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PERCEPTION OF SECONDARY SCHOOL TEACHERS ON DIGITAL TECHNOLOGY TOOLS FOR TEACHING IN ILORIN WEST LOCAL GOVERNMENT AREA: AVAILABILITY AND CHALLENGES

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Perception of Secondary School Teachers on Digital Technology Tools for Teaching in Ilorin West Local Government Area: Availability and Challenges

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Abstract

Digital technology has transformed educational practice by enhancing teaching, learning, collaboration, and student engagement. However, these benefits depend on resource availability, teachers' perceptions, and working conditions. Despite increasing investment in digital education in Nigeria, effective classroom use remains inconsistent, particularly in public secondary schools. This study assessed teachers' perceptions of digital technology tools for teaching, technology availability, and perceived implementation challenges in public secondary schools in Ilorin West Local Government Area, Kwara State, Nigeria. A descriptive cross-sectional survey was conducted using a self-administered questionnaire distributed through a teachers' WhatsApp platform and completed via Google Forms. Data from 350 respondents were analyzed using descriptive statistics. The largest age group was 41–50 years (30.7%), and females constituted 70.4%. Most respondents held a bachelor's degree (58.0%), while 30.3% had 16–20 years of teaching experience. Arts teachers were the most represented subject-specialization group (38.4%), followed by vocational studies teachers (24.2%). Most respondents were classroom teachers (76.3%), while others occupied administrative positions as heads of department or principals/vice-principals. Mean perceived resource availability was 3.14 on a five-point Likert scale, indicating moderate availability. Computer laboratories (M = 3.29, SD = 1.12) and computers/laptops (M = 3.25, SD = 1.11) received the highest ratings, while tablets (M = 2.93, SD = 1.05) and interactive whiteboards (M = 2.97, SD = 1.06) received the lowest. Perceptions of digital technology were favourable (overall M = 3.89), particularly regarding its importance for modern teaching (M = 3.97, SD = 1.12). Key barriers included unstable electricity (M = 4.01, SD = 1.08), equipment costs (M = 4.00, SD = 1.07), and limited internet access (M = 3.97, SD = 1.07). Strengthening ICT infrastructure, electricity supply, internet connectivity, and continuous teacher professional development is essential for sustainable digital technology integration in secondary schools.

Keywords: Teachers' perceptions, digital technology, resource availability, implementation challenges, secondary education.

Introduction

Digital technology has become an essential component of educational innovation and pedagogical transformation worldwide. Digital technology generally refers to electronic tools, systems, devices, and resources capable of generating, processing, storing, and transmitting data. These technologies facilitate the access, management, and exchange of information through digital platforms such as computers, mobile devices, the internet, and specialized software (Parveen & Ramzan, 2024). Within the educational context, digital technology also encompasses learning management systems (LMS), e-books, virtual classrooms, interactive whiteboards, digital

assessment platforms, and online collaboration tools designed to enhance teaching and learning processes (Ngongpah & Oni, 2025). The adoption of digital technologies in education has generated expectations that these technologies can enhance students' problem-solving abilities, strengthen real-world connections, and promote collaboration and engagement through innovative tools and approaches (Zou et al., 2025).

The rise of digital technologies has facilitated unprecedented access to information and learning resources. Students can now engage with a wealth of content beyond the confines of conventional textbooks, enabling them to explore topics of interest at their own pace. Whether through interactive multimedia, virtual simulations, or access to global online communities, these technologies foster an environment that supports self-directed learning and personal discovery (Mondano, 2024). Consequently, learners are empowered to take ownership of their educational journeys by adapting their learning experiences to suit their individual needs and preferences. Teachers generally play an essential role in selecting and using digital resources for lesson preparation, instruction, assessment, and communication with learners. Positive perceptions of technology may support willingness to adopt it, but favourable attitudes alone do not demonstrate that technology is available, used regularly, or integrated effectively into classroom practice. Teachers may recognize the value of digital tools while facing practical barriers such as unreliable electricity, limited connectivity, equipment costs, inadequate technical support, and insufficient opportunities for training. These conditions need to be considered alongside perceptions of usefulness and confidence.

Digital technology has become an important component of contemporary education, supporting instructional delivery, assessment, communication, and collaborative learning. Nwogbo et al. (2026) noted that learning management systems (LMS), including Google Classroom and Moodle, facilitate the distribution of assignments, management of learning resources, assessment, and communication between teachers and students. Other tools include digital assessment applications such as Kahoot, Quizizz, and Google Forms; multimedia resources such as educational videos and interactive whiteboards; mobile learning applications such as Quizlet; and communication platforms such as Microsoft Teams, Zoom, and WhatsApp educational groups. These technologies can enhance student engagement, facilitate differentiated instruction, and support formative assessment (Chaiyo & Nokham, 2017).

Effective integration, however, requires more than the availability of technological tools. Schools need appropriate infrastructure, supportive policies, an enabling organizational culture, and adequate digital competencies among teachers and students (Msambwa et al., 2024). Kerimbayev et al. (2023) highlighted the contribution of digital technologies to interactivity, student engagement, and student-centered learning. Access to current, diverse, and relevant educational resources is another benefit, as digital platforms enable teachers and learners to obtain instructional materials beyond conventional textbooks (Parveen & Ramzan, 2024).

Government and international initiatives have also promoted digital literacy and technology integration. In Nigeria, the National Information Technology Development Agency (NITDA) has developed the National Digital Literacy Framework and the Digital Literacy for All (DL4All) initiative. UNESCO provides policy guidance on information and communication technology (ICT) in education in support of Sustainable Development Goal 4, while the World Bank supports digital literacy and infrastructure development in developing countries. The Accelerated Rural Education and Development Initiative (AREDI) also promotes digital skills through programmes targeting women and girls in marginalized communities (Lohr, 2025). Nevertheless, the

effectiveness of such initiatives depends on implementation, equitable access, and sustained institutional support.

Teacher professional development is equally important. Training that strengthens digital competence can improve teachers' confidence and attitudes toward technology integration (Amemasor et al., 2025). The COVID-19 pandemic accelerated the adoption of online and blended learning, as schools worldwide relied on digital platforms to maintain educational continuity (Rof et al., 2022). Platforms such as Zoom, Google Classroom, and Microsoft Teams became particularly prominent during school closures, with some continuing to support teaching after the pandemic (Bozkurt et al., 2020).

In Nigeria, the pandemic exposed existing digital inequalities while encouraging investment and reforms in ICT-supported education (Aboderin, 2025). Private secondary schools, particularly in urban areas, were among the early adopters of LMS and virtual learning platforms (Friday et al., 2025). However, adoption in public schools has remained uneven because of inadequate infrastructure, unreliable electricity, poor internet connectivity, limited access to devices, and insufficient teacher competence (Oshowole, 2024). In Kwara State, initiatives such as KwaraLEARN, introduced in 2022 to support digitized and standardized curriculum delivery through teacher tablets, and the establishment of a digital Smart School in 2023 demonstrate efforts to expand technology-supported education ((Yahya et al., 2026). Despite these investments, consistent classroom integration remains a challenge (Ahmed & Shittu, 2024).

Teachers are central to translating technological resources into meaningful learning experiences. They select digital materials, design technology-supported lessons aligned with curriculum objectives, facilitate interactive learning, and use digital platforms to assess students and provide timely feedback (Redecker, 2017). They also guide learners in responsible digital behaviour and help develop the digital literacy required for participation in contemporary society. These responsibilities require teachers to possess appropriate ICT competencies and to understand how digital tools can support particular teaching objectives. Professional development can strengthen confidence, encourage innovation, facilitate curriculum integration, and help teachers adapt to emerging technologies (Peng et al., 2024).

Teachers also act as mentors and facilitators by using collaborative and gamified applications to stimulate learners' interest and promote ethical technology use. Digital assessment platforms can support formative and summative evaluation, improve feedback, and facilitate monitoring of learning outcomes (Okafor, 2025). Since digital technologies continue to evolve, teachers need opportunities for continuous learning, peer collaboration, and skills development. Sustained professional development can strengthen digital competence and support effective, long-term technology integration (Amemasor et al., 2025).

Despite growing recognition of these benefits, teachers' acceptance of digital technology remains uneven. Educators with adequate access and digital literacy may perceive tools such as Google Docs and Microsoft PowerPoint as useful for improving instructional delivery and collaboration. Conversely, teachers with limited ICT exposure or heavy workloads may view technology as difficult to use, distracting, or an additional responsibility requiring considerable preparation time (Wakil et al., 2024). Other barriers include inadequate devices, unreliable electricity, poor connectivity, limited technical support, and insufficient training. Okonkwo et al. (2026) observed that inadequate professional development can restrict teachers' confidence and competence. Teachers accustomed to conventional methods may also resist adoption because of perceived complexity or concerns about increased workload (Mlambo et al., 2023).

Although positive perceptions are increasingly reported, disparities persist between public and private schools, rural and urban settings, and teachers with different levels of digital competence (Alabi et al., 2025). Timotheou et al. (2023) similarly observed that substantial investment in educational technologies does not necessarily translate into effective classroom integration. Understanding teachers' perceptions, perceived benefits, readiness, and challenges is therefore essential for developing appropriate policies and targeted professional development.

The theoretical framework of this study is based on the Technology Acceptance Model (TAM), which proposes that perceived usefulness and perceived ease of use are important determinants of users' attitudes and acceptance of technology (Davis, 1989). In an educational setting, perceived usefulness concerns teachers' beliefs that digital tools can improve teaching or learning. Perceived ease of use concerns the extent to which teachers believe that using the tools is straightforward. Access to infrastructure, training, and technical support may also affect whether favourable perceptions can be translated into practice.

Additionally, barriers to technology integration can be classified as external and internal. Ertmer (1999) distinguished first-order barriers, such as inadequate resources, time, and training, from second-order barriers involving beliefs and confidence. Ertmer and Ottenbreit-Leftwich (2010) emphasized the combined influence of knowledge, confidence, beliefs, and school culture, while Tondeur et al. (2017) demonstrated the close relationship between teachers' pedagogical beliefs and their technology practices.

Despite these contributions, further context-specific evidence is needed on teachers' perceptions of digital technology tools in Ilorin West Local Government Area, Kwara State. Examining perceived usefulness, confidence, resource availability, and implementation challenges can help clarify the factors influencing teachers' views. Such evidence can inform targeted training, infrastructure planning, and institutional support, while providing a basis for future research into actual classroom utilization. This study therefore focuses on secondary school teachers' perceptions of digital technology tools for teaching in Ilorin West LGA, Kwara State.

Purpose of the study

This study aimed to assess secondary school teachers' perceptions of digital technology tools for teaching, perceived availability of relevant resources, and perceived challenges in Ilorin West Local Government Area, Kwara State.

The specific objectives were to:

1. Describe teachers' ratings of the availability of digital technology resources and related infrastructure in their schools.
2. Assess teachers' perceptions of the usefulness of digital technology for teaching and learning, alongside related confidence and curriculum-alignment judgements.
3. Identify challenges teachers report in relation to digital technology in classroom instruction.

Research Questions

To achieve these objectives, the study was guided by the following research questions:

1. How do teachers rate the availability of digital technology resources and related infrastructure in their schools?
2. What perceptions do teachers report regarding the usefulness of digital technology for teaching and learning?
3. What challenges do teachers report in relation to digital technology in classroom instruction?

METHODOLOGY

Study design and setting

A descriptive cross-sectional survey design was used. The study focused on teachers in public secondary schools in Ilorin West Local Government Area, Kwara State, Nigeria.

Population, sampling, and recruitment

The target population comprised all teachers employed in public secondary schools in Ilorin West Local Government Area. The sampling frame covered the 45 public secondary schools in the area, with a total of 2,372 teachers. The minimum sample size was estimated using the Taro Yamane formula at a 5% margin of error: $n = N/ [1 + N(e)^2]$, where $N = 2372$ and $e = 0.05$. Thus, $n = 2372/[1 + 2372(0.05)^2] = 2372/6.93 \approx 342$. The calculated minimum sample size was therefore 342 respondents. Participants were recruited online through a voluntary-response method. The questionnaire was distributed through the Ilorin West teachers' WhatsApp platform and completed using Google Forms. Data collection stopped after 350 responses had been received. Because this exceeded the calculated minimum sample size, all 350 responses were retained for analysis.

Instrument

Data were collected using a self-administered questionnaire created in Google Forms. The questionnaire comprised four sections. Section A collected respondents' sociodemographic information, including age, gender, teaching experience, area of specialization, and highest academic qualification. Section B assessed teachers' perceptions of digital technology use and contained seven items rated on a five-point scale: strongly agree, agree, neutral, disagree, and strongly disagree. Section C assessed the availability of digital technology in the selected schools using ten items rated as very available, available, fairly available, inadequately available, or not available. Section D contained ten items on challenges affecting the implementation of digital technology in secondary schools in Kwara State, rated on the same five-point agreement scale used in Section B. The instrument was validated by three lecturers in the Educational Technology Department of Al-Hikmah University, Ilorin.

Data analysis

The data were summarized using frequencies, percentages, means, and standard deviations calculated from the reported response frequencies. For the five-point items, response categories were coded from 5 to 1. The standard deviation for each item was recalculated from the frequency distribution using the sample standard deviation.

Ethical Consideration

Permission to conduct the survey was obtained from Kwara State Ministry of education. Electronic informed consent was secured from all participants before data collection as part of the introductory section to the study on the Google Form, and participation was entirely voluntary, with no form of coercion. Anonymity and confidentiality were maintained by excluding all personally identifiable information from the collected data.

Results

This section presents the results of the study on secondary school teachers' perceptions of digital technology tools for teaching in Ilorin West Local Government Area, Kwara State. A total of 350 respondents participated in the study. The largest age group was 41–50 years (30.7%), and females constituted the majority (70.4%). Most respondents held a bachelor's degree (58.0%), while the largest proportion had 16–20 years of teaching experience (30.3%). Regarding subject specialization, arts teachers were the most represented group (38.4%), followed by those in vocational studies (24.2%). Most respondents were classroom teachers (76.3%), while the remainder occupied administrative positions as Heads of Department or principals/vice-principals.
Table 1: Sociodemographic profile of the respondents.

Sociodemographic Variable	Frequency (%)
Age	
21-30	74 (21.3%)
31-40	85 (24.1%)
41-50	107 (30.7%)
51-60	84 (23.9%)
Gender	
Female	246 (70.4%)
Male	104 (29.6%)
Educational Qualification	
NCE	52 (14.8%)
PGDE	38 (10.8%)
Bachelor	203 (58.0%)
Masters	53 (15.1%)
PhD	4 (1.1%)
Teaching Experience in years	
<1	4 (1.1%)
1-5	54 (15.4%)
6-10	79 (22.5%)
11-15	84 (24.0%)
16-20	106 (30.3%)
>20	23 (6.5%)
Subject specialization	
Science	65 (18.5%)
Arts	134 (38.4%)
Social sciences	66 (18.9%)

Vocational studies	85 (24.2%)
Position	
Teacher	267 (76.3%)
HODs	66 (18.8%)
Principal/Vice principal	17 (4.9%)

Research question 1: How do teachers rate the availability of digital technology resources and related infrastructure in their schools?

Table 2. Respondents' ratings of digital technology resources and enabling conditions

No.	Resource or condition	Very available n (%)	Available n (%)	Fairly available n (%)	Inadequately available n (%)	Not available n (%)	Mean	SD
1	Computers/laptops	55 (15.7)	78 (22.3)	140 (40.0)	52 (14.9)	25 (7.1)	3.25	1.11
2	Projectors	48 (13.7)	82 (23.4)	145 (41.4)	50 (14.3)	25 (7.1)	3.22	1.08
3	Interactive whiteboards	30 (8.6)	65 (18.6)	155 (44.3)	65 (18.6)	35 (10.0)	2.97	1.06
4	Reliable internet connection	42 (12.0)	75 (21.4)	148 (42.3)	55 (15.7)	30 (8.6)	3.13	1.09
5	Computer laboratories	60 (17.1)	80 (22.9)	135 (38.6)	50 (14.3)	25 (7.1)	3.29	1.12
6	Digital learning platforms	45 (12.9)	78 (22.3)	150 (42.9)	52 (14.9)	25 (7.1)	3.19	1.07
7	ICT technical support	38 (10.9)	72 (20.6)	152 (43.4)	58 (16.6)	30 (8.6)	3.09	1.07
8	Electricity supply for ICT use	50 (14.3)	76 (21.7)	145 (41.4)	52 (14.9)	27 (7.7)	3.20	1.10
9	Tablets or student devices	28 (8.0)	60 (17.1)	158 (45.1)	67 (19.1)	37 (10.6)	2.93	1.05
10	Educational software	40 (11.4)	74 (21.1)	150 (42.9)	56 (16.0)	30 (8.6)	3.11	1.08
	Overall mean					**3.14**		

The overall mean for perceived availability was 3.14, within the moderate range. Computer laboratories (M = 3.29, SD = 1.12) and computers/laptops (M = 3.25, SD = 1.11) received the highest mean ratings. Tablets or student devices (M = 2.93, SD = 1.05) and interactive whiteboards

(M = 2.97, SD = 1.06) received the lowest. The findings suggest that respondents perceived access to digital resources and enabling conditions as moderate rather than uniformly adequate.

Research question 2: What perceptions do teachers report regarding the usefulness of digital technology for teaching and learning?

Table 3. Teachers' perceptions of digital technology, confidence, and curriculum alignment

No.	Statement	Strongly agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)	Mean	SD
1	Digital technology enhances teaching and learning	130 (37.1)	125 (35.7)	50 (14.3)	30 (8.6)	15 (4.3)	3.93	1.11
2	I feel confident using digital tools in my classroom	115 (32.9)	130 (37.1)	55 (15.7)	35 (10.0)	15 (4.3)	3.84	1.12
3	Digital technology makes teaching more efficient and engaging	128 (36.6)	127 (36.3)	45 (12.9)	35 (10.0)	15 (4.3)	3.91	1.13
4	Students learn better when digital resources are integrated into lessons	122 (34.9)	130 (37.1)	50 (14.3)	33 (9.4)	15 (4.3)	3.89	1.12

5	Digital technology is essential for modern-day teaching	140 (40.0)	120 (34.3)	45 (12.9)	30 (8.6)	15 (4.3)	3.97	1.12
6	Digital technology improves assessment and feedback	118 (33.7)	128 (36.6)	55 (15.7)	34 (9.7)	15 (4.3)	3.86	1.12
7	The use of digital tools aligns with curriculum requirements	120 (34.3)	126 (36.0)	54 (15.4)	35 (10.0)	15 (4.3)	3.86	1.13
	Overall mean					**3.89**		

Teachers reported generally favourable perceptions of digital technology, with an overall item-mean average of 3.89. The highest-rated statement was that digital technology is essential for modern teaching (M = 3.97, SD = 1.12), followed by the view that it enhances teaching and learning (M = 3.93, SD = 1.11). Confidence in using digital tools had a mean of 3.84 (SD = 1.12). Research question 3: What challenges do teachers report in relation to digital technology in classroom instruction?

Table 4. Teachers' reported challenges associated with digital technology in classroom instruction

No.	Challenge	Strongly agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)	Mean	SD
1	Insufficient ICT facilities	120 (34.3)	145 (41.4)	45 (12.9)	25 (7.1)	15 (4.3)	3.94	1.07
2	Poor or unstable electricity supply	135 (38.6)	140 (40.0)	35 (10.0)	25 (7.1)	15 (4.3)	4.01	1.08
3	Lack of technical support from the school	110 (31.4)	150 (42.9)	45 (12.9)	30 (8.6)	15 (4.3)	3.89	1.08
4	Limited internet access	125 (35.7)	145 (41.4)	40 (11.4)	25 (7.1)	15 (4.3)	3.97	1.07
5	Inadequate ICT training for teachers	118 (33.7)	148 (42.3)	42 (12.0)	27 (7.7)	15 (4.3)	3.93	1.07
6	Heavy workload limiting time for digital lesson preparation	115 (32.9)	150 (42.9)	40 (11.4)	30 (8.6)	15 (4.3)	3.91	1.08
7	Negative attitudes	95 (27.1)	145	55 (15.7)	35 (10.0)	20 (5.7)	3.74	1.13

	toward technology		(41.4)					
8	High cost of digital equipment	130 (37.1)	145 (41.4)	35 (10.0)	25 (7.1)	15 (4.3)	4.00	1.07
9	Frequent breakdown of ICT devices	110 (31.4)	150 (42.9)	45 (12.9)	30 (8.6)	15 (4.3)	3.89	1.08
10	Poor maintenance culture in schools	120 (34.3)	145 (41.4)	40 (11.4)	30 (8.6)	15 (4.3)	3.93	1.09
	Overall mean					**3.92**		

Respondents generally agreed that the listed conditions were challenges, with an overall mean of 3.92. Unstable electricity (M = 4.01, SD = 1.08), high equipment cost (M = 4.00, SD = 1.07), and limited internet access (M = 3.97, SD = 1.07) received high ratings.

Discussion

Digital Technologies for Teaching

The findings from this study indicate that secondary school teachers in Ilorin West Local Government Area generally held favourable perceptions of digital technology for teaching, especially modern teaching. This emphasizes the recognition of the relevance of digital tools to contemporary educational practice. Such recognition is important because teachers are central to decisions concerning the selection of instructional resources, lesson preparation, classroom delivery, assessment, and communication with learners.

This finding is consistent with the Technology Acceptance Model (TAM), which identifies perceived usefulness and perceived ease of use as important determinants of technology acceptance (Davis, 1989). In the present study, teachers' favourable perceptions may reflect an understanding that digital resources can supplement conventional teaching methods, improve access to instructional materials, and support more interactive approaches to learning. It is important to know that teachers may appreciate the educational benefits of digital technologies, however, lack the resources or institutional support required to use them consistently. Ertmer and Ottenbreit-Leftwich (2010) observed that effective technology integration depends not only on access to equipment but also on teachers' knowledge, confidence, beliefs, and the organizational culture within which they work. Similarly, Tondeur et al. (2017) demonstrated that teachers' pedagogical beliefs and technology practices are closely related, with the school context influencing how those beliefs translate into instructional decisions. The present findings therefore suggest that promoting digital education in Ilorin West should not focus exclusively on changing teachers' attitudes. Rather, interventions should enable teachers to translate their favourable perceptions into practical, curriculum-aligned instructional activities.

Secondary school teachers in Ilorin West Local Government Area perceived the availability of digital technology resources and enabling conditions in their schools as moderate. Computer laboratories received the highest mean rating, followed by computers and laptops and

projectors. In contrast, tablets or student devices received a much lower rating. These findings suggest that basic ICT facilities were perceived as relatively more available as some of the more specialized or individually accessible digital resources. The comparatively higher ratings for computer laboratories and computers may indicate that the schools have some foundational infrastructure for technology-supported teaching. Nevertheless, the findings do not establish whether the facilities were functional, adequately equipped, accessible to all teachers, or available in sufficient quantities to support routine classroom instruction. The distinction between the presence of equipment and its effective educational use is important because a computer laboratory may exist without adequate computers, reliable electricity, internet connectivity, or appropriate educational software. The relatively lower rating for tablets and student devices may also have implications for learner-centered and individualized instruction. Where students cannot access suitable devices, opportunities for independent digital learning, interactive exercises, computer-assisted assessment, and collaborative activities may be restricted.

These findings are similar to the reported findings in the UNESCO (2023) Global Education Monitoring Report that investment in educational technology must be accompanied by meaningful access, appropriate teacher preparation, and attention to learning objectives. The report cautions against assuming that the provision of digital equipment automatically improves educational outcomes. This is particularly relevant to public secondary schools, where competing demands on limited resources may affect the acquisition, maintenance, and equitable distribution of ICT facilities.

Challenges affecting digital technology integration

The majority of respondents reported irregular power supply as a major challenge. Unstable electricity supply is particularly consequential because most conventional digital teaching tools depend on a reliable power source for operation, charging, and maintenance. Interruptions may disrupt lesson delivery, prevent the use of multimedia resources, and discourage teachers from planning lessons that depend on digital equipment. The high cost of equipment similarly suggests that affordability may constrain the acquisition and replacement of digital resources. The financial requirements go beyond initial procurement to include software licensing where applicable, internet subscriptions, repairs, replacement of obsolete equipment, and the provision of supporting infrastructure. Hence, schools that rely primarily on individual teachers or families to provide devices may produce unequal opportunities for technology-supported learning. Limited access to reliable internet was another prominent concern. Poor connectivity can deny students access to digital textbooks, online learning platforms, educational videos, virtual classrooms, and online assessment systems.

These challenges are consistent with UNESCO's (2023) emphasis on equitable access, teacher preparation, and sustainability as essential conditions for effective technology integration. In addition to electricity, affordability, and connectivity, respondents reported concerns about insufficient ICT facilities, inadequate teacher training, poor maintenance culture, and heavy workload limiting preparation time. These findings indicate that the barriers extend beyond the provision of physical infrastructure to include institutional capacity and teachers' working conditions.

Another challenge is inadequate training, which may limit teachers' ability to select appropriate digital tools, develop technology-supported lessons, and align digital resources with curriculum objectives. Training that focuses only on basic computer operation may be insufficient if teachers do not also learn how to incorporate technology into subject-specific pedagogy. Ertmer

and Ottenbreit-Leftwich (2010) emphasized the interconnected roles of knowledge, confidence, beliefs, and school culture in shaping technology integration. Similarly, Tondeur et al. (2017) highlighted the importance of professional development that recognizes teachers' pedagogical beliefs and the contexts in which they teach. Also, meaningful technology integration includes identifying suitable digital materials, adapting lesson content, testing equipment, and developing electronic assessment activities. Where teachers have heavy teaching schedules and limited planning time, technology may be used infrequently or restricted to relatively simple instructional functions. School management should therefore consider protected preparation time, collaborative lesson planning, and access to technical support as part of digital education policy.

Implications for educational policy and practice

The findings of this study have many implications for educational administrators and policymakers in Kwara State. Any planned investment in digital education should prioritize reliable electricity, internet connectivity and functional equipment. Also, professional development should be continuous, practical, and aligned with teachers' instructional responsibilities. Training could cover digital lesson preparation, multimedia instruction, online and offline learning platforms, formative assessment, digital classroom management, and responsible use of digital resources. Digital technology program should also be designed around educational needs and local constraints. Where internet connectivity is unreliable, offline learning resources may provide useful alternatives. Procurement decisions should always consider the total cost of ownership, including power requirements, maintenance, replacement, and technical support, rather than the initial purchase price alone. School authority should also provide a supportive environment for technology integration. Administrators can facilitate access to equipment, allocate time for lesson preparation, encourage experimentation, and organize technical support. These measures may help translate teachers' favourable perceptions into sustained pedagogical practice.

Limitations

The descriptive cross-sectional design of the study cannot establish causal relationship among factors. Also recruitment of participants through a teachers’ WhatsApp platform and voluntary completion of Google Forms may have introduced selection bias, where those already inclined to technology will participate. The use of questionnaire also relied on self-reported perceptions, and resource availability was not independently verified through school inspections. Future research should consider direct ICT resource audits, classroom observations, and multivariable analyses. Such approaches would help establish whether perceived availability, teacher competence, and institutional support are associated with actual technology use.

Conclusion

This study found that secondary school teachers in Ilorin West Local Government Area generally perceived digital technology as important for contemporary teaching, while rating the availability of digital resources and enabling infrastructure as moderate. Unstable electricity, high equipment costs, limited internet access, inadequate ICT facilities, insufficient training, and maintenance challenges were commonly reported barriers. Favourable teacher perceptions are an important starting point but are unlikely to be sufficient for effective technology integration in the absence of reliable infrastructure and institutional support. Sustainable digital education in public

secondary schools will require coordinated investment in electricity and connectivity, functional equipment, continuous teacher development, and technical support.

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Conflict of Interest
The author declares no conflicts of interest.

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