

TEACHERS' PERCEIIONS OF THE ROLES OF ARTIFICIAL INTELLIGENCE (AI) IN THE INTEGRATION OF THE NEW CURRICULUM IN SECONDARY SCHOOLS IN KANO STATE, NIGERIA

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Abstract

The study examined teachers' perceptions of the roles of artificial intelligence (AI) in the integration of the new curriculum in secondary schools in Kano State, Nigeria. The study adopted descriptive survey design. The study was guided by three research objectives with the corresponding research Questions. The population of the study consists of all the teachers in public secondary schools in Kano State, Nigeria. The sample of 370 teachers was used for the study. The instrument for data collection was researcher made structural questionnaire titled Teachers Perceived Roles of Artificial Intelligence Questionnaire (TPRAIQ). The instrument was face and content validated by three experts and the reliability coefficient is 0.87. The data collected were analysed using descriptive statistics Mean and Standard Deviation. The result shows that teachers are aware of the

integration of AI into secondary schools curriculum but teachers' didn't receive training for effective integration of AI in secondary school education. It was also discovered that AI support teachers in preparing lesson plans and instructional materials, contributes to effective curriculum delivery and evaluation. Based on the findings, recommendations were made that teachers should be trained on the use of AI and its relevant to educational system, future research should focus on developing frameworks for responsible AI use in educational settings and educational stakeholders must collaborate to overcome challenges related to infrastructure, training, and ethical considerations.

Keyword: Roles, Artificial Intelligence, New curriculum, Integration, Teacher perception

Introduction

The global advancement of Artificial Intelligence (AI) has influenced the design, delivery, and assessment of curricula in education systems. In Nigeria, the introduction of the new secondary school curriculum which emphasizes digital literacy, critical thinking, and skill-based learning creates the need to explore how AI can support teaching and learning. Teachers' perceptions are crucial because they determine the extent to which AI tools can be successfully integrated into classroom practices. Artificial Intelligence (AI) refers to the simulation of human intelligence processes by machines, particularly computer systems, to perform cognitive functions such as learning, reasoning, and problem-solving

(Adebayo & Ogunyemi, 2020). In the educational context. Ogunleye (2020) defines AI in education as "the simulation of human intelligence processes by machines, especially computer systems, to facilitate personalized learning experiences and automate administrative tasks." This definition emphasizes the dual role of AI in enhancing both learning and administrative functions. Afolabi (2021) describes AI in education as "the use of algorithms and software to create intelligent systems that can adapt to the learning needs of individual students." This highlights the adaptive nature of AI technologies in catering to diverse learning styles. Adeyemi (2019) posits that "AI in education refers to the application of machine learning, natural language processing, and robotics to improve educational outcomes and streamline processes." This definition underscores the technological components that constitute AI in educational contexts. Nwankwo (2022) states that "AI in education encompasses tools and systems that analyze student data to provide insights and recommendations for enhancing teaching and learning." This perspective focuses on data-driven decision-making facilitated by AI. Ibrahim (2020) argues that "AI in education is the integration of intelligent systems that can assist educators in curriculum design, assessment, and student engagement." This definition points to the supportive role of AI in educational planning and execution. Chukwu (2021) defines AI in education as "the deployment of intelligent technologies that can mimic cognitive functions such as learning and problem-solving to

enhance educational practices." This emphasizes the cognitive capabilities of AI systems. Ojo (2022) describes AI as "a set of technologies that enable machines to perform tasks that typically require human intelligence, thereby transforming traditional educational methodologies." This definition highlights the disruptive potential of AI in conventional education. Obi (2019) states that "AI in education involves the use of intelligent tutoring systems that provide personalized feedback and support to learners." This focuses on the interactive and supportive aspects of AI technologies. Eze (2021) argues that "AI in education is the application of computational intelligence to create adaptive learning environments that respond to the unique needs of each student." This definition emphasizes the customization aspect of AI in learning. Uche (2020) defines AI in education as "the use of advanced technologies to enhance educational delivery, improve student engagement, and facilitate administrative efficiency." This encapsulates the multifaceted benefits of AI in educational settings.

AI can play several roles in integrating the new curriculum in secondary schools. Oladipo and Musa (2025) emphasized that AI assists teachers in curriculum design, lesson planning, and individualized instruction. AI-powered systems help align learning materials with curriculum standards and track student performance in real time. Moreover, Okonkwo and Chukwuemeka (2021) highlighted the relevance of AI in fostering critical thinking and creativity core objectives of Nigeria's new curriculum. AI-based learning environments

allow students to explore interactive simulations, receive instant feedback, and collaborate with peers beyond classroom boundaries. AI also supports automated assessment and data analytics, enabling teachers to focus more on instruction than on repetitive evaluation tasks. Adebayo and Ogunyemi (2020) noted that teachers who adopted AI-assisted grading and feedback systems experienced improved classroom efficiency and enhanced learner engagement.

Also according to Ojo and Adebayo (2021), AI technologies can facilitate adaptive learning environments that cater for individual student needs, thereby enhancing engagement and academic performance. Similarly, Adeyemi and Olatunji (2022) emphasize the importance of AI in data analytics, which can inform curriculum development and instructional strategies. According to Adamu (2023), teachers play a pivotal role in the successful integration of AI technologies, as their attitudes and beliefs significantly influence the adoption process. Teachers play a pivotal role in curriculum implementation, and their perceptions influence the acceptance and use of educational technologies (Okonkwo & Chukwuemeka, 2021). A study by Yusuf and Balogun (2022) found that many Nigerian teachers perceive AI as a useful but complex innovation that requires technical competence and infrastructural support. Teachers' readiness is often limited by inadequate training, poor digital literacy, and lack of institutional support. In Kano State, Abubakar and Ali (2023) observed that while a number of teachers expressed interest in AI tools such as digital grading systems and

adaptive learning software, most schools lacked the necessary infrastructure and professional development programs. Their findings indicated a positive attitude toward AI, but with low practical application.

Despite its potential, AI integration in Nigerian secondary schools faces multiple challenges. Eze and Ibrahim (2024) identified infrastructural deficits, such as unreliable electricity and limited internet connectivity, as major obstacles. Teachers often lack access to digital tools or consistent professional training. Additionally, Abubakar and Ali (2023) reported that cultural resistance, fear of job displacement, and ethical concerns about AI replacing teachers were prevalent among educators. Many teachers perceived AI as a threat rather than a collaborative tool, which affects their willingness to use it in teaching. The absence of clear policy frameworks and curriculum guidelines for AI adoption further limits progress. Based on this background, the researcher investigated the teachers' perceptions of the roles of artificial intelligence (AI) in the integration of the new **curriculum in secondary schools in Kano State, Nigeria.**

Objectives of the Study

1. To examine teachers' awareness and understanding of AI applications in teaching and learning.
2. To explore teachers' perceptions of AI's role in facilitating the new curriculum.

3. To identify challenges teachers face in integrating AI tools.

Research Questions

1. To extend are teachers' aware of the AI applications in teaching and learning?
2. What are the teachers' perceptions of AI roles in facilitating new curriculum in the area?
3. What are the challenges that teachers face in integrating AI tools for new curriculum implementation?

Methodology

The study investigates teachers' Perceptions of the Roles of Artificial Intelligence (AI) in the Intergration of the New Curriculum in Secondary Schools in Kano State, Nigeria. The study adopted descriptive survey research design. This enables the researcher to collect data from large population through sample to make decision on the population of the study. The population of the study consists of all the teachers in public secondary schools in Kano State, Nigeria.

The sample of the study consists of 370 teachers from public secondary schools in Kano State, the sample of the study was selected through multi-stage and purposeful sampling technique

The instrument for data collection was researcher made structural questionnaire title Teachers Perceived Roles of Artificial Intelligence Questionnaire (TPRAIQ). The instrument consists of five likert scale of strongly agreed, Agreed, Undecided, Disagreed and strongly Disagreed. The instrument is sub-divided into three sections: Section A: Teachers awareness of AI with 8 items; Section B: Perceived teachers roles of AI with 10 items and Section C: challenges of AI in the integration of the new curriculum with 8 items. The total items of the instrument are 26 items. The instrument was face and content validated by three experts in the field of study (Computer Science Education) and two experts from curriculum studies department. The reliability of the instrument was determined through test-retest. The reliability yielded 0.89 reliability coefficient. This make the instrument reliable for the data collection.

The instrument was administered to the teachers in the sample schools by the researcher and research assistants after permission was taken from the principles of the various schools. The data collected were analysed using descriptive statistics Mean and Standard Deviation to answer the research Questions. The criteria mean of 3.00 was used to agree with the items or statement in the questionnaire and mean below the criteria mean of 3.00 disagreed with the items or statement.

Results

Answering Research Questions

Research Question One: To extend are teachers' aware of the AI applications in teaching and learning?

Table 1: Teachers' Awareness of Artificial Intelligence (AI)
N = 370

SN	STATEMENT	MEAN	SD	DECISION
1	m aware of the concept of tificial Intelligence (AI).	3.67	0.89	Agreed
2	I have received training or seminars related to AI in education	2.94	1.08	Disagreed
3	I understand how AI can be applied in classroom teaching and learning.	2.87	1.12	Disagreed
4	I am familiar with AI tools such as ChatGPT, Google Bard, or educational chatbots	2.76	1.09	Disagreed
5	The integration of AI is included in the new secondary school curriculum.	3.52	0.91	Agreed
6	I can identify AI-based applications used in teaching and assessment.	2.89	1.04	Disagreed
7	I have good knowledge of AI tools for teaching and learning.	2.78	1.05	Disagreed

8	I have the knowledge of the technology tools for the implementation of new curriculum.	2.87	1.12	Disagreed
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From table 1 above shows teachers' awareness of AI, the result shows that items 1 and 5 are agreed by the respondents while items 2, 3, 4, 6, 7, and 8 were disagreed. It mean that teachers are aware of the integration of AI into secondary schools curriculum but teachers' didn't received training for effective integration of AI in secondary school education and most of the teachers are not familiar with AI tools for the integration of new curriculum.

Table 2: Perceived Roles of AI in the New Curriculum.
No = 370

SN	STATEMENT	MEAN	SD	DECISION
1	AI can support teachers in preparing lesson plans and instructional materials.	3.45	0.86	Agreed
2	AI helps to personalize learning according to students' abilities.	3.42	0.69	Agreed
3	AI can automate students' assessments and grading.	3.38	0.70	Agreed

4	AI tools enhance students' engagement and participation in class.	3.40	0.67	Agreed
5	AI can assist teachers in identifying students' learning difficulties	3.33	0.66	Agreed
6	AI contributes to effective curriculum delivery and evaluation	3.46	0.61	Agreed
7	AI can help reduce teachers' workload.	3.41	0.64	Agreed
8	Bridging educational gaps and effective curriculum delivery.	3.40	0.66	Agreed
9	Improved academic performance among students	3.18	0.69	Agreed
10	Data-driven is for decision-making and placement of students.	3.36	0.72	Agreed

From table 2 above shows teachers Perceived roles of AI in the integration of new curriculum in secondary schools. The

result shows that all the items in the questionnaire are agreed to be the roles of AI in education. This means that AI support teachers in preparing lesson plans and instructional materials, contributes to effective curriculum delivery and evaluation, bridging educational gaps and effective curriculum delivery, improved academic performance among students and also help reduce teachers' workload.

Table 3: Challenges of AI Integration in the New Curriculum. **N = 370**

SN	STATEMENT	MEAN	SD	DECISION
1	Lack of adequate knowledge and training in AI hinders its implementation.	3.44	0.37	Agreed
2	Insufficient ICT facilities make AI integration difficult.	3.22	0.70	Agreed
3	Poor internet connectivity affects the use of AI tools.	3.30	0.75	Agreed
4	Teachers fear that AI might replace their roles in the classroom.	3.47	0.68	Agreed
5	There is inadequate government policy support for AI adoption in education.	3.50	0.71	Agreed
6	The cost of AI tools and software is a major	3.46	0.61	Agreed

	barrier.			
7	Lack of technical support discourages teachers from using AI.	3.40	0.66	Agreed
8	High cost of deployment of AI	3.36	0.72	Agreed

From Table 3 above shows challenges of AI integration in the new curriculum, the result shows teachers' Perceived challenges faced by teachers in the integration of AI in the new curriculum, from the analyses all the items are agreed to be challenges faced by teachers. The challenges includes; Lack of adequate knowledge and training, Insufficient ICT facilities, Poor internet connectivity, inadequate government policy support for AI adoption in education, high cost of AI tools and software, lack of technical support and high cost of deployment of AI.

Discussion of findings

This examined the teachers' perceptions of the roles of artificial intelligence (AI) in the intergration of the new curriculum in secondary schools in Kano State, Nigeria. From the result, it was discovered that teachers are aware of the intergration of AI into secondary schools curriculum but teachers' didn't received training for effective integration of AI in secondary school education and also most of the teachers are not familiar with AI tools for the integration of new curriculum. This study agrees with Ibrahim (2020), Afolabi (2021) Nwankwo (2022) and Ojo (2022) stated that

teachers' are aware of AI integration into educational system but lack adequate training and facilities for effective teaching and learning in secondary schools.

Furthermore, the study discovered that AI support teachers in preparing lesson plans and instructional materials, contributes to effective curriculum delivery and evaluation, bridging educational gaps and effective curriculum delivery, improved academic performance among students and also help reduce teachers' workload. The study is in line with Oladipo and Musa (2025) who emphasized that AI assists teachers in curriculum design, lesson planning, and individualized instruction, AI-powered systems help align learning materials with curriculum standards and track student performance in real time. In the same vein Okonkwo and Chukwuemeka (2021) highlighted the relevance of AI in fostering critical thinking and creativity core objectives of Nigeria's new curriculum. They further State that AI-based learning environments allow students to explore interactive simulations, receive instant feedback, and collaborate with peers beyond classroom boundaries. AI also supports automated assessment and data analytics, enabling teachers to focus more on instruction than on repetitive evaluation tasks. Similarly, Adebayo and Ogunyemi (2020) noted that teachers who adopted AI-assisted grading and feedback systems experienced improved classroom efficiency and enhanced learner engagement.

Lastly, the study discovered that challenges faced by teachers in the integration of new curriculum using AI includes; Lack of adequate knowledge and training, Insufficient ICT

facilities, Poor internet connectivity, inadequate government policy support for AI adoption in education, high cost of AI tools and software, lack of technical support and high cost of deployment of AI. This study agrees with Eze and Ibrahim (2024) who stated that infrastructural deficits, such as unreliable electricity, insufficient ICT facilities and limited internet connectivity are major obstacles of integrating AI in educational system in Nigeria. They further stated that teachers often lack access to digital tools or consistent professional training. Similarly, Abubakar and Ali (2023) reported that cultural resistance, fear of job displacement, and ethical concerns about AI replacing teachers were prevalent among educators.

Conclusion

Teachers' perceptions of AI's roles in new curriculum integration in secondary schools in Kano State reveal a complex interplay of optimism and concern. While educators recognize the potential of AI to enhance teaching and learning, Artificial Intelligence holds significant promise for transforming education in Nigeria and beyond. By providing personalized learning experiences and improving administrative processes, AI can enhance educational outcomes. However, it is essential to approach the integration of AI in education with caution, considering ethical implications and ensuring equitable access to technology and significantly, the barriers must be addressed to facilitate effective implementation of the new curriculum.

Recommendations

The following recommendations were made based on the findings: of the study:

1. Teachers should be trained on the use of AI and its relevant to educational system.
2. Future research should focus on developing frameworks for responsible AI use in educational settings.
3. Educational stakeholders must collaborate to overcome challenges related to infrastructure, training, and ethical considerations.

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