

ARTIFICIAL INTELLIGENCE AND ITS IMPLEMENTATION IN CLASSROOMS IN ABAKALIKI METROPOLIS

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Abstract

Artificial intelligence (AI) has recently influenced every sector of life, including education. The modern day classrooms truly deserve a feel of the innovations that artificial intelligence offers. This study examines the implementation of artificial intelligence in classroom teaching and learning in secondary schools in Abakaliki metropolis. The main purpose of the study is to determine the extent of implementation of AI tools in the classroom in Abakaliki metropolis. Specifically, the study sought to determine the level of awareness, availability, benefits, challenges affecting implementation and the attitude of teachers towards AI. The descriptive survey design was adopted for the study, using questionnaires administered to teachers. Findings reveal that AI tools such as intelligent tutoring systems, automated grading system and adaptive learning platforms help to improve teachers' efficiency, students' learning and personalized instruction. However, setbacks such as lack of digital infrastructure, lack of digital skills among teachers and high cost of implementation were identified. The study concludes that artificial intelligence has all it takes to transform our classroom instructions, support students learning if properly implemented; but cannot substitute the position of a teacher. It therefore recommends that government and schools should invest in digital technological infrastructure, training of teachers and formulation of policies that will promote responsible use of artificial intelligence.

Keywords: artificial intelligence, personalized learning, digital technology.

INTRODUCTION

The world of education is increasingly being influenced by diverse innovations. One of such innovation is the use artificial intelligence. The versatile nature of software and hardware devices leaves the present day educators with various options to choose from in executing the task of teaching and learning. The tasks of Nigerian teachers range from instructional preparation, presentation, students' assessment and progress monitoring. In executing this task, an average teacher in most Nigerian settings is constrained by time, volume of task and individual differences on the side of the students. When faced with so much

instructional burdens, teachers' effectiveness becomes heavily challenged. The introduction and usage of artificial intelligence tools therefore becomes an alternative in such situation. The whole world focuses more on tools and innovations that will turn around the global system of education and by so doing achieve the sustainable development goals as it relates to education.

There is no single, universally accepted definition for Artificial Intelligence, but the Oxford English Dictionary defines AI as "the capacity of computers, or other machines, to exhibit intelligent behaviour". This means AI systems appear to think, learn and act like humans and in some cases exceed the capabilities of humans. AI systems can analyse vast amounts of data, solve complex problems, make decisions and perform creative tasks.

Artificial Intelligence (AI) is the ability of a digital computer, computer-controlled machine or robot to perform tasks commonly associated with intelligent beings like humans (Robinson, 2018). Artificial intelligence (AI), sometimes called machine intelligence, is intelligence demonstrated by machines in contrast to natural intelligence displayed by humans and other animals (McCorduck, 2004). In its most general form, artificial intelligence (AI) is defined as the ability of a computer or a robot controlled by a computer to perform various tasks in a manner similar to intelligent beings.

In 1956, the Dartmouth AI Conference brought about those involved in research in AI: John McCarthy (Dartmouth), Marvin Minsky (Harvard), Nathaniel Rochester (IBM), and Claude Shannon (Bell Telephone Laboratories) brought together researchers in computers, natural language processing, and neuron nets to Dartmouth College for a month-long session of AI discussions and research. This conference gave opportunity for experts to explore the possibility of making machines that possess some measure of intelligence for the first time. Since then, Artificial intelligence has been the subject of optimism, but has also suffered setbacks and, today, has become an essential part of the technology industry, providing the heavy lifting for many of the most difficult problems in computer science (Ndunagu, 2021).

As stated by Ndunagu (2021), today's AI systems have been able to achieve limited success in some of these tasks:

- In Computer vision, the systems are capable of face recognition
- In Robotics, we have been able to make vehicles that are mostly autonomous
- In Natural language processing, we have systems that are capable of simple machine translation
- Today's Expert systems can carry out medical diagnosis in a narrow domain
- Speech understanding systems are capable of recognizing several thousand words continuous speech
- Planning and scheduling systems had been employed in scheduling experiments with the Hubble Telescope
- The Learning systems are capable of doing text categorization into about a 1000 topics
- In Games, AI systems can play at the Grand Master level in chess (world champion), checkers, etc.

Implementation of artificial intelligence in Nigerian classrooms

In Nigerian classrooms, almost everything is done manually, despite the fact that we now live in the time where a lot of works are taken over by machines (Artificial Intelligence). Most teachers and educators still prefer to write their lesson notes on books, compute theirs results manually, and prepare their assessment tools manually. Access and utilization of vast resources which artificial intelligence offers

appear like a mirage. Digital divide seems to be very high among practicing teachers in most part of Nigeria, particularly Ebonyi State.

As identified by Robinson (2025), AI technology can make education system smarter in Nigeria. To him, this can be done by introducing self- teaching classrooms at every level of the education institution. In this classroom, machines can be used to properly teach and answer on the spot questions in a universally accepted manner.

To further deepen the impact of artificial intelligence in our modern day classrooms, several AI tools exist which can be of immense help to an average Nigerian teacher. The table below shows some notable ones that could be applied in classroom situations.

Table 1: Some Notable AI Tools for Classroom Usage

AI TOOLS CATEGORY	SPECIFIC USAGE	SPECIFIC EXAMPLES
1 Lesson planning and content creation of work, test, deepseek, perplexity ,teach curriculum, etc. better, notebooklm, germini	Generating lesson note, Magic school, notion, chatGpt, scheme	
2 Assessment and grading tools and feedback, for faster evaluation	Marking, generating real time Formative, brisk teaching quizzes	
3 Teaching mixed abilities	Very useful in class with varied Diffit learners	
4 Student engagement tools	They make lessons lively, Canva for education, curipod, create live polls, creates quizlet flashcard, posters etc	
5 AI tutors and support students	Helps students learn Khanmigo, khanacademy independently,	
6 Presentation and teaching material	For faster classroom preparation, converts notes into slides	Slides Ai

Although AI has the potential to improve teaching and learning, its implementation in many schools in Abakaliki metropolis remains limited. Many schools lack the trained personnel, digital infrastructure and financial resources to adopt AI in their classrooms. Again there is uncertainty about the level of awareness, availability and effectiveness of AI tools in classrooms. These issues create a gap between innovations in AI technology and practical application in the classroom. For this reason, the researcher, therefore, seeks to unravel the level of awareness of AI implementation in the classroom in Abakaliki metropolis; identify the level of availability and frequency of use of AI tools in the classroom; identify the benefits, challenges and attitude towards the use of AI.

The main purpose of the study is to determine the extent of implementation of AI tools in the classroom in Abakaliki metropolis. Specifically, the study sought to determine the level of awareness, availability, benefits, challenges affecting implementation and the attitude of teachers and students towards AI.

Research questions

The following questions guided the study:

1. What is the level of awareness of AI in the classrooms in Abakaliki metropolis?
2. What is the level of availability and frequency of use of AI tools in classrooms in Abakaliki metropolis?
3. What are the benefits of AI in Education?
4. What challenges affect AI implementation?
5. What is the attitude towards the use of AI?

Methodology

A descriptive survey design was used for the study. This was suitable since the study was looking for information on level of awareness, availability, benefits, challenges affecting implementation and the attitude of teachers and students towards AI. The study was conducted in Abakaliki metropolis. This includes the eight local governments that make up the old Abakaliki division viz: Abakaliki, Ezza South, Ezza North, Ikwo, Ishielu, Ohaukwu, Ebonyi and Izzi local governments. The choice of this area is important since it houses two major education zones in the present arrangement by the Ebonyi State ministry of Education. The education zones are Abakaliki and Onueke Education Zones. The population consists of senior secondary school teachers in Abakaliki and Onueke Education Zones respectively. From the data obtained from the Ebonyi State Secondary Education Board, the zones have 3023 teachers in the senior secondary. Stratified Random sampling technique was used to get 120 respondents for the study. Fifteen (15) respondents were drawn from each local government Area. No special condition was attached while making the selection of the respondents. A structured questionnaire based on the 4 point scale was used for the study. It was titled questionnaire on AI implementation in the classroom. The instrument has two main parts; the first contains the demographic information while the second part helped to answer the research questions. The first cluster of the instrument seeks to extract information on the level of awareness of AI, the second cluster was on availability and usage of AI tools, and the third cluster was on benefits of AI while fourth and fifth extracted information on challenges and attitude towards AI usage. The instrument was face validated by experts in science education and Measurement and Evaluation respectively. Soft copy of the instrument was sent to them for this purpose and suggestions from them were incorporated to in the final copy. The Cronbach Alpha method was used to determine the internal consistency of the instrument. Copies of the instrument were given to fifteen teachers in Ohaozara Local Government Area to fill. After computing the respondents mean ratings, the coefficient alpha value of 0.83 was obtained. This was high enough for the study. Respondents were visited physically and given copies of the instrument to complete. The completed copies were also recovered and utilized for analysis. Mean scores were used to answer the research questions. The responses were presented in tables. A decision rule of 3.0 was used, were any mean score greater than or equal to 3.0 indicates agreement while score less than 3.0 indicates disagreement.

Results

Research question 1: What is the level of awareness of AI in the classrooms in Abakaliki metropolis?

Table 1. The mean score of respondents on level of awareness of AI

S/N	Items	Mean	Decision
1	I am aware of artificial intelligence	3.80	Agree
2	I understand how AI works in education	3.45	Agree

3	I am familiar with AI tools used in classrooms	3.20	Agree
4	AI is relevant to modern education	4.10	Agree

The above result shows that the respondents have high level awareness of artificial intelligence and its relevance in education.

Research question 2: What is the level of availability and frequency of use of AI tools in classrooms in Abakaliki metropolis?

Table 2.

Table S/N	Items	Mean	Decision
1	AI tools are available in my school	2.90	Disagree
2	I use AI tools frequently in teaching/learning	2.75	Disagree
3	My school encourages the use of AI	2.85	Disagree
4	AI is used for assignments and research in my school	3.10	Agree

showing the mean score of respondents on availability and usage of AI

In table 2 above items 1, 2 and 3 have mean scores less than 3.0 thus indicating disagreement. Item 4 have a mean score of 3.10. In all it could be inferred that AI tools are not sufficiently available, and their usage in classrooms is relatively low.

Research question 3: What are the benefits of AI in Education?

Table 3. The mean score of respondents on perceived benefits of AI

S/N	Items	Mean	Decision
1	AI improves teaching effectiveness	3.95	Agree
2	AI enhances students learning experience	4.05	Agree
3	AI supports personalized learning	3.85	Agree
4	AI reduces teachers' work load	3.70	Agree
5	AI improves students' academic performance	3.90	Agree

From table 3 above, all the items have mean score above 3.0. This implies the respondents strongly agreed that AI has significant benefits in improving teaching and learning. Research question 4: What challenges affect AI implementation?

Table 4: The mean score of respondents on challenges of AI implementation

S/N	Items	Mean	Decision
1	Lack of digital infrastructure limits AI usage	4.20	Agree
2	Lack of digital skills among teachers affects AI adoption	4.10	Agree
3	AI tools are too expensive to implement	3.95	Agree
4	Poor internet access affects AI usage	4.25	Agree
5	There is resistance to AI adoption in my school	3.60	Agree
6	Inadequate power supply affects AI usage	3.0	Agree

From table 4 above, the respondents agree to the items as major setbacks to AI implementation. Research question 5: What is the attitude towards the use of AI?

Table 5: The mean score of respondents on attitude towards AI

S/N	Items	Mean	Decision
1	I am willing to use AI	3.85	Agree
2	AI should be integrated into the curriculum	4.00	Agree
3	AI makes learning more interesting	3.95	Agree
4	I feel confident using AI	3.40	Agree
5	AI will play a major role in future education	4.20	Agree

From table 5 above, mean score of all the items are greater than 3.0 suggesting that most respondents have positive attitude towards the use of AI in education.

Discussions of Findings

The findings above reveal that secondary school teachers in Abakaliki Metropolis have a good level of awareness of Artificial Intelligence. This suggests that exposure to technology is increasing among the teachers. This agrees with the view of Al Nabhani, Hamzah, & Abuhassna (2025) that Artificial intelligence (AI) has emerged as a pivotal technical instrument that has profoundly influenced the educational process.

However, despite high awareness, the availability and usage of AI tools remain low, indicating a gap between knowledge and practical implementation. This may be due to infrastructural limitations, lack of proper policy and negative attitudes towards change and innovation.

The study also found that AI offers significant benefits, including improved teaching effectiveness, enhanced learning experience, and personalized education. This aligns with global trends in educational technology. As stated in Robinson (2018), AI technology can make the education system smarter in Nigeria.

Major challenges identified by the study that hinder effective implementation of AI in schools include: poor infrastructure, lack of training, high cost implementation, and inadequate internet access. Despite these challenges, respondents showed a positive attitude toward AI, expressing willingness to adopt the use of AI.

Recommendations

The use of AI in the classrooms will help to improve students' learning experiences, enhance teachers effectiveness and improve overall educational productivity. Based on the above findings, the following recommendations were made:

1. Regular training should be organized for teachers in Ebonyi on responsible use of AI in the classrooms.
2. ICT infrastructure should be provided in secondary schools. This should also include fast and reliable internet service.
3. Appropriate regulatory policies should be put in place to handle ethical and security issues.
4. Provision of ICT allowances for teachers who form the backbones of AI implementation

Conclusion

From the study, it was discovered that teachers in Abakaliki metropolis have high level of awareness of artificial intelligence and also agree that AI has significant benefits in improving teaching and learning but unfortunately, AI tools are not sufficiently available in classrooms hence its Low usage. Findings further reveal that AI tools such as intelligent tutoring systems, automated grading system and adaptive learning platforms help to improve teachers' efficiency, students' learning and personalized instruction. However, setbacks such as lack of digital infrastructure, lack of digital skills among teachers and high cost of implementation impede the usage of AI by teachers. The study concludes that artificial intelligence has all it takes to transform our classroom instructions, support students learning if properly implemented; but cannot substitute the position of a teacher. It therefore recommends that government and schools should invest in digital technological infrastructure, training of teachers and formulation of policies that will promote responsible use of artificial intelligence.

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