

APPLICATION OF ARTIFICIAL INTELLIGENCE IN CLASSROOM MANAGEMENT IN PUBLIC SECONDARY SCHOOLS IN EBONYI STATE, NIGERIA.

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Abstract

This study assessed the Application of Artificial Intelligence in classroom management in Secondary Schools in Ebonyi State, Nigeria. The objectives of the study were to examine the roles of closed-circuit television and digital classrooms in classroom management. The study was guided by two research questions and null hypotheses. The researcher adopted a descriptive survey research design, and the instrument for data collection was a researcher-developed questionnaire titled “Application of Artificial Intelligence in Classroom Management in Ebonyi State, Nigeria Questionnaire (AAICRMQ)”. The population of the study was 226 principals in 226 public secondary schools in Ebonyi State. The reliability of the instrument was determined using the Cronbach Alpha technique, which yielded a reliability coefficient of 0.72. Mean ($\bar{x}$) and Standard Deviation (SD) were used to answer the research questions, while t-test statistics were used to test the null hypotheses at a 0.05 level of significance. The findings from the data analysis revealed that application of artificial intelligence (Close Circuit Television and Digital Classroom) in classroom management in Ebonyi state is to a low extent. Based on the findings the study recommended that artificial intelligence should be inculcated as a tool for the management of classrooms in Ebonyi State, Nigeria and that the staffs (teachers) should be trained on the use of artificial intelligence.

Keywords: Artificial Intelligence (AI), Application, Classroom and Management, Closed Circuit, Television and Digital Classroom.

INTRODUCTION

Artificial intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think and learn like humans. These systems can perform tasks that typically require human intelligence, such as learning, reasoning, problem-solving, and decision-making. Artificial intelligence is a broad field encompassing various techniques and approaches, including machine learning and deep learning, which enable machines to learn from data and adapt to new situations (Umahi 2025).

Artificial intelligence can simply be defined as designing machines to make them behave like humans, that is, in terms of reasoning and processing (Umahi 2025). It offers exciting opportunities to enhance teaching, learning, and administrative procedures in secondary

schools. Some possible benefits include personalized learning, intelligent tutoring, data analytics, and streamlined administrative/management processes. However, responsible AI implementation requires a culture of continual learning, ensuring equity and accessibility, promoting human-machine collaboration, and considering ethical considerations. By embracing AI technology with purpose and awareness, secondary schools can capitalize on its potential to enhance instruction and empower students in the digital age.

Artificial intelligence encompasses various subfields such as machine learning, which focuses on algorithms that allow computers to learn from and make predictions based on data. Another significant subfield is natural language processing, which involves the interaction between computers and human languages, enabling machines to understand, interpret, and generate human language. Computer vision, yet another important area, enables machines to interpret and make decisions based on visual input from the world. According to Benko and Lanyi, as cited in Wamba-Taguimdje et al. (2020), artificial intelligence involves a range of principles and methodologies aimed at developing machines capable of replicating human intelligence.

Globally, the use of AI in education has been growing rapidly, reshaping traditional teaching and learning paradigms (Owan et al, 2025). However, the adoption of AI in educational settings remains uneven, especially in developing countries. In Nigeria, the integration of AI tools in schools is still in its early stages, hindered by challenges such as inadequate infrastructure, low awareness, and varying levels of teacher readiness (Ayanwale, 2025). Ebonyi State is a rapidly developing educational hub that faces these challenges, including large class sizes, diverse learner needs, and limited instructional resources. Within this context, AI-powered classroom management tools could provide a solution to help teachers handle both administrative and instructional tasks more efficiently.

Administration refers to the process of organizing and managing the operations, resources, and functions of an organization or institution. This includes planning, coordinating, and overseeing activities to ensure they align with the organization's goals and objectives, often involving decision-making, policy implementation, and resource allocation. Unachukwu and Okorji (2014) defined administration as a social process concerned with identifying, motivating, controlling, and unifying formally and informally organized human and material resources within an integrated system designed specially to accomplish predetermined goals. Aideloha (2018) defined administration as whenever collective action is required, whenever there is a need for order in a series of activities, and whenever a group seeks to obtain a goal. Administrative effectiveness is based on the way a principal runs the school in an easy and effective manner. Effective administration is crucial in secondary education as it ensures the implementation of policies, management of resources, and support for educators and students, fostering an environment conducive to academic success and personal development (Ogbuanu, Udeani, Mogboh, 2023).

Secondary education is referred to as the education that prepares the individual for useful living within the society and higher education (Federal Republic of Nigeria (FRN), 2013). Secondary education helps in the acquisition of knowledge, skills, and values necessary for the exercising of responsible citizenship (Laurie, Nonoyama-Tarumi, McKeown & Hopkins, 2016). The ultimate goal of secondary education is to develop the individual's mental capacity and character for

higher education and useful living within society. Secondary education improves and strengthens the developmental capacities of individuals and communities. This is because secondary education promotes openness in individuals, enabling them to become better citizens (Baumann & Winzar, 2016). Secondary education relies on effective instructional delivery, which plays a critical role in enhancing student engagement, comprehension, and academic success.

Statement of the Problem

The Application of Artificial Intelligence in classroom management in Secondary Schools in Ebonyi State, Nigeria, is crucial for the attainment of world order in classroom management. Despite the potential benefits, there are significant challenges in the installation and use of closed-circuit television and digital classrooms. Many schools lack the necessary infrastructure and technical know-how to effectively implement AI solutions. Teachers and administrators often do not possess adequate training in AI technologies, which hampers the adoption of innovative instructional methods. Furthermore, there is a scarcity of funding to support the acquisition and maintenance of AI systems. Financial management within these schools is traditionally manual and prone to errors, inefficiencies, and fraud. The existing financial systems are not equipped to handle the complexities and speed of AI-powered operations. There is also a resistance to change among stakeholders who are accustomed to conventional methods. Consequently, this gap between the current state and the required advancements needs to be addressed to harness the full potential of AI in improving educational outcomes in Ebonyi State public secondary schools.

Purpose of Study

The main purpose of this study was to investigate the application of artificial intelligence in classroom management in secondary schools in Ebonyi State. Specifically, this study sought to:

1. ascertain the roles of artificial intelligence in classroom management in Ebonyi State.
2. ascertain the problems solved with the application of artificial intelligence in classroom management in Ebonyi State.

Research Questions

The following research questions guided this study.

1. What are the roles of artificial intelligence in classroom management in Ebonyi State?
2. What are the problems solved with the application of artificial intelligence in classroom management in Ebonyi State?

Hypotheses

The following null hypotheses were formulated to guide the study and were tested at the 0.05 level of significance.

Ho1: There is no significant difference in the mean ratings of urban and rural secondary schools on the roles of artificial intelligence in classroom management in Ebonyi State.

Ho2: There is no significant difference in the mean ratings of urban and rural secondary schools on the problems solved with the application of artificial intelligence in classroom management in Ebonyi State.

REVIEW OF RELATED LITERATURE.

Artificial Intelligence (AI)

Artificial intelligence is a branch of computer science that develops machine systems capable of demonstrating behaviors linked to human intelligence. AI programs use data collected from different interactions to improve the way they mimic humans in order to perform tasks such as learning, planning, knowledge representation, perception, and problem-solving (Umahi, 2025).

It is defined as intelligence exhibited by machines and has many applications in today's society. Artificial intelligence a program developed to perform specific tasks that are being utilized for a wide range of activities, including medical diagnosis, electronic trading platforms, robot control, and remote sensing. It has been used to develop and advance numerous fields and industries, including finance, healthcare, education, transportation, and more.

Artificial intelligence robots are controlled electronically with the aid of a computer by mimicking the competencies of the human mind. Artificial Intelligence refers to the development of computer systems capable of performing tasks that typically require human intelligence (Umahi, 2025). Artificial Intelligence is a method of making a computer, a computer-controlled robot, or a software think intelligently like the human mind. It leverages computers and machines to mimic the problem-solving and decision-making capabilities of the human mind.

Artificial Intelligence (AI), according to Ogbuanu, Udeani, & Mogboh (2023), is the computer-controlled robots that think intelligently like human beings. Liu (2016) viewed AI as intelligent machines or intelligent systems that simulate human intelligence activities and extend the science of human intelligence. Artificial intelligence is therefore an emerging technology and the simulation of human intelligence by machines capable of understanding, reasoning, learning, and applying knowledge to function, act, and mimic the problem-solving and decision-making capabilities of the human mind to solve problems. The study of intelligent machines and software capable of reasoning, learning, knowledge acquisition, communication, manipulation, and perception defines the realm of Artificial Intelligence.

Artificial Intelligence in Classroom Management.

Recent advancements in AI technology have introduced a range of tools designed to enhance classroom management and improve instructional efficiency. AI-powered systems assist with tasks such as grading, tracking students' performance, identifying learning gaps, and personalizing content delivery (Calderwood, 2025). These tools help teachers make informed decisions, improving classroom organization and engagement. In large classrooms, AI can help manage administrative tasks, enabling teachers to focus more on teaching and less on routine duties. For example, Artificial intelligence tools can automate attendance tracking, monitor student behavior, and provide real-time feedback, making it easier for teachers to address individual student needs (Mohd-Amin, Ismail, & Sivakumaran, 2025).

Teachers' perceptions of AI classroom management tools are crucial for their effective integration into daily instructional practices. When teachers perceive AI as useful and effective in supporting classroom management, they are more likely to incorporate it into their teaching routines. AI tools that automate routine tasks, such as attendance tracking and behavior monitoring, can help teachers maintain order and focus on instruction, thereby improving the overall classroom environment (Fütterer et al., 2025).

However, the effectiveness of these tools is often contingent on how well school administrators understand and interpret AI-generated data. Without sufficient training, teachers may struggle to use AI effectively, reducing the potential benefits of the technology. Artificial intelligence tools are especially valued for their ability to personalize learning and engage students. Features such as behavior prompts, participation tracking, and real-time feedback help teachers maintain students' engagement and adapt instruction based on student performance (Vieriu & Petrea, 2025). School administrators are more likely to adopt AI tools when they perceive them as flexible and adaptable to their teaching style. However, if the tools are perceived as rigid or impersonal, teachers may be less willing to integrate them into their classrooms (Calderwood, 2025). This underscores the importance of aligning AI tools with pedagogical goals and ensuring they complement teachers' existing instructional strategies.

Problems of the Application of Artificial Intelligence in Classroom Management.

Despite the potential benefits of AI in classroom management, several barriers hinder its widespread adoption. One significant challenge is the lack of digital fluency among teachers, particularly in under-resourced settings. Many educators are not sufficiently trained to use AI tools effectively, and without adequate professional development, they may find these tools intimidating or unnecessary (Laru, Celik, Jokela, & Mäkitalo, 2025). Moreover, infrastructure limitations, such as unreliable internet connectivity, inconsistent power supply, and a lack of functional devices, further complicate AI adoption, especially in developing regions (Omotayo et al., 2025). In many schools, even when AI systems are introduced, the lack of stable infrastructure can lead to frustration and discontinuation.

Additionally, concerns about privacy and data security are major barriers to the adoption of AI tools in classrooms. Teachers may worry about how student data is collected, stored, and used, especially when AI platforms are developed by third-party vendors. (Xue, Chinapah, & Zhu, 2025). These concerns are particularly relevant in regions like Ilorin, where data protection regulations may not be fully developed or enforced. Furthermore, teachers may resist AI adoption due to unclear benefits, lack of institutional support, or fear of misuse, which makes it crucial to address these issues through targeted interventions, transparent data policies, and ongoing professional development (Taheri et al., 2025).

Secondary School:

A secondary school, high school, or senior school is an institution that provides secondary education. Some secondary schools provide both lower secondary education (ages 11 to 14) and upper secondary education (ages 14 to 18), i.e., both levels 2 and 3 of the ISCED scale, but these can also be provided in separate schools. There may be other variations in the provision: for example, children in Australia, Hong Kong, and Spain change from the primary to secondary systems a year later at the age of 12, with the ISCED's first year of lower secondary being the last year of primary provision (Federal Government of Nigeria 2013).

Secondary education in Nigeria is a 6-year program divided into 3 years of Junior Secondary School (JSS1-3) and 3 years of Senior Secondary School (SSS1-3), aimed at students aged 11-17 to prepare them for tertiary education or vocational training.

Structure of Secondary Education

Junior Secondary School (JSS): Completes basic education, lasting 3 years. Students take the Basic Education Certificate Examination (BECE) to progress.

Senior Secondary School (SSS): Lasts 3 years, focusing on specialization. Students take the Senior Secondary Certificate Examination (SSCE) conducted by WAEC or NECO, which is crucial for university admission (Federal Government of Nigeria 2013).

METHODOLOGY

The study adopted a descriptive survey design. The area of the study was Ebonyi State. The State has 13 Local Government Areas (LGAs). These include: Abakaliki, Ebonyi, Izzi, Ivo, Ikwo, Onicha, Ohaozara, Ishielu, Ezza South, Ezza North, Afikpo South, Edda, and Ohaukwu LGAs. Ebonyi State has 226 public secondary schools and shares geographical boundaries with Benue State in the North, Abia State in the south, Cross River State in the East, and Enugu State in the West. The population of the study was all 226 principals of 226 secondary schools in Ebonyi State. There was no sampling; rather, it was a consensus survey. The instrument for data collection was a researcher-developed questionnaire titled "Application of Artificial Intelligence in Classroom Management in Ebonyi State, Nigeria Questionnaire (AAICRMQ). The questionnaire response options took a modified Likert-type scale the form of 4 – point rating scale, ranging from 'Very High Extent (4), High Extent (3), Low Extent (2), and Very Low Extent (1). Respondents were expected to make judgments by ticking (✓) the appropriate columns, which expressed their opinions about the items. The instrument was face-validated by three (3) experts: two from the Department of Educational Management and Foundational Studies and one from the Department of Science Education (Measurement and Evaluation); all from the Faculty of Education, Alex Ekwueme Federal University Ndufu-Alike, Ebonyi State. These experts were requested to review the items in terms of their clarity, the appropriateness of the language and expressions to ensure unambiguity, and the relevance of the items to the problem under investigation. The experts made necessary corrections, and the corrections made were effected by the researcher. To ascertain the internal consistency of the instrument, Cronbach's Alpha technique was used for its analysis. Reliability coefficients for the clusters were as follows: cluster A: 0.83 and cluster E: 0.75. These gave an overall reliability score of 0.72. The result indicated that the instrument was reliable and therefore considered appropriate for use. In answering the research questions, data collected from respondents were analyzed using SPSS.

RESULTS

Research Question One

What are the roles of artificial intelligence in classroom management in Ebonyi State?

The data providing answers to the above research question are presented in Table 1 below.

Table 1: Mean Ratings and Standard Deviation of Responses on the roles of application of artificial intelligence in classroom management in public secondary schools in Ebonyi State.

S/N	Items Statement	N	$\bar{x}$	SD	DEC:
1	Installation of closed-circuit television (CCTV) cameras helps monitor movement in the classroom	226	1.48	1.03	LE
2	Making available motion sensors to detect unauthorized movement around the school	226	1.13	1.04	LE
3	Having enough lighting system in and around the school to provide vision.	226	1.42	0.97	LE
4	Use of an electronic mass notification system to notify students about an event in school	226	1.22	0.97	LE
5	Use of a digital signage system that can map out people that are together in class	226	1.18	0.86	LE
6	Use of computer-assisted design programmes to remind students of activities	226	1.02	0.86	LE
7	In installing smart classroom devices that can be controlled remotely and grant access electronically	226	1.49	0.88	LE
Average Mean			1.31	0.96	LE

Source: Field Work, 2026

The result presented in Table 1 showed the mean ratings of respondents on the role of application of artificial intelligence in classroom management in Ebonyi State. Items 1,2, 3, 4, 5, 6 and 7 with mean scores of 1.48, 1.35, 1.42, 1.22, 1.18, 1.02, 1.49 and standard deviation of 1.03, 1.04, 0.97, 0.97, 0.86, and 0.88 respectively showed to low extent to which artificial intelligence impact class room management in Ebonyi State. This implies that Ebonyi State secondary education to a low extent apply artificial intelligence class room management in Ebonyi State. This shows that the mean value for the cluster is 1.31, which is between 1.50 and 2.49 and corresponds to Low Extent (LE).

Research Questions Two

What are the problems solved with the application of artificial intelligence in classroom management in Ebonyi State?

Table 2: Mean Ratings and Standard Deviation of Responses on the problems solved with the application of artificial intelligence in classroom management in Ebonyi State.

S/N	Items Statement	N	$\bar{x}$	SD	DEC:
8	Application of artificial intelligence helps in curbing corruption	226	1.40	0.89	LE
9	Application of artificial intelligence helps in checkmating examination malpractice	226	1.38	0.99	LE
10	Application of artificial intelligence helps in curbing sexual harassmt and abuse.	226	1.30	0,98	LE
11	Application of artificial intelligence helps in promoting equity and fairness.	226	1.28	0.83	LE
12	Application of artificial intelligence helps in checkmating cultism in the universities,	226	1.14	0.88	LE
13	Application of artificial intelligence helps in curbing drug and substance abuse	226	1.42	0.90	LE
14	Application of artificial intelligence helps in curbing a poor value system	226	1.45	0.89	LE
Average Mean			1.34	0.90	LE

Source: Field Work, 2025

The result presented in Table 1 showed the mean ratings of respondents on the problems solved with the application of artificial intelligence in classroom management in Ebonyi State. Items 9,10,11,12,13 and 14 with mean scores of 1.40, 1.38, 1.30, 1.28, 1.14, 1.42, 1.45 and standard deviation of 0.89, 0.99, 0.98, 0.83, 0.88, 0.90 and 0.89 respectively showed to low extent to which problems are solved with the application of artificial intelligence in class room management in Ebonyi State. This implies that Ebonyi state secondary education board to a low extent: apply artificial intelligence in curbing corruption, applies artificial intelligence to a low extent in checkmating examination malpractice, applies artificial intelligence to a low extent in checkmating sexual harassmt and abuse, applies artificial intelligence in checkmating cultism in the schools, application of artificial intelligence in curbing drug and substance abuse and also application of artificial intelligence in curbing poor value system. This shows that the mean value for the cluster is 1.34, which is between 1.50 and 2.49 and corresponds to Low Extent (LE).

Hypotheses

1: H01: There is no significant difference in the mean ratings of urban and rural secondary schools on the roles of application of artificial intelligence in classroom management in Ebonyi State.

Table 3: t-test of difference in the mean responses of the roles of application of artificial intelligence in classroom management in secondary schools in Ebonyi State.

Items	Category of respondents	N	Mean	SD	Df	P-Value	Decision
1.	Urban	82	2.58	1.02	224	0.317	Not Significant
	Rural	144	2.72	1.03			
2.	Urban	82	2.53	1.03	224	0.217	Not Significant
	Rural	144	2.71	1.04			
3.	Urban	82	3.58	0,98	224	0.900	Not Significant
	Rural	144	2.06	1.13			
4.	Urban	82	3.03	0.88	224	0.273	Not Significant
	Rural	144	2.88	1.01			
5.	Urban	82	2.89	0.80	224	0.152	Not Significant
	Rural	144	3.06	0.90			
6.	Urban	82	2.70	0.79	224	0.062	Not Significant
	Rural	144	2.93	0.89			
7.	Urban	82	2.97	0,90	224	0.933	Not Significant
	Rural	144	2.96	1.87			

Source: Field Work, 2026

Significant @ $P < 0.05$

The result of the t-test analysis presented in Table 3 indicated that there is no significant difference in the mean ratings of urban and rural secondary schools in Ebonyi State on the roles of application of artificial intelligence in classroom management in public secondary schools in Ebonyi State, as shown in items 1, 2, 3, 4, 5, 6, and 7. This is because, from the table, each of the items obtained a t- value that was greater than the alpha level of 0.05. Based on this, the researcher hereby failed to reject the null hypothesis that there is no significant difference in the mean ratings of urban and rural secondary schools in Ebonyi State on the roles of application of artificial intelligence in classroom management in public secondary schools in Ebonyi State.

H02: There is no significant difference in the mean ratings of urban and rural secondary schools on the problems solved with the application of artificial intelligence in classroom management in secondary schools in Ebonyi State.

Table 4: t-test of difference in the mean responses of urban and rural secondary schools on the problems solved with the application of artificial intelligence in classroom management in secondary schools in Ebonyi State

Items	Category of respondents	N	Mean	SD	Df	P-Value	Dec:
8	Urban	82	2.92	0.92	224	0.136	Not Sig.
	Rural	144	3.11	0.86			
9	Urban	82	3.25	0.94	224	0.092	Not Sig.
	Rural	144	2.96	1.00			
10	Urban	82	3.21	0.86	224	0.670	Not Sig.
	Rural	144	3.07	1.05			
11	Urban	82	3.24	0.72	224	0.423	Not Sig.
	Rural	144	3.11	0.88			
12	Urban	82	3.08	0.77	224	0.078	Not Sig.
	Rural	144	3.01	0.94			
13	Urban	82	2.93	0.98	224	0.126	Not Sig.
	Rural	144	3.15	0.85			
14	Urban	82	2.91	0.87	244	0.215	Not Sig

Source: Field Work, 2025

Significant @ $P < 0.05$

The result of t-test analysis presented in Table 4 indicated that there is no significant difference in the mean ratings of urban and rural secondary schools on the problems solved with the application of artificial intelligence in class room management in secondary schools in Ebonyi State. This is because from the table above, each of the items obtained a t-value that was greater than the 0.05 alpha level of significant. Based on this, the researcher hereby failed to reject the null hypothesis that there is no significant difference in the mean ratings of urban and rural secondary schools on the problems solved with the application of artificial intelligence in class room management in secondary schools in Ebonyi State.

Discussion

The result showed on the roles of application of artificial intelligence in class room management in secondary schools in Ebonyi State a low extent, which implies that Ebonyi state public secondary schools does not apply artificial intelligence in monitoring classrooms, does not apply artificial intelligence in checkmating unauthorized activities in class, does not apply artificial intelligence in providing enough lightening for students, does not apply artificial intelligence in providing electric mass notification system, application of artificial intelligence in providing digital signage, application of intelligence in computer assisted design programm and smart class room device. The indication revealed that the role of application of artificial intelligence in class room management in secondary schools in Ebonyi State was to a low extent while the hypothesis revealed that there is no significant difference in the mean ratings of urban and rural secondary schools in Ebonyi state on the roles of application of artificial intelligence in class room management in public secondary schools in Ebonyi State.

The study basically revealed the problems solved with the application of artificial intelligence in class room management in public secondary schools in Ebonyi State. The indication in the responses of the respondents shows that to a low extent do application of artificial intelligence in checkmating examination malpractice, does not apply artificial intelligence in checkmating issues of sexual harassment and abuse, does not apply artificial intelligence in promoting equity and fairness, application of artificial intelligence in curbing cultism, application of intelligence in checkmating drug abuse and poor value system. The indication revealed the problems solved with the application of artificial intelligence in class room management in public secondary schools in Ebonyi State was to a low extent while hypothesis result in the same research question revealed that there is no significant difference in the mean ratings of urban and rural secondary schools on the problems solved with the application of artificial intelligence in classroom management in secondary schools in Ebonyi State.

Summary of Findings

The findings from this study were summarized as follows:

1. The application of artificial intelligence in classroom management in public secondary schools in Ebonyi State is to a low extent.
2. Problems solved with the application of artificial intelligence in the classroom in Ebonyi State are to a low extent
3. There is no significant difference in the mean ratings of urban and rural secondary schools in Ebonyi State on the roles of application of artificial intelligence in classroom management in public secondary schools in Ebonyi State.
4. There is no significant difference in the mean ratings of urban and rural secondary schools on the problems solved with the application of artificial intelligence in classroom management in secondary schools in Ebonyi State

Conclusion

In conclusion, artificial intelligence is not inculcated in classroom management in public secondary schools in Ebonyi State. This non-inculcation suggests that these schools are not fully leveraging AI's potential benefits. Enhancing AI integration could significantly improve educational outcomes and operational efficiency. Consequently, there is a need for strategic initiatives and investments to bolster AI utilization in these critical areas. The overall conclusion is that the Ebonyi State Government needs to inculcate artificial intelligence in classroom management in public secondary schools in Ebonyi State.

Recommendations

Based on the discussion of the results, the following recommendations were made:

This includes:

- Providing adequate training and support for principals and teachers in our public secondary schools on how to apply artificial intelligence in managing classrooms.
- Government should provide artificial intelligence equipment in public secondary schools in Ebonyi State and encourage staff to use them.

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