Artificial Intelligence-Driven Inclusive Education Management: Enhancing Accessibility and Learning Outcomes for Students with Disabilities

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HOW TO CITE:
Annu Chauhan, Meenu Shant Priya, Kavita Singh, Komal, Gourav Koundal, Ritu Benjamin, Jaya Chandra (2026). Artificial Intelligence-Driven Inclusive Education Management: Enhancing Accessibility and Learning Outcomes for Students with Disabilities. International Journal of Special Education, 41(13s), 01-14

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ABSTRACT:
The education system is undergoing a significant transformation through the power of Artificial Intelligence (AI), which is making learning more accessible, personalized, and inclusive for students with disabilities. The present study explores the contribution of AI based inclusive education management to the improvement of accessibility and learning outcomes of students with disabilities. Designations of quantitative research type were used and the data collected were primary data that was gathered via a structured questionnaire from 210 respondents consisting of a student with disabilities, teachers, special educators, academic administrators, and educational support staff. Five aspects of AI in inclusive education management were studied: Accessibility Support Systems, AI-Based Assistive Technologies, Personalized Learning Systems, Intelligent Tutoring Systems, and Predictive Analytics and Student Monitoring. The data were analysed on SPSS by reliability analysis, descriptive statistics and multiple regression analysis. The results showed that the reliability of all constructs was good, as Cronbach's Alpha values were above 0.70. The regression results showed that all five dimensions had significant and positive influence on learning outcomes, meaning that all five dimensions explained 65.9% of the variance of the dependent variable. The main predictor of learning outcomes was Personalized Learning Systems. The study finds that AI-driven educational technologies have a significant impact in promoting the accessibility, participation, engagement, satisfaction, and

academic outcomes of students with disabilities, which leads to more inclusive and equitable learning environments.

Keywords: Artificial Intelligence (AI), Inclusive Education Management, Students with Disabilities, Accessibility Support Systems, AI-Based Assistive Technologies

1. Introduction

Education is considered as one of the key pillars of individual empowerment, social inclusion and economic development (Labeeque & Sanaullah, 2019). In the last few decades, it has been increasingly acknowledged that all learners, irrespective of their physical, sensory, cognitive or developmental differences, have the right to access quality education, and that this must be done equitably (Camilleri & Camilleri, 2019). Inclusive education is not merely desired to be done by placing students with disabilities in mainstream classes but also about creating learning spaces that are inclusive and supportive of students with diverse needs and school participation with meaningful learning outcomes (Deshmane & Thombre, 2024). Although there has been much policy change and international agreements made for achieving educational equity, there are still substantial barriers that face many of the students with disabilities that hinder their full participation in educational activities (Agbedahin, 2019).

Learning challenges faced by learners with disabilities are multidimensional involving inaccessible learning materials, inadequate instructional adaptations, communication difficulties, limited assistive resource and insufficient institutional support (AlKharouf et al., 2024; Beyene et al., 2023). Traditional education models tend to have a uniform approach to teaching which is not always suitable for students with visual impairments, deaf-blindness, autism spectrum disorders, learning disabilities, intellectual disabilities or physical impairments (Ambili et al., 2024). As a result, the majority of learners experience challenges in comprehending the content, communicating with the teacher and fellow students, and showcasing their learning abilities. These barriers may lead to lower levels of education completed, less participation and less opportunities for personal and professional growth (Zongozzi, 2022).

Digital technologies continue to evolve rapidly giving new opportunities for educational practices to change and for issues of access and accessibility to be addressed (Zou et al., 2025). In this list of technological innovations, Artificial Intelligence (AI) can be described as one of the impactful innovations that potentially transforms the process of teaching, learning, and educational management (Asy'ari & Sharov, 2024). AI is a collective term used to describe various forms of computation that help a computer to do tasks that are normally done by humans, such as making predictions, processing language, recognising patterns and learning from data, and to aid in decision making. AI driven systems are increasingly being used in education to customize learning experiences, automate administrative tasks, offer intelligent support, and deliver insights to inform teaching and learning (Lopez et al., 2024).

AI has the potential to tackle the needs of students with disabilities in a wide variety of ways.AI can help meet the needs of students with disabilities in many different ways (Chalkiadakis et al., 2024). AI systems can adjust to the specific needs, preferences, and performance of each learner, offering personalized learning solutions, which is a key feature distinct from traditional educational technologies that tend to offer a one-size-fits-all approach.This is another key aspect of AI systems, as opposed to traditional educational technologies, which often come with a single solution – AI systems can adapt dynamically to individual learner characteristics, preferences, and performance levels (Lopez-Gazpio, 2025). The AI platforms can pinpoint certain learning difficulties and suggest targeted interventions by analysing the ongoing

interactivity between learners and educational materials.By observing and analysing the continuous interaction between learners and educational content, AI-driven platforms can detect specific learning challenges and recommend personalised interventions. This adaptability allows schools to break away from the traditional, uniform approach to teaching and learning and create more flexible learning environments that meet the needs of all students and promote academic achievement (Pagliara et al., 2024).

The potential of AI to enhance the accessibility of education, particularly through the development of assistive technologies, is one of the most exciting prospects in inclusive education (Mohammed & Watson, 2019). The development of speech recognition systems, text-to-speech applications, automated captioning tools, language translation technologies, and intelligent communication aids has greatly increased the access opportunities for students with disabilities to access educational content independently (Fitas, 2025). AI-driven screen readers and image recognition software help learners with visual impairments access digital resources, and real-time transcription and captioning for learners with hearing loss. Likewise, predictive text applications and communication support systems help students who have speech and language challenges to communicate their ideas more effectively (Ahmed et al., 2025). These innovations not only overcome the obstacles to participation but also foster learner autonomy and confidence.

AI can help with educational inclusion by offering tailored learning journeys.In addition to accessibility improvements, AI plays a role in educational inclusion by providing personalized learning paths. Students with disabilities may have different learning styles, and teaching methods and supports need to be tailored to accommodate their individual differences in learning (Kooli & Chakraoui, 2025). The learning management system with AI technology can use the learner's achievement data to discover strengths and weaknesses and present personalized content in line with the learner's learning goals. This personalization enables students to learn at their own rate and receive feedback and support that is targeted (George & Wooden, 2023). This consequently helps learners to be more involved with learning materials, more motivated, and to get better learning results (Igbokwe, 2023).

AI technologies are also integrated into educational management, providing valuable support to teachers and administrators. Predictive analytics and intelligent monitoring systems can assist administrators and educators in identifying students who might be struggling with their education or at risk of falling behind (Khairullah et al., 2025). Early identification allows for interventions, resource allocation and planning of support to be made at the right time and prevents gaps from growing over time. Moreover, AI-based decision support systems help institutions to assess the effectiveness of the programs, plan accessibility services, and formulate evidence-based strategies for inclusive education implementation (Aderibigbe et al. 2023).

While there are numerous benefits of AI adoption, there are also several challenges that need to be addressed to ensure that AI is implemented in an equitable and responsible manner (Jørgensen & Ma, 2025). Issues of data privacy, algorithmic bias, technological accessibility, infrastructure constraints and ethical governance are still important concerns (Arora, 2020). AI systems must be developed and implemented in a manner that respects the rights of learners and the privacy of sensitive data and prevents the perpetuation of inequalities. Furthermore, teachers should receive the necessary training and professional development to successfully apply AI tools to their inclusive teaching practices (Melo-López et al., 2025).

In this context, the knowledge of how AI can assist students with disabilities has gained significant relevance as educational systems continue to adapt to the technological progress and growing emphasis on the inclusion of all students.Given the ongoing evolution of educational systems in the face of technological

advancements and rising expectations for inclusive education, the importance of understanding how AI can support students with disabilities has only grown. This is the case because AI and inclusive education have the potential to provide more accessible, adaptive and learner-centred learning environments than ever before (Bulathwela et al., 2024). In this paper, the author reviews how inclusive education management is becoming an important role in the application of AI to access and improve learning outcomes for students with disabilities (Ahmed et al., 2025). It examines the major uses of technology, the educational impacts, implementation issues, and the potential for future research and practice, adding to the debate about how to create an equitable and sustainable educational environment.

Literature Review

Artificial Intelligence (AI) is rapidly becoming a game-changer in the realm of inclusion, accessibility, and educational equity for people with disabilities. For disabled individuals, AI-powered devices like voice recognition systems, smart glasses, intelligent prosthetics, wearable monitoring gadgets, and adaptive assistive technology have greatly enhanced their ability to communicate, navigate, access and utilize healthcare, and manage their daily lives independently. These innovations not only facilitate personalized support and early diagnosis, but also offer real-time assistance and improve the quality of life, promoting greater social participation and autonomy (Almufareh et al., 2024; Alsaleh, 2026; Bhavana et al., 2024). In addition, AI tools like real-time captioning, sign language translation, brain computer interfaces and robotic support have shown great promise in enhancing communication, learning and functioning for individuals with intellectual and developmental disabilities (Almufareh et al., 2023).

Within the educational domain, AI-powered adaptive learning systems have revolutionized inclusive education by offering personalized learning experiences tailored to individual abilities, learning styles, and accessibility requirements. They leverage real-time analytics, natural language processing and machine learning algorithms to tailor instruction, give instant feedback, and facilitate students with disabilities' cognitive learning. Several studies have shown that adaptive learning platforms with AI have a positive impact on educational disparities, student engagement, academic performance, knowledge retention and accessibility between students with disabilities and peers (Ayeni et al., 2024). Likewise, AI has developed from AI-driven learning wherein students are mere recipients of instruction to AI-driven personalized learning environments that centre students in the learning process, allowing them to have more control over their learning experiences through adaptive & data-driven technologies (Kyambade et al., 2025).

However, the use of AI in the process of Educational Leadership and Management further enhances inclusive educational environments. With AI systems, decision-making is powered by data, real-time tracking of inclusion metrics, and culturally responsive interventions that benefit diverse student populations. The technologies can improve institutional responsiveness, planning and inclusive leadership, which are essential for more equitable education in a multi-cultural and global context (Mariyono et al., 2024). Furthermore, language learning applications have developed such tools as text-to-speech systems, audio descriptions, interactive learning platforms, and natural language processing (NLP) tools that increase access for students who are visually impaired, hearing impaired, or physically challenged. These innovations provide equal opportunities for learning and promote communication, independence, and social integration for students with disabilities (Asrifan et al., 2025).

AI's ability to generate inclusive learning environments through responsive support for a range of learning needs and those with learning difficulties has also been increasingly recognized in recent research. AI technologies help achieve equal opportunities to learning by enabling differentiated teaching, adaptive testing, and customized interventions. But problems like poor

digital infrastructure, low level of technology skills among teachers, data privacy issues, and issues of academic honesty still exist in the way the initiative is taking shape. Therefore, overcoming these barriers through investments in information and communication technologies, educator training, collaboration between stakeholders and ethical governance structures remains vital in order to fully capitalize on the potential of AI in the educational domain (Mbambo & Du Plessis, 2025).

AI is transforming the learning landscape in STEM, offering a set of tools that improve access, engagement, and success for learners with disabilities.AI is making a significant impact in STEM education, providing a suite of tools that boost access, engagement, and achievement for students with disabilities. Intelligent Tutoring Systems, Adaptive Learning Environments and Personalized Content Delivery mechanisms help develop critical thinking, inquiry-based learning, problem-solving skills, and meet Universal Design for Learning (UDL) principles. These technologies provide opportunities to help address achievement gaps and foster equitable access to STEM subject areas. However, challenges with algorithmic bias, representation in training data sets, and student data security require careful consideration to ensure that AI-based educational interventions are inclusive and equitable (Kohnke & Zaugg, 2025).

AI-powered personalized learning is a constantly developing field, with adaptive learning systems, intelligent learning analytics, personalized content suggestions, and intelligent tutoring platforms all playing a role. While these technologies provide significant potential to improve learners' engagement and effectiveness, there are also technical accessibility, teacher-AI collaboration, algorithmic fairness, and ethical implementation challenges. Moving forward, the need for interdisciplinary cooperation, inclusive design and universally agreed upon assessment systems is highlighted, all to facilitate the long-term adoption of AI in education (Patel, 2025).

While the potential of AI for disability inclusion and accessibility in education is significant, the need to address ethical and social concerns has consistently been highlighted. Algorithmic bias, privacy protection, the cost of technology, access to technology and the digital divide are possible exacerbating factors of inequality. Researchers call for the creation of human-centric, inclusive and ethically responsible Artificial Intelligence (AI) systems, which focus on accessibility, transparency, fairness, and user involvement in the design and development process (Almufareh et al., 2024; Bhavana et al., 2024; Alsaleh, 2026). The papers as a whole show the potential of AI to revolutionise the landscape of disability inclusion and personalised education, paving the way for more inclusive, accessible, and equitable learning environments that support people with disabilities to reach their full academic potential, to be independent learners, and to participate socially.

3. Research Methodology

3.1 Research Design

The research design used in this study was quantitative research.The type of research in this study was a quantitative research approach to study the role of Artificial Intelligence (AI)-based inclusive education management in improving accessibility and improving learning outcomes for students with disabilities. The primary data is collected from the respondents who are related to the educational institutions that have adopted and implemented AI in teaching and learning, using a cross-sectional survey approach. The quantitative design is deemed suitable as it allows for a systematic analysis of the relationships between the variables and statistical analysis of the perceptions of the respondents on the use of AI in education. This study sought to build empirical evidence that demonstrates the impact of AI technologies on the development of inclusive learning environments and students with diverse educational needs.

3.2 Population and Sample

The study aimed to identify the target population, which included students with disabilities, teachers, special educators, academic administrators, and educational support professionals in schools, colleges, and universities

using AI-based educational technologies. Participants were chosen from those institutions that actively conduct digital learning and accessibility initiatives, as this research aimed to gain insight into the effectiveness of AI tools for inclusive education management. The sample size of 210 respondents was deemed to be sufficient to ensure adequate representativeness of the study population to allow for statistical analysis to be undertaken. Stratified random sampling was used to ensure that the sample reflected the representative sample of different categories of participants which further ensured that the findings were reliable and generalizable.

3.3 Data Collection Instrument

A structured questionnaire was designed following a comprehensive literature review on artificial intelligence, inclusive education, educational technology, accessibility support systems, and learning outcomes, which was used to gather primary data. The questionnaire was divided into two parts. The first section gathered demographic data on age, gender, educational level, institutional affiliation, professional role, and experience with AI-enhanced technologies in education.The first section collected demographic data about age, gender, educational level, institutional affiliation, professional role, and experience with AI technology in education. The second section comprised the items of measuring accessibility enhancement, assistive technologies using AI, personalized learning systems, intelligent tutoring systems, learner engagement, academic achievement and educational effectiveness. The responses were captured on a five-point Likert scale, from strongly disagree to strongly agree, which allowed us to gauge respondents' attitudes and perceptions about education using AI.

3.4 Variables of the Study

The study used AI-DIEM as independent variable and Learning Outcomes for Students with Disabilities as dependent variable. The independent variable comprised a variety of dimensions such as accessibility support systems, AI-based assistive technologies, personalized learning platforms, intelligent tutoring systems, and predictive analytics applications. The dependent variable was on the different components of learning outcomes such as academic achievement, learner engagement, educational participation, learning satisfaction, and self-efficacy. They were chosen from previous literature that has shown potential for impact of AI technologies on inclusive educational practices and student success.

3.5 Data Collection Procedure

Data collection was done online and offline for three months. Questionnaires were distributed after obtaining the permission of the Educational Institutions involved. The purpose of the study was explained and it was explained that they would participate voluntarily. The confidentiality and anonymity of the research process were maintained to ensure honest and unbiased response. Completed questionnaires were thoroughly checked for missing or inconsistent answers and only valid answers were used for further analysis.

3.6 Reliability and Validity Assessment

The reliability and validity of the research instrument were carried out to ensure the quality of the research instrument. Content validity was achieved by having experts from the fields of artificial intelligence, educational technology and inclusive education review the content. The suggestions they made were taken into consideration to ensure that the items in the questionnaire were made more understandable and relevant. To ensure the reliability of the instrument, a pilot study was carried out on 30 respondents before the main study. The internal consistency was tested by Cronbach's Alpha coefficient, with a score higher than 0.70 being an acceptable level of reliability. In addition, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were used for the assessment of construct validity. To determine the appropriateness of the data for factor analysis, the Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity were used.

3.7 Data Analysis Techniques

Data which is collected was analyzed by using software of Statistical Package for Social Sciences (SPSS) and Software of Structural Equation Modeling (SEM). Demographic characteristics and responses of the participants were summarized using descriptive statistical techniques such as frequencies, percentages, means and standard deviations. The reliability analysis was carried out with Cronbach's alpha and validity was carried out with the procedure of factor analysis. Correlation analysis, regression analysis was used as inferential data analysis in order to study the relationship between study variables. Moreover, the proposed conceptual framework was evaluated and the hypothesized relationships between AI-based inclusive education management and learning outcomes of students with disabilities were tested using Structural Equation Modeling (SEM).

3.8 Research Hypotheses

H1: Accessibility support systems positively influence learning outcomes among students with disabilities.

H2: AI-based assistive technologies positively affect educational participation among students with disabilities.

H3: Personalized learning systems significantly enhance learner engagement.

H4: Intelligent tutoring systems positively contribute to academic achievement.

H5: Predictive analytics and student monitoring systems positively influence learning satisfaction.

H6: Artificial intelligence-driven inclusive education management has a significant positive effect on overall learning outcomes for students with disabilities.

4. Results and Discussion

4.1 Demographic Profile of Respondents

The number of valid responses obtained for the study is 210. The demographic information included gender, age, educational level, respondent category, type of disability, institution type, and experience with AI-based educational technologies. The cross-section of the respondents resulted in representation from a wide range of stakeholder groups associated with inclusive education, such as students with disabilities, teachers, special educators, academic administrators and educational support staff. This diversity enhanced the reliability of research results and made it possible to get a full picture of the effectiveness of inclusive education management with the help of AI.

Table 1. Demographic Characteristics of Respondents (N = 210)

Variable	Category	Frequency	Percentage (%)
Gender	Male/Female	210	100
Age	Various Categories	210	100
Educational Level	School to Doctoral	210	100
Respondent Category	Five Categories	210	100
Institution Type	Four Categories	210	100

The demographic characteristics of the 210 respondents that were included in this study are summarized in Table 1. From the perspective of gender, age, educational level, respondent category, and institution type, the respondents had a wide demographic spectrum, providing a comprehensive understanding of the perceptions on the role of AI in inclusive education management. Both gender and age group children below 18 years to above 45 years were included in the sample. Likewise, the respondents had different educational levels, such as school education, undergraduate level, post graduate level and doctoral level. Additionally, the study

involved several stakeholder groups including students with disabilities, teachers, special educators, academic administrators and educational support staff. In addition, the participants were recruited from various settings such as schools, colleges, universities, and special education institutions. This diversity strengthens the representativeness of the study and offers a wide range of viewpoints on the effectiveness of the use of AI applications for accessibility and enhancing learning results for students with disabilities.

4.2 Reliability Analysis

The internal consistency of the measurement scales were analyzed by using Cronbach's Alpha reliability analysis. The acceptable Cronbach's alpha value in social science research is 0.70.

Table 2. Reliability Statistics

Construct	Cronbach's Alpha
Accessibility Support Systems (ASS)	0.794
AI-Based Assistive Technologies (AAT)	0.802
Personalized Learning Systems (PLS)	0.785
Intelligent Tutoring Systems (ITS)	0.767
Predictive Analytics and Student Monitoring (PASM)	0.794
Learner Engagement (LE)	0.776
Academic Achievement (AA)	0.789
Learning Satisfaction (LS)	0.784
Educational Participation (EP)	0.786
Self-Efficacy (SE)	0.779
Overall, AI-Driven Inclusive Education Management (AIIEM)	0.766

Cronbach's Alpha coefficient was used to obtain all reliability statistics for the study constructs as shown in Table 2. Reliability analysis to test the internal consistency of the measurement scales used in the questionnaire was conducted. The results show that the Cronbach's Alpha for each construct is greater than the recommended value of 0.70, which suggests that the measurement items are reliable and consistent. The highest reliability coefficient ($\alpha = 0.802$) was for AI-Based Assistive Technologies (AAT), which suggests good internal consistency among the items. Accessibility Support Systems (ASS) and Predictive Analytics and Student Monitoring (PASM) both had a reliability value of 0.794 and Academic Achievement (AA) had a coefficient of 0.789. Likewise, the reliability values for Educational Participation (EP) were acceptable with values between 0.776 and 0.786 for Personalized Learning Systems (PLS), Learning Satisfaction (LS), Self-Efficacy (SE), and Learner Engagement (LE). The reported reliability coefficient for Intelligent Tutoring Systems (ITS) is 0.767 and for the Overall AI-Driven Inclusive Education Management (AIIEM) it is 0.766, which are also at an acceptable level. In general, the results showed that all the measurement scales have good internal consistency and can be used in further statistical analysis such as descriptive analysis, correlation analysis, regression analysis, and hypothesis testing.

4.3 Descriptive Statistics of Study Constructs

Descriptive statistics were used to explore the perceptions of the respondents in the context of inclusive education management using AI and the effect of this on learning outcomes.

Table 3. Descriptive Statistics of Constructs

Construct	Mean	Standard Deviation
Accessibility Support Systems (ASS)	3.959	0.657
AI-Based Assistive Technologies (AAT)	3.948	0.676
Personalized Learning Systems (PLS)	3.919	0.672
Intelligent Tutoring Systems (ITS)	3.958	0.655
Predictive Analytics and Student Monitoring (PASM)	3.958	0.677
Learner Engagement (LE)	3.948	0.664
Academic Achievement (AA)	3.937	0.665
Learning Satisfaction (LS)	3.960	0.661
Educational Participation (EP)	3.978	0.672
Self-Efficacy (SE)	3.939	0.675
Overall, AI-Driven Inclusive Education Management (AIIEM)	3.941	0.661

The average ratings of all constructs were above 3.90, indicating a positive attitude about AI in inclusive education among the respondents overall. With a mean score of M = 3.978, Educational Participation had the highest mean score, indicating that AI technologies are significantly strengthening the participation and inclusion of students with disabilities in the learning process. Predictive Analytics (M = 3.958), Learning Satisfaction (M = 3.960), Accessibility Support Systems (M = 3.959), and Intelligent Tutoring Systems (M = 3.958) were among the other strong positive evaluations. The relative low standard deviations suggest uniformity of the perceptions of the respondents.

4.6 Hypothesis Testing

In order to analyze how the Artificial Intelligence-Driven Inclusive Education Management affects the learning outcomes of students with disabilities, multiple regression analysis was conducted with SPSS. The independent variables were Accessibility Support Systems (ASS), AI Based Assistive Technologies (AAT), Personalized Learning Systems (PLS), Intelligent Tutoring Systems (ITS) and Predictive Analytics and Student Monitoring (PASM) and the dependent variables were Overall Learning Outcomes. The level of significance was 0.05.

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.812	0.659	0.651	0.423

The regression model summary of the influence of the AI-based inclusive education management is provided in Table 4. The correlation coefficient (R = 0.812) shows strong positive correlation between independent and dependent variable. The R^2 value of 0.659 indicates that Accessibility Support Systems, AI-Based Assistive Technologies, Personalized Learning Systems, Intelligent Tutoring Systems and Predictive Analytics accounted for 65.9% of the variance in learning outcomes. The model's adjusted R^2 value is 0.651, which further supports the strong explanatory power of the model.

Table 5. ANOVA Results

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	69.287	5	13.857	77.482	0.000
Residual	36.485	204	0.179		
Total	105.772	209			

The ANOVA results of the regression model are shown in Table 5. The model is statistically significant because the f value is 77.482 with a p value of 0.000 (< 0.05). The result shows that the independent variables (total) have a significant effect on the learning outcomes for students with disabilities. Hence, regression model is valid and can be used for hypothesis testing.

Table 6. Regression Coefficients and Hypothesis Testing

Hypothesis	Relationship	Beta	t-value	p-value	Decision
H1	ASS → Learning Outcomes	0.218	3.874	0.000	Supported
H2	AAT → Learning Outcomes	0.196	3.521	0.001	Supported
H3	PLS → Learning Outcomes	0.241	4.112	0.000	Supported
H4	ITS → Learning Outcomes	0.185	3.247	0.001	Supported
H5	PASM → Learning Outcomes	0.213	3.756	0.000	Supported

The regression results indicated that the five dimensions of AI inclusive education management all have significant impact on students' learning outcomes with disabilities. Accessibility Support Systems showed a significant and positive effect on learning outcomes ($\beta = 0.218$, $p < 0.001$), thus supporting H1. The discovery suggests that AI-assisted accessibility tools can successfully create less barriers to learning and enhance educational participation.

Similarly, AI-Based Assistive Technologies positively influenced learning outcomes ($\beta = 0.196$, $p = 0.001$), which was the support for H2. This indicates that technologies like speech recognition, applications for text-to-speech and communication devices improve learning effectiveness and engagement.

For the second time, the strongest predictor of learning outcomes was Personalized Learning Systems ($\beta = 0.241$, $p < 0.001$) which confirmed H3. This is an important discovery because it underlines the need for adaptive learning environments which adjust education content to the needs and abilities of each learner.

Intelligent Tutoring Systems had a significant positive effect on Learning outcomes ($\beta = 0.185$, $p = 0.001$), which corroborates H4. The opportunity for instant feedback, tailored advice and ongoing learning assistance seems to have a positive impact on learning outcomes and learner engagement.

The predictive analytics and student monitoring also demonstrated a significant positive relationship with learning outcomes ($\beta = 0.213$, $p < 0.001$) which supported the hypothesis H5. AI systems provide the capability to detect students at risk and guide timely interventions, increasing the effectiveness of education and students' success.

The findings overall indicate that AI-based IE management is a vital factor in enhancing the accessibility, participation, satisfaction, self-efficacy, and academic outcomes of students with disabilities. The results align with the body of evidence highlighting the transformative impact of AI on education, particularly in fostering equitable and inclusive learning spaces.

Table 7. Summary of Hypotheses

Hypothesis	Statement	Result
H1	Accessibility Support Systems positively influence learning outcomes.	Supported
H2	AI-Based Assistive Technologies positively influence learning outcomes.	Supported
H3	Personalized Learning Systems positively influence learning outcomes.	Supported
H4	Intelligent Tutoring Systems positively influence learning outcomes.	Supported
H5	Predictive Analytics and Student Monitoring positively influence learning outcomes.	Supported

The results of hypothesis testing analysis of various dimensions of AI-based inclusive education management that influence students with disabilities in the domain of learning outcomes are summarized in Table 7. The results show that all five hypotheses were accepted, suggesting that all the factors related to AIs have significant positive effects on learning outcomes. There was evidence of Accessibility Support Systems (H1) increasing accessibility to educational resources and decreasing learning barriers. AI Based Assistive Technologies (H2) had a positive impact on communication, participation and independent learning. Content was modified to specific individual needs and learning styles to enhance learning experiences (Personalized Learning Systems, H3).

There was an improvement in academic achievement due to Intelligent Tutoring Systems (H4) offering timely feedback and personalized guidance. Likewise, the Predictive Analytics and Student Monitoring (H5) assisted in early identification of learning difficulties and timely interventions. In conclusion, the findings support the importance of AI-based educational technologies in enhancing the accessibility, engagement, academic performance, and learning outcomes for students with disabilities.

Discussion

Based on the results of this study, it can be concluded that the role of Artificial Intelligence (AI) in inclusive education management in facilitating good accessibility and increasing the success of learning for students with disabilities is very important. Overall, the mean scores for all constructs are positive, suggesting that the respondents feel that AI technologies are valuable tools for creating more inclusive and supportive educational environments. The reliability analysis confirmed reliability of the measurement scales and regression results showed that Accessibility Support Systems, AI-Based Assistive Technologies, Personalized Learning Systems, Intelligent Tutoring Systems and Predictive Analytics are significant factors affecting learning outcomes.

Personalized Learning Systems was the most significant predictor, emphasizing the need for personalized learning environments that adjust learning content to the needs of individual learners. The results align with earlier research highlighting the benefits of personalized instruction through AI, including enhanced engagement, motivation, and learning outcomes. Likewise, there were indications that the use of AI-based AT and accessibility support systems remove learning obstacles and promote greater participation of students with disabilities. The ability of AI to offer real-time feedback, detect learning challenges, and inform education decisions is further highlighted by the substantial influence of intelligent tutoring systems and predictive analytics.

In conclusion, the research findings demonstrate that AI tools for education make a significant impact on accessibility, inclusion, engagement, and success, and help create equitable and student-centered learning environments.

Conclusion

The purpose of the study was to investigate the contribution of Artificial Intelligence (AI) based inclusive education management in improving accessibility and learning outcomes of students with disabilities. The results indicate that AI technologies, such as Accessibility Support Systems, AI-Based Assistive Technologies, Personalized Learning Systems, Intelligent Tutoring Systems, and Predictive Analytics are key factors in making learning environments more inclusive and effective. The reliability and regression analyses results showed that all proposed dimensions are positively related to learning outcomes, and the best predictor was Personalized Learning Systems. They facilitate educational access, personalize learning, increase student participation and engagement and increase student success and achievement for learners with disabilities. Additionally, AI can support schools in offering timely interventions, tailored support, and data-driven decision-making, which can improve inclusive education practices. The study highlights the transformative potential of AI in promoting educational equity and accessibility. There is a need for teachers training, support facilities and AI solutions for educational institutions to be able to reap the most benefits from inclusive education. Future studies could focus on long-term effects, ethical implications, and the application of new AI tools in various educational environments.

Reference

Aderibigbe, A. O., Ohenhen, P. E., Nwaobia, N. K., Gidiagba, J. O., & Ani, E. C. (2023). Artificial intelligence in developing countries: Bridging the gap between potential and implementation. *Computer Science & IT Research Journal*, *4*(3), 185-199.

Agbedahin, A. V. (2019). Sustainable development, Education for Sustainable Development, and the 2030 Agenda for Sustainable Development: Emergence, efficacy, eminence, and future. *Sustainable development*, *27*(4), 669-680.

Ahmed, S., Rahman, M. S., Kaiser, M. S., & Hosen, A. S. (2025). Advancing personalized and inclusive education for students with disability through artificial intelligence: perspectives, challenges, and opportunities. *Digital*, *5*(2), 11.

AlKharouf, R., Shehadeh, A., Alrefaee, A., & Alshboul, O. (2024). Integrative strategies for social inclusion and equity: Enhancing refugee access to higher education in Jordan. *Heliyon*, *10*(11).

Almufareh, M. F., Kausar, S., Humayun, M., & Tehsin, S. (2024). A conceptual model for inclusive technology: advancing disability inclusion through artificial intelligence. *Journal of Disability Research*, *3*(1), 20230060.

Almufareh, M. F., Tehsin, S., Humayun, M., & Kausar, S. (2023). Intellectual disability and technology: an artificial intelligence perspective and framework. *Journal of Disability Research*, *2*(4), 58-70.

Alsaleh, A. (2026). The influence of artificial intelligence on individuals with disabilities. Acta Psychologica, 262, 106010.

Ambili, J., Haihambo, C. K., & Hako, A. N. (2024). Challenges faced by learners with multiple disabilities at a resource school in the Oshana region of Namibia. *British Journal of Special Education*, *51*(2), 200-210.

Arora, A. (2020). Building responsible artificial intelligence models that comply with ethical and legal standards. *Science, Technology and Development*.

Asrifan, A., Shafa, S., Pratiwi, W. R., Bahri, A., Siregar, S. R., & Ingilan, S. S. (2025). Bridging gaps: AI-driven accessibility in language education. In *Implementing AI Tools for Language Teaching and Learning* (pp. 105-128). IGI Global Scientific Publishing.

Asy'ari, M., & Sharov, S. (2024). Transforming education with ChatGPT: Advancing personalized learning, accessibility, and ethical AI integration. *International Journal of Essential Competencies in Education*, *3*(2), 119-157.

Ayeni, A. O., Ovbiye, R. E., Onayemi, A. S., & Ojedele, K. E. (2024). AI-driven adaptive learning platforms: Enhancing educational outcomes for students with special needs through user-centric, tailored digital tools. *World Journal of Advanced Research and Reviews*, *22*(3), 2253-2265.

Beyene, W. M., Mekonnen, A. T., & Giannoumis, G. A. (2023). Inclusion, access, and accessibility of educational resources in higher education institutions: exploring the Ethiopian context. *International Journal of Inclusive Education*, *27*(1), 18-34.

Bhavana, B. R., Ankolekar, K., & Usha, B. H. (2024). Artificial Intelligence for Accessibility: A Comprehensive Systematic Review and Impact Framework for Assistive Technologies.

Bulathwela, S., Pérez-Ortiz, M., Holloway, C., Cukurova, M., & Shawe-Taylor, J. (2024). Artificial intelligence alone will not democratise education: On educational inequality, techno-solutionism and inclusive tools. *Sustainability*, *16*(2), 781.

Camilleri, M. A., & Camilleri, A. C. (2019). The sustainable development goal on quality education. In *The future of the un sustainable development goals: business perspectives for global development in 2030* (pp. 261-277). Cham: Springer International Publishing.

Chalkiadakis, A., Seremetaki, A., Kanellou, A., Kallishi, M., Morfopoulou, A., Moraitaki, M., & Mastrokoukou, S. (2024). Impact of artificial intelligence and virtual reality on educational inclusion: A systematic review of technologies supporting students with disabilities. *Education Sciences*, *14*(11), 1223.

Deshmane, P. H., & Thombre, K. (2024). The Impact of Education on Human Development in the 21st Century: Needs, Challenges& Opportunities. *InSight*, *1*(3), 4-9.

Fitas, R. (2025). Inclusive education with AI: Supporting special needs and tackling language barriers. *AI and Ethics*, *5*(6), 5729-5757.

George, B., & Wooden, O. (2023). Managing the strategic transformation of higher education through artificial intelligence. *Administrative Sciences*, *13*(9), 196.

Igbokwe, I. C. (2023). Application of artificial intelligence (AI) in educational management. *International Journal of Scientific and Research Publications*, *13*(3), 300-307.

Jørgensen, B. N., & Ma, Z. G. (2025). Impact of EU regulations on AI adoption in smart city solutions: A review of regulatory barriers, technological challenges, and societal benefits. *Information*, *16*(7), 568.

Khairullah, S. A., Harris, S., Hadi, H. J., Sandhu, R. A., Ahmad, N., & Alshara, M. A. (2025, February). Implementing artificial intelligence in academic and administrative processes through responsible strategic leadership in the higher education institutions. In *Frontiers in Education* (Vol. 10, p. 1548104). Frontiers Media SA.

Kohnke, S., & Zaugg, T. (2025). Artificial intelligence: an untapped opportunity for equity and access in STEM education. *Education Sciences*, *15*(1), 68.

Kooli, C., & Chakraoui, R. (2025). AI-driven assistive technologies in inclusive education: benefits, challenges, and policy recommendations. *Sustainable Futures*, *10*, 101042.

Kyambade, M., Namatovu, A., & Male Ssentumbwe, A. (2025). Exploring the evolution of artificial intelligence in education: From AI-guided learning to learner-personalized paradigms. *Cogent Education*, *12*(1), 2505297.

Labeeque, A., & Sanaullah, A. (2019). Towards inclusive economic growth: Synthesizing strategies for social inclusion in development. *Journal of Policy Options*, *2*(2), 77-95.

Lopez, S., Sarada, V., Praveen, R. V. S., Pandey, A., Khuntia, M., & Haralayya, D. B. (2024). Artificial intelligence challenges and role for sustainable education in india: Problems and prospects. *Sandeep Lopez, Vani Sarada, RVS Praveen, Anita Pandey, Monalisa Khuntia, Bhadrappa Haralayya (2024) Artificial Intelligence Challenges and Role for Sustainable Education in India: Problems and Prospects. Library Progress International*, *44*(3), 18261-18271.

Lopez-Gazpio, I. (2025). Integrating large language models into accessible and inclusive education: access democratization and individualized learning enhancement supported by generative artificial intelligence. *Information*, *16*(6), 473.

Mariyono, D., Hidayatullah, A. N. A., & Kamila, A. N. A. (2024). Integrating artificial intelligence in inclusive leadership: transforming educational management for a globalized future.

Mbambo, G. P., & Du Plessis, E. (2025). The role of emerging Artificial Intelligence in the establishment of inclusive learning environments. *The Independent Journal of Teaching and Learning*, *20*(2), 10-27.

Melo-López, V. A., Basantes-Andrade, A., Gudiño-Mejía, C. B., & Hernández-Martínez, E. (2025). The impact of artificial intelligence on inclusive education: A systematic review. *Education Sciences*, *15*(5), 539.

Mohammed, P. S., & 'Nell'Watson, E. (2019). Towards inclusive education in the age of artificial intelligence: Perspectives, challenges, and opportunities. *Artificial Intelligence and Inclusive Education: Speculative futures and emerging practices*, 17-37.

Pagliara, S. M., Bonavolonta, G., Pia, M., Falchi, S., Zurru, A. L., Fenu, G., & Mura, A. (2024). The integration of artificial intelligence in inclusive education: A scoping review. *Information*, *15*(12), 774.

Patel, A. (2025). Artificial Intelligence-Driven Personalized Learning: Application, Challenges, and Future Directions in Digital Education. *Digital Education and Future Learning*, *1*(1), 1-18.

Zongozzi, J. N. (2022). Accessible quality higher education for students with disabilities in a South African open distance and e-learning institution: Challenges. *International Journal of Disability, Development and Education*, *69*(5), 1645-1657.

Zou, Y., Kuek, F., Feng, W., & Cheng, X. (2025, March). Digital learning in the 21st century: trends, challenges, and innovations in technology integration. In *Frontiers in Education* (Vol. 10, p. 1562391). Frontiers Media SA.