

Impact of Artificial Intelligence (AI) on Teachers' Leadership in Nigerian Schools

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Abstract

This study investigated the extent to which AI is perceived to expand or regress teacher leadership roles in schools and identified the competencies teacher-leaders need to sustain and enhance their leadership in an AI-augmented educational environment. A phenomenological research design was adopted to explore the lived experiences of 30 purposively sampled teachers across five Nigerian states (Abuja, Imo, Kaduna, Lagos, and Rivers). Data were collected through semi-structured interviews conducted via video conferencing and analyzed thematically using open, axial, and selective coding. Findings revealed a polarized perspective: while some teachers viewed AI as diminishing professional autonomy, collaboration, and human connection by reducing educators to technology facilitators, others regarded it as a catalyst for expanded leadership through automation of administrative tasks, data-driven decision-making, and increased opportunities for mentoring and instructional innovation. Five core competencies emerged as essential for sustaining teacher leadership in the AI era: technological literacy, adaptability and continuous learning, collaborative and coaching skills, data-informed decision-making, and human-centered approaches. The study concludes that AI's impact on teacher leadership is not inherently positive or negative but contingent on how it is integrated, underscoring the need for professional development and ethical frameworks that position AI as a tool that augments, rather than replaces, human-centered leadership.

Keywords: Artificial Intelligence; Teacher Leadership; Educational Leadership; Human-Centered Approach; Nigerian Schools; Phenomenological Study

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Background to the Study

The twenty-first century has witnessed unprecedented advancements in digital technologies, fundamentally transforming how people communicate, access information, work, and learn. These technological developments have reshaped virtually every aspect of society, including education, where traditional classrooms are rapidly evolving into technology-rich learning environments. Consequently, educational institutions are increasingly expected to integrate innovative digital technologies into teaching, learning, assessment, and school management in order to meet the demands of the digital age (Doğan et al., 2024). One of the most transformative innovations driving this educational transformation is Artificial Intelligence (AI). Artificial Intelligence is a branch of computer science that enables machines to perform tasks that ordinarily require human intelligence, such as learning, reasoning, problem-solving, decision-making, and language processing. AI achieves these capabilities through sophisticated algorithms that simulate aspects of human cognition. Over the years, AI has evolved from a theoretical concept into a practical technology with applications across numerous sectors, including healthcare, finance, agriculture, manufacturing, and education (Arun, 2019).

Within education, Artificial Intelligence has emerged as an important catalyst for improving instructional delivery, assessment, and institutional management. Artificial Intelligence in Education (AIED) refers to the use of intelligent technologies to facilitate teaching, learning, assessment, and educational administration. AI-powered applications including intelligent tutoring systems, adaptive learning platforms, educational chatbots, automated assessment tools, educational data mining, and machine learning technologies—support personalized learning, provide timely feedback, reduce teachers' administrative workload, and improve students' learning experiences (Çaresiz et al., 2024; İncemen & Öztürk, 2024). Furthermore, AI has enhanced instructional effectiveness by enabling teachers to personalize learning experiences and adopt data-informed instructional strategies that improve student outcomes (Altun, 2024).

Education itself is built upon three interrelated pillars: pedagogy, curriculum, and assessment (Hill & Barber, 2014). The integration of AI into these foundational components has significantly transformed educational practices by supporting differentiated instruction, improving assessment accuracy, and facilitating evidence-based teaching. Beyond classroom instruction, AI has also expanded into educational administration, where intelligent technologies are increasingly used to improve planning, decision-making, resource management, and organizational efficiency. The growing adoption of AI has equally transformed educational leadership. Leadership in education extends beyond occupying formal administrative positions and includes the ability of educators to influence teaching practices, mentor colleagues, promote curriculum innovation, support professional development, and contribute to school improvement (Ghamrawi, 2023). Teacher leadership, in particular, has become an essential component of effective schools because it promotes collaboration, instructional excellence, and continuous school improvement (Bond, 2022; Harris & Jones, 2019; Shen et al., 2020).

As educational systems embrace digital transformation, teachers and school leaders are increasingly required to develop new competencies to effectively integrate AI into educational practice. These competencies include managing digital infrastructure, utilizing AI-powered technologies, promoting teachers' professional learning, safeguarding information privacy, and making ethical decisions regarding AI implementation (Kafa, 2025). Educational leaders are therefore expected not only to understand AI technologies but also to leverage tools such as ChatGPT and predictive analytics to improve instructional leadership, school administration, and organizational performance (Marrone et al., 2024). Artificial Intelligence also offers educational leaders' powerful analytical capabilities. By leveraging AI-driven data analytics, school administrators can evaluate student performance, predict learning difficulties and dropout risks, optimize curriculum planning, and support evidence-based decision-making (Brynjolfsson & McAfee, 2017; EDUCAUSE, 2023). These capabilities enable school leaders to allocate resources more effectively, implement targeted interventions, and improve both teaching effectiveness and student achievement.

Despite these opportunities, AI integration requires educational leaders to rethink traditional leadership practices. Leadership scholars argue that effective educational leadership depends on vision, strategic decision-making, emotional intelligence, collaboration, and the ability to foster productive learning environments (Leithwood et al., 2004; Beytekin & Göktürk, 2012). In AI-enabled educational settings, leadership increasingly reflects a human–AI partnership in which intelligent systems support, rather than replace, human decision-making (Wang, 2021; Li & Tian, 2026). This evolving relationship introduces important ethical considerations regarding accountability, transparency, professional autonomy, and responsible AI governance (Ethical Management of Human-AI Interaction: Theory Development Review, 2023). Consequently, educational leaders must balance technological innovation with the preservation of human values, professional judgment, and ethical responsibility.

Recent scholarship demonstrates that AI has enormous potential to transform school administration, instructional leadership, and educational outcomes through intelligent automation, predictive analytics, and personalized educational support (Arar et al., 2024). Nevertheless, the effectiveness of AI implementation depends largely on the preparedness, competencies, and leadership capacity of teachers and school leaders (Marrone et al., 2024). As AI continues to reshape educational systems worldwide, understanding its relationship with teacher leadership has become increasingly important for ensuring that technological advancement complements rather than diminishes the human dimensions of leadership, collaboration, and school improvement.

Statement of the Problem

The rapid integration of Artificial Intelligence (AI) into education is transforming teaching, learning, assessment, and school administration. AI-powered technologies such as intelligent tutoring systems, learning analytics, adaptive learning platforms, and generative AI tools are increasingly being adopted to improve educational efficiency and enhance learning outcomes (Hwang et al., 2020; Arar et al., 2024). Consequently, the role of teachers is evolving beyond

classroom instruction to include technology integration, data-informed decision-making, mentoring, and instructional leadership.

Teacher leadership has long been recognized as a critical driver of school improvement, curriculum innovation, professional collaboration, and educational change (Harris & Jones, 2019; Ghamrawi, 2023). However, the increasing reliance on AI has generated divergent perspectives regarding its influence on teacher leadership. While some scholars argue that AI can strengthen teachers' leadership capacity by automating routine tasks, improving instructional decision-making, and creating opportunities for mentoring and innovation (Kafa, 2025; Marrone et al., 2024), others express concern that excessive dependence on AI may reduce teachers' professional autonomy, weaken interpersonal relationships, and diminish their leadership roles in schools (Duan et al., 2019).

Despite the growing body of literature on AI in education, much of the existing research has concentrated on its effects on teaching, learning, assessment, and student achievement. Comparatively little attention has been given to how AI is redefining teacher leadership roles, particularly within the context of developing countries such as Nigeria, where AI adoption in schools remains at different stages of implementation. Moreover, there is limited empirical evidence on whether AI serves as an enabler of teacher leadership or contributes to its regression, as well as the competencies teachers require to remain effective leaders in AI-enhanced educational environments. This gap in knowledge presents a significant challenge for educational policymakers, school leaders, and teacher educators who are expected to prepare teachers for leadership in increasingly technology-driven schools. Without a clear understanding of AI's implications for teacher leadership, schools may fail to develop appropriate policies, professional development programs, and ethical frameworks that enable teachers to harness AI while preserving the human-centered aspects of educational leadership.

Therefore, this study seeks to investigate the extent to which Artificial Intelligence is expanding or regressing teacher leadership roles in schools and to identify the competencies required for teachers to sustain and enhance their leadership roles in an AI-augmented educational environment. The findings are expected to contribute to the growing discourse on AI in education and provide evidence-based recommendations for teacher preparation, educational leadership, and policy development.

Purpose of the Study

The of this study is to investigate the Impact of Artificial Intelligence (AI) on Teachers' Leadership in Nigerian Schools. Specially, the study sought to;

1. Ascertain the extent to which AI perceived to expand or regress teacher leadership roles in schools
2. Determine new competencies required for teacher-leaders to not only sustain but also enhance their roles in an AI-augmented educational environment.

Research Question

This research seeks to understand how AI is redefining the scope, authority, and very nature of teacher leadership by asking:

1. To what extent is AI perceived to expand or regress teacher leadership roles in schools?
2. What new competencies are required for teacher-leaders to not only sustain but also enhance their roles in an AI-augmented educational environment?

Methodology

The study adopted a phenomenological research design to explore the lived experience of some teachers and the impact of AI on teacher leadership in schools. This approach was chosen because it allows for in-depth participants' perceptions. The study was conducted across 5 states in Nigeria (Abuja, Imo, Kaduna, Lagos, and Rivers). Participants (teachers) were selected using Purposive sampling to ensure they had direct experience of the phenomenon. A total of 30 teachers were used. Data were collected through semi-structured interviews, allowing participants to freely describe their experiences. Interviews were conducted through a scheduled Google Meet, recorded with consent, and lasted approximately 30-60 minutes. Data were analyzed using thematic analysis and presented in narrative form. To ensure the validity of the instrument, credibility was ensured through descriptions of participant responses.

This was developed for this study, allowing the interviewer to delve into unexpected or important areas that may arise during the interview while ensuring key topics are covered. The semi-structured format also facilitates comparability across different interviews by ensuring some consistency in the questions asked. It underwent iterative refinement and revision through pilot testing and expert feedback to enhance its effectiveness and relevance to the research study experiences of some teachers, as well as through in-depth interviews and other secondary data, such as texts, reports, articles, and case studies, to identify themes, patterns, or narratives. This type of research often focuses on understanding deeper meanings, contexts, and experiences. Qualitative data were analyzed thematically and presented in narrative form. Ethical considerations, such as acknowledging the source of data, are critical. This research method is cost-effective and time-efficient, providing valuable insights without requiring direct interaction with participants or fieldwork.

Data analysis followed open coding, axial coding, and selective coding, as suggested by Williams and Moser (2019). To ensure the validity of the codes and themes, peer debriefing was employed, in which two researchers independently coded the data and subsequently cross-referenced and harmonized the codes and themes, as suggested by Scharp and Sanders (2019). During analysis, the interview transcripts were segmented into smaller units and assigned labels (codes), which were continually compared and contrasted for similarities and differences. The next stage involved axial coding, in which the codes were grouped, and connections were established between them. The final stage involved selective coding, affording the researchers the opportunity to amplify and formulate the narrative of the instance by extending the central coding to a more abstract level (Flick, 2009, in Ghamrawi et al 2023). This method provided reinforcement in constructing significance and narrating a tale employing the amassed data (Charmaz, 2014).

Results

Table 1: Interview Schedule

Introduction	Welcoming, self-introductions, overview of the topic, informed consent, and ground rules. Why do you identify as a teacher leader? Give examples of roles you have taken up in your school.
Enhancing	Drawing from your current understanding with AI in education, how do you perceive its influence on teacher leadership? In your view, does AI have the potential to strengthen or diminish the leadership roles of teachers—and why? Additionally, could you highlight specific aspects of your teaching practice where AI might enhance or support leadership functions? For example, consider areas such as instructional planning, student assessment, professional collaboration, or school-wide decision-making
Regression	Do you have any concerns about AI in education, especially its impact on teacher leadership? Have you seen examples where AI has either supported or limited teacher leadership? If so, please describe.
Competence	What key skills and competencies do teachers need to integrate AI while sustaining their leadership roles?
Closure	Is there anything else you'd like to share or reflect on regarding AI and teacher leadership—perhaps insights, experiences, or suggestions that haven't come up yet? Your perspective is valuable and could offer new dimensions to this conversation

Source: interview Survey, 2026

Discussion of Research Findings

In order to address ethical concerns, participants are known using the formula TNS, where 'T' stands for teacher, 'N' stands for the number given to him/her, and 'S' is the first letter of the state this participant came from. For example, T2S indicates a Lagos teacher numbered '2'.

Research question 1: To what extent will AI expand/regress teacher Leadership roles in schools?

Participants in this study were divided: some considered AI to be enhancing (16 out of 30), while others (14 out of 30) thought it was regressing toward teacher leadership roles in schools. On the one hand, teachers thought that teacher leadership might regress because teachers could become facilitators of technology and problem-solvers around it. 'AI's regression of teacher roles is a valid concern. The integration of AI systems into classrooms may lead to teachers being reduced to mere technology facilitators. Thus, our leadership role will be diminished' (T3-I).

'AI's potential regression of teacher roles should not be undervalued. As technology takes on more responsibilities, teachers might face reduced command over their students and colleagues. They can no longer serve as resource providers for both' (T6-A). Teachers may find themselves assigned to observing and troubleshooting technological systems rather than engaging in meaningful interactions with students. This could lead to a devaluation of teacher leadership roles in the classroom and outside it' (T2-I).

Equally, participants report that the encroachment of AI algorithms into education poses a major threat to teachers' autonomy, weakening their leadership roles and turning them into mere followers of preset instructional guidelines. AI was thought to undermine teachers' autonomy, changing them into passive conduits for pre-determined algorithms, ultimately eroding their ability to exercise leadership and tailor instruction to their students and colleagues. Teachers may lose their independence in decision-making as AI algorithms dictate curriculum content and assessment methods. This degenerates their leadership roles' (T11-K).

"The prescriptive nature of AI algorithms can compromise teachers' professional autonomy, casting them merely as executors of predetermined content rather than as educational leaders. This constrains their ability to innovate and lead within their own classrooms." (T7-R) "The increasing reliance on AI algorithms to dictate curriculum content and assessment methods undermines teachers' autonomy, eroding their capacity to lead and make informed decisions that best serve their students' unique needs. So, teachers are no more leaders around student learning' (T6-L). Participants expressed contrasting views on AI's impact on collaboration. Some feared that by automating planning and providing pre-packaged content, AI would diminish the need for teachers to collaborate on curriculum design and resource sharing (T13-A, T15-L). Conversely, others argued that this very automation would free teachers from administrative burdens, granting them more time to focus on high-level collaborative leadership, mentoring, and instructional innovation. 'In my view, AI empowers teachers to be leaders who can make informed decisions based on data and ensure each student reaches their full potential. This integration of AI technology empowers teachers to assume greater leadership in creating engaging, student-centered learning experiences (T28-I).

Many teachers view AI as a transformative tool for enhancing leadership. By automating routine tasks, AI liberates educators to focus on higher-impact activities like personalized instruction, critical thinking, and fostering positive classroom environments (T19-K). Furthermore, AI augments teacher expertise by providing rich educational resources and adaptive tools, amplifying their ability to improve student outcomes (T30-L). This empowerment extends beyond the classroom, enabling teachers to assume strengthened roles as mentors and coaches for their colleagues. They can leverage AI-driven insights and materials to support peer development, collaborative planning, and school-wide innovation, ultimately reclaiming time for these vital leadership functions (T22-R).

Participants posit that AI serves as a critical resource for amplifying teacher leadership. The technology provides an abundance of educational materials and analytical insights, enabling educators to assume expanded roles as mentors and instructional coaches. By leveraging these tools, teacher leaders are empowered to support their colleagues in implementing effective practices and guiding professional development, thereby enhancing their overall influence and capacity within the school community (T21-L, T14-K). In conclusion, teachers are divided in their viewpoints concerning the impact of AI on teacher leadership roles. Although some believe AI may regress teacher leadership by limiting autonomy and replacing human connection, others see it as a tool that can enhance teacher leadership through expanded mentorship, coaching, and resource-provision opportunities.

Research Question 2: What will be the new set of competencies required for teacher leaders to sustain their roles in an AI era?

To sustain their leadership roles in the AI era, teacher leaders must develop a new set of competencies centered on five essential themes: technological literacy, adaptability and continuous learning, collaborative and coaching skills, data-informed decision making, and human-centered approaches. These competencies reflect the evolving educational landscape shaped by the integration of artificial intelligence, which presents both opportunities and challenges for educators.

Technological literacy: Participants universally affirmed that technological literacy is a non-negotiable, core competency for teacher leaders navigating the AI era. This literacy extends far beyond basic digital skills, requiring a functional understanding of AI-powered tools, data analytics platforms, and emerging educational technologies. The primary objective is to equip these leaders to not only enhance their own instructional practices but also to effectively guide and support their colleagues in the meaningful integration of AI resources. As one participant (T12-L) stated, this involves being "comfortable with technology" and possessing "the ability to leverage AI tools effectively," emphasizing that it is "not just about being tech savvy; it's about understanding how AI works, analyzing data insights, and using technology as an enabler." This sentiment was echoed by another (T10-A), who highlighted the necessity for teacher leaders to be "equipped with the knowledge and skills to navigate AI-powered platforms, interpret data generated by AI systems, and leverage technology to optimize instructional practices and support their colleagues."

Adaptability and continuous learning: These competencies emerged as vital for teacher leaders in the AI era. All participants emphasized the need for educators to embrace new technologies, evolving pedagogical approaches, and changing professional roles. Teacher leaders must commit to ongoing professional development, stay current with AI advancements, and continuously adapt their instructional practices to effectively integrate AI tools. As one participant noted, this requires "a growth mindset and a commitment to continuous learning," being "adaptable, willing to explore new technologies, and continuously refine instructional practices" (T1-R). Another emphasized that teacher leaders must be "adaptable and open to change," actively seeking professional development opportunities and staying informed about AI developments to ensure seamless integration that enhances student learning (T25-I).

Collaborative and coaching skills: These were identified as essential for teacher leaders in the AI era. Participants unanimously agreed that leaders must foster a collaborative culture, promote peer learning, and act as instructional coaches to help colleagues effectively use AI resources. As emphasized by participants, teacher leaders must "create opportunities for educators to collaborate, share best practices, and support each other" (T10-K) and "serve as coaches who help their colleagues navigate the integration of AI tools in the classroom" (T23-A). This involves facilitating peer learning and providing ongoing support to ensure successful AI implementation. **Data-informed decision-making:** Participants (13 out of 30) emphasized

it as a key competency for teacher leaders in an AI era. They discussed the need for educators to be proficient in analyzing and interpreting data generated by AI systems, using insights to inform instructional strategies, personalize learning experiences, and identify areas for improvement.

"Teacher leaders must possess strong data literacy skills in an AI era. They need to be able to analyze and interpret data from AI systems to make informed decisions about instructional practices, identify student needs, and drive evidence-based decision-making to improve learning outcomes (T22- L). 'Data-informed decision making is crucial for teacher leaders in the AI era. They should be adept at analyzing data insights generated by AI tools and leveraging that information to tailor instruction, identify learning gaps, and implement targeted interventions to meet the diverse needs of their students (T17- I).

Human-centered approaches: Human-centered approaches emerged as a critical competency for teacher leaders, with two-thirds of participants emphasizing the need to preserve education's human element amidst AI integration. Teacher leaders must champion the irreplaceable role of human educators by prioritizing relationship-building, social-emotional development, and critical thinking skills while leveraging AI tools. As participants emphasized, AI should "complement and enrich the human experience, not replace it" (T9-K). Teacher leaders must ensure "the human element of education remains central" by using AI to enhance learning while preserving "the personal connection between teachers and students" and promoting holistic educational values like "creativity, collaboration, and critical thinking" (T27-L). This human-centered approach represents a crucial counterbalance to technological integration in education.

Conclusion

This study on AI and teacher leadership revealed a polarized view among educators regarding its impact on their roles. One group feared AI would regress their leadership, diminish their autonomy and reduce them to passive facilitators of technology. They were concerned about losing their ability to collaborate and tailor instruction, seeing AI algorithms as a threat to their professional judgment. Conversely, another group viewed AI as a tool for enhancement. They believed it could automate administrative tasks, provide data-driven insights, and free up time, allowing them to focus on instructional leadership, mentoring, and innovation. This group envisioned expanding their role beyond the classroom to become mentors and coaches for colleagues, using AI to support collaborative planning and professional growth.

To sustain their leadership in the AI era, the study identified five essential competencies for teachers. These are technological literacy, to understand and utilize AI tools; adaptability and continuous learning, to keep pace with new technologies; and collaborative and coaching skills, to support colleagues. Furthermore, data-informed decision-making is crucial for personalizing learning and guiding instruction based on AI-generated insights. Finally, and most uniquely, the study highlights a human-centered approach as a critical competency. This novel finding specifically connects the prioritization of positive relationships and social-emotional development to the enhancement of teacher leadership, ensuring that technology serves to augment rather than replace human connection.

Recommendations

The following recommendations are made:

1. Educational institutions should develop comprehensive professional development programs that build teacher leaders' competencies in technological literacy, adaptability, collaborative coaching, data-informed decision making, and human-centered approaches, ensuring these programs preserve professional autonomy and the irreplaceable human elements of education while leveraging AI's capabilities
2. School leadership should establish ethical AI frameworks that safeguard teacher autonomy, preserve collaborative practices, and strengthen human connections by positioning AI as a tool to enhance rather than to replace teacher leadership, thereby empowering educators as curriculum designers and creating opportunities for amplified roles as mentors and instructional coaches.

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