https://doi.org/10.68071/772vhf5m

ORIGINAL RESEARCH
Kakanchi Multidisciplinary Journal of COEASU
Vol. 1, Issue 1, 1-08, July 2026
OPEN ACCESS
E-ISSN 3156-397X

Teacher Effectiveness in the Digital Era: The Role of Educational Management in Nigeria

Benjamin Kinrin Catherine
Department of Educational Foundations, Federal College of Education, Okene, Kogi State, NIGERIA

Correspondence: *benjamin.kinrin2709@fceokene.edu.ng*

Highlights:

Determine the gap between Nigeria's digital education policies and classroom practice as its driven by weak educational leadership, planning, and accountability, not just technology scarcity.

Emphasize for teacher effectiveness in the digital era requires TPACK-based skills: digital content creation, virtual classroom management, data-informed instruction, and ethical tech use.

Government should invest in professional development, change management planning, and supervision systems to strengthen institutional support.

Received date: 7 May 2026
Revised date: 13 June 2026
Accepted date: 20 July 2026

Citation: Benjamin, K.C. (2026). Teacher Effectiveness in the Digital Era: The Role of Educational Management in Nigeria. 1(01), 1-08.

Abstract: The integration of digital technologies into educational systems constitutes one of the most important pedagogical transformations of the 21st century, significantly reshaping the ways teachers deliver instruction and students acquire knowledge. However, in Nigeria, despite substantial policy commitments and investments in educational technology infrastructure, teacher effectiveness in leveraging digital tools remains significantly constrained by weak educational management systems rather than technological scarcity alone. This position paper argues that the persistent and troubling gap between articulated digital education policies and actual classroom practice in Nigeria is fundamentally rooted in deficiencies in educational leadership, institutional planning, and accountability mechanisms. The paper conceptualizes teacher effectiveness in the digital era as the multidimensional capacity of educators to design, implement, and evaluate technology-enhanced learning experiences while demonstrating proficiency in digital content creation, virtual classroom management, data-informed instruction, and ethical technology use within the Technological Pedagogical Content Knowledge (TPACK) framework. This paper makes a critical contribution to educational management literature by foregrounding leadership and governance as decisive determinants of successful digital transformation, arguing that teacher effectiveness is fundamentally shaped by the quality of institutional support and educational management rather than by teacher capacity alone. The paper recommends that government should establish targeted professional development competencies including foundational digital literacy, pedagogical evaluation of technology-enhanced instruction, change management strategic planning, and supervision system establishment.

Keywords: Digital Education, Teacher Effectiveness, Educational Management.

Introduction

The Fourth Industrial Revolution (4IR) has fundamentally reconceptualized teaching and learning globally. As Bates (2019) articulates, "Digital technologies are not simply tools to deliver existing content; they fundamentally reshape what teachers teach, how they teach, and how students learn." This transformation extends beyond technological provision to encompass profound pedagogical reconceptualization. UNESCO's (2023) Global Education. Monitoring Report emphasizes that contemporary teachers must function simultaneously as facilitators of learning, innovators in pedagogical practice, and creators of digital knowledge resources. Nigeria has articulated clear policy commitments to this digital transformation through frameworks including the National Policy on ICT in Education (2019), the National Digital Economy Policy (2020–2030), and initiatives such as NITDA's National Digital Literacy Programme and UBEC's Smart Schools Project. Yet implementation remains substantially inadequate.

https://doi.org/10.68071/772vhf5m

The World Bank (2023) reports that 71% of public school teachers lack formal ICT training, while the National Bureau of Statistics (2024) documents that approximately 89% of public school students were unable to access structured learning during COVID-19 school closures. This implementation gap reflects a critical insight: The primary constraint to digital transformation in Nigerian education is not technological scarcity but systemic weaknesses in educational leadership, planning, and accountability mechanisms**.**

Educational managers occupy strategic positions as architects of institutional conditions enabling or constraining teacher effectiveness. Effective educational leaders establish clear digital education visions, coordinate resource allocation, design professional development programmes, supervise instructional practice, and create accountability systems translating technological investment into improved teaching and learning.

This paper argues that educational management excellence represents the central determinant of teacher effectiveness in Nigeria's digital education transformation. The paper conceptualizes teacher effectiveness in digital contexts as the multidimensional capacity to design technology-enhanced learning experiences while demonstrating digital literacy, online facilitation skills, and data-informed instruction capability. The paper demonstrates through synthesis of contemporary empirical evidence that schools with strong instructional leadership consistently achieve higher teacher effectiveness compared to schools with weak leadership, regardless of technological resource availability.

Teacher Effectiveness in the Digital Era

Evolution of Teacher Effectiveness

Traditionally, teacher effectiveness encompassed subject matter knowledge, classroom management, and pedagogical technique proficiency (Stronge, 2018). Hattie's (2008) landmark meta-analysis of 800+ studies identified teacher quality as the single most significant school-based factor influencing student learning. However, these traditional conceptions, while foundational, inadequately address contemporary digital realities. Contemporary teacher effectiveness must incorporate digital competence as a central dimension. Mishra and Koehler's (2006) Technological Pedagogical Content Knowledge (TPACK) framework provides theoretical foundation, proposing that effective technology integration requires dynamic integration of three domains: Technological Knowledge (understanding digital tools), Pedagogical Knowledge (understanding learning processes), and Content Knowledge (disciplinary expertise). The intersection of these domains produces "transformative expertise" enabling teachers to leverage technology for improved learning outcome.

In Nigeria specifically, Okon and Udo (2023) demonstrate that teachers exhibiting high TPACK proficiency show significantly greater student engagement and higher learning achievement compared to teachers with lower integrated competence. This validates that digital effectiveness requires integrated knowledge rather than isolated technical skills. Dimensions of Digital Teacher Effectiveness. Contemporary digitally-effective teachers demonstrate proficiency across several interrelated dimensions:

https://doi.org/10.68071/772vhf5m

Digital Content Creation—designing and crating high-quality digital educational resources;

Virtual Learning Facilitation—managing online and blended learning environments (Garrison & Vaughan, 2008).

Data-Informed Instruction—utilizing learning analytics to diagnose student difficulties and adjust instruction (Siemens & Baker, 2012).

Ethical Technology Use - modeling digital citizenship and cyber security awareness.

Pedagogical Innovation—leveraging technology's unique affordances for genuinely innovative instruction rather than replicating traditional methods in digital formats.Notably, effectiveness in resource-constrained Nigerian contexts encompasses additional dimensions: resourcefulness with limited infrastructure, capacity to function with low-bandwidth technologies, and adaptive instruction despite infrastructural constraints (Hennessy et al., 2010).

Educational Management in the Digital Context

Core Functions and Digital-Age Evolution

Educational management, defined as "systematic planning, organization, coordination, and evaluation of educational resources to achieve defined objectives" (Bush, 2020), has expanded substantially in response to technological change. Bush and Glover (2014) identify foundational functions including strategic planning, resource allocation, human resource development, curriculum coordination, facilities management, stakeholder engagement, and organizational culture development. Digital transformation requires evolution of these traditional functions.

Strategic Roles of Educational Leaders in Digital Transformation

Educational leaders must accomplish interconnected tasks essential for successful digital transformation:

Strategic Leadership: Educational leaders must articulate compelling visions of how technology enhances educational quality and establish strategic plans with defined objectives (Fullan & Causes, 2008). This visionary leadership generates the institutional commitment necessary for sustained change.

Teacher Capacity Development: Educational leaders must design and implement systematic professional development programmes developing both technical and pedagogical competencies. Kraft and Rogers (2015) demonstrate that "school leaders' attention to professional development quality significantly predicts teacher learning gains." Effective professional development connects to classroom practice, provides follow-up coaching, engages teachers in peer learning communities, and emphasizes pedagogical application.

Infrastructure and Technical Support: Educational leaders must assess technology needs, coordinate equipment acquisition and maintenance, ensure reliable electricity and internet access, and establish systems for technical support. In resource-constrained contexts, this includes creative solutions through public-private partnerships and community engagement.

Instructional Supervision: Regular classroom observation coupled with

constructive feedback regarding technology integration quality creates accountability while providing concrete guidance. This supervisory function is crucial given that teachers cannot improve what is not observed and evaluated (Serna & Serna, 2012).

Implementation Monitoring and Accountability: Educational leaders must establish systems for monitoring policy implementation fidelity, collect data on technology utilization and learning outcomes, identify barriers, and course-corrections through adaptive management.

Transformational Leadership Theory in Digital Contexts

Transformational Leadership Theory (Burns, 1978; Bass & Riggio, 2006) provides particular theoretical relevance for digital educational transformation. Transformational leaders accomplish change through four mechanisms: **Idealized Influence**(role modeling), **Inspirational Motivation** (articulating compelling visions), **Intellectual Stimulation** (encouraging innovation), and **Individualized Consideration** (providing personalized support). Leithwood et al. (2004) demonstrate through meta-analysis that transformational leadership practices "significantly predict teacher commitment, capacity development, and ultimately student achievement gains."

In digital contexts, transformational leaders must exemplify digital literacy, inspire conviction regarding technology's educational value, encourage pedagogical experimentation, and provide individualized coaching enabling teacher development.

Empirical Findings: Teacher Effectiveness and Educational Management in Nigeria

Current State of Teacher Digital Competence

Current empirical evidence presents a troubling picture. The World Bank (2023) indicates that 71% of public school teachers lack formal ICT training. NITDA's (2024) National Digital Literacy Assessment Report reveals that only 28% demonstrate basic digital literacy competence, merely 12% show proficiency in educational technology applications, and less than 8% possess data analytics skills. Approximately 60% report high anxiety regarding technology use in teaching.

Ogunode et al. (2024), in national representative research, report that "teacher digital competence remains significantly below levels required for meaningful ICT integration," with marked disparities between urban and rural teachers and between well-resourced and under-resourced schools.

Infrastructure and Technological Access Disparities

The World Bank (2023) documents that only 34% of public primary schools and 51% of secondary schools possess any computers. Internet connectivity is available in merely 18% of public schools; fewer than 5% of rural primary schools have internet access. Electricity supply is irregular in 67% of schools. These infrastructural deficits disproportionately affect teachers' capacity to integrate technology meaningfully.

https://doi.org/10.68071/772vhf5m

Educational Leadership's Demonstrable Impact

Empirical evidence reveals significant variation in teacher effectiveness correlated with leadership quality. The Eko EXCEL Programme in Lagos State, implementing structured digital instructional supervision and real-time feedback, documented substantial teacher performance improvements (UBEC, 2024). Okon and Udo (2023) identified school leadership quality as a significant predictor of technology adoption, with schools having strong instructional leaders recording technology utilization rates 3-4 times higher than schools with weak leadership.

Professional Development Effectiveness

Teachers participating regularly in ICT training and peer learning communities demonstrate markedly higher technology confidence and greater pedagogical innovation (Ogunode et al., 2024). However, current professional development provision remains inadequate: the average Nigerian teacher receives fewer than 10 hours of ICT training annually—substantially below UNESCO's (2023) recommended 40+ hours for meaningful competence development.

Policy-Implementation Gaps

The Federal Ministry of Education's (2023) Monitoring Report documents that while digital education policies are well-articulated, implementation remains weak. Only 34% of state educational authorities have developed implementation action plans; monitoring and accountability mechanisms are systematically inadequate; and resource allocation remains unpredictable.

Challenges and Barriers to Enhanced Teacher Effectiveness

Infrastructure Deficits

Pervasive infrastructure deficits represent visible, immediately constraining barriers. However, educational management ingenuity can partially address deficits through public-private partnerships for internet access, solar power installation, shared computer laboratory scheduling, and utilization of low-bandwidth platforms designed for connectivity-challenged contexts (Hennessy et al., 2010).

Teacher Capacity Gaps

Substantial percentage of Nigerian teachers lack foundational digital competencies. While addressing this gap requires systematic professional development, current provision remains grossly inadequate. Most teachers receive disconnected, one-off training disconnected from pedagogical practice with minimal follow-up support.

Inadequate and Unpredictable Funding

Digital education initiatives require sustained predictable financial investment. However, funding remains inadequate and subject to political fluctuations. Teachers frequently finance internet subscriptions and digital materials personally, an unsustainable situation that limits technology use and perpetuates inequalities.

Weak Policy Implementation and Accountability

While Nigeria has articulated relatively comprehensive ICT education policies, implementation and monitoring is weak, accountability is diffuse, and consequences for non-compliance are

https://doi.org/10.68071/772vhf5m

minimal. This implementation gap reflects inadequate educational management systems.

Educational Leadership Capacity Deficits

Many school principals lack the specific competencies necessary for leading digital transformation. Many principals lack sufficient digital literacy to evaluate technology enhanced instruction and possess limited change management experience. This leadership capacity gap requires targeted professional development for educational leaders.

Educational Management as Central Determinant

The converging empirical evidence leads to a clear conclusion: Educational leadership and management quality represents the central determinant of teacher effectiveness in Nigeria's digitally transforming education system. This assertion does not minimize other factors but identifies educational management as the most strategically important modifiable variable. Educational management encompasses coordinating multiple factors: infrastructure provision, financial resource allocation, professional development design and implementation, instructional supervision, policy implementation, and accountability systems. When educational managers successfully coordinate these factors toward coherent digital transformation objectives, teacher effectiveness increases substantially. Conversely, weak educational management characterized by poor coordination, inadequate supervision, minimal professional development, and weak accountability constrains teacher effectiveness despite policy commitments and resource investments. Effective educational management establishes institutional enabling conditions including: **Clarity of Vision and Strategic Direction** articulating compelling visions of how technology enhances educational quality; **Systematic Professional Development** institutionalizing ongoing, pedagogically-focused training with follow-up coaching; **Infrastructure and Technical Support** assessing needs, acquiring equipment, ensuring maintenance and technical support; **Instructional Supervision and Evidence-Based Feedback** regular observation coupled with constructive feedback; **Accountability Systems and Performance Management** clear expectations linked to transparent performance evaluation; **Equity and Access Assurance** ensuring resources reach all teachers, particularly those in under-resourced contexts; and **Innovation Culture and Risk Support** fostering cultures where experimentation is normalized and failures treated as learning opportunities.

Conclusion(s)

Teacher effectiveness in Nigeria's digital era is fundamentally shaped by educational management quality. While technological tools increasingly proliferate, their impact remains limited without strong leadership, strategic planning, and effective implementation. This paper has demonstrated that challenges including inadequate digital competence, poor infrastructure, insufficient funding, weak policy implementation, and limited managerial capacity constrain effective ICT integration. However, empirical evidence equally demonstrates that schools with supportive leadership structures, regular professional development, and effective monitoring systems record improved teacher performance and enhanced learner engagement.

Recommendations

Based on comprehensive analysis, this paper proposes three actionable, evidence-based recommendations:

1. Government should collaborate with public private partnerships to ensure that telecommunication companies provide easy access to internet and to make available equipment for teachers in various schools.
2. Government should make sure digital competence become a key criterion in teacher recruitment, certification, promotion, and performance evaluation.
3. Government should prioritize investment in digital infrastructure and technical support systems to enhance teachers' effectiveness in various schools.

Acknowledgements: The author acknowledge the institutional support provided by Federal College of Education (FCE) Okene. The research infrastructure and academic environment facilitated the successful execution and completion of this study.

Funding Statement: This work was supported by personal effort.

Data Availability: The analyzed data are included within the article.

Declaration: The author declare no potential conflicts of interest, financial or otherwise, that could be perceived as influencing the objectivity or integrity of the research presented herein.

Disclosure: The AI-assisted visual output has been verified, with the authors taking final responsibility for the intellectual content.

References

Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership (2nd ed*.). Lawrence Erlbaum Associates.

Bates, A. W. (2019). Teaching in a digital age: Guidelines for designing teaching and learning. BCcampus Open Education.

Burns, J. M. (1978). Leadership. Harper & Row.

Bush, T. (2020). Theories of educational leadership and management (5th ed.). Sage Publications.

Bush, T., & Glover, D. (2014). School leadership models: Concepts and evidence. *School Leadership & Management, 34(2), 114–127.*

Federal Ministry of Education. (2023). Monitoring report on national policy on ICT in education. Abuja: FME.

Fullan, M., & Causes, E. (2008). Change leadership: A practical guide to transforming our schools. Jossey-Bass.

Garrison, D. R., & Vaughan, N. D. (2008). *Blended learning in higher education*: Framework, principles, and guidelines. Jossey-Bass.

Hattie, J. (2008). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. Routledge.

Hennessy, S., Ruthven, K., & Brown, S. (2010). Using digital technology to enhance learning in low-resourced African contexts. In K. Gombeya & L. Mukhari (Eds.), Technology in African education (pp. 145–168). African Education Press.

Kraft, M. A., & Rogers, T. (2015). The impact of teacher coaching on

instruction and achievement. *Educational Evaluation and Policy Analysis, 37(4), 751–778.*

Leithwood, K., Louis, K. S., Anderson, S., & Wahlstrom, K. (2004). How leadership influences student learning. Wallace Foundation.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A new framework for teacher education. Teachers College Record, 108(6), 1017–1054.

National Bureau of Statistics. (2024). Annual abstract of statistics. Abuja: NBS.

National Information Technology Development Agency. (2024). National digital literacy assessment report. Abuja: NITDA.

Ogunode, N. J., Omowa, O. U., & Akayddin, N. (2024). Digital literacy among Nigerian teachers: Current status and development needs. Nigerian Journal of Educational Administration, 18(2), 45–61.

Okon, E. E., & Udo, E. A. (2023). Technology adoption among secondary school teachers in Nigeria: Roles of leadership and institutional support. African Journal of Educational Studies, 12(1), 77–93.

Serna, L. A., & Serna, P. (2012). Technology, change, and school leadership. NASSP Bulletin, 96(1), 26–41.

Siemens, G., & Baker, R. S. (2012). Learning analytics and educational data mining: Towards communication and collaboration. In Proceedings of 2nd International Conference on Learning Analytics and Knowledge (pp. 252–254). ACM.

Stronge, J. H. (2018). Qualities of effective teachers (3rd ed.). Association for Supervision and Curriculum Development.

UNESCO. (2023). Global education monitoring report: Technology in education. Paris: UNESCO.

Universal Basic Education Commission. (2024). Smart schools implementation update. Abuja: UBEC.

World Bank. (2023). Nigeria digital economy diagnostic report. Washington, DC: World Bank.