

**TEACHER AND SCHOOL MANAGEMENT RELATED FACTORS INFLUENCING
THE UTILIZATION OF EMERGING EDUCATIONAL TECHNOLOGIES IN PUBLIC
SECONDARY SCHOOLS IN EDUCATION DISTRICT VI, LAGOS STATE**

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ABSTRACT

This study investigates teacher- and school management-related factors that influence the utilization of emerging educational technologies—specifically Learning Management Systems (LMS), Artificial Intelligence (AI) tools, gamification platforms, and adaptive learning systems in Lagos State public secondary schools, with a focus on Education District VI. Using a descriptive survey design, data were collected from 174 teachers across six senior secondary schools in Mushin, Ikeja, and Oshodi-Isolo Local Government Areas. A structured questionnaire with a four-point Likert-type response scale was administered, and responses were interpreted using a decision rule of $\text{mean} \geq 2.50 = \text{Accepted}$ and $\text{mean} < 2.50 = \text{Rejected}$. Results showed that inadequate training, lack of competence, and low self-confidence are the dominant teacher-related barriers, while unavailability of infrastructure, insufficient power supply, and restrictive school policies are the most significant school management-related constraints. Teachers proposed professional training, government subsidies on ICT tools, and public-private partnerships as improvement strategies. The study concludes that meaningful integration of emerging educational technologies requires simultaneous investment in teacher capacity building and institutional infrastructure. These findings carry significant implications for Lagos State education policy, particularly the

need to mainstream digital competency training into teachers' professional development programmes and to prioritise ICT infrastructure funding in underserved districts.

Keywords: *emerging educational technologies, teacher factors, school management factors, Lagos State, technology utilization, education district.*

INTRODUCTION

The rapid development of Information and Communication Technology (ICT) has, over the past two decades, substantially transformed the structure and delivery of education around the world. Digital tools such as Learning Management Systems (LMS), cloud-based platforms, Artificial Intelligence (AI)-driven tutoring systems, gamification software, Virtual Reality (VR) environments, and adaptive learning systems have shifted instructional practice from teacher-centred approaches toward interactive, learner-centred pedagogies. These technologies promote flexibility, collaboration, and access to vast educational resources that are essential for developing 21st-century skills. According to Adarkwah (2021), integrating ICT into teaching is no longer optional but is imperative for enhancing the effectiveness of teaching and learning. The COVID-19 pandemic underscored this reality further, revealing the centrality of teachers' digital competence in sustaining instructional continuity during crises.

Despite global progress, the adoption of modern educational technologies remains a critical challenge in most developing countries, including Nigeria. Poor infrastructure, unreliable internet connectivity, and insufficient teacher training are among the most persistent barriers to technology-enhanced instruction. Etesike, Ogundeke, and Olatunji (2024) observed that the COVID-19 lockdowns exposed the systemic unpreparedness of most Nigerian public schools for online or

blended learning, underscoring the urgency of addressing teacher digital competence. More recently, Okeke and Nwachukwu (2023) found that secondary school teachers in South-Western Nigeria demonstrated significantly low levels of technology integration behaviour, attributing this to inadequate pre-service and in-service training. Similarly, Afolabi, Omotayo, and Adeyemi (2022) documented that fewer than 30% of Lagos State teachers reported confident use of LMS or AI-based platforms in classroom instruction, highlighting the persistence of the digital skills gap. Obaseki and Eze (2024) further noted that institutional policies in many Nigerian schools discourage unsanctioned use of personal devices, inadvertently restricting teacher-initiated technology adoption.

In Lagos State, the commercial and educational hub of Nigeria, several government-driven ICT initiatives have been implemented over the past decade to promote technology integration in schools. Programmes such as the Lagos State Teachers' Professional Development Scheme and digital classroom projects have aimed to increase teachers' digital literacy and access to instructional technologies. However, Durojaiye and Adeyanju (2020) documented significant disparities between well-resourced urban schools and those in resource-constrained communities, with many teachers still lacking access to functional digital tools, stable electricity, or consistent technical support. Adebayo and Olayinka (2019) reported that while some schools have made progress in implementing LMS or e-learning platforms, others remain constrained by infrastructural deficits and administrative inflexibility.

Teacher-related characteristics including gender, qualification, teaching experience, and training exposure have been identified as key determinants of technology adoption (Ojedokun & Ige, 2021; Ikwuka, 2022). Institutional factors such as school policies, infrastructure provision, and

administrative support equally serve as facilitators or constraints (Teo, 2020). Research by Adewunmi and Ogunlade (2023) indicates that schools with enabling environments and supportive school leadership record measurably higher rates of technology use among teachers. Yet, despite this body of evidence, there is a notable shortage of empirical studies that examine how these teacher and school management factors specifically operate within Education District VI of Lagos State, which encompasses Mushin, Ikeja, and Oshodi-Isolo Local Government Areas areas characterised by high student enrolment, mixed socioeconomic conditions, and uneven ICT resource distribution. This study therefore addresses that gap by systematically examining the influence of teacher- and school management-related factors on the utilization of emerging educational technologies in public secondary schools within Education District VI, Lagos State.

STATEMENT OF THE PROBLEM

Notwithstanding substantial government investments in ICT infrastructure and teacher training programmes, the utilization of emerging educational technologies in Lagos State public secondary schools remains persistently low. The Lagos State Ministry of Education's 2022 ICT Integration Report indicated that although over ₦800 million had been committed to digital classroom infrastructure between 2018 and 2022, fewer than 40% of equipped schools reported active teacher use of the provided technologies (Lagos State Ministry of Education, 2022). At the district level, anecdotal evidence and preliminary observations within Education District VI suggest a particularly pronounced gap: many teachers remain unable to competently operate LMS platforms, AI-assisted tools, gamification resources, or adaptive learning systems that have been procured for school use.

Several measurable dimensions of this problem are evident. First, the majority of teachers in the district have not received structured, practice-based training in the use of specific digital tools aligned with the secondary school curriculum. Second, a significant proportion of ICT equipment in schools within the district remains non-functional or inaccessible due to poor maintenance, inadequate power supply, and storage in locked facilities. Third, existing school management policies in some institutions do not formally accommodate or incentivise teacher-initiated technology adoption, creating a policy vacuum that leaves teachers without clear guidance or motivation. These conditions collectively produce a situation in which technology investment does not translate into instructional change.

Without a clear empirical understanding of how specific teacher-related and school management-related factors interact to constrain or facilitate technology use in Education District VI, it becomes impossible to design targeted and effective interventions. This study therefore aims to provide that empirical basis by identifying and measuring the precise teacher and institutional factors that shape technology utilization in the district, and by documenting the strategies that teachers themselves propose for improving adoption.

RESEARCH QUESTIONS

The study was guided by the following research questions:

1. What are the teacher-related factors affecting the utilization of emerging educational technologies in public secondary schools in Education District VI, Lagos State?
2. What are the school management-related factors affecting the utilization of emerging educational technologies in public secondary schools in Education District VI, Lagos State?

3. What strategies can improve the utilization of emerging educational technologies in public secondary schools in Education District VI, Lagos State?

LITERATURE REVIEW

Teacher-Related Factors and Technology Utilization

The integration of emerging educational technologies largely depends on teachers' competence, perception, and attitude toward technology. Teachers serve as the critical bridge between digital innovation and the classroom; their preparedness and willingness fundamentally determine whether any education technology initiative will succeed or fail (Ojedokun & Ige, 2021). Adebowale and Aremu (2018) and Yakubu and Dasuki (2018) established that teachers' willingness to embrace technology is anchored on their level of digital literacy, perceived ease of use, and belief in the pedagogical value of the technology. Teachers who hold positive perceptions of ICT tend to experiment more with digital tools, which in turn leads to increased student engagement and learning outcomes (Teo, 2020). Conversely, limited confidence or training leads to underutilization of technological resources, even where infrastructure has been provided.

Training and professional development are among the most influential factors shaping teachers' capacity to use educational technologies. Etesike, Ogundele, and Olatunji (2024) affirmed that regular ICT training helps practising teachers develop strong confidence and skill for integrating technology into classroom instruction. Okeke and Nwachukwu (2023) similarly found that secondary school teachers who received structured digital skills workshops were significantly more likely to integrate LMS and AI tools into their weekly instructional plans. Adebayo and Olayinka (2019) documented that most teachers in Lagos public schools have limited exposure to digital pedagogy, making it difficult for them to apply technology in actual teaching practice.

Afolabi et al. (2022) further noted that the absence of mentoring structures within schools compounds this challenge, leaving teachers without peer support for technology integration.

School Management-Related Factors and Technology Utilization

School physical infrastructure, administrative support, and availability of ICT facilities greatly affect technology adoption. Access to functional computer laboratories, stable internet connectivity, and reliable power supply are prerequisites for sustained technology integration (Durojaiye & Adeyanju, 2020). Unfortunately, infrastructural deficiencies remain widespread across Nigerian public schools, discouraging consistent use of digital tools. Obaseki and Eze (2024) observed that in many public secondary schools in Lagos, ICT equipment procured by the government is often stored unused due to lack of maintenance protocols, electricity instability, and absence of trained technicians.

Beyond infrastructure, the organisational climate of a school matters considerably. Schools with supportive administrators, flexible and clearly articulated ICT policies, and collaborative professional cultures are more likely to exhibit higher levels of technology adoption (Babajide & Adebayo, 2020). Where school management discourages experimentation or fails to maintain ICT equipment, teachers tend to revert to traditional lecture-based methods. Ikwuka (2022) found that administrative leadership style was a statistically significant predictor of technology use frequency among secondary school teachers in Nigeria, reinforcing the critical role of school management in shaping institutional technology culture.

Strategies for Improving Technology Utilization

Several strategies have been proposed in the literature to address these challenges. These include sustained government investment in ICT facilities, partnerships with private technology firms, and regular teacher retraining (Adewunmi & Ogunlade, 2023). Curriculum reform that explicitly incorporates digital pedagogy competencies and structured mentoring programmes have also been recommended as mechanisms for helping teachers adapt to digital innovation. Babajide and Adebayo (2020) emphasised that multi-sectoral collaboration among government bodies, schools, and private organisations is essential for achieving sustainable digital transformation. The literature thus points to a dual imperative: empowering teachers through capacity building and developing enabling institutional environments for the effective use of emerging educational technologies.

METHODOLOGY

A descriptive survey research design was adopted for this study. The target population consisted of teachers in Senior Secondary Schools within Education District VI of Lagos State. Education District VI comprises schools in Mushin, Ikeja, and Oshodi-Isolo Local Government Areas (LGAs). These three LGAs fall within the administrative boundary of Education District VI as designated by the Lagos State Ministry of Education, and were selected because they collectively represent the socioeconomic and infrastructural diversity characteristic of the district, ranging from relatively resource-endowed schools in Ikeja to more constrained schools in parts of Mushin and Oshodi-Isolo.

Using a random sampling technique, 174 teachers were selected from six senior secondary schools, two from each of the three LGAs, to ensure equitable district representation. The instrument for

data collection was a structured questionnaire divided into three sections: Section A covered demographic information; Section B comprised 10 items on teacher-related factors (5 items) and school management-related factors (5 items); and Section C contained 5 items on improvement strategies. Responses were measured on a four-point Likert-type scale: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). A decision rule of mean ≥ 2.50 = Accepted and mean < 2.50 = Rejected was applied in interpreting results. The instrument's internal consistency reliability was established through a pilot test with 20 teachers outside the study sample, yielding a Cronbach's Alpha coefficient of 0.85, indicating high reliability. Data were analysed using mean scores and standard deviations to address each research question.

RESULTS

The decision rule adopted for interpreting all descriptive results in this study is: mean score ≥ 2.50 = Accepted (indicating agreement that the item constitutes a factor or viable strategy) and mean score < 2.50 = Rejected (indicating insufficient agreement). This benchmark is consistent with the four-point Likert scale used, where the midpoint is 2.50.

Research Question 1: Teacher-Related Factors Affecting Utilization of Emerging Educational Technologies

Table 1

Descriptive Statistics of Teacher-Related Factors Influencing Technology Utilization (N = 174)

Factor	Mean	SD	Decision
I have no training on using the technology	3.05	0.60	Accepted
I don't know how to use educational technologies	2.97	0.65	Accepted

Factor	Mean	SD	Decision
I find it difficult to use the technology	2.81	0.71	Accepted
I am not allowed to use the technology	2.66	0.85	Accepted
I don't want to use them	2.45	0.92	Rejected
Average Mean	2.79	0.75	Accepted

Note. Decision rule: mean ≥ 2.50 = Accepted; mean < 2.50 = Rejected.

Table 1 presents the teacher-related factors that influence the utilization of emerging educational technologies. The highest-rated factor was “I have no training on using the technology” (M = 3.05, SD = 0.60), indicating strong agreement that lack of training is the most significant teacher-level barrier. This was followed by “I don't know how to use educational technologies” (M = 2.97, SD = 0.65) and “I find it difficult to use the technology” (M = 2.81, SD = 0.71), confirming that insufficient knowledge and skill are central constraints. The item “I am not allowed to use the technology” (M = 2.66, SD = 0.85) suggests moderate institutional restriction, while “I don't want to use them” (M = 2.45, SD = 0.92) fell below the decision threshold and was rejected, indicating that negative attitude or unwillingness is not the primary barrier. The average mean of 2.79 confirms that teacher-related barriers are predominantly rooted in capacity and training deficits rather than resistance.

Research Question 2: School Management-Related Factors Affecting Utilization of Emerging Educational Technologies

Table 2

Descriptive Statistics of School Management-Related Factors Influencing Technology Utilization (N = 174)

Factor	Mean	SD	Decision
The school doesn't have the technology	3.12	0.67	Accepted

Factor	Mean	SD	Decision
The school does not allow teachers to use them	2.89	0.70	Accepted
The school does not provide power to use them	2.65	0.83	Accepted
No dedicated space/workshop for ICT facilities	2.50	0.85	Accepted
Most of the facilities are not working	2.42	0.78	Rejected
The school kept them in storage	2.31	0.76	Rejected
Average Mean	2.65	0.77	Accepted

Note. Decision rule: mean ≥ 2.50 = Accepted; mean < 2.50 = Rejected. Items with mean < 2.50 are marked Rejected, indicating respondents did not reach sufficient agreement on those items as primary barriers.

Table 2 outlines the school management-related factors that hinder the integration of emerging educational technologies. The most prominent barrier was “The school doesn’t have the technology” (M = 3.12, SD = 0.67), indicating that non-availability of digital tools is the foremost institutional constraint. This was followed by “The school does not allow teachers to use them” (M = 2.89, SD = 0.70), reflecting policy-level restrictions, and inadequate power supply (M = 2.65, SD = 0.83) and lack of dedicated ICT workspace (M = 2.50, SD = 0.85), both of which met the acceptance threshold. The items relating to non-functional facilities (M = 2.42) and equipment kept in storage (M = 2.31) fell below the decision threshold and were accordingly rejected. The overall average mean of 2.65 confirms that school management-related factors constitute a significant constraint on technology utilization.

Research Question 3: Strategies for Improving Utilization of Emerging Educational Technologies

Table 3**Teachers' Perceptions of Strategies for Improving Technology Utilization (N = 174)**

Strategy	Mean	SD	Decision
Teachers should be given professional training	3.45	0.55	Accepted
Govt should subsidise purchase of ICT facilities for teachers	3.32	0.63	Accepted
Schools partnering with private sector	3.21	0.61	Accepted
Teachers should be loaned ICT facilities	3.17	0.60	Accepted
Govt should provide dedicated workshop/display space	3.01	0.69	Accepted
Average Mean	3.23	0.62	Accepted

Note. Decision rule: mean ≥ 2.50 = Accepted; mean < 2.50 = Rejected.

Table 3 presents teachers' perspectives on strategies that could enhance technology utilization. The most strongly endorsed strategy was "Teachers should be given professional training" (M = 3.45, SD = 0.55), reflecting near-unanimous agreement that capacity building is the most critical lever for change. This was followed by government subsidies on ICT purchases (M = 3.32), public-private sector partnerships (M = 3.21), ICT facility loans to teachers (M = 3.17), and provision of dedicated workshop space (M = 3.01). All five strategies exceeded the acceptance threshold, with an overall average mean of 3.23, indicating broad teacher consensus in favour of a multi-pronged, collaborative approach to technology adoption.

DISCUSSION OF FINDINGS

The findings of this study reveal that the utilization of emerging educational technologies in Education District VI, Lagos State, is substantially constrained by both teacher- and school management-related factors, operating simultaneously across individual and institutional levels.

The predominance of training deficits as the leading teacher-related barrier ($M = 3.05$) is consistent with the observations of Ojedokun and Ige (2021), who identified continuous professional development as the cornerstone of technology proficiency among Nigerian teachers. The finding that attitude and unwillingness fell below the acceptance threshold is particularly noteworthy: it contradicts the common assumption that teacher resistance is the primary obstacle, instead directing attention toward structural deficiencies in pre-service and in-service training. This aligns with Okeke and Nwachukwu (2023), who documented that teachers in South-Western Nigeria are broadly willing to use technology but lack the practical skills required to do so effectively. The implication for school administrators and district education officers is clear: interventions targeting attitude change alone are insufficient; structured, practice-based training programmes that build specific competencies in LMS, AI tools, and gamification platforms are necessary. For Lagos State education policy, this finding supports the case for mandatory ICT proficiency benchmarks within the Teachers' Professional Development Scheme, particularly for teachers in districts with documented low technology use.

Regarding school management-related factors, the finding that non-availability of technology ($M = 3.12$) and restrictive school policies ($M = 2.89$) are the dominant institutional barriers

corroborates the work of Durojaiye and Adeyanju (2020), who identified resource scarcity and administrative inertia as defining characteristics of technology-poor schools in Lagos. Obaseki and Eze (2024) similarly documented that ICT equipment in many Lagos public schools is procured but stored unused, a finding that corresponds to the item on storage ($M = 2.31$) in this study. That inadequate power supply ($M = 2.65$) also met the acceptance threshold reflects the systemic challenge of electricity instability in Nigerian schools, which renders even functional devices unusable for extended instructional periods. District education officers should therefore prioritise not only procurement but also maintenance frameworks, access policies, and energy solutions such as solar installations, as complementary investments. Ikwuka (2022) specifically identified leadership style as a predictor of technology use frequency, reinforcing the need for school administrators to actively model and incentivise technology adoption within their institutions.

The strong consensus among teachers in favour of professional training ($M = 3.45$) and government subsidies ($M = 3.32$) as improvement strategies supports the multi-stakeholder framework advocated by Babajide and Adebayo (2020), who argued that sustainable digital transformation in Nigerian education requires coordinated action across government, school management, and private sector actors. The endorsement of public-private partnerships ($M = 3.21$) reflects teachers' awareness that government funding alone is insufficient and that private technology firms can serve as supplementary resource providers. Adewunmi and Ogunlade (2023) similarly proposed private-sector mentoring as a mechanism for bridging the pedagogical technology gap. These findings collectively point to the necessity of developing a structured, district-level digital education action plan for Education District VI, one that integrates training, infrastructure, policy reform, and partnership mechanisms into a coherent implementation framework.

CONCLUSION

This study provides empirical evidence that the utilization of emerging educational technologies—including LMS, AI tools, gamification platforms, and adaptive systems—in public secondary schools in Education District VI, Lagos State, is significantly constrained by identifiable and addressable teacher- and school management-related factors. The central evidence-based takeaway is that inadequate training, not negative attitude, is the primary teacher-level barrier, while the non-availability of technology and restrictive institutional policies constitute the dominant school management-level constraints. Teachers themselves are not resistant to technology adoption; rather, they are under-supported in developing the competencies and accessing the resources required for effective integration. This distinction has critical implications for both teacher professional development policy and school management practice: investment must be directed toward structured capacity building and enabling institutional conditions, not merely toward hardware procurement. Lagos State education authorities, particularly at the district level, are urged to adopt targeted, evidence-driven strategies that address training deficits and infrastructure gaps simultaneously, ensuring that technology investments translate into measurable improvements in instructional practice. Additionally, the findings underscore the need for revising teacher professional development frameworks to embed sustained digital competency training as a core, non-negotiable component of career progression for secondary school teachers across the state.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are offered:

1. The Lagos State Ministry of Education should institutionalise mandatory, practice-based digital skills training for all public secondary school teachers in Education District VI, with specific modules on LMS platforms, AI-assisted instructional tools, and gamification software, delivered at least twice per academic year and evaluated through observable classroom integration outcomes.
2. School administrators and the Education District VI management office should develop and enforce clear, enabling ICT access policies that formally permit and encourage teachers to use available digital tools, removing administrative bottlenecks and providing guidelines for responsible technology integration in classroom settings.
3. The Lagos State Government should prioritise an ICT infrastructure audit across all schools in Education District VI, with a view to restoring non-functional equipment to use, providing stable alternative power sources (such as solar energy systems) to address electricity instability, and establishing school-based ICT maintenance protocols staffed by trained technicians.
4. School managements should actively pursue structured partnerships with private technology companies and non-governmental organisations to supplement government-funded ICT resources, facilitate teacher mentoring programmes, and provide access to updated educational technology platforms, in line with the strong endorsement of public-private collaboration expressed by teachers in this study.
5. Teacher training institutions preparing candidates for secondary school service should integrate emerging educational technology competencies into pre-service curricula, ensuring that newly qualified teachers enter the profession equipped with practical skills in digital pedagogy, thereby reducing the professional development burden on in-service programmes.

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