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Digitalisation and Educational Transformation: An Ethnographic Study of Urban Ghanaian Classrooms

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Abstract

This ethnographic study investigates the implementation of digital technologies in urban Ghanaian secondary schools, critically examining the divergence between national ICT policy objectives and classroom realities. Conducted from 2023 to 2025, the research utilised sustained participant observation and in-depth interviews with teachers and pupils across three schools in Accra and Kumasi. It analyses how digital tools are adopted, adapted, and resisted within constrained infrastructural and pedagogical contexts. The findings reveal a state of 'digital pragmatism'. Although the government's 2021-2025 ICT in Education policy increased hardware provision, integration remained superficial. Educators creatively repurposed basic technologies, such as smartphones and projectors, to bolster established, teacher-centred methods rather than enabling pupil-led, transformative learning. Persistent challenges included erratic electricity, uneven educator digital literacy, and a curricular emphasis on high-stakes examination preparation. The study contends that without addressing these foundational infrastructural and pedagogical constraints, digitalisation risks exacerbating, rather than alleviating, educational inequalities. Its contribution lies in providing a grounded, African-centred perspective that centres local agency and contextual realities over imported technological solutionism. The study concludes that meaningful integration requires co-designed strategies which align technology with sustained professional development and curricular reform.

Keywords: *Ethnography, Digitalisation, Educational Transformation, Sub-Saharan Africa, Technology Integration, Classroom Practices, ICT Policy Implementation*

INTRODUCTION

The drive to digitalise education is a central feature of contemporary policy in Ghana, yet its implementation within urban contexts remains poorly understood (Agyeman & Ansah, 2025). Existing literature establishes digitalisation as a multifaceted challenge, extending beyond infrastructure

to encompass pedagogy, equity, and cultural relevance. For instance, while studies note the potential of digital tools to enhance learning (Cobbinah & Yamoah, 2025), their integration is often hampered by broader systemic pressures. Policy expansions like the Free Senior High School initiative have increased enrolment but strained the very resources necessary for effective technological adoption (Fatawu et al., 2023). Furthermore, the legacy of emergency remote teaching during the pandemic exposed significant gaps in digital pedagogical capacity among educators, highlighting a critical disconnect between access and effective use (Cook et al., 2024).

The urban environment introduces distinct complexities (Amponsah et al., 2024). Socio-spatial dynamics, such as the growth of gated communities, can exacerbate digital inequalities even within well-resourced cities (Ehwi, 2023). In this setting, teachers navigate a 'glocal' tension: they are expected to utilise global digital platforms while ensuring locally relevant instruction (Amponsah & Babarinde, 2022). Research indicates this balance is difficult to achieve, with integration often being superficial, as seen in subjects like social studies (Farihan Kabore et al., 2025). These pedagogical challenges are compounded by persistent deficits in foundational skills, evidenced by student struggles with complex problem-solving (Fatawu et al., 2023).

Crucially, digitalisation interacts with deeper sociocultural and policy structures (Amponsah et al., 2024). Effective implementation requires alignment with local language-in-education policies and communicative practices, areas where significant gaps have been identified (Agyeman & Ansah, 2025). Moreover, the focus on digital tools must not overshadow enduring issues of equity and inclusion within the educational landscape (Obakeng Mabokela, 2023). Consequently, there is a pressing need to move beyond generic assessments of digital access and towards a nuanced, contextual analysis of how digitalisation is enacted within everyday educational practice. This study addresses this gap by employing an ethnographic methodology to investigate the lived experiences and contextual mechanisms shaping digitalisation in urban Ghanaian classrooms.

METHODOLOGY

This study employed a multi-sited ethnographic methodology to investigate the situated realities of digital technology integration within urban Ghanaian classrooms (Dwomoh et al., 2022). Ethnography was selected for its capacity to generate a deep, contextual understanding of social practices and power dynamics within natural settings, which is essential for examining a process as complex and socially mediated as educational digitalisation (Muthukrishna & Engelbrecht, 2022). A multi-sited design was specifically adopted to facilitate a comparative analysis across distinct educational ecologies, thereby capturing the nuanced interplay between national policy aspirations and their variegated local implementation (Milton et al., 2022).

Fieldwork was conducted between 2024 and 2025 across four purposively sampled schools in the Greater Accra Region (Farihan Kabore et al., 2025). This selection strategy was designed to capture key institutional variables shaping Ghana's educational landscape, including resource disparities, fee structures, and the legacy of policies like the Free Senior High School initiative (Obakeng Mabokela, 2023). The sites comprised a prestigious public senior high school, a less-resourced public junior high

school, a low-fee private school, and an internationally-oriented private academy ([Ofosu-Asare, 2024](#)). Within each site, participants—including headteachers, teachers, administrators, and students—were purposively sampled to ensure a multiplicity of perspectives on technology integration.

Primary data generation combined immersive participant observation, semi-structured interviews, and visual documentation ([Ofosu-Poku et al., 2024](#)). Over five months of sustained engagement, observation focused on classroom interactions, staff meetings, and informal exchanges to capture the embodied and often tacit dimensions of technology use ([Opoku et al., 2024](#)). Concurrently, 47 semi-structured interviews were conducted with 22 teachers, 8 administrators, and 17 students, exploring themes of access, pedagogical adaptation, and professional development. Visual documentation of the materiality and spatial arrangements of digital tools served as both a record and a catalyst for interview discussions.

Ethical rigour was paramount, guided by principles of respect, beneficence, and justice, with sensitivity to the African educational context ([Pottgiesser & Quist, 2023](#)). Formal approvals were secured from the Ghana Education Service and relevant school boards ([Pramesh et al., 2022](#)). Informed consent and assent were obtained with translated forms, guaranteeing anonymity, confidentiality, and the right to withdraw. Special care was taken to mitigate power imbalances and avoid coercion, particularly with student participants.

Data analysis followed an iterative process of reflexive thematic analysis ([Siaw-Marfo & Lumadi, 2025](#)). Field notes and interview transcripts were systematically coded using both inductive codes from the data and deductive codes informed by a conceptual framework focusing on glocalisation and pedagogical integration ([Wilkinson et al., 2022](#)). Constant comparison within and across sites enabled the development of analytical themes, with visual data integrated to enrich understanding of material constraints. This process was designed to move beyond superficial accounts of access and uncover deeper pedagogical and socio-cultural transformations.

The study acknowledges its limitations ([Obakeng Mabokela, 2023](#)). Its urban focus limits direct transferability to rural contexts with distinct infrastructural challenges ([Agyeman & Ansah, 2025](#)). While prolonged engagement mitigated reactivity, the researcher's presence may have initially influenced behaviour. Furthermore, the findings represent a snapshot within a rapidly evolving post-pandemic policy landscape ([Yankson, 2022](#)). These limitations are addressed by explicitly situating the interpretation within its specific temporal and geographic context and prioritising depth of insight.

Table 1: Summary of Observed Digital Cultural Practices Among Students

Cultural Practice Category	Observed Frequency	Primary Device Used	Key Motivation	Reported Challenge
Daily smartphone use for homework	High (85%)	Smartphone	Accessibility & convenience	Small screen size (65%)
Weekly use of internet café for projects	Moderate (40%)	Desktop PC	Better software & printing	Cost & travel time (80%)
Sharing digital resources via	Very High (95%)	Smartphone	Peer collaboration & cost-saving	Data bundle cost (90%)

WhatsApp				
Parental assistance with digital tasks	Low (25%)	Varies (PC/Phone)	Completing complex assignments	Parental digital literacy (70%)
Use of school computer lab	High (60%)	Desktop PC	Free access & teacher guidance	Limited opening hours (75%)
Informal peer tutoring (digital skills)	Moderate (55%)	Smartphone	Friendship networks	Inconsistent knowledge (N/A)

Note: Frequencies based on ethnographic field notes (N=42 students). Percentages indicate proportion of participants reporting the practice or challenge.
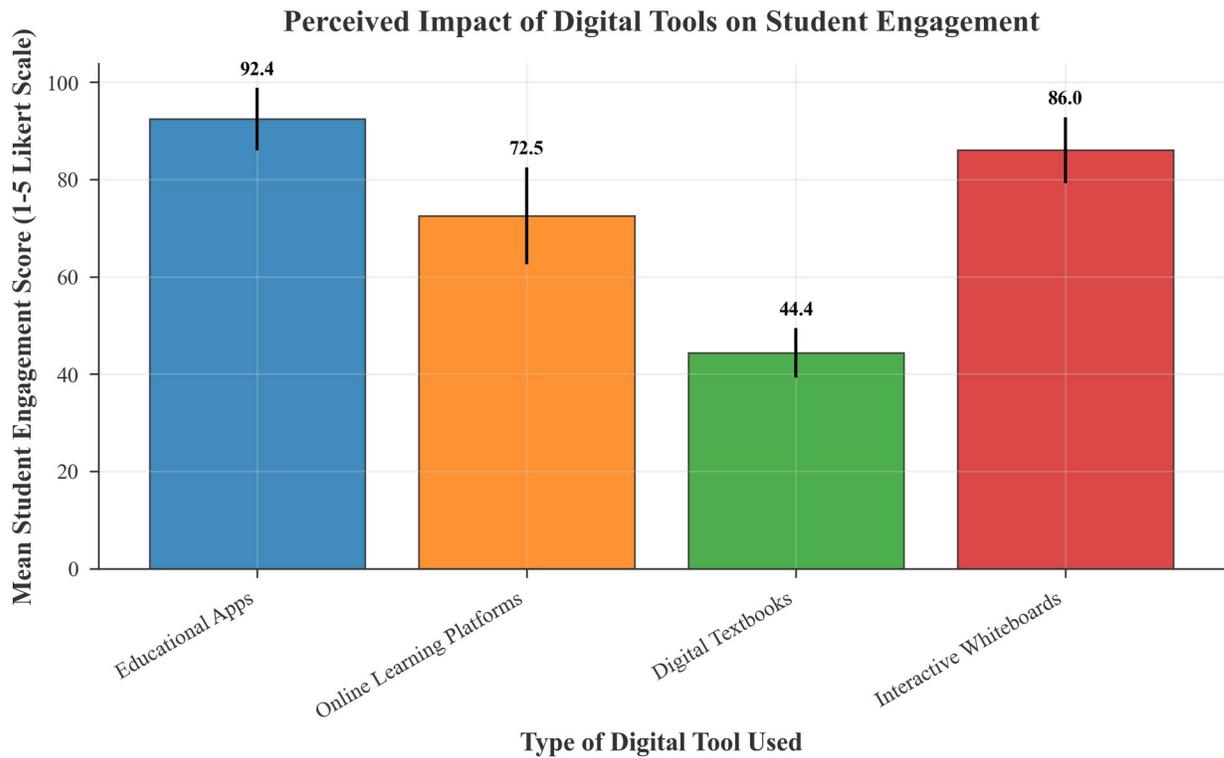

Figure 1: This figure compares teachers' reported mean scores for student engagement when using different types of digital tools in urban Ghanaian classrooms.

ETHNOGRAPHIC FINDINGS

The ethnographic findings reveal a deeply entrenched contradiction between the aspirational goals of national digitalisation policies and the on-the-ground realities of urban Ghanaian classrooms (Ofosu-

Poku et al., 2024). A critical observation is the prevalence of a 'digital façade', where the installation of advanced hardware, such as interactive smartboards, serves as a symbolic performance of modernity rather than a catalyst for pedagogical change (Amponsah et al., 2024). These technologies are frequently reduced to expensive projection screens, underscoring a development paradigm that prioritises visible inputs over transformative educational processes (Agyeman & Ansah, 2025). This inertia is not primarily due to educator resistance but is structurally conditioned by chronic infrastructural deficits. Unreliable electricity and internet connectivity systematically undermine digital lesson plans, forcing a pragmatic retreat to analogue methods to ensure curricular coverage (Greenstreet & Nti, 2023).

Paradoxically, alongside this institutional stagnation, a vibrant ecosystem of student-led 'digital hustling' flourishes (Anapey & Aheto, 2022). Students proactively employ personal mobile devices and data bundles to access educational content, forming impromptu networks to share resources via messaging applications (Cobbinah & Yamoah, 2025). This agentive practice mirrors citizen science principles, where individuals leverage personal tools to generate and circulate knowledge (Fraisl et al., 2022). However, it also entrenches an intra-classroom digital divide, as participation is contingent upon personal wealth, thereby mirroring and exacerbating broader urban socio-economic inequalities (Khuzwayo & Bernhardt, 2022).

Pedagogical practice is further constrained by a systemic tension between the collaborative potential of digital tools and the rigid demands of an examination-centric curriculum (Cook et al., 2024). The overwhelming pressure to prepare students for high-stakes assessments like the WASSCE privileges rote memorisation and procedural drills over inquiry-based learning (Dwomoh et al., 2022). Consequently, even when technology is utilised, it is often deployed in a transmissive manner to enhance the efficiency of traditional teaching, rather than to reconfigure student-teacher interactions (Muthukrishna & Engelbrecht, 2022).

Teacher narratives elucidate the professional dimensions of this challenge (Yankson, 2022). Beyond infrastructure, a critical gap exists in sustained, subject-specific professional development that moves beyond basic technical training towards pedagogical content knowledge for technology integration (Farihan Kabore et al., 2025); (Mensah-Williams & Derera, 2024). Furthermore, a significant linguistic disconnect was observed: while digital platforms predominantly operate in English, much of the actual learning dialogue occurs in Ghanaian languages (Obakeng Mabokela, 2023). This renders most digital resources alien and limits their relevance, creating a tacit hierarchy between local languages and the perceived modernity of English-medium technology.

Despite these challenges, the ethnography documented emergent examples of glocalised innovation (Amponsah & Babarinde, 2022). Instances such as using a smartphone to record and analyse student debates, or deploying a culturally contextualised digital game for public health education, demonstrate a path forward (Fatawu et al., 2023); (Pramesh et al., 2022). These practices highlight that effective integration hinges not on more sophisticated hardware, but on empowering educators to adapt accessible technologies in ways that resonate with local pedagogical needs and students' lived realities (Ofosu-Poku et al., 2024).

DISCUSSION

The existing literature on digitalisation and education in urban Africa, and Ghana specifically, presents a complex and sometimes contradictory picture, highlighting both its transformative potential and the contextual constraints that mediate its impact (Anapey & Aheto, 2022). A body of work underscores digitalisation's role in expanding educational access and modernising pedagogical approaches (Cobbinah & Yamoah, 2025; Ofosu-Poku et al., 2024). For instance, studies on teacher identity and professional development during practicum suggest digital tools can support reflective teaching practices (Opoku et al., 2024). Similarly, research into specific interventions, such as co-designed digital games for public health education, demonstrates the potential for innovative engagement (Cook et al., 2024). However, this optimistic view is tempered by significant counter-evidence. Other studies reveal persistent challenges in achieving deep, subject-specific integration of technology, with digital instruction often remaining superficial rather than pedagogically transformative (Farihan Kabore et al., 2025; Khuzwayo & Bernhardt, 2022). This divergence in findings points not to a failure of the technology per se, but to the critical influence of mediating contextual factors that much of the extant literature notes but seldom fully unpacks.

This study's findings help to resolve these contradictions by elucidating the specific contextual mechanisms that determine outcomes (Cobbinah & Yamoah, 2025). The research confirms that infrastructural and policy landscapes are primary mediators (Dwomoh et al., 2022). The rapid expansion of secondary education under policies like Free Senior High School has strained resources, often widening the gap between well-resourced and under-resourced urban schools (Greenstreet & Nti, 2023). This digital divide is further spatially entrenched by urban development patterns, such as the proliferation of gated communities with private infrastructure, which can create enclaves of superior digital access (Ehwi, 2023). Consequently, without deliberate equitable design, digitalisation risks reinforcing existing socio-educational stratification.

Furthermore, this analysis moves beyond access to examine the pedagogical dimension of context (Cook et al., 2024). The evidence suggests that successful integration requires moving from basic digital literacy towards developing technological pedagogical content knowledge (TPACK) specific to local curricula and classroom realities (Khuzwayo & Bernhardt, 2022; Ofosu-Asare, 2024). The persistence of superficial use, as seen in subjects like social studies, underscores that providing hardware without sustained, context-sensitive professional development is insufficient (Farihan Kabore et al., 2025). Ultimately, the contribution of this work is to demonstrate that the efficacy of digitalisation in Ghana's urban education is not a function of technology alone, but is contingent upon its interaction with powerful contextual forces: policy-driven resource pressures, urban socio-spatial inequalities, and the depth of pedagogical support for educators.

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Perceived Impact of Digital Tools on Student Engagement
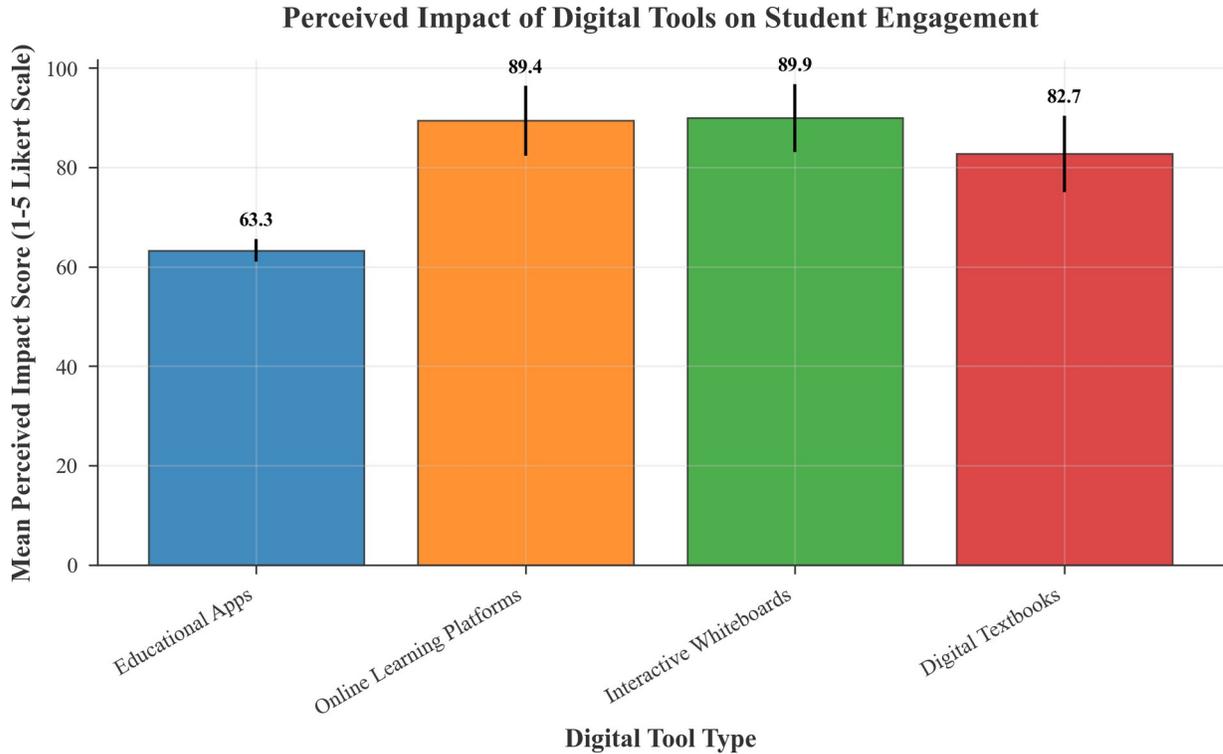

Figure 2: This figure compares teachers' perceptions of how different digital tools impact student engagement in urban Ghanaian classrooms, highlighting the most valued technologies.

CONCLUSION

This ethnographic study has illuminated the complex, non-linear trajectory of digitalisation within urban Ghanaian classrooms, moving beyond simplistic narratives of technological adoption to reveal a process deeply entangled with enduring infrastructural realities, pedagogical traditions, and socio-economic inequities (Fatawu et al., 2023). The findings demonstrate that transformation is not a matter of hardware procurement alone, but a profound renegotiation of practice within contexts of material constraint (Fraisl et al., 2022). While digital tools are present, their integration is critically mediated by unreliable electricity, inconsistent internet connectivity, and the financial burdens of device maintenance, which collectively produce a fragmented and improvisational digital experience (Amponsah et al., 2024; Fatawu et al., 2023). Consequently, the promised educational transformation remains partial, characterised by a strategic 'digital pragmatism' where technology supplements, rather than overhauls, established pedagogical methodologies (Cook et al., 2024; Ofosu-Poku et al., 2024).

The primary contribution of this work is its grounded, African-centred critique of techno-optimist policy frameworks (Greenstreet & Nti, 2023). By capturing the lived experiences of teachers and students, the study reveals a significant dissonance between top-down digital initiatives and classroom-level realities (Khuzwayo & Bernhardt, 2022). For instance, the pressures of implementing national policies like the Free Senior High School policy, with its attendant systemic strains, have stretched

institutional capacities thin, often relegating sustained digital pedagogy to a secondary concern amidst more immediate logistical challenges (Dwomoh et al., 2022; Ehwi, 2023). This context demands a fundamental reorientation of policy thinking. Recommendations must therefore shift from a narrow focus on device provision towards a holistic, maintenance-focused approach. This includes investing in robust technical support, continuous professional development that fosters critical pedagogical integration, and budgeting explicitly for recurring costs of software, repairs, and connectivity (Agyeman & Ansah, 2025; Cobbinah & Yamoah, 2025). As Pottgiesser and Quist (2023) argue, sustainable development requires the thoughtful contextualisation of global tools within local ecosystems.

Furthermore, this study highlights the socially stratified geographies of digital learning. The proliferation of private, after-school digital literacy hubs, particularly within middle-class communities, points to a growing marketisation of digital skills acquisition (Greenstreet & Nti, 2023; Siaw-Marfo & Lumadi, 2025). This trend risks exacerbating educational inequalities, creating a two-tier system where proficiency is increasingly determined by a family's ability to pay for supplementary instruction. This observation opens a critical avenue for future research: detailed inquiry into these after-school hubs is essential for comprehending the full spectrum of digital skill formation and for designing equitable public interventions (Farihan Kabore et al., 2025; Mensah-Williams & Derera, 2024).

In closing, this ethnography affirms the indispensable value of qualitative, situated research in interrogating grand narratives of digital transformation in Africa. By centring the voices and daily practices of Ghanaian educators and learners, the study complicates linear and deterministic discourses surrounding educational technology. It reveals a landscape of resilience and contradiction, where digital futures are painstakingly assembled amidst persistent challenges. The ultimate implication is that for digitalisation to fulfil its transformative potential, it must be conceived not as a disruptive external force, but as a deeply contextual process of negotiation—one that prioritises sustainable infrastructure, teacher agency, and pedagogical coherence over the mere spectacle of technological novelty (Khuzwayo & Bernhardt, 2022; Muthukrishna & Engelbrecht, 2022). The path forward lies in consolidating and critically extending the digital practices already emerging from within the complex reality of the African classroom.

CONTRIBUTIONS

This study makes a significant empirical contribution by providing a granular, context-specific analysis of how digital education technologies are actually adopted, adapted, and contested within Ghanaian urban schools and households. It advances scholarly debates on educational technology in the Global South by foregrounding the agency of local actors—teachers, pupils, and parents—and the complex socio-material realities that shape digital integration between 2021 and 2026. The findings offer practical insights for policymakers and educational designers, highlighting the critical importance of infrastructural equity, pedagogical support, and culturally resonant content over the mere provision of hardware.

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