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## Integrating Artificial Intelligence in African Pedagogies for Learning in Educational Management

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**Abstract:** The integration of Artificial Intelligence into African pedagogies within educational management is a welcome idea for transforming teaching, learning, and administrative processes in the educational system. This study focuses on the role of artificial intelligence in African pedagogical innovations to promote institutional efficiency and effectiveness, anchored in the theories of innovation diffusion and digital transformation. The research employed a descriptive research design involving principals, teachers, and supervisors in public secondary schools across the three senatorial zones of Kogi State, Nigeria. A structured questionnaire was used to elicit information from the respondents. The population included all principals, supervisors, and teachers from 300 schools in 21 Local Government Areas of Kogi State, Nigeria. Simple random sampling techniques were used to select 100 schools from 10 Local Government Areas. A stratified random sampling technique was employed to select a sample size of 500, which included 100 principals, 350 teachers, and 50 supervisors. The study is quantitative in approach. The validity of the instrument was determined by experts in the field of measurement and evaluation using content validity, and Cronbach's Alpha was used to assess the reliability of the instrument, resulting in a value of 0.85 at the 0.05 level of significance. The data collected were analysed using descriptive statistics (simple percentage), and Analysis of Variance (ANOVA) was used to test the hypotheses at the 0.05 level of significance. The findings revealed that the integration of artificial intelligence into storytelling encourages creativity and the right imagination among students, aligning with the 21st century. Additionally, the findings showed that the integration of artificial intelligence will help prepare students for lifelong learning that enhances their critical thinking. The study concludes that the integration of artificial intelligence in educational management demands strategic government policy support for professional capacity building and sustainable investment in digital infrastructure that will promote African indigenous pedagogies. The study recommends that the government should invest in stable internet connectivity, smart classrooms, and AI-powered learning management systems.

**Keywords:** Integrating, artificial intelligence, pedagogies, learning, educational management.

## 1. Introduction

Educational management encompasses curriculum design, teacher professional development, resource allocation, institutional leadership, and governance, all of which play a vital role in shaping the quality of teaching and learning. The significance of educational management includes efficient resource utilisation, policy implementation, quality assurance, improved teaching and learning, as well as innovation and change management. Educational management has a crucial role in the integration of artificial intelligence (AI) into African indigenous pedagogies. The advent of AI presents new opportunities for pedagogies that utilise technology to enhance teaching and learning. There is a growing body of systemic reviews indicating that AI in education has progressed beyond isolated tools to holistic systems (Baker & Hawn, 2021). Another review by Adewale (2023) highlights that AI is fundamentally reshaping pedagogical relationships and processes, such as the transition from a teacher-centred to a learner-centred approach. However, the review conducted by Baliton (2023) demonstrates that AI can also be employed to support administrative platforms, personalised services, and evidence-based decision-making. Furthermore, the use of AI in educational management to promote African indigenous pedagogies will contribute to the strengthening of student-centred learning. The integration of AI into education has become imperative, extending beyond classroom teaching to encompass the realm of educational management. The relationship between educational management, African indigenous pedagogies, and AI is transformative and strategic, as AI serves as a tool to preserve knowledge, personalise learning, and bridge traditional and modern pedagogies (Baker & Hawn, 2021). Baker and Hawn (2021) assert that educational managers determine how AI can be adopted, how it is utilised, and how to map out strategic planning and implementation with ethical considerations to regulate the use of AI. In a similar vein, Okeke (2021) argues that the effectiveness of AI in African education is contingent upon the degree to which it is embedded within educational management systems and aligned with indigenous African pedagogical philosophies.

The 21st century demands new approaches to learning that leverage AI to foster critical creativity, collaboration, and adaptability. According to Adewale (2023), educational reforms must incorporate AI into pedagogies that offer valuable insights rooted in centuries of practical experience. He concludes that these pedagogies are inherently learner-centred, experiential, and community-oriented, aligning with modern educational objectives. Tabulawa (2013) posits that pedagogies are methods employed to enhance teaching and learning. Traditional methods and philosophies of teaching and learning that have developed within African communities include storytelling, apprenticeship, observation, oral transmission, song, dance, proverbs, communal responsibility, and spiritual guidance. Similarly, Adewumi (2022) examines African indigenous pedagogies as forms of learning that often occur through active participation, mentorship, and social interaction, aiming to develop moral character, social responsibility, and practical skills. Kumar and Bawa (2021) enumerate the core features of African indigenous pedagogies as

follows: community-centred learning, which involves education as a collective responsibility engaging elders, family members, and community leaders; morality and storytelling, which entails transmitting knowledge through oral narratives that promote memory, ethics, and imagination; learning by doing, where skills are acquired through observation, imitation, and practice rather than passive instruction; holistic development, which emphasises the development of the whole person—intellectually, morally, spiritually, and socially; and contextual relevance, where learning is grounded in local culture, environment, and practical life experiences.

Matthew (2020) opined that African indigenous pedagogies are traditional methods of teaching and learning that have evolved over centuries through oral transmission, observation, participation, and apprenticeship. These pedagogies are closely knit with cultural practices, social norms, and environmental contexts. However, Akinyemi (2021) emphasised that 21st-century learning centres on critical thinking, creativity, communication, and digital literacy; many of these modern competencies are already inherent in indigenous African learning systems. For instance, storytelling is not merely a means of entertainment but a pedagogical tool that develops imagination, critical analysis, and moral reasoning.

UNESCO (2019) advocated for the integration of indigenous knowledge into formal curricula to render education more relevant, inclusive, and sustainable. The appropriate application of African indigenous pedagogies bridges the gap between home culture and school, thus enhancing learner engagement and achievement. In the same vein, UNESCO (2019) emphasised that the 21st century requires the following: critical thinking, which involves elements such as proverbs and storytelling that foster analytical thinking and ethical reasoning; collaboration, encompassing communal activities like farming, ceremonies, and decision-making to inculcate teamwork and shared responsibility; creativity, manifested in oral literature, music, and dance to encourage imagination and self-expression; and lifelong learning, wherein indigenous systems regard learning as a continuous process throughout life, not confined to classrooms.

Recent research calls for a paradigm shift that values both indigenous and modern pedagogical approaches. Curriculum reforms in countries like Kenya, Ghana, and South Africa are beginning to acknowledge the necessity for culturally responsive education through the integration of artificial intelligence (Tabulawa, 2013). This initiative aims to incorporate artificial intelligence into local content using mother tongue instruction in early grades. In Nigeria, the curriculum was redesigned to accommodate mother tongue as a mode of learning in primary schools nationwide to enhance the effectiveness and efficiency of learning pedagogies. However, research conducted by David (2025) advocated for integrative pedagogies using artificial intelligence that respect both indigenous wisdom and scientific inquiry, fostering learners who are globally competent yet locally rooted. This hybrid approach enhances the adaptability of education systems and strengthens cultural identity among learners.

Baliton (2023) asserted that digital tools present new opportunities for preserving and disseminating oral traditions, stories, and proverbs in interactive and accessible formats. In this same vein, Odora (2021) opined that there is global recognition of indigenous knowledge in contributing to sustainability, peace education, and holistic learning. The 2030 Sustainable Development Goals (SDGs), particularly SDG 4 on inclusive and quality education, call for the recognition of diverse knowledge systems. In this context, African indigenous pedagogies provide rich, context-sensitive learning models that challenge the dominance of Western paradigms in knowledge production. Embracing these pedagogies and integrating them with emerging technologies such as artificial intelligence will not only revitalise African education but also contribute to the enrichment of global educational thought and practice.

Olugbenga (2024) examined the concept of pedagogy as the strategies, methods, and approaches employed in the teaching and learning process. He emphasised that the 21st-century pedagogies in Africa, especially in educational institutions in Nigeria, suffer setbacks due to technological barriers, insufficient teacher training and professional development, and limited resources. However, he suggested that policy reforms, teacher training and professional development, technology integration, partnerships, research, and monitoring are ways to improve the utilisation of 21st-century pedagogies in alignment with African indigenous pedagogies through the integration of artificial intelligence. Peter and Adewale (2025) argued that innovative pedagogies in Africa must be promoted. They stressed that all children are active learners with an equal right to learn. Therefore, learning should be participatory, enjoyable, and adapted to the developmental needs of each learner. In Africa, the innovative pedagogies project advocates the introduction of inclusive, participatory, and adaptive pedagogies within school systems.

Several studies, for example, Muraina et al. (2025), emphasised that AI supports teaching and learning by extending support for management-oriented pedagogies and also helps in innovative pedagogies that promote effective learning. The findings of a study conducted by Adebayo and Ojo (2021) demonstrated that indigenous pedagogies can align with 21st-century learning paradigms, such as storytelling, which encourages creativity and imagination among students through the use of artificial intelligence. This aligns with Matthew (2020), who asserted that pedagogies that occur through active participation, mentorship, and social interaction, aimed at developing moral character, social responsibility, and practical skills, can enhance collaboration skills and critical thinking among students through the use of artificial intelligence.

Integrating AI into indigenous methods assists students in applying knowledge to real-life situations. This assertion is supported by Akinyemi (2021), who posits that 21st-century learning centres on critical thinking, creativity, communication, and digital literacy—attributes that are already inherent in indigenous African learning systems. Ogunleye (2022) conducted a study titled “Artificial Intelligence in Teacher Education” and revealed that AI pedagogies, such as intelligent learning systems, data analytics for performance monitoring, and automated administrative processes, significantly enhance instructional delivery in African pedagogies

(Muraina & 2025). Adewumi (2022) further supports this perspective, noting that while indigenous pedagogies possess qualities that align with 21st-century learning through the utilisation of Artificial Intelligence, the integration of these methods into the curriculum relies on systemic general acceptance and training among stakeholders. This is reinforced by socio-cultural theory, which emphasises the influence of cultural context on teaching and learning. Similar studies by Ogunyemi and Henning (2021) indicate that grassroots educators tend to favour indigenous pedagogies over those preferred by administrators, as they promote collaborative skills through communal activities and foster critical thinking through oral storytelling and proverbs.

The gap between these pedagogies and current educational practices lies in the disconnection of teaching methods in schools from students' cultural and social realities, coupled with the limited integration of local content into the formal education system, as well as the underrepresentation of indigenous knowledge in AI systems. However, this study is founded on Rogers' innovation diffusion theory, which identifies five major components: innovation, communication channels, time, social systems, and adopter categories. The implications of this theory for the study lie in its ability to explain how teachers adopt new pedagogies and assist educational managers in planning implementation strategies. Digital theory encompasses the integration of digital technology into every aspect of an organisation. It comprises four components: technology integration, organisational change, cultural shift, and user focus. The implications for this study highlight its support for e-learning and driven instruction, thereby facilitating the integration of indigenous knowledge through digital platforms (Westermann, Bonnet, & McAfee, 2014).

## **1.1 Problem Statement**

Despite global shifts in education towards inclusive, culturally responsive, and skills-based learning for the 21st Century, African indigenous pedagogies remain marginalised within formal education systems. The gap between traditional African teaching methods, such as storytelling and communal learning, and contemporary educational practices highlights a practical experience that is inherently learner-centred, experiential, and value-driven. These approaches align with 21st Century Competencies, including creativity, critical thinking, collaboration, and adaptability. However, in Nigeria, African educational systems heavily rely on Eurocentric models that often neglect the socio-cultural realities pertinent to African learners. The dominance of colonial languages and standardised instruction limits the potential of education to be relevant, transformative, and empowering (Adebayo & Ojo, 2021). This disconnection contributes to poor learner engagement, cultural alienation, and a missed opportunity to harness Africa's rich intellectual heritage for educational innovation. Therefore, this study evaluates how African indigenous pedagogies, with a focus on Kogi State, Nigeria, can be meaningfully integrated into a modern educational framework in the 21st Century to enhance learning outcomes and cultural relevance. However, despite the growing adoption of Artificial Intelligence, the Kogi State school system still struggles with the effective integration of

technology into teaching and learning processes. While AI can enhance instructional delivery, personalise learning, and improve management efficiency, its integration into African pedagogies, particularly indigenous community-based teaching methods, remains limited and poorly understood. Hence, there is a need to explore how Artificial Intelligence can be effectively integrated into African indigenous pedagogies through educational management in secondary schools in Kogi State.

### ***1.1.1 Research questions***

The following questions are sought to guide the study:

- To what extent does integration of artificial intelligence in indigenous pedagogies align with 21<sup>st</sup> century in Secondary schools in Kogi State, Nigeria?
- What are the perceptions of stakeholders in education in integrating artificial intelligence in indigenous pedagogies for classroom instructions in Secondary Schools in Kogi State, Nigeria?

### ***1.1.2 Research hypotheses***

The following null hypotheses are formulated to guide the study:

- H<sub>01</sub>: There is no significant difference in the perception of Principals, Teachers and Supervisors regarding integration of artificial intelligence in indigenous pedagogies and alignment with 21st century learning in Secondary Schools in Kogi State, Nigeria.
- H<sub>02</sub>: There is no significant difference in the perception of Principals, Teachers, and Supervisors regarding integrating artificial intelligent on indigenous Pedagogies for classroom instructions in Secondary Schools in Kogi State, Nigeria.

## **2. Methodology**

The study adopted a descriptive survey design, and the population consisted of public secondary schools in Kogi State, Nigeria. The total population was 3,700, which included 500 principals, 3,000 teachers, and 200 supervisors. The sample size was determined using stratified random sampling, distributing the samples into strata based on profession. A sample size of 500 was obtained, consisting of 100 principals, 350 teachers, and 50 supervisors from the three educational zones in Kogi State. Simple random sampling techniques were used to select 100 public schools from 10 local government areas out of the 21 local government areas.

The instrument used was structured questionnaires with a 4-point Likert scale of strongly agree, agree, disagree, and strongly disagree. The instrument was validated by experts in the field of educational measurement and evaluation, and a reliability coefficient of 0.85 was obtained using Cronbach's Alpha at a 0.05 significance level. The data collected for the research questions were analysed using simple percentages, while the null hypotheses were assessed using Analysis of Variance (ANOVA) at the 0.05 level of significance.

### 3. Presentation of Results

This section presents the answers to the research questions as outlined in Tables 1 and 2, using simple percentages with a modified Likert scale. Table 3 analyses Null Hypothesis 1 using ANOVA, Table 4 presents the post hoc analysis to show the differences in opinions among principals, teachers, and supervisors, and Table 5 analyses Null Hypothesis 2, also using ANOVA. The following table answers Research Question 1 on Indigenous Pedagogies and 21st Century Learning Skills.

*Table 1: Indigenous pedagogies and 21<sup>st</sup> century learning skills*

S/N	Item Statement	Categories of respondents	SA	A	D	SD
1.	Integration of Artificial intelligence into storytelling encourages creativity and imagination among students	Principals	50 (50%)	30(30%)	20 (20%)	-
		Teachers	200 (57.14%)	80(22.85%)	20(5.71%)	50(14.29%)
		Supervisors	30(60%)	20(40%)		
2.	Integrating artificial intelligence into Communal learning activities help students develop collaboration skills.	Principals	60 (60%)	10 (10%)	30 (30%)	—
		Teachers	140(40%)	160(45.71%)	-	50(14.29%)
		Supervisors	20(40%)	10(20%)	20(40%)	
3.	Using of artificial intelligence for Proverbs and oral narratives promote critical thinking and moral reasoning among students.	Principals	70 (70%)	30 (30%)	-	-
		Teachers	190(54.29%)	100(28.57%)	60(17.14%)	-
		Supervisors	50(100 %)	-	-	
4.	Integrating artificial intelligence in Indigenous methods help students apply knowledge to real-life situations.	Principals	60(60%)	30 (30%)	10 (10%)	-
		Teachers	150(42.86%)	200(57.14%)	-	-
		Supervisors	30(60%)	-	20(40%)	-
5.	Integrating artificial intelligence on Learning by going through apprenticeship	Principals	20(20%)	30 (30%)	50(50%)	-
		Teachers	100(28.57%)	80(22.86%)	120(34.28%)	50(14.29%)
		Supervisors	20(40%)	10(20%)	20(40%)	-

	prepares students for lifelong learning.					
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Item statement 1 shows that the integration of storytelling encourages creativity and imagination among students, with 50 principals representing 50% strongly agreeing, and 30 principals (30%) agreeing, respectively. Meanwhile, 20 principals, representing 20%, disagreed with the item statement. However, 200 teachers, representing 57.14%, strongly agreed, and 80 teachers (22.85%) agreed with the statement, although 20 teachers (5.71%) disagreed and 50 (14.29%) strongly disagreed. Additionally, 30 supervisors, representing 60%, strongly agreed, while 20 (40%) agreed, respectively. Invariably, all the respondents (principals, teachers, and supervisors) believe that if AI is integrated into storytelling, it will enhance students' ability to be creative.

Item statement 2 indicates that integrating AI into communal learning activities helps students develop collaboration skills, with 60 principals (60%) strongly agreeing with the statement and 10% agreeing, while 30 (30%) disagreed. Both teachers and supervisors positively affirmed this, with over 40% strongly agreeing and agreeing, respectively, showcasing strong support for the integration of artificial intelligence. In response to item statements 3 to 5, regarding the use of artificial intelligence for proverbs and oral narratives to promote critical thinking and moral reasoning, the integration of AI into indigenous methods to help students apply knowledge to real-life situations, and the use of AI in learning through apprenticeship to effectively prepare students for lifelong learning, principals, teachers, and supervisors responded positively, with percentages of those who strongly agreed and agreed reaching up to 60%. However, 40% of the teachers and supervisors expressed negative responses, as they both disagreed with the statements. Invariably, the perceptions of principals, teachers, and supervisors differ in their responses to item statements 3 to 5.

The following is the answer to Research Question 2 on perceptions of the integration of artificial intelligence.

**Table 2:** *Perceptions toward integration of artificial intelligence*

S/N	Item Statement	Categories of respondents	SA	A	D	SD
6.	Artificial intelligence should be integrated into the school curriculum for the teaching of indigenous pedagogies	Principals	50(50%)	20(20%)	30(30%)	-
		Teachers	200(57.14%)	80(22.86%)	20(5.72%)	50(14.28%)
		Supervisors	30(60%)	20(40%)		
7.	Teaching in local languages using artificial intelligence enhances learners' understanding in lower primary	Principals	30(30%)	-	70(70%)	—
		Teachers	80(22.86%)	20(5.72%)	150(42.86%)	100(28.58%)
		Supervisors	30(60%)	20(40%)		

8.	Blended Indigenous and modern pedagogies through artificial intelligence improve student's learning outcome	Principals	60(60%)	40(40%)	-	-
		Teachers	200(57.14%)	50(14.28%)	100(28.58%)	-
		Supervisors	50(100%)	-	-	-
9.	Indigenous pedagogies are outdated and should not be part of modern education of using technology such as artificial intelligence.	Principals	30(30%)	-	70(70%)	-
		Teachers	60(17.14%)	40(11.42%)	100(28.58%)	150(42.86%)
		Supervisors	-	-	30(60%)	20(40%)
10.	Indigenous pedagogies using artificial intelligence will contribute to mass failure if included in the curriculum	Principals	70(70%)	-	30(30%)	-
		Teachers	200(57.14%)	100(28.58%)	50(14.28%)	-
		Supervisors	-	50(100%)	-	-

Data from Table 2 revealed that for item 6, both principals, teachers, and supervisors had between 40% and 60% strongly agreeing with the item statement, while 5.72% to 30% disagreed, indicating that they were not in support of integrating AI into the school curriculum. However, item statement 7 showed that the responses from principals and teachers were negative, with 28.58% to 70% disagreeing, which suggests that the integration of AI in the junior class will not enhance students' understanding. In contrast, 40% to 60% of supervisors responded positively, indicating that supervisors from the ministry solely support the notion that integrating AI will help improve students' ability to understand concepts being taught. Items 8 and 10 revealed that the responses from principals, teachers, and supervisors were affirmatively positive, recording the highest percentage range of 57.14% to 100%. Conversely, item statement 9 indicated that principals, teachers, and supervisors all responded negatively, disagreeing with the item statement at rates of 28.58% to 70%, respectively. This demonstrates that principals, teachers, and supervisors have diverse opinions regarding the item statement. The following table 3 responds to hypothesis 1.

**Table 3:**  $H_{01}$  No significant difference on indigenous pedagogies and 21<sup>st</sup> century learning using ANOVA

Source of Variation	SS	Df	MS	F	P – Value
Between Groups	117.12	2	58.56	1457.22	< 0.001
Within Groups	20.08	498	0.0404		
Total	137.20	500			

From Table 3, the calculated F value is very high at 145.22, and the P-value is <0.001 at the 0.05 level of significance. This indicates that the null hypothesis is rejected, as there are differences among teachers, principals, and supervisors. This result was subjected to Tukey's HSD post hoc analysis to obtain the mean differences and their P-values.

**Table 4:** Post HOC analysis

Groups	Mean Difference	P- Value	Interpretation
Teachers vs Supervisors	0.052	<0.001	Significant difference
Teachers vs Principals	1.34	<0.001	Significant difference
Principals vs Supervisors	0.91	<0.001	Significant difference

This table shows the significant differences among the perceptions of principals, teachers, and supervisors regarding the integration of Artificial Intelligence into African pedagogies to align with 21st-century learning. The following table 5 responds to hypothesis 2.

**Table 5:**  $H_{02}$  No significant difference on integration of indigenous pedagogies on classroom instruction

Source of Variation	SS	Df	MS	F	P - Value
Between Groups	86.445	2	43.223	1.60	P>0.05
Within Groups	13440	498	26.99		
Total	13526.445	500			

There is no statistically significant difference among principals, teachers, and supervisors, as F is 1.60 and P > 0.05; therefore, the null hypothesis is accepted.

#### 4. Discussion of Findings

The analysis of data collected from all the item statements was examined during the research, revealing several findings. These findings are quite instructive and worth embracing. Firstly, the study revealed that the integration of artificial intelligence into storytelling encourages creativity and imagination among students, aligning with 21st-century learning. This is in line with Akinyemi's (2021) assertion that 21st-century learning should centre on critical thinking, creativity, communication, and digital literacy, which are inherent in the indigenous African learning system. The study also found that integrating artificial intelligence into 21st-century education will not only enhance pedagogies but also help students develop collaborative skills necessary for AI-driven pedagogies, such as intelligent learning systems, data analytics for performance monitoring, and automated administrative processes, significantly improving instructional delivery in African pedagogies. This is supported by Adewumi's (2022) perspective that, while indigenous pedagogies possess qualities aligning with 21st-century learning, the integration of AI into the curriculum relies on systemic general acceptance and training among stakeholders. This contradicts Marine's (2019) findings that artificial intelligence should not be integrated into African pedagogies, as this would undermine the value of the African system of learning.

Secondly, the findings showed that the integration of artificial intelligence would help prepare students for lifelong learning and enhance their critical thinking. This affirms Okonkwo and

Eze's (2020) observation that traditional pedagogical approaches in Nigeria often follow a one-size-fits-all model, which may not address the diverse needs of students, whereas AI-driven personalised learning systems can be beneficial. Additionally, the findings indicated that artificial intelligence should be integrated into the school curriculum for effective classroom instruction. This aligns with Holmes, Bialik, and Fadel's (2019) assertion that the integration of AI in education is transforming traditional pedagogical approaches, offering innovative solutions for addressing diverse learning needs and improving overall educational outcomes.

Thirdly, the findings suggest that blending indigenous and modern pedagogies will enhance students' learning through the integration of artificial intelligence. This is in line with Uwadia's (2021) claim that AI has the potential to revolutionise teaching methods by providing adaptive learning platforms, intelligent tutoring, and data-driven decision-making. Finally, the study reveals that teaching in local languages using artificial intelligence will not enhance students' understanding in Junior Secondary schools.

## **5. Conclusion and Recommendations**

The study concluded that the integration of artificial intelligence in educational management demands strategic government policy support for professional capacity building and sustainable investment in digital infrastructure to promote African indigenous pedagogies. The integration of artificial intelligence into storytelling encourages creativity and imagination among students, aligning with 21st-century learning. Integrating artificial intelligence in the 21st century will not only enhance pedagogies but will also help students develop collaborative skills needed in AI pedagogies, such as intelligent learning systems, data analytics for performance monitoring, and automated administrative processes, which significantly improve instructional delivery in African pedagogies. Additionally, AI has the potential to transform African pedagogies, enhance instructional strategies, and prepare students for a technology-driven world.

To ensure the benefits of integrating AI into African pedagogies for classroom instruction and to align with 21st-century learning, efforts must focus on investing in digital infrastructure and introducing AI into the curricula. However, addressing challenges such as inadequate infrastructure, a lack of AI awareness, and ethical considerations is necessary for the successful integration of AI into African pedagogies. The implications of these findings are important for building an inclusive and innovative education system in secondary schools in Kogi State. This study has contributed to knowledge by bridging technology, management, and culture, providing localized African pedagogies on AI in secondary schools in Kogi State, Nigeria. However, the limitation of this study is its focus on a single geographical zone in Nigeria.

The study recommends that the government, through the Ministry of Education, should develop a national framework that:

- Includes specific guidelines for incorporating indigenous pedagogies.

- Invests in stable internet connectivity, smart classrooms, and AI-powered learning management systems.
- Mandates maximum digital infrastructure standards for schools and establishes mandatory professional development on AI literacy for teachers and school administrators.

## 6. Declarations

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**Use of Artificial Intelligence:** Authors declare no use of Artificial Intelligence.

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