

Inclusive Education: Exploring the Potential of Artificial Intelligence as Teaching Pedagogy for Students with Intellectual Disability in Ilorin Metropolis

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Abstract: Inclusive education aims to provide equal opportunities for all students, including those with intellectual disabilities. However, students with intellectual disabilities often face challenges in accessing quality education due to limited resources and inadequate teaching pedagogies. Artificial intelligence (AI) has the potential to revolutionize inclusive education by providing personalized learning experiences for students with intellectual disabilities. The study therefore aimed to examining inclusive education: exploring the potential of artificial intelligence as teaching pedagogy for students with intellectual disability in Ilorin metropolis. One research question and two hypotheses were postulated. Descriptive research design of correlation type was used for the study while the population consisted of all teacher teaching students with intellectual disability with a sample size of 30 teachers selected from two special schools. Two instruments were used to collect data from the participates tagged “Artificial Intelligence Questionnaire (AIQ) and “Literacy Skills Test (LST)”. The face and content validity of the instruments were ascertained by researcher’s readers, experts in the field of Special education. The reliability of the instrument was ascertained through test and retest on the respondents outside the sampled population, afterwards the results were yield 0.79 and 0.80 respectively using Cronbach’s alpha. Data obtained from the respondents were analyzed using frequency count and percentage for the demographical profile, the research question was answered using mean and standard deviation while hypotheses was tested at 0.05 level of significance. Hypothesis one was tested using regression and hypothesis two was tested using independent sample t-test. The findings revealed high extent of artificial intelligence used to enhance teacher confidence and competence in supporting students with intellectual disability in an inclusive classroom in Ilorin metropolis (mean = 3.40), artificial intelligence as teaching pedagogy cannot significantly predict the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis ($B = 20.63$; $t_{(28)} = -.164$, $P = .871$), there was significant difference in the use of artificial intelligence as teaching pedagogy on the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis based on gender ($t_{(28)} = -1.18$, $P < 0.05$). It concluded that the use of artificial intelligence to empower teachers for better support of students with intellectual disabilities cannot be overlook in an inclusive education because it helps in terms of automating tasks, providing personalized learning, and offering insights into students’ academic success. Based on the finings it was recommended that the students with intellectual disability should also be included in an inclusive setting it will greatly assist their academic performance, proprietors and school administrators should make school conducive for teacher teaching students with intellectual disability in an inclusive classroom, curriculum planner/ developer should include artificial intelligence in the school curriculum and implementation of artificial intelligence among teacher teaching students with intellectual disabilities should be made priority.

Keywords: Inclusive Education, Artificial Intelligence as Teaching Pedagogy, Students with Intellectual Disability

Introduction

Inclusive education aims to provide equal opportunities for all students, including those with intellectual disabilities. However, students with intellectual disabilities often face challenges in accessing quality education due to limited resources and inadequate teaching pedagogies. Artificial intelligence (AI) has the potential to revolutionize inclusive education by providing personalized learning experiences for students with intellectual disabilities. The rapid advancement of artificial intelligence (AI) has transformed numerous sectors, including education of students with intellectual disability, where AI tools are increasingly integrated learning processes. Lexico (2019), defined artificial intelligence (AI) as the theory and development of computer systems that can perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation and interpretation. Artificial Intelligence (AI), is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to think, reason, discover meaning, generalize, or learn from past experience. Artificial intelligence AI can be seen as abstractions of human intelligence, with rationality corresponding to a certain level. Classification of artificial intelligence (AI) include: structure artificial intelligence, behavior artificial intelligence, capability artificial intelligence, function artificial intelligence and principal artificial intelligence. Structure artificial intelligence focus on imitation of human intelligence this regarded as a machine that does exactly what the human brain does. Behavior artificial

intelligence focus on human-like mind without demanding a human-like brain that is associated with intelligence. Capability artificial intelligence focus on problem-solving capability. Function artificial intelligence distinguish AI from the other branches of computer science and associate AI to the cognitive functions that are identified in the human mind, the perspective of this artificial intelligence gives the field a better identity than capability AI which is focused on specific problems. Principal artificial intelligence center on fundamental principles that can uniformly explain the relevant phenomena that is the usage of intelligence as a form of rationality Wang (2019).

Special education teacher, students with intellectual disability, lecturers and other professionals are key beneficiaries of artificial intelligence because it offers significant opportunity to enhance their teaching and learning experiences, critical thinking, and problem-solving skills. The awareness and usage of artificial intelligence tools among students with intellectual disability remain a crucial area of study, as the global digital landscape continues to evolve. While many inclusive educations across the globe have begun incorporating artificial intelligence into curricula, it is important to understand how familiar and proficient to students with intellectual disability. Artificial Intelligence among students with intellectual disability is highly ranked in the agenda of the 21st century nations for rapid development of manpower, academic excellent and task efficiency. It is generally acknowledged as being crucial system of any nation. It is the art of acquiring knowledge, developing of the reasoning and judgmental abilities of the mind, character and manipulative competencies in a formal setting. Artificial Intelligence among students with intellectual disability can authoritatively be regarded as key development of academic success of students with intellectual disability in an inclusive education setting because it unravels their potentials, strengthens, weakness and as well as equips individuals. This has implicated the inclusion of AI systems in day-to-day used, indicating the improved outcomes of as a powerful tool to increase efficiency, quality of academic performance and technological influence on artificial intelligence in an inclusive education in Ilorin metropolis.

AI and Inclusive Classroom

Wang (2020) defined AI as the science and skills of problem-solving with the use of technologies that incorporate the use of science, technology, engineering, and mathematics (STEM). Yang (2022) also firmly believed that AI is expedient in education because it integrates knowledge of different disciplines and multiple technologies simultaneously. Similarly, Nemorin et al. (2023) believed that AI is a necessary component of education. Further, Kamalov et al. (2023) and Ouyang and Jiao (2021) decisively claimed that AI in education is increasing rapidly. Salas-Pilco and Oshima (2022) conjectured that inclusion is a necessary component of education because it improves educational equity and quality for all students, enhances intelligence, and sustains a more equitable society. Inclusive education is fundamental to developing a more equitable society (Hardy and Woodcock, 2023). It forms an integral part of the education system that seeks to affirm equity, diversity, and equality for all students. Kielblock and Woodcock (2023) surmised that because inclusion addresses the needs of students, proper policy and practice should be implemented to accommodate and affirm this position. UNICEF (2014) defined inclusive education as a sustained and uninterrupted process that upholds diversity and diminishes barriers to teaching and learning.

Statement of the Problem

Students with intellectual disabilities often face significant barriers in accessing quality education, despite the increasing emphasis on inclusive education. Traditional teaching pedagogies may not be effective in meeting the diverse needs of these students, leading to limited learning outcomes and social participation. The use of Artificial Intelligence (AI) as a teaching pedagogy has the potential to revolutionize inclusive education, but its effectiveness in supporting students with intellectual disabilities remains largely unexplored. There is a significant research gap in exploring the potential of AI as a teaching pedagogy for students with intellectual disabilities in Ilorin metropolis. This study aims to investigate inclusive education: exploring the potential of artificial intelligence as a teaching pedagogy for students with intellectual disability in Ilorin metropolis.

Research questions

1. To what extent is artificial intelligence used to enhance teacher confidence and competence in supporting students with intellectual disability in Ilorin metropolis?

Hypotheses

H₀₁: Artificial intelligence as teaching pedagogy cannot significantly predict the academic performance of students with intellectual disability in an inclusive classroom in Ilorin metropolis

H₀₂: there is no significant difference in the use of artificial intelligence as teaching pedagogy on the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis based on gender

Methodology

The research design that was employed for this study is descriptive research of the correlation type. It sought to investigate on the Inclusive education: exploring the potential of artificial intelligence as a teaching pedagogy for students with intellectual disability in Ilorin metropolis. The research design is considered to be appropriate because the researcher sought to get responses from the teachers directly. The researcher adopts the design because the data collected will not be manipulated. The participant was teacher teaching students with intellectual disability from special education schools in Ilorin metropolis. The population for this study was 30 special education teachers in Ilorin metropolis. Questionnaire was used as instrument for data collection which titled: "Artificial Intelligence Questionnaire (AIQ) and Artificial Intelligence Teaching Pedagogy Questionnaire (AITPQ)" and "Literacy Skills Test

(LST)". The results obtained from the respondents were analyzed using mean and standard deviation for research question and T-test was used to analyzed researcher hypothesis at 0.05 level of significance.

Results

Table 1: Distribution of respondents based on gender.

Gender	Frequency	Percentage
Male	21	70
Female	9	30
Total	30	100.0

Table 1 shows the distribution of respondents based on gender 21 of the respondents representing 70% were male while 9 of the respondents were female representing 30%. From the analysis above, it is apparent that male respondents were more in number than female respondents.

Research Question 1: To what extent is artificial intelligence used to enhance teacher confidence and competence in supporting students with intellectual disability in an inclusive classroom in Ilorin metropolis?

Table 2: showing the extent of artificial intelligence used to enhance teacher confidence and competence in supporting students with intellectual disability in an inclusive classroom in Ilorin metropolis.

S/N	ITEMS	MEAN	STD	REMARK
1	I find it easy to use artificial intelligence when teaching students with intellectual disability in an inclusive classroom.	2.60	0.56	High Extent
2	The artificial intelligence is easy to understand and navigate teaching and learning of students with intellectual disability in an inclusive classroom.	2.80	0.92	High Extent
3	I can use artificial intelligence independently when teaching students with intellectual disability in an inclusive classroom	3.60	0.56	High Extent
4	The AI-powered tools provide clear instructions and feedback when teaching of students with intellectual disability in an inclusive classroom.	3.63	0.49	Very High Extent
5	I enjoy using AI-powered tools in teaching and learning students with intellectual disability in an inclusive classroom in an inclusive classroom.	3.27	0.87	Very High Extent
6	I feel more confident in my abilities when using artificial intelligence with students with intellectual disability in an inclusive classroom.	3.07	0.74	Very High Extent
7	The artificial intelligence helps me understand complex concepts better when teaching students with intellectual disability in an inclusive classroom.	2.97	0.89	High Extent
8	I feel motivated to teach when using artificial intelligence with students with intellectual disability in an inclusive classroom.	3.23	0.77	Very High Extent
9	I feel that artificial intelligence has improved my teaching experience with students with intellectual disability in an inclusive classroom.	2.93	1.01	High Extent
10	The use of artificial intelligence make teaching more fun and engaging with students with intellectual disability in an inclusive classroom.	3.13	0.97	Very High Extent
Weighted Mean		3.40		High Extent

Source: Field Survey 2026

Table 2: showed to what extent is artificial intelligence used to enhance teacher confidence and competence in supporting students with intellectual disability in an inclusive classroom Ilorin metropolis is follows: I find it easy to use artificial intelligence when teaching students with intellectual disability in inclusive classroom (2.60), the artificial intelligence is easy to understand and

navigate teaching and learning of students with intellectual disability in an inclusive classroom (2.80), I can use artificial intelligence independently when teaching students with intellectual disability in an inclusive classroom (3.60), The artificial intelligence provide clear instructions and feedback when teaching of students with intellectual disability in an inclusive classroom (3.63), I enjoy using artificial intelligence in teaching and learning students with intellectual disability in an inclusive classroom (3.27), I feel more confident in my abilities when using artificial intelligence with students with intellectual disability in an inclusive classroom (3.07), The artificial intelligence helps me understand complex concepts better when teaching students with intellectual disability in an inclusive classroom (2.97), I feel motivated to teach when using artificial intelligence with students with intellectual disability in an inclusive classroom (3.23), I feel that artificial intelligence has improved my teaching experience with students with intellectual disability in an inclusive classroom (2.93), The use of artificial intelligence make teaching more fun and engaging with students with intellectual disability in an inclusive classroom (3.13). The weighted average was 3.4 which is greater than 2.50, this shows that the artificial intelligence used to enhance teacher confidence and competence in supporting students with intellectual disability in an inclusive classroom in Ilorin metropolis is high.

H₀₁: Artificial intelligence as teaching pedagogy cannot significantly predict the academic performance of students with intellectual disability in an inclusive classroom in Ilorin metropolis

Table 3: Summary of regression of artificial intelligence as teaching pedagogy and academic performance of students with intellectual disability in an inclusive classroom in Ilorin metropolis

Model	N	R	R Square	Adjusted R Square	F-cal.	P-value
1	30	.031	.001	-.035	.027	.871

Dependent Variable: Academic performance

Source: Field Survey 2026

Table 3 summarizes the regression results of the artificial intelligence as teaching pedagogy can significantly predict the academic performance of students with intellectual disability in an inclusive classroom in Ilorin metropolis. The result indicated that artificial intelligence as teaching pedagogy can significantly predict the academic performance of students with intellectual disability in an inclusive classroom in Ilorin metropolis ($R = .031$) while R-squared is .001 which means that the independent variable (artificial intelligence as teaching pedagogy) explained 1% variations of the dependent variable (academic performance). Thus, this is an accurate reflection that, artificial intelligence as teaching pedagogy can significantly predict the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis ($F_{(28)} = .027$ $p = .871$).

Table 4 coefficients

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig.	95% Confidence Interval	
	B	Std. Error	Beta			Lower/Bound	Upper/Bound
1 (Constant)	20.63	5.95		3.47	.002	8.45	32.82
Artificial Intelligence as Teaching Pedagogy	-.39	.239	-.031	-.164	.871	-.528	.450

Dependent Variable: Academic performance

Source: Field Survey 2026

The coefficients results presented in Table 4 shows that, artificial intelligence as teaching pedagogy can significantly predict the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis ($B = 20.63$; $t_{(28)} = -.164$, $P = .871$). It indicated that at 5% level of significance, it is evidenced that the regression equation specified that artificial intelligence as teaching pedagogy can significantly predict the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis. Based on this, the null hypothesis was accepted, and it was concluded that artificial intelligence as teaching pedagogy cannot significantly predict the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis.

Table 5: Summary of t-test use of artificial intelligence as teaching pedagogy on the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis based on gender

	Gender	N	Mean	Std Deviation	T	Df	Sig	Decision
Artificial Intelligence as Teaching Pedagogy	Male	21	22.14	4.39				
					-1.84	28	.000	Sig

Female	9	25.89	7.91
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Source: Field Survey 2025.

Table 5: showed the summary of t-test results of the significant difference in the use of artificial intelligence as teaching pedagogy on the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis based on gender. It was revealed that male respondents had mean score 22.14 and standard 4.39 deviation while female respondents had mean score 41.08 and standard deviation 6.19, the t was -1.18, degree of freedom 28, and significant level of .000 ($P < 0.05$). This implies that there was significant difference in the use of artificial intelligence as teaching pedagogy on the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis based on gender. Therefore, the null hypothesis that states that there is no significant difference in the use of artificial intelligence as teaching pedagogy on the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis based on gender was rejected.

Discussion of findings

Based on the first findings it showed that artificial intelligence can be used to enhance teacher confidence and competence in supporting students with intellectual disability in an inclusive classroom in Ilorin metropolis. The reason adduce is that teacher teaching students with intellectual disability make used of internet (artificial intelligence) when he/she is preparing his/her lesson note. This is in line with Julien (2024), who conducted study on how artificial intelligence (AI) impacts inclusive education say that artificial intelligence (AI) is extensively used in the field of education, it presents various opportunities in teaching and learning. In education, AI is chiefly used to impart knowledge, stimulate comprehension, heighten intelligence, and is treasured as support in learning. It is also instrumental in empowering and inspiring students. The emergence of AI also has a positive impact on students with intellectual disability in an inclusive classroom. Because these technologies can potentially transform teaching and learning, it is important to understand how they can be used to further support inclusive classroom. This non-empirical research analyzed some advantages and challenges of incorporating AI in teaching and learning and highlighted how it influences inclusion. Based on the literature, some of the advantages of AI are improved performance of students, motivation, and encouragement of students. This review also identified some challenges associated with the use of AI for inclusive education, such as technological difficulties, poor connectivity, pedagogical issues, and limitations of the database. Some recommendations are proposed to address these challenges. This research can assist educators, parents, students, government officials, and policymakers in making proper decisions on the effective use of AI and inclusion. Based on the second findings it was review that artificial intelligence as teaching pedagogy can significantly predict the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis the reason is the both the teacher and the students find it easy and faster this inline with Becker et al. (2018) and Seldon and Abidoye (2018) conjectured that by having a wide and varied knowledge of the AI tools that are available, educators can efficiently identify and cater to the various learning needs of students. Educators must keep abreast with these tools and be aware of how they can be applied to ensure inclusivity and accessibility of students. Nurdyansyah et al. (2022) indicated that numerous barriers still prohibit educators from successfully using modern technology in the classroom to promote inclusion. Some educators are not even competent in using technology, while others lack basic teaching strategies and skills. They further believed that some digital materials, such as those designed for assistive technologies, may be neither compatible nor accessible. The third findings reviewed that there was no significant difference in the use of artificial intelligence as teaching pedagogy on the academic performance of students with intellectual disabilities in an inclusive classroom in Ilorin metropolis based on gender, the reason is that male students make used of artificial intelligence and they performed more effective during learning the activities.

Recommendations

The following recommendations were made:

1. Teacher teaching students with intellectual disabilities should make used of artificial intelligence in preparing lesson notes in inclusive classroom.
2. Students with intellectual disability should also be included in an inclusive setting it will greatly assist their academic performance.
3. Proprietors and school administrators should make school conducive for teacher teaching students with intellectual disability in an inclusive classroom.
4. Curriculum planner/ developer should include artificial intelligence in the school curriculum.
5. Further research is recommended to explore artificial intelligence as teaching pedagogy in the classroom of students with intellectual disability in an inclusive education.

Conclusion

In conclusion, the use of artificial intelligence to empower teachers for better support of students with intellectual disabilities cannot be overlook in an inclusive education because it helps in terms of automating tasks, providing personalized learning, and offering insights into students' academic success. In addition, artificial intelligence is a valuable tool for supporting students with intellectual disabilities in an inclusive classroom and empowering teachers to provide more effective and personalized instruction. This can increase teacher confidence and competence by reducing workload, providing more effective interventions, and allowing teachers to focus on higher-level instruction. However, it is important to consider ethical implications and ensure that AI is used responsibly and with the support of qualified professionals.

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