The Impact of Transformational Leadership on ICT Integration for School Administration and Teaching in Ghanaian Basic Schools

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Abstract

The integration of Information and Communication Technology (ICT) into basic education is widely recognised as a strategy to improve teaching quality, administrative efficiency, and student learning outcomes. However, in Ghanaian basic schools, ICT adoption remains limited due to infrastructure gaps, low teacher digital literacy, and a disconnect between national policies and local execution. This review examines the role of transformational leadership in supporting ICT integration in these resource-constrained settings. Specifically, it looks at how transformational leadership practices influence ICT implementation, encourage teacher engagement, and tackle common leadership challenges within Ghanaian schools. A systematic review of peer-reviewed and theoretical literature published between 2010 and 2025 was conducted using databases such as ERIC, JSTOR, Google Scholar, and institutional library resources. Findings indicate that transformational leadership boosts teacher motivation, supports professional growth, and promotes innovation—key factors for effective ICT integration. Nonetheless, ongoing challenges such as unequal resource distribution, insufficient infrastructure, and digital skill gaps continue to impede progress. Notably, rural and marginalised schools remain under-researched, limiting understanding of leadership's role in these vulnerable environments. The study concludes by emphasising the need for context-sensitive strategies that align transformational leadership with systemic reforms to achieve sustainable and equitable ICT integration in Ghanaian basic education.

Keywords: transformational leadership, information and communication technology (ICT) integration, Ghanaian basic schools, teaching and school administration, school leaders, Ghana

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Introduction

Integrating information and communication technology (ICT) into education is a current global policy priority, valued for improving teaching quality, administrative efficiency, and student performance (Adarkwah, 2021; UNESCO, 2025). ICT is regarded in both developed and developing countries as vital for equipping learners with skills necessary for the digital economy and knowledge society. As Williams (2006) observes, "School reform has and will continue to be an important cornerstone of government's economic growth plans" (p. 2), making ICT integration not merely an educational goal but a strategic economic imperative.

In line with this, Ghana has made notable investments in ICT development in its basic schools, including national frameworks such as the ICT for Accelerated Development (ICT4AD) Policy and the Education Strategic Plan (Adarkwah, 2021). However, translating these policies into meaningful classroom practice remains challenging, as many basic schools continue to face substantial barriers—ranging from limited infrastructure, low levels of digital literacy among teachers, limited resources, and policy objectives that do not align with school-level realities (Asare et al., 2023; Soma et al., 2021)Addressing these challenges requires more than resources; it calls for strong, visionary leadership capable of reshaping school culture and fostering collective commitment—an approach aligned with transformational leadership principles (Duman, 2021; Schmitz et al., 2023).

Transformational leadership—characterized by setting a clear vision, inspiring teachers, building capacity, and fostering collaborative cultures—has gained global recognition as a promising approach for supporting ICT integration in schools (Duman, 2021; Schmitz et al., 2023). Research suggests that transformational school leaders can motivate teachers to adopt innovative and sustainable uses of technology. However, limited evidence exists on how specific

transformational leadership behaviours influence ICT integration in basic schools, especially those facing infrastructural shortages and gaps in teacher skills (Asare, 2016; Lomoa et al., 2024). This review addresses this gap by exploring how transformational leadership can promote ICT integration in Ghanaian basic schools. It examines how leadership actions either facilitate or hinder ICT use and investigates the structural, cultural, and policy barriers that impede progress. Understanding these dynamics is essential for informing policies and leadership practices that advance meaningful ICT adoption within Ghana's basic education system. The review also contextualizes Ghana's experience within the global movement towards ICT-enabled education, highlighting the importance of context-sensitive, leadership-driven strategies in tackling ongoing challenges. By analyzing the relationship between leadership practices, teacher preparedness, infrastructural readiness, and policy frameworks, the review contributes to the growing body of research on how transformational leadership can enable ICT integration. It identifies the barriers and complexities faced by Ghanaian basic schools.

To address these concerns, the review is structured as follows: the problem, purpose, and research questions are first outlined to provide context. Key concepts central to the discussion are then defined, followed by an explanation of the method used to select and evaluate relevant literature. A critical review of existing research on transformational leadership and ICT integration in Ghanaian basic schools forms the core of the paper, followed by an acknowledgement of limitations and the presentation of recommendations. Finally, the discussion and conclusion consider the implications of the findings and identify areas for future research.

Problem, Purpose Statement, and Research Questions

Over the years, the Government of Ghana has invested significantly in integrating information technology and communication (ICT) into teaching and school management across all basic schools through national policy initiatives (Adarkwah, 2021). However, basic schools encounter notable implementation challenges, including inadequate infrastructure, teacher readiness, and weak alignment between national policy frameworks and local school-level practices (Asare et al., 2023; Soma et al., 2021). Consequently, digital teaching and administrative practices remain inconsistent and underused across the country's foundational education levels.

At the same time, transformational leadership has been recognized in international literature as a leadership style that can promote innovation and empower school communities to adopt educational technology (Duman, 2021; Schmitz et al., 2023). This leadership approach encourages teacher engagement, improves institutional capacity, and facilitates whole-school change. However, within the Ghanaian context, limited empirical attention has been given to how transformational leadership can specifically address systemic barriers to ICT integration.

This study primarily aims to evaluate the impact of transformational leadership on ICT integration in the Ghanaian basic schools. It investigates the role of transformational leadership practices in supporting ICT integration and looks at challenges school leaders encounter in advocating for ICT integration through transformational practices.

This research attempts to answer the following questions:

1. What does prior literature say about the connection between transformational leadership and the integration of ICT in teaching and school management within basic schools?

2. What does prior literature show about the impact of transformational leadership on ICT implementation in teaching and school management in Ghanaian basic schools?

3. What challenges confront school leaders using transformational leadership to facilitate ICT integration in Ghanaian basic schools?

Discussion of Terms

ICT integration in this review refers to the intentional and systematic use of information and communication technology (ICT) tools—such as computers, interactive projectors, internet platforms, and educational software—to support classroom instruction and school administration in basic schools. Integration extends beyond casual or superficial use; it focuses on embedding ICT into daily teaching practices, curriculum delivery, and administrative tasks to enhance educational outcomes and school efficiency (Buabeng-Andoh, 2019; Tondeur et al., 2018).

Transformational Leadership is a leadership approach focused on vision-setting, capacity building, individualized consideration, and fostering an innovation-driven school culture (Bass & Avolio, 1994; Leithwood & Jantzi, 2005). It is characterized by its core emphasis on transforming both people and organizations—raising moral purpose, expanding aspirations, and motivating followers to transcend self-interest for the collective good (Burns, 1978; Litz & Blaik-Hourani, 2020). Transformational leaders demonstrate this through idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Avolio, 2000), building collective efficacy and cultural commitment for sustainable change rather than relying on compliance or focusing solely on curriculum (Bush, 2007). This distinction is especially relevant in Ghanaian basic schools, where ICT integration requires leaders who can reshape school culture, inspire collective ownership, and navigate resource limitations (Asare, 2016; Leithwood & Jantzi, 2006; Litz & Blaik-Hourani, 2020).

Ghanaian Basic Schools include pre-primary, primary, and junior high school levels that provide essential learning for children aged about four to fifteen (Ministry of Education, 2019). This system, similar to kindergarten through grade 9, serves as the primary focus for implementing ICT integration policies, making leadership influence on technology adoption especially important in these schools.

School administration and teaching encompass two interconnected areas of school operation: administrative tasks—such as planning, communication, resource management, and data handling—and teaching activities, including lesson preparation, instructional delivery, student assessment, and classroom management. ICT integration across these areas improves operational efficiency, instructional quality, and overall school performance (Buabeng-Andoh, 2019).

These concepts were chosen for their frequent use and importance in the literature on ICT integration and transformational leadership. They offer a consistent framework for analysis and interpretation throughout this review. Additionally, their interconnections help clarify how transformational leadership influences the conditions needed for ICT integration in Ghanaian basic schools. This review examines how school leaders can impact technology adoption to enhance teaching, learning, and school management, especially in resource-limited environments.

Methodology

This review employed a systematic literature review method to gather and synthesize evidence on the intersection of transformational leadership and ICT integration, with particular focus on the Ghanaian basic education context. Established protocols for educational research

synthesis guided the methodology, especially those outlined by Booth et al. (2016) and Snyder (2019).

Search strategy

Relevant empirical studies were retrieved from electronic sources such as Sage, ResearchGate, the Education Resources Information Center (ERIC), Google Scholar, JSTOR, ScienceDirect, and the Memorial University of Newfoundland (MUN) Library's digital repository, providing access to a broad range of peer-reviewed journal articles, e-books, and institutional research materials. The search was limited to publications from 2010 to 2025 to capture current developments in ICT and school leadership practices. Older, foundational theoretical works on transformational leadership were also included to offer conceptual grounding.

Search terms were carefully selected and combined to focus on leadership and technology integration. Keywords such as "transformational leadership," "ICT integration," "school leadership," "teaching and school administration," "technology adoption," "Ghanaian basic schools," "developing countries," and "low-resource schools" were included. To improve search results across various databases, Boolean operators and truncations were employed.

Inclusion and Exclusion Criteria

For quality and relevance, the inclusion criteria prioritized peer-reviewed empirical studies, systematic reviews, and theoretical papers. The study focused on materials published between 2010 and 2025 and literature addressing transformational leadership and ICT in basic education or comparable K-9 settings. Additionally, some relevant studies conducted on K-12 were included due to limited publications on basic schools in Ghana. Furthermore, foundational conceptual and theoretical works essential to understanding transformational leadership and ICT

integration—some of which predate 2010—were deliberately included to provide historical context and theoretical grounding (e.g., Bass & Avolio, 1994; Burns, 1978; Leithwood & Jantzi, 2005). Particular attention was paid to literature exploring transformational leadership, ICT use in teaching and school administration, and the challenges of technology adoption in under-resourced educational settings.

Combining these databases with the MUN library's sources, the review aimed to ensure a comprehensive and credible body of evidence assessing the influence of leadership—primarily transformational leadership—on ICT integration within Ghanaian basic education. Concerning the exclusion criteria, grey literature lacking scholarly rigour and non-English publications were omitted.

Selection and Analysis

Following the initial search, abstracts were screened for relevance and duplicates (Booth et al., 2016). Full-text reviews were conducted for articles meeting the inclusion criteria. The selected studies were then analyzed thematically to address the three guiding research questions, with close attention to patterns in findings, theoretical alignment, and the contextual relevance for Ghana (Braun & Clarke, 2006). This systematic approach helped ensure that the review captures both global insights and Ghana-specific research on transformational leadership and ICT integration (Boell & Cecez-Kecmanovic, 2015).

Critical Review of the Literature

Research Question 1: Leadership and ICT Integration

Transformational leadership has been extensively examined in educational research as a style that promotes innovation, responsiveness, and capacity building—qualities that closely match the requirements for effective ICT integration. In the Ghanaian context, where basic

schools function with limited resources and rapidly changing policy expectations, transformational leadership offers a relational framework that encourages readiness for technological change (Hafeez & Bidari, 2022; Sliwka et al., 2024).

The relationship between transformational leadership and ICT integration is based on four core dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Avolio, 1994; Leithwood & Jantzi, 2006). Each of these dimensions creates essential conditions for ICT adoption. Leaders who act as ethical role models (idealized influence) reinforce the legitimacy of change and inspire teachers to follow their example. Tschannen-Moran and Gareis (2017) point out that in settings where school resources are uneven and staff morale may be low, this modelling behaviour is vital for building credibility and trust.

Inspirational motivation

Inspirational motivation is often conveyed through articulating a compelling vision, which helps frame ICT integration not just as a compliance requirement but as a transformative opportunity. In Ghana, this is especially important, as many schools lack digital infrastructure yet are expected to adopt ICT-based learning. Mafe (2023) asserts that leaders who demonstrate optimism and a shared purpose mobilise staff to pursue long-term innovation despite short-term constraints.

Intellectual Stimulation

This is particularly important in ICT integration, as it motivates educators to move beyond traditional teaching methods and explore digital strategies that increase interactivity and student engagement (Zhao et al., 2024). In this way, transformational leaders support not only the adoption of technology but also pedagogical reform.

Individualized consideration

Leaders addressing each teacher's specific needs played a crucial role in shaping ICT outcomes. In contexts where ICT skills vary widely among teachers, transformational leaders who provided personalized support, mentorship, and capacity-building had greater success in promoting meaningful ICT use (Lanbon et al., 2020). For example, Dare et al. (2025) identified a research gap in ICT-focused leadership. However, they highlighted that when school leaders support professional development and inclusive leadership practices, they lay the foundation for increased technological adoption.

Several Ghanaian studies support the theoretical link between transformational leadership and ICT readiness. Amankwah and Guo-Hua (2020) found that visionary and participative leadership were associated with innovation across basic schools in the Adansi-South District, especially in classrooms led by empowered teachers. Although their study was not ICT-specific, it highlights how leadership practices that promote collaboration can foster an environment conducive to technology adoption.

More specifically, Akpalu et al. (2025) introduced a conceptual model that connects transformational instructional supervision with teacher motivation and an ICT-friendly school culture. Their work suggests that the impact of leadership on ICT readiness is not accidental but interconnected through clear relational pathways. Similarly, Lomoa et al. (2024) found that teachers were more likely to engage with ICT when they perceived headteachers to be supportive and involved in digital planning. These findings show how leadership qualities influence staff attitudes and willingness to explore technology, even before formal implementation begins.

Another significant study by Asare (2016) reported both the existence and inconsistency of transformational behaviours among Ghanaian headteachers. While some demonstrated

coaching, trust-building, and participatory leadership, others were seen as coercive or adopting a top-down approach in their decision-making. This variation shows that the link between leadership and ICT is influenced by how consistently transformational values are practised.

The literature also reveals systemic gaps that school leadership alone cannot fill. Dare et al. (2025) identified a lack of rural-focused leadership research and highlighted that ICT integration is seldom examined in schools serving marginalized populations. Nonetheless, transformational leadership remains the relational engine that aligns teacher values, institutional goals, and innovation agendas, making it a prerequisite for successful ICT integration.

Overall, the literature shows a strong and positive link between transformational leadership and ICT integration in Ghanaian basic schools. While leadership alone may not ensure digital success, it sets the vision, motivation, and culture needed for ICT adoption. The combination of theoretical models and empirical data emphasises that transformational leadership builds the psychological and structural readiness required for integrating technology into teaching and administration.

Research Question 2: Transformational Leadership Impact

Empirical research increasingly shows that transformational leadership plays a significant role in ICT implementation within teaching and school administration, especially in developing contexts like Ghana. Transformational leaders shape the environment in which ICT is adopted and sometimes directly drive change through communicating a digital vision, promoting teacher growth, and fostering collaborative cultures.

One key area of impact is the articulation of vision. According to Lomoa et al. (2024), headteachers who clearly communicated goals related to ICT use and actively involved teachers in the planning process showed greater engagement with digital tools. Their results further show

that teachers acknowledged that leadership behaviours such as encouragement, modelling ICT use, and facilitating project-based initiatives increased their willingness to experiment with technology. One participant poignantly noted, "If the headteacher is not interested, the teachers also will not make use of the ICT tools" (Lomoa et al., 2024, p. 12), illustrating the critical modelling role of leaders in shaping ICT use among staff. This qualitative evidence contrasts with Dare et al. (2025), whose systematic review recognized the centrality of transformational leadership in school innovation but found few empirical studies examining its practical effect on ICT in rural or under-resourced schools. This highlights a gap in the literature regarding how leadership vision translates into impact across diverse Ghanaian contexts.

Transformational leadership also influences ICT outcomes by improving teacher competence and motivation. Bariham and Tiyumba (2024) identified a strong link between leadership qualities—especially intellectual stimulation and individualized consideration—and teachers' motivation to use ICT. Their quantitative data indicated that when teachers viewed their headteachers as supportive and inspiring, they were more likely to explore technology in their teaching. Akpalu et al. (2025) confirmed this by showing that instructional supervision based on transformational practices increased both teacher confidence and readiness to use ICT tools. The findings of Asare et al. (2023) further indicate that a lack of effective school-level leadership often hampers the implementation of national ICT policies, underscoring the mediating role of leadership in translating policy into practice.

However, the link between leadership and ICT adoption is not always positive, especially when structural barriers are present. Akaadom and Gorni (2023) and Soh (2025) showed that many Ghanaian basic school teachers have basic digital skills, like using MS Word or browsing the internet, but lack the confidence and training to incorporate technology into teaching. In such

situations, even motivated leadership may have limited influence unless it is supported by structured professional development. Lomoa et al. (2024) recognised this limitation, noting that despite headteachers' efforts, ICT integration was often hindered by unreliable electricity, lack of equipment, and poor maintenance. This shows that transformational leadership alone cannot fix infrastructural issues.

Broader developing contexts support these findings and highlight overlooked populations. Leithwood and Jantzi (2005) found that transformational leaders enhance organizational readiness for innovation, including ICT integration, especially when they foster trust and promote continuous learning. However, Lanbon et al. (2020) observed that in schools serving learners with disabilities, headteachers often lack training in assistive technologies. This gap in leadership development perpetuates digital exclusion in special education, underscoring the need for more inclusive leadership training and ICT planning.

Finally, leadership effectiveness depends on how transformational principles are applied. Asare (2016) found that while many Ghanaian headteachers engaged in role modelling and staff mentoring, some relied on top-down authority, which discouraged openness to ICT experimentation. This variation in leadership style indicates that not all uses of transformational leadership produce the same results, especially in environments where traditional hierarchies are still in place. As one teacher described, "Well, actually there is no decision. I have to follow as my head commands or face punishment" (p. 10), emphasising how coercive leadership practices can suppress teacher autonomy, restrict innovation, and hinder efforts to effectively integrate ICT in schools. In summary, the literature offers credible and diverse evidence of the influence of transformational leadership on ICT implementation. Studies confirm that such leadership enhances teacher motivation, boosts confidence in digital innovation, and increases the

likelihood of sustained ICT use in teaching and management. However, this influence is affected by external factors, particularly those related to infrastructure, access to training, and inclusivity gaps. Therefore, transformational leadership should be viewed not as a standalone solution but as a crucial enabling force that needs support from broader policies, capacity-building, and equity-focused interventions. The next section will examine these challenges.

Research Question 3: Challenges for School Leaders

Systemic and Contextual Barriers to ICT Integration in Ghanaian Basic Schools

Although there is growing recognition of the importance of ICT in enhancing teaching, learning, and school administration, several systemic and contextual barriers still obstruct ICT integration efforts in Ghanaian basic schools. These barriers include inadequate infrastructure, gaps in teachers' digital literacy, insufficient funding, and a disconnect between policy and practice. Recognising these challenges is vital, as they influence the environment within which school leaders—particularly those adopting transformational leadership—must operate to foster effective technology adoption.

Infrastructural Deficiencies. A key challenge to ICT integration is the widespread lack of infrastructure in Ghanaian basic schools. Lomoa et al. (2024) highlight ongoing issues such as unstable electricity, unreliable internet, outdated computers, and poor maintenance culture, all of which severely restrict both teaching, learning, and administrative work through digital tools. This problem is worse in rural areas, where schools face even greater deficits in basic infrastructure (Ofosu-Asare, 2024). Ofosu-Asare's (2024) review stresses that rural schools often lack not only digital hardware but also basic amenities like reliable electricity, making traditional ICT adoption impossible. The author's proposed conceptual framework for ICT integration in these settings stresses the importance of affordable, context-sensitive technologies such as

mobile devices and community-shared resources as interim solutions to bridge the urban-rural digital divide.

This infrastructural gap mirrors broader patterns observed across Sub-Saharan Africa, where educational inequities are sustained by the unequal distribution of ICT resources (Salimi, 2025; UNESCO, 2025). Even the most dedicated transformational leaders encounter limitations when such structural deficiencies go unaddressed.

Digital Literacy Deficit among Teachers. Teacher competence in digital technologies is essential for effective ICT integration, yet significant gaps remain in this area. Research by Akaadom & Gorni (2023) and Soh (2025) shows that many Ghanaian teachers mainly use computers for administrative tasks, such as typing exams, rather than incorporating them into lesson delivery. They also found that administrative staff, especially headteachers and school secretaries, primarily use computers for typing letters rather than managing student records, emails, or data collection and reporting. According to Akaadom and Gorni (2023), few teachers report confidence in developing ICT-based teaching resources, with just 22% possessing such skills. These findings align with Quaicoe and Pata's (2020) comprehensive study, which reveals that although most teachers in Ghana see themselves as digitally literate, over 50% of schools remain "digitally passive," with limited actual use of ICT for teaching and learning. Quaicoe and Pata emphasize that digital literacy among teachers must extend beyond technical skills to include practical, pedagogical applications—an area requiring deliberate leadership support. The authors also highlight the importance of school-based management structures that enable teachers to take ownership of ICT initiatives, rather than relying solely on top-down training models that often overlook real classroom challenges. Transformational leaders, by promoting continuous professional development and teacher-driven innovation, play a vital role in

improving digital literacy and fostering ICT integration (Akpalu et al., 2025). These findings suggest that transformational leaders should prioritise ongoing professional development to raise teacher digital competencies, in line with Asare et al. (2023)'s call for systemic reforms in teacher education.

Inadequate Funding and Resource Allocation. Resource scarcity continues to be a systemic barrier to ICT adoption in basic education. As Lomoa et al. (2024) observe, headteachers committed to promoting ICT initiatives often lack the financial resources needed to purchase, maintain, and upgrade technological tools. These challenges are particularly severe in marginalized schools, where unequal resource distribution worsens educational disparities (Lanbon et al., 2020). Ofosu-Asare (2024) further supports this, showing how financial constraints hinder rural schools from accessing not only hardware but also training opportunities and local digital content. Ofosu-Asare's proposed framework highlights low-cost technologies and community participation as key strategies for overcoming funding obstacles and ensuring sustainable ICT integration. In Ghanaian basic schools, the absence of dedicated funding streams at the school level also hampers transformational leaders' ability to align their visions with practical actions, emphasizing the need for structural reforms that combine leadership efforts with equitable resource provision (Lomoa et al., 2024; Ofosu-Asare, 2024).

Policy-Practice Misalignment. A persistent gap between national ICT policies and actual school-level practices remains a major obstacle to integration efforts. Asare et al. (2023) argue that although Ghana has put in place comprehensive policy frameworks promoting ICT in education, issues such as inconsistencies in implementation, limited infrastructure, and inadequate teacher training continue to prevent progress. This disconnect is not unique to Ghana. Comparative insights from Kenya show similar patterns, where national ICT policies for teacher

education are often just rhetoric and rarely lead to effective classroom practices (Ogange, 2011). Ogange's study on Kenya's ICT policy development highlights fragmented, poorly coordinated implementation efforts and a failure to align teacher training with practical ICT pedagogical needs—challenges that mirror those faced by Ghana. Ofosu-Asare (2024) stresses the importance of locally tailored, context-sensitive policy approaches that allow schools—especially in rural areas—to adapt ICT integration strategies to their specific constraints and capacities. Without such alignment, transformational leaders are limited in their ability to carry out ICT-driven reforms effectively.

Leadership Implications. These systemic and contextual barriers highlight the complexity of integrating ICT into basic education. Although transformational leadership traits—such as inspiring vision, promoting professional development, and building collaborative cultures—are essential for creating conditions conducive to ICT use (Akpalu et al., 2025; Amankwah & Guo-Hua, 2020; Bariham & Tiyumba, 2024), leaders must also navigate structural challenges beyond their immediate control. Lomoa et al. (2024) stress that even the most committed headteachers face significant constraints without systemic improvements. Research emphasizes that school leaders, particularly in rural and underserved settings, require systemic support to address infrastructure deficits, digital literacy gaps, resource constraints, and policy inconsistencies (Lomoa et al., 2024; Ofosu-Asare, 2024; Quaicoe & Pata, 2020). Moreover, as Ogange (2011) demonstrates, fragmented policy environments undermine leadership efforts unless teacher education programs and national strategies are coherently aligned with school realities.

The School Leader's Role in Overcoming ICT Barriers

Despite Ghana's policy commitment to integrating ICT in basic education, implementation is still limited by infrastructural issues, teacher digital literacy gaps, funding problems, and policy-practice disconnects. In this context, transformational leadership plays a vital role in overcoming these challenges. School leaders who adopt this leadership style are well-placed to motivate teachers, gather resources, and foster adaptable, innovation-ready school cultures (Akpalu et al., 2025; Leithwood & Jantzi, 2006).

A key element in ICT integration is teachers' willingness to engage with technology, which is influenced by their attitudes, confidence, and perceived value of ICT (Buabeng-Andoh & Yidana, 2014). Based on Expectancy-Value Theory, their research indicates that transformational leaders can positively shape these perceptions by fostering self-efficacy, demonstrating ICT use, and highlighting the practical benefits of technology. In Ghana, studies reveal that even when teachers see the potential of ICT, integration remains limited due to the high perceived effort and low expectations of success (Asare, 2016; Bariham & Tiyumba, 2024). Leaders who offer encouragement, mentorship, and safe opportunities for experimentation help reduce fear of failure and strengthen teacher ownership of ICT initiatives (Akpalu et al., 2025).

Leadership support is also consistently linked to higher ICT use among teachers. Buabeng-Andoh's (2019) study of Ghanaian secondary school teachers found a strong link between leadership commitment and ICT engagement, even in resource-poor settings. School leaders who organize training, provide resources, and promote digital practices create an environment that helps teachers adopt technology more easily. Transformational leaders address both internal barriers (like teacher readiness) and external ones (such as access to tools),

reinforcing global findings on leadership's role in the adoption of educational technology (Uluyol & Sahin, 2016).

Professional development is essential for ICT readiness. Many Ghanaian teachers lack sufficient training to incorporate digital tools into pedagogy (Soh, 2025). Transformational leaders play a crucial role by facilitating ongoing, context-responsive training programs that extend beyond one-time workshops. When teachers develop practical skills and feel supported, they are more likely to experiment with ICT in lesson delivery, assessment, and resource creation (Quaicoe & Pata, 2020). Studies confirm that such leadership-driven initiatives are key in building teacher confidence and fostering innovation (Buabeng-Andoh, 2019).

Moreover, transformational leaders help create collaborative and adaptable school cultures that support innovation, even when structural barriers remain. By encouraging shared learning, risk-taking, and a collective vision for digital transformation, these leaders promote a shift from passive to active ICT engagement (Fullan, 2016). Although leadership alone cannot eliminate systemic inequities, it can cultivate the cultural readiness needed for sustainable ICT integration (Buabeng-Andoh, 2019).

Limitations of the Review

This review has several limitations. First, it mainly depends on peer-reviewed empirical studies, which, although academically rigorous, may introduce publication bias. Studies with positive or noteworthy findings on transformational leadership and ICT integration are more likely to be published than those showing limited or no effects, potentially biasing the evidence towards overly positive outcomes. Moreover, despite efforts to ensure thorough coverage, the selection process might have unintentionally introduced bias due to limited access to full-text articles, database restrictions, and subjective decisions during screening. Consequently, studies

highlighting the advantages of transformational leadership could be overrepresented, while critical or conflicting perspectives receive less attention. A more significant concern is the underrepresentation of research on leadership and ICT integration in rural and underserved schools in Ghana. Most available studies focus on urban or better-resourced settings, which restricts the applicability of their findings to environments facing greater infrastructural and professional development challenges. Few studies in Ghana examine how leadership interacts with contextual factors such as poverty, geographic isolation, or cultural norms in marginalized communities – an important gap that future research needs to address. Lastly, the predominance of cross-sectional and quantitative studies limits understanding of the long-term impacts of leadership initiatives. Longitudinal and mixed-methods research is necessary to comprehend better how transformational leadership influences ICT integration over time and across diverse school settings.

Recommendations

Based on the reviewed literature and the limitations identified, several key recommendations emerge for policymakers, school leaders, and researchers to enhance ICT integration through transformational leadership in Ghanaian basic education. First, there is a need for more comprehensive policy alignment and support. National education policies should be complemented by practical implementation frameworks that empower school leaders to adopt transformational leadership approaches. This should include strategic funding, targeted capacity-building programmes, and supportive accountability systems that reflect the realities of basic schools. Without these measures, policy directives may remain disconnected from school-level practices.

Second, leadership development programmes are essential. Training opportunities should

be designed for both current and future school leaders, with a clear focus on transformational leadership principles such as establishing a shared vision, empowering staff, and promoting digital innovation. Importantly, these programmes must be tailored to the socio-cultural and infrastructural contexts of Ghanaian schools to ensure they are relevant and impactful.

Third, equitable investment in ICT infrastructure is crucial. While strong leadership is important, it cannot replace the necessary technological resources. Therefore, investment strategies should prioritize under-resourced rural and peri-urban schools to ensure fair access to hardware, connectivity, and technical support. Without addressing these disparities, efforts toward transformational leadership may have a limited impact.

Moreover, it is vital to foster school-based cultures of innovation. School leaders should intentionally cultivate collaborative and learning-focused environments where experimentation with ICT is encouraged. This can be achieved through establishing professional learning communities (PLCs), peer mentorship, and teacher-led ICT initiatives. Such efforts not only build capacity but also strengthen collective commitment to ICT integration.

Lastly, future research should focus more on the Ghanaian context. There is a clear need for more in-depth, context-aware studies, particularly qualitative case studies exploring the perspectives of school leaders, teachers, and students. Additionally, comparative research involving other low-resource settings can offer valuable lessons and highlight adaptable strategies for transformational leadership in ICT integration. In conclusion, these recommendations aim to bridge the gap between policy and practice by positioning transformational leadership as a crucial driver of sustainable and equitable ICT integration in Ghana's basic education system.

Discussion

This review synthesizes existing literature to examine how transformational leadership impacts ICT integration in Ghanaian basic schools, highlighting ongoing structural and contextual barriers. The evidence shows that although transformational leadership plays a crucial role in encouraging ICT adoption, its success is influenced by systemic challenges such as insufficient infrastructure, limited teacher competency, and gaps between policy and practice.

Transformational leaders, defined by their vision-setting, capacity-building, and fostering collaborative cultures (Bass & Avolio, 1994; Leithwood & Jantzi, 2006), play a vital role in shaping teachers' attitudes toward adopting ICT. Leaders who communicate a clear digital vision, demonstrate technology use, and offer personalized support are better able to motivate staff and boost teacher confidence (Asare, 2016; Bariham & Tiyumba, 2024). These strategies increase teacher engagement with technology, encourage innovative teaching methods, and improve school management (Schmitz et al., 2023).

However, the literature also highlights the limitations of leadership in isolation. Structural deficits, particularly in rural and marginalized schools, constrain even the most committed leadership efforts (Lomoa et al., 2024; Ofosu-Asare, 2024). Unreliable electricity, poor internet access, and limited digital resources are pervasive challenges that hinder ICT integration. Moreover, even though Ghana's national ICT policies provide a framework for digital transformation, inconsistent implementation, especially at the basic school level, weakens their impact (Asare et al., 2023; Ogange, 2011).

A key insight emerging from this review is the interaction between leadership and structural realities. Transformational leaders can reduce some barriers through innovative and supportive cultures, encouraging ongoing professional development, and mobilizing community

or external resources (Amankwah & Guo-Hua, 2020; Quaicoe & Pata, 2020). However, without systemic investments in infrastructure, fair resource distribution, and targeted teacher training, leadership efforts may be insufficient or unsustainable.

Global research reflects this pattern. Studies in similar developing contexts confirm that transformational leadership improves readiness for ICT integration but must be supported by structural reforms to create lasting change (Lanbon et al., 2020; UNESCO, 2025). Specifically, in Ghana, the limited research on rural schools highlights a significant knowledge gap, as these environments face the most severe resource constraints and receive little attention to leadership development (Dare et al., 2025).

Overall, the findings indicate that transformational leadership is a crucial driver for ICT integration in Ghanaian basic education. However, its effectiveness relies on alignment with broader systemic reforms, highlighting the importance of integrated, context-aware strategies that combine leadership development with structural capacity enhancement.

Conclusion

Transformational leadership plays a crucial role in advancing ICT integration in Ghanaian basic schools by fostering teacher motivation, professional development, and innovation. This leadership style enables schools to adopt and maintain digital tools despite systemic challenges. However, leadership alone is not enough. Sustainable progress relies on coordinated efforts among policymakers, education leaders, and communities to tackle infrastructure gaps, policy-practice discrepancies, and resource inequalities. Leadership development should be incorporated into broader structural reforms to ensure ICT integration is fair, inclusive, and lasting. Future research should focus on underserved regions and use diverse methods to explore the complexities of leadership in real-world educational settings. Only

through such comprehensive, context-aware strategies can Ghana bridge the digital divide and

unlock the transformative potential of ICT in education.

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