence and inclusive education: Speculative futures and emerging practices (pp. 1-13). Singapore: Springer Singapore.
[32]. Kuriakose, B., Shrestha, R., &Sandnes, F. E. (2023). DeepNAVI: A deep learning based smartphone navigation assistant for people with visual impairments. Expert Systems with Applications, 212, 118720.
[33]. Leafcare. (2024). Common ADHD challenges and characteristics. Retrieved from https://leafcare.co.uk/blog/common-adhd-challenges-and-characteristics/
[34]. Learning Disabilities Association. (2025). What are learning disabilities?. Retrieved from https://ldaamerica.org/advocacy/lda-position-papers/what-are-learning-disabilities/
[35]. Liu, R., Salisbury, J. P., Vahabzadeh, A., &Sahin, N. T. (2017). Feasibility of an Autism-Focused Augmented Reality Smartglasses System for Social Communication and Behavioral Coaching. Frontiers in pediatrics, 5, 145. https://doi.org/10.3389/fped.2017.00145
[36]. Ministry of Social Justice and Empowerment, Government of India. (2016). The Rights of Persons with Disabilities Act, 2016. https://www.indiacode.nic.in/bitstream/123456789/15939/1/the_rights_of_persons_with_disabilities_act,_2016.pdf
[37]. Ministry of Statistics and Programme Implementation, Government of India. (2016). Disabled persons in India: A statistical profile. https://www.mospi.gov.in/sites/default/files/publication_reports/Disabled_persons_in_India_2016.pdf
[38]. Morciano, G., Llergo, J. M. A., Zingoni, A., Bolivar, E. Y., Taborri, J., &Calabrò, G. (2024). Use of recommendation models to provide support to dyslexic students. Expert Systems with Applications, 249, 123738.
[39]. National Institute of Mental Health. (2023). Attention-deficit/hyperactivity disorder: What you need to know. Retrieved from https://www.nimh.nih.gov/health/publications/attention-deficit-hyperactivity-disorder-what-you-need-to-know
[40]. Paglialunga, A., &Melogno, S. (2025). The Effectiveness of Artificial Intelligence-Based Interventions for Students with Learning Disabilities: A Systematic Review. Brain Sciences, 15(8), 806.
[41]. Raza, M. M., & Begum, S. (2022). Community-based rehabilitation: A strategy to promote inclusion of persons with disabilities in developing countries. Excellence International Journal of Education and Research, 13(3).
[42]. Raza, M., &Alam, A. (2023). Assistive technology (AT) for students with visual impairment in inclusive classroom: An overview. https://doi.org/10.13140/RG.2.2.13940.12169
[43]. Santomauro, D. F., et al. (2025). The global epidemiology and health burden of autism spectrum disorder. The Lancet Psychiatry, 12(1), 17–28. https://doi.org/10.1016/S2215-0366(24)00236-3
[44]. Scaria, L. M., Bhaskaran, D., & George, B. (2023). Prevalence of Specific Learning Disorders (SLD) Among Children in India: A Systematic Review and Meta-Analysis. Indian journal of psychological medicine, 45(3), 213–219. https://doi.org/10.1177/02537176221100128
[45]. Seiple, W., van der Aa, H. P., Garcia-Piña, F., Greco, I., Roberts, C., & van Nispen, R. (2025). Performance on activities of daily living and user experience when using artificial intelligence by individuals with vision impairment. Translational Vision Science & Technology, 14(1), 3-3.
[46]. Sennott, S. C., Akagi, L., Lee, M., & Rhodes, A. (2019). AAC and artificial intelligence (AI). Topics in language disorders, 39(4), 389-403.
[47]. Silvera-Tawil, D., Bruck, S., Xiao, Y., & Bradford, D. (2022). Socially-assistive robots to support learning in students on the autism spectrum: investigating educator perspectives and a pilot trial of a mobile platform to remove barriers to implementation. Sensors, 22(16), 6125.
[48]. Solek, P., Nurfitri, E., Sahril, I., et al. (2025). The role of artificial intelligence for early diagnostic tools of autism spectrum disorder: A systematic review. Turkish Archives of Pediatrics, 60(2), 126–140.
[49]. Sri Sukasih, S. S., Andrijati, N., &Nurharini, A. (2024). Integration of Games-Based

Artificial Intelligence to Support Differentiated Learning and Literacy Skills of Inclusive Students with Specific Learning Disorders. Journal of Management World, 2024(4), 454-462.
[50]. Srivastava, P., Arif, A., & Singh, S. (2024). Artificial intelligence in decoding ADHD. International Journal of Neurology and Neurosurgery, 16(1-2), 7–16.
[51]. Stephen, G., &Ikbal, A. (2023). Artificial intelligence powered tools for people who are blind users in libraries—An overview to guide special users by the librarians. International Journal of Science, Engineering and Technology, 11(6), 621–629.
[52]. Sun, B., Cai, F., Huang, H., Li, B., & Wei, B. (2025). Artificial intelligence for children with attention deficit/hyperactivity disorder: a scoping review. Experimental Biology and Medicine, 250, 10238.
[53]. Tang, J., et al. (2024). AI-powered wearable navigation system for blind individuals. Nature Machine Intelligence.
[54]. Tbaishat, D., Al-Shafei, R., &Odeh, M. (2025). The role of AI in the diagnosis of speech and language disorders: A systematic mapping study. Digital Health, 11, 20552076251379769.
[55]. Telefónica. (2024). How AI is transforming the lives of hearing impaired and hard of hearing people. Retrieved from https://www.telefonica.com/en/communication-room/blog/artificial-intelligence-transforming-lives-hearing-impaired-hard-hearing-people/
[56]. Toyokawa, Y., Horikoshi, I., Majumdar, R., & Ogata, H. (2023). Challenges and opportunities of AI in inclusive education: a case study of data-enhanced active reading in Japan. Smart Learning Environments, 10(1), 67.
[57]. Tsouktakou, A., Hamouroudis, A., &Horti, A. (2024). The use of artificial intelligence in the education of people with visual impairment. World Journal of Advanced Engineering Technology and Sciences, 13(1), 734-744.
[58]. Udayakumar, D., Gopalakrishnan, S., Raghuram, A., Kartha, A., Krishnan, A. K., Ramamirtham, R., ...&Raju, R. (2025). Artificial intelligence-powered smart vision glasses for the visually impaired. Indian Journal of Ophthalmology, 73(Suppl 3), S492-S497.
[59]. Uke, P., Gaikwad, S., Vagha, K., &Wandile, S. (2024). Unraveling the spectrum: A comprehensive review of autism spectrum disorder in India. Cureus, 16(6).
[60]. Umashankar, A., Anusha, M. N., &Pachaiappan, C. (2021). Applications of artificial intelligence in hearing aids and auditory implants: A short review. Journal of Hearing Science, 11(3), 20–23. https://doi.org/10.17430/JHS.2021.11.3.2
[61]. United Nations. (2006). Convention on the Rights of Persons with Disabilities. https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html
[62]. Verma, M. K. (2018). Artificial intelligence and its scope in different areas with special reference to the field of education. International Journal of Advanced Educational Research.
[63]. Volker, E., Gupta, S., & Brown, B. (2022). Inclusive education: advantages and overcoming barriers. MacEwan University Student eJournal, 6(1).
[64]. Wang, M., Muthu, B., &Sivaparthipan, C. B. (2022). Smart assistance to dyslexia students using artificial intelligence based augmentative alternative communication. International Journal of Speech Technology, 25(2), 343-353.
[65]. Wang, X., Jia, Q., Liang, L., Zhou, W., Yang, W., & Mu, J. (2025). Artificial intelligence in ADHD: a global perspective on research hotspots, trends and clinical applications. Frontiers in Human Neuroscience, 19, 1577585.
[66]. Woolf, B. P., Lane, H. C., Chaudhri, V. K., &Kolodner, J. L. (2013). AI grand challenges for education. AI magazine, 34(4), 66-84.
[67]. World Health Organization. (2007). International classification of functioning, disability, and health: Children & youth version: ICF-CY. World Health Organization.
[68]. World Health Organization. (2021). World report on hearing. https://www.who.int/publications/i/item/world-report-on-hearing
[69]. World Health Organization. (2023). Blindness and vision impairment. https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment
[70]. World Health Organization. (2025). Autism spectrum disorders. Retrieved from https://www.who.int/news-room/fact-sheets/detail/autism-spectrum-disorders

[71]. Xiong, J., Redmond, S., &Govindaraju, V. (2025). AI to screen for language and speech disorders among children. University at Buffalo News. Retrieved from https://www.buffalo.edu/news/releases/2025/04/AI-screens-language-speech-disorders-children.html
[72]. Zahurin, K., Mamat, N., wan Ali, W. N. H., &Abas, H. (2024). The influence of robotic process automation on the administrative workload of teachers. Open International Journal of Informatics, 12(1), 47-56.
[73]. Zhang, L., Carter Jr, R. A., Liu, Y., &Peng, P. (2024). Let's CHAT about Artificial Intelligence for students with disabilities: A systematic literature review and meta-analysis. Review of Educational Research, 00346543241293424.
[74]. Zingoni, A., Taborri, J., Panetti, V., Bonechi, S., Aparicio-Martínez, P., Pinzi, S., &Calabrò, G. (2021). Investigating issues and needs of dyslexic students at university: Proof of concept of an artificial intelligence and virtual reality-based supporting platform and preliminary results. Applied Sciences, 11(10), 4624.