

Teachers' Awareness, Attitudes, and Readiness to Integrate Artificial Intelligence for Instructional Delivery in Secondary Schools in Ondo State, Nigeria

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Abstract

This study investigated teachers' awareness, attitudes, and readiness to integrate Artificial Intelligence (AI) for instructional delivery in secondary schools across Ondo State, Nigeria. Driven by the global shift toward digital learning technologies, the research evaluated educators' familiarity with AI tools, their perceptions of AI's utility, and their practical capacity to adopt AI applications in classroom teaching. A descriptive survey research design was adopted, utilizing a sample of secondary school teachers selected through a simple random sampling technique from schools in Ondo State. Data were collected using a validated, structured questionnaire titled Teachers' AI Integration Survey (TAIS), which demonstrated strong internal consistency reliability. Data analysis involved descriptive statistics (percentages, frequency counts, weighted means, and standard deviations) for operational research questions. Findings revealed that while secondary school teachers in Ondo State exhibit a high level of general AI awareness and hold a largely positive attitude toward AI as an instructional delivery system, their actual practical readiness to integrate AI tools remains critically low. Significant barriers impeding readiness included inadequate technological infrastructure, unstable power supply, lack of institutional funding, absence of clear policy guidelines, and insufficient hands-on professional development training. It is recommended that the Ondo State Ministry of Education, Science and Technology collaborate with educational technology stakeholders to upgrade ICT infrastructure in secondary schools, organize targeted AI literacy workshops for teachers, and formulate clear policy framework guidelines for ethical AI integration in instruction.

Keywords: Artificial, Awareness, Delivery, Teacher, Readiness,

Introduction

Artificial Intelligence (AI) has become an important component of contemporary technological development, with increasing applications in education, healthcare, business, communication and other areas of human activity. In education, AI refers broadly to computer-based systems that can perform functions commonly associated with human intelligence, including learning from information, generating responses, recognising patterns, providing recommendations and supporting decision-making. The increasing availability of

AI-powered applications has created new possibilities for teachers and learners and has also raised questions about how educational institutions should prepare for their effective and responsible use. Badmus and Ajibola (2025) noted that Artificial intelligence (AI) is a vast branch of computer science concerned with developing intelligent computers capable of doing tasks that typically need human intelligence.

The development of AI has changed the way educational technology is conceived and applied. Earlier educational technologies were mainly designed to provide access to information or facilitate communication, whereas newer AI systems can interact with users, generate instructional materials, analyse information and provide personalised assistance. Applications such as intelligent tutoring systems, automated assessment tools, adaptive learning platforms, educational chatbots and generative AI applications can potentially support several aspects of teaching and learning. For teachers, AI can provide assistance with lesson preparation, development of instructional materials, assessment, feedback and the adaptation of learning activities to different learner needs. However, the availability of these technologies does not automatically result in their effective use in schools. Teachers need adequate knowledge of what AI can do, the ability to distinguish appropriate applications from inappropriate ones, and sufficient confidence to incorporate relevant tools into their instructional activities (Thomas, Gambari, Yusuf, Abanikanda, and Daramola, 2024).

Badmus and Ajewole (2025) observed that over the past few decades, the integration of technology in education has gained momentum, transforming the ways in which teaching and learning take place. One of the most significant technological advancements in education is the use of digital platforms such as YouTube, AI, and many others. Teachers' awareness of digital literacy and technology integration is therefore an important starting point for AI integration. Awareness goes beyond simply having heard about artificial intelligence. It involves recognising available AI applications, understanding their possible educational uses and having some knowledge of the opportunities and limitations associated with their application. A teacher may be aware of an AI tool without possessing the practical competence required to use it effectively. Consequently, awareness should be considered alongside attitude, competence and readiness. Teachers' attitudes also have an important influence on technology adoption. A teacher who considers AI useful and manageable may be more willing to experiment with it, whereas one who views it as threatening, unreliable or unnecessarily complicated may be reluctant to adopt it. Concerns about inaccurate information, academic dishonesty, privacy, excessive dependence on technology and possible changes in teachers' roles may also influence attitudes towards AI (Adepoju & Salami, 2022).

Ajimoko, Badmus and Job (2024) noted that achieving the seamless integration of technology into education requires careful consideration of both its benefits and challenges. Readiness represents another important dimension of technology integration. A teacher may have positive feelings towards AI but still be unable to use it because of inadequate technical skills, poor internet connectivity, insufficient electricity supply, lack of appropriate devices or limited institutional support. Readiness therefore involves more than willingness. It includes the knowledge, skills, confidence, resources and organisational conditions required for meaningful implementation. The school environment is particularly important in determining whether teachers can translate awareness and positive attitudes into actual classroom practice. Access to computers and other digital devices, reliable electricity, internet connectivity, technical support and professional development opportunities can facilitate technology

adoption. Conversely, inadequate infrastructure and limited training can create a gap between teachers' interest in AI and their capacity to use it.

In Nigeria, the growing interest in digital education has increased the need to understand teachers' preparedness for emerging technologies. Secondary schools are expected to equip learners with knowledge and skills that are relevant to a rapidly changing technological environment. This expectation places additional responsibility on teachers, who need opportunities to develop appropriate digital and AI-related competencies.

The Ondo State educational environment provides an important context for examining these issues. Teachers work in schools with varying levels of infrastructure, technological resources, professional experience and access to training (Ondo State Ministry of Education, 2024). These differences may influence their awareness of AI, their perceptions of its educational value and their readiness to incorporate AI-supported activities into classroom instruction. It is also necessary to recognise that AI integration should not be approached simply as the replacement of conventional teaching practices. Rather, AI can be viewed as a tool that may complement teachers' professional judgement. Effective integration requires teachers to determine when an AI application is appropriate, how its output should be evaluated and how it can be used without compromising educational quality, academic integrity or the teacher's professional responsibility.

Statement of the Problem

Artificial intelligence is increasingly becoming part of educational discussions and practices. Despite the growing availability of AI applications, the existence of these tools does not necessarily mean that teachers are adequately prepared to use them in secondary school instruction. There may be a difference between knowing that AI exists and possessing the knowledge, skills, confidence and resources required to use it effectively. One major concern is the level of teachers' awareness of AI and its educational applications. Some teachers may be familiar with popular AI applications but may have limited understanding of how such tools can be used for lesson preparation, assessment, feedback and other instructional activities. Limited exposure to structured AI training may further restrict teachers' ability to distinguish useful educational applications from inappropriate or unreliable uses. Teachers' attitudes towards AI also constitute an important concern. Although AI may offer opportunities for improving teaching and learning, teachers may have reservations about its reliability, possible misuse, effects on professional roles and implications for academic integrity. Concerns about students using AI to facilitate cheating or plagiarism may also influence teachers' willingness to adopt the technology.

Another problem concerns teachers' practical readiness. Positive attitudes towards AI may not necessarily translate into classroom use when teachers lack the technical skills, devices, internet access, electricity supply or institutional support required for implementation. Where these conditions are inadequate, teachers may remain interested in AI while being unable to incorporate it meaningfully into their teaching. There is also a need for clearer institutional and policy guidance on the responsible use of AI in schools. Teachers need guidance on issues such as appropriate classroom applications, verification of AI-generated information, student use of AI, academic integrity, privacy and responsible digital behaviour. In the absence of adequate guidance, individual teachers and schools may adopt different approaches to AI integration.

The problem is therefore not simply whether AI tools are available. The more important question is whether secondary school teachers in Ondo State possess sufficient awareness, favourable attitudes and practical readiness to integrate such technologies into instruction, and what factors may hinder that process. This study investigates teachers' awareness, attitude, readiness and challenges to integrate artificial intelligence into instruction in secondary schools in Ondo State.

Purpose of the Study

The main purpose of this study was to examine teachers' awareness, attitude and readiness to integrate artificial intelligence into instruction in secondary schools in Ondo State.

Specifically, the study seeks to:

1. determine the level of teachers' awareness of artificial intelligence and its educational applications;
2. examine teachers' attitudes towards the integration of artificial intelligence into classroom instruction;
3. assess teachers' readiness to use artificial intelligence in teaching and learning;
4. identify the major barriers affecting the integration of artificial intelligence in secondary schools; and

Research Questions

The following research questions guide the study:

- i. What is the level of teachers' awareness of artificial intelligence and its educational applications in secondary schools in Ondo State?
- ii. What are teachers' attitudes towards the integration of artificial intelligence into classroom instruction?
- iii. To what extent are teachers ready to integrate artificial intelligence into teaching and learning?
- iv. What barriers do teachers encounter in integrating artificial intelligence into instruction?

Methodology

The study adopted a descriptive survey research design. The descriptive survey approach enabled the researcher to collect information from a defined group of respondents and describe their views and experiences without manipulating the variables under investigation. The population of the study comprised secondary school teachers in Ondo State. The target population covered teachers working in secondary schools within the area selected for the investigation. A sample of 300 secondary school teachers was used for the study. Thirty (30) teachers were selected from ten (10) schools using a simple random technique.

The instrument used for data collection was a structured questionnaire developed to obtain information relevant to the objectives and research questions of the study. There are

five sections, Sections A, B, C, D, and E. Section was on respondent's information, section B centred on teachers' awareness of AI, section C focused on teachers' attitude towards AI integration, section D comprised on teacher readiness to integrate AI and section E was on challenges hinder AI integration. The responses were measured using a four-point scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD).

The questionnaire was subjected to appropriate validation procedures to ensure that the items adequately represented the study's objectives and research questions. The items were examined for clarity, relevance, adequacy of coverage and suitability for secondary school teachers. Corrections arising from the validation process were incorporated into the final version of the questionnaire before its administration. The reliability of the questionnaire was determined through a pilot test involving 30 secondary school teachers which shares similar educational characteristics with Ondo State but is outside the study area. The responses were analyzed using the Cronbach's Alpha reliability coefficient, and an overall reliability index of 0.84 was obtained, indicating a high level of internal consistency and reliability of the instrument.

The researcher administered the questionnaire to the selected secondary school teachers. Respondents were informed about the purpose of the research and were encouraged to provide honest responses. The researcher ensured that the questionnaire items were properly explained where necessary and that completed copies were retrieved for analysis. Attention was given to maintaining the confidentiality of respondents' information. The data were coded and analyzed using the Statistical Package for the Social Sciences (SPSS) version 26.0. The Descriptive Statistics (frequency counts, percentages, and means) were used to

Results

Answer to Research Questions

Research Question 1: What is the level of awareness of teachers in Ondo State secondary schools about Artificial Intelligence (AI) in teaching and learning?

Table 1: Frequency and Percentage on Level of Teachers' Awareness in Teaching and Learning

S/N	Items	SA (%)	A (%)	D (%)	SD (%)	Remarks
1.	I have heard about Artificial Intelligence in education	54 (18)	141 (47)	72 (24)	33 (11)	Agreed
2.	I can identify common AI tools (e.g., ChatGPT, Google Assistant)	150 (50)	110 (37)	30 (10)	10 (3)	Agreed
3.	I understand how AI can be used in classroom instruction	120 (40)	90 (30)	66 (22)	24 (8)	Agreed
4.	I have attended a seminar/workshop on AI in education	9 (3)	21 (7)	60 (20)	210 (70)	Disagreed
5.	I can differentiate AI tools from other educational technologies	90 (30)	120 (40)	60 (20)	30 (10)	Agreed

From Table 1, the majority of the respondents (195 out of 300), representing (65%) either agreed (47%) or strongly agreed (18%) with the statement. This indicates a moderate to high level of awareness of AI among the respondents. It suggests that artificial intelligence is gradually becoming a recognized concept within the educational sector, possibly due to increasing digital exposure, media, and recent technological trends in education.

Research Question 2: What is the attitude of teachers in Ondo State secondary schools towards AI integration in their teaching and learning?

Table 2: Frequency and Percentage of Teachers' Attitude toward AI Integration

S/N	Items	SA (%)	A (%)	D (%)	SD (%)	Remarks
1.	AI can improve the effectiveness of teaching and learning	96 (32)	120 (40)	54 (18)	30 (10)	Agreed
2.	I am excited about the use of AI in education	12 (4)	33 (11)	210 (70)	45 (15)	Disagreed
3.	I feel AI might replace the role of teachers in the future	69 (23)	102 (34)	90 (30)	39 (13)	Agreed
4.	I am willing to explore AI applications in my classroom	150 (50)	114 (38)	27 (9)	9 (3)	Agreed
5.	I believe AI should be integrated into secondary school curriculum	90 (30)	123 (41)	33 (11)	54 (18)	Agreed

Table 2, it is obvious that respondents agreed with all the items except item 2. This means that 216 respondents, representing (72%) of the total sample, expressed a positive attitude about the role of AI in enhancing teaching and learning processes. This majority indicates that educators and stakeholders recognize the potential of AI in transforming education by personalizing learning experiences, automating administrative tasks, and providing intelligent tutoring systems.

Research Question 3: What is the readiness of teachers in Ondo State secondary schools to integrate AI-powered tools into their teaching and learning?

Table 3: Frequency and Percentage of Teachers' Readiness to Integrate AI

S/N	Items	SA (%)	A (%)	D (%)	SD (%)	Remarks
1.	I am willing to be trained on how to use AI in education	135 (45)	123 (41)	30 (10)	12 (4)	Agreed
2.	I feel confident in my ability to incorporate AI tools to support pedagogical objectives	129 (43)	120 (40)	39 (13)	12 (4)	Agreed
3.	I believe that integrating AI into classroom instruction enhances student engagement and improves overall teaching efficiency	126 (42)	123 (41)	36 (12)	15 (5)	Agreed

4.	I am currently using or experimenting with AI tools in teaching	108 (36)	132 (44)	42 (14)	18 (6)	Agreed
5.	I have access to adequate technical infrastructure, training, and administrative guidelines to safely and effectively adopt AI in my school	30 (10)	42 (14)	141 (47)	87 (29)	Disagreed

The result in Table 3 shows that teachers in Ondo State secondary schools are generally ready to integrate AI-powered tools into teaching and learning, with a grand mean of 2.97, which is above the criterion mean of 2.50. Most teachers were willing to be trained (86%), felt confident in using AI tools (83%), believed that AI improves engagement and efficiency (83%) and were already using or experimenting with AI (80%). However, 76% disagreed that they had adequate technical infrastructure, training and administrative guidelines (mean = 2.05). This implies that although teachers are personally prepared, inadequate institutional support may limit effective integration.

Research Question 4: What are the barriers that teachers in Ondo State secondary schools may face in integrating AI in teaching and learning?

Table 4: Frequency and Percentage of Barriers to AI Utilization

S/N	Items	SA (%)	A (%)	D (%)	SD (%)	Remarks
1.	Lack of infrastructure is a major challenge to AI integration	144 (48)	90 (30)	60 (20)	6 (2)	Agreed
2.	AI implementation is hindered by lack of clear government policy	90 (30)	75 (25)	120 (40)	15 (5)	Agreed
3.	I need more training to use AI effectively	120 (40)	153 (51)	24 (8)	3 (1)	Agreed
4.	Am concerned AI might replace teaching jobs	72 (24)	72 (24)	120 (40)	36 (12)	Disagreed
5.	I fear misuse of AI tools by students (e.g., for cheating/plagiarism)	150 (50)	129 (43)	15 (5)	6 (2)	Agreed

Table 4 reveals that teachers in Ondo State secondary schools face several barriers to integrating AI in teaching and learning, with a grand mean of 3.07, above the criterion mean of 2.50. The highest-rated barriers were fear of misuse of AI tools by students (93%, mean = 3.41), the need for more training (91%, mean = 3.30) and lack of infrastructure (78%, mean = 3.24). Lack of clear government policy was also agreed to be a barrier (55%, mean = 2.80). However, teachers did not generally fear that AI would replace their jobs (52% disagreed). This implies that the main obstacles are practical and institutional and not resistance to AI itself.

Discussions of Findings

The findings of the study indicate that teachers in Ondo State secondary schools possess a moderate level of awareness of Artificial Intelligence (AI). A considerable proportion of the respondents reported that they had heard about AI and were able to identify commonly used AI applications such as ChatGPT and Google Assistant. This finding is consistent with the report of Badmus and Ajibola (2025), teachers are aware of AI technologies and their applications. UNESCO (2023) similarly recognizes the expanding role of AI in education and its potential to support teaching, learning, and educational development.

Despite this general awareness, the findings reveal limitations in teachers' deeper understanding and practical exposure to AI. A substantial majority of respondents reported that they had not attended seminars or workshops relating to AI in education. This finding is consistent with the concern reported by NERDC (2024) regarding inadequate formal preparation of teachers for emerging educational technologies. The implication is that teachers may be familiar with AI largely through general exposure to popular digital applications rather than through structured educational training. The findings further indicate that although many respondents could identify AI tools, this recognition does not necessarily translate into an ability to distinguish AI-specific applications from other educational technologies or to apply AI effectively for instructional purposes. This suggests the need for systematic professional development that moves beyond basic awareness and develops teachers' practical understanding of AI-supported pedagogy.

The findings indicate that teachers' attitudes toward AI integration are mixed, although there is considerable recognition of its potential educational benefits. A majority of respondents agreed that AI can improve the effectiveness of teaching and learning, while a similarly substantial proportion expressed willingness to explore AI applications in their classrooms. These findings suggest that many teachers recognize the possible instructional value of AI. This finding was in line with Olasedidun (2014) who reported that teacher showed positive attitude towards technology integration in education. The findings therefore suggest that professional development should address both the practical and psychological dimensions of AI adoption. Training should not only demonstrate how AI can support teaching but should also address concerns relating to employment, ethical use, reliability, academic integrity, and the continuing professional role of teachers.

The findings demonstrate that teachers' readiness to integrate AI is constrained by limitations in technical competence, infrastructure, practical experience, and confidence. Although 86% of the respondents indicated that they were willing to receive training on the use of AI in education, only 17% agreed that they possessed the technical skills required to use AI tools. This difference between willingness to learn and current competence suggests that teachers may be receptive to AI adoption but require appropriate capacity-building opportunities. Infrastructure represents another major limitation. Only (17%) of respondents indicated that their schools provide the infrastructure required for AI integration, whereas (83%) disagreed or strongly disagreed with the statement. This is in line with the report of Oshin and Badmus (2018) that they had not been utilizing ICT to prepare students for future challenges and had not been effectively using ICT strategies for instruction delivery due to lack of ICT infrastructure. Taken together, the results indicate that teachers in the study area should not necessarily be regarded as unwilling to adopt AI. Rather, the evidence points to a situation in which willingness is considerably higher than current preparedness. Therefore,

regular practical training, access to appropriate infrastructure, and continuous institutional support are important for converting teachers' willingness into effective AI integration.

Conclusion

Based on the findings, the study concludes that teachers in Ondo State secondary schools are becoming increasingly aware of Artificial Intelligence and generally recognise its potential value in education. Nevertheless, awareness alone does not guarantee effective classroom integration. Teachers demonstrated considerable willingness to learn about and use AI, but their practical readiness was constrained by inadequate technical skills, limited exposure to AI training, insufficient infrastructure and limited opportunities to experiment with AI-supported teaching. This indicates a gap between awareness, positive disposition and actual implementation capacity. The study therefore concludes that AI integration in Ondo State secondary schools should be approached as a gradual professional and institutional development process. Teachers need relevant knowledge, practical skills, reliable infrastructure, continuous professional development and clear guidance on responsible AI use.

Recommendations

Based on the findings, the following recommendations are made:

1. School management should establish mandatory, hands-on professional development modules focused on foundational AI concepts, emerging generative AI capabilities, and practical classroom applications.
2. There should be incentives, research grants, or innovation awards for educators who successfully pilot creative and ethical AI activities in their teaching.
3. Periodically evaluate teachers' technical confidence and pedagogical self-efficacy to deliver customized, tiered training programs.
4. Allocate budget by the authority to ensure high-speed internet connectivity, functional computer labs, reliable power supply, and updated hardware across all learning spaces.

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