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Article

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DIGITAL TRAINING AND TEACHERS' PROFICIENCY IN LESSON DELIVERY IN PRIMARY SCHOOLS IN OSUN STATE, NIGERIA

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Abstract

This study examines the connection between teachers' competency in delivering lessons in elementary schools in Osun State, Nigeria, and their digital knowledge. The study investigates how organised digital training programmes affect teachers' instructional capacities at the fundamental level of education in a time when digital literacy is essential to good instruction. The study adopted a quantitative research design, using structured questionnaires to collect data from 56 randomly selected primary school teachers in Osun State. The availability and frequency of digital training, the degree of instructors' digital competency, and the effect of such training on lesson delivery were the three main variables investigated. Three research questions were raised and answered using descriptive statistics. The results showed that while the Ministry of Education offers and supports digital training programs, there is variation in how they are implemented. Teachers reported moderate to high levels of digital proficiency, particularly in using tools like PowerPoint, Zoom, and Google Classroom, and in basic troubleshooting. It was also found out that digital training greatly improves pedagogical integration, student engagement, and lesson planning. After being exposed to digital training programmes, teachers observed increases in learner participation and material delivery. The study did, however, also identify several significant obstacles, such as rural teachers' restricted access to training, poor infrastructure, and a dearth of opportunities for ongoing professional development. The study recommends policy reforms and targeted investments to bridge the digital divide and promote effective digital integration in primary education. Strengthening these efforts is vital for achieving quality education and preparing young learners for a digitally-driven future.

Keywords: Digital Training, Teachers, Proficiency, Primary Education, Lesson Delivery.

Introduction

The rapid global integration of digital technologies into educational systems has transformed pedagogical practices and reshaped the competencies required of teachers, especially at the foundational level of learning which is the primary education. In the Nigerian context, the imperative of equipping teachers with digital skills has gained heightened relevance due to the demands of 21st-century teaching and the challenges exposed by the COVID-19 pandemic, which disrupted traditional classroom-based instruction and necessitated a shift toward digital learning platforms (Olusola & Ifeanyi, 2021). This shift underscored the critical role of teacher training in the effective use of Information and Communication Technologies (ICTs) herein referred to as digital training for lesson delivery. Digital training refers to structured learning interventions aimed at enhancing teachers' technological skills, including the use of digital tools such as interactive whiteboards, educational software, mobile applications, and online content management systems. For teachers at the primary school level, proficiency in using these tools is essential for creating engaging, interactive, and learner-centered classrooms (Adebayo & Salawu, 2022). However, in many parts of Nigeria, including Osun State, access to such training remains inconsistent, and its impact on lesson delivery is under-researched. Teachers' proficiency, defined as the ability to effectively integrate digital tools into instructional practices, is a key determinant of the quality of education delivered to learners (UNESCO, 2022). Numerous studies have demonstrated that when teachers are adequately trained and digitally proficient, they are better equipped to design dynamic lessons, assess learners' progress digitally, and foster inclusive education (Adeoye & Kolawole, 2023). Nonetheless, in states like Osun, structural inequalities, limited ICT infrastructure, and a lack of sustainable digital training programmes have continued to hinder effective digital integration into primary education.

The Universal Basic Education Commission (UBEC) and the Osun State Universal Basic Education Board (SUBEB) have initiated programmes aimed at enhancing teacher capacity, yet there remains a gap between policy intentions and classroom realities. According to a recent study by Olanrewaju and Ogunleye (2023), a significant percentage of primary school teachers in Osun State either lack basic ICT skills or have limited access to periodic digital training, which adversely affects the quality of lesson planning, instructional delivery, and learning outcomes. Moreover, rural schools are disproportionately affected, as digital training programmes tend to be concentrated in urban centers. Globally, countries that have successfully enhanced the digital competencies of their teaching workforce did so through continuous professional development, policy coherence, and investments in ICT infrastructure (World Bank, 2021). For Nigeria, and Osun State in particular, to achieve Sustainable Development Goal 4 (Quality Education), it is essential to evaluate and strengthen the link between digital training initiatives and teachers' instructional proficiency at the primary level. Furthermore, as digital literacy becomes a prerequisite for future learning and workforce engagement, the foundational skills taught in primary education must be mediated through pedagogies that incorporate technology. The National Policy on ICT in Education (Federal Ministry of Education, 2019) recognizes the role of digital training in improving teaching quality but stops short of detailing implementation strategies at the state and local levels. This disconnect necessitates empirical investigation into how digital training influences teachers' classroom effectiveness in specific contexts like Osun State.

Given these challenges and opportunities, this study seeks to critically assess the extent to which digital training enhances teachers' proficiency in primary school lesson delivery in Osun State. The study will explore not only the availability and frequency of

digital training programmes but also their relevance, content quality, and the enabling environment necessary for teachers to practice what they have learned. It also aims to offer recommendations for policy and practice that can bridge the digital skills gap and improve education delivery at the grassroots level. Digital training in education refers to systematic efforts aimed at enhancing teachers' competencies in utilizing digital tools, resources, and platforms to support and improve the teaching and learning process (UNESCO, 2018). It is a crucial aspect of teachers' Continuous Professional Development (CPD) in the 21st century, where technology is increasingly shaping pedagogical practices and learning environments (European Commission, 2017). The global shift towards digital education has emphasized the need for teachers at all educational levels, particularly in primary schools, to be equipped with adequate digital skills to prepare learners for the demands of the digital age (Redecker, 2017). According to Alshammari et al. (2017), digital training enhances teachers' ability to integrate Information and Communication Technology (ICT) into lesson planning, delivery, assessment, and student engagement strategies.

The importance of digital training cannot be overemphasised in teaching and learning process as it bridges the gap between traditional teaching methods and modern, technology-enhanced approaches (Tella, 2015). It enables teachers to develop competence in using digital platforms, devices, and instructional software for effective content delivery (Yusuf & Balogun, 2019), and also prepares teachers to manage digital classrooms, blended learning models, and virtual student interactions effectively (Okebukola, 2019). Digital training should cover pedagogical strategies that promote student-centered learning through technology, not just the development of fundamental ICT skills. Teachers may choose, modify, and successfully use digital technologies in a variety of learning scenarios thanks to this all-encompassing approach. Several researchers such as (Akinyemi & Fashola, 2019; Oluwaseun & Ayodele, 2020 and Obi & Akinola, 2020) have identified different types of digital training as-Formal Digital Training which is typically delivered through structured workshops, certification programmes, and formal courses often provided by educational ministries, universities, or NGOs; Informal Digital Training which includes self-directed learning, peer collaborations, online tutorials, and hands-on experimentation as well as On-the-Job Training which also involves regular in-school digital coaching, ICT mentorship programs, and peer-assisted learning. The World Bank (2020) stressed the importance of combining formal and informal digital training opportunities to ensure sustainable skill development, especially in under-resourced primary schools.

Globally, countries such as Finland, Singapore, and Estonia have made digital training a core component of teachers' professional development, leading to significant improvements in digital literacy and student outcomes (Redecker, 2017). In contrast, in sub-Saharan Africa, including Nigeria, digital training remains limited in scope and frequency, with many primary school teachers lacking access to adequate resources (Ajayi, 2018; Olorunsola & Adeleke, 2020). A study by Mtebe and Raisamo (2014) in Tanzania revealed that insufficient digital training programmes were a primary reason why teachers failed to integrate ICT effectively in classrooms. Similar findings by Ofoha and Iweka (2016) in Nigeria identified irregular digital training workshops, poor internet connectivity, and lack of technical support as persistent barriers to digital teaching proficiency. In the Nigerian context, the Federal Ministry of Education (2019) acknowledged that digital training for teachers is still at a developmental stage, especially at the basic education level. Efforts such as the Universal Basic Education Commission (UBEC) ICT teacher training initiatives have been rolled out but are often insufficient, irregular, or not uniformly distributed across states.

In Osun State, Olorunsola and Adeleke (2020) reported that although some digital training programmes exist, their frequency is limited, with most teachers attending one-off workshops that do not provide sustained learning. The lack of follow-up and practical applications after training often renders such efforts ineffective. In the context of primary education, digital training often encompasses the use of interactive whiteboards, computers, educational software, internet resources, and virtual learning platforms to enhance lesson delivery and learning outcomes (Akinyemi & Fashola, 2019). According to Oyetunde and Musa (2021), digital training is crucial in ensuring that teachers can adapt to evolving educational technologies and improve classroom engagement. Furthermore, Olaitan (2017) noted that teachers in rural primary schools within Osun State are frequently excluded from digital training due to logistical challenges, cost implications, and poor infrastructure, thereby exacerbating the urban-rural divide in digital proficiency. There is extensive evidence that effective digital training improves teachers' lesson preparation, delivery, and assessment techniques. Tella (2015) observed that primary school teachers who undergo regular digital training demonstrate increased confidence in using multimedia resources, leading to more interactive and student-centered lessons. Yusuf and Balogun (2019) emphasized that teachers with substantial digital training are more likely to be able to utilize online learning materials and educational software, incorporate audiovisual aids to simplify complex concepts, employ interactive whiteboards and projectors to improve lesson engagement and implement digital assessment tools to provide timely feedback. In contrast, teachers without adequate digital training often rely heavily on rote learning and teacher-centered approaches, limiting the effectiveness of lesson delivery (Akpan & Beard, 2016).

Teachers' digital proficiency refers to their ability to effectively apply digital technologies in teaching to improve content delivery, assessment, and student engagement (Tella, 2015). Proficiency encompasses both basic ICT skills and the pedagogical ability to integrate digital tools meaningfully into lessons (UNESCO, 2018). It is not limited to the ability to use computers but also extends to using digital learning management systems, multimedia teaching aids, and interactive educational software (Yusuf & Balogun, 2019). Lesson delivery is the process by which teachers communicate knowledge, skills, and values to learners (Adebayo, 2017). Effective lesson delivery involves the use of diverse instructional strategies, adequate preparation, learner engagement, and timely feedback (Obi & Akinola, 2020). The integration of digital technologies into lesson delivery can improve content retention, promote interactive learning, and support differentiated instruction to meet the needs of all learners (Akpan & Beard, 2016). Among the key challenges inhibiting digital training in Osun State primary schools are inconsistent policy implementation regarding teacher digital literacy (Oyetunde & Musa, 2021); inadequate funding and infrastructure, especially in rural schools (Olaitan, 2017); limited access to digital devices and reliable internet connections (Ajayi, 2018), and insufficient training duration and lack of continuity in professional development programmes (Oluwaseun & Ayodele, 2020). For government to be able to address these challenges, targeted investment, government commitment, and the establishment of regular, needs-based digital training that is accessible to all teachers regardless of location are required.

Theoretically, the study is underpinned by two theories, which are the Technological Pedagogical Content Knowledge (TPACK) Model and Constructivist Learning Theory. The TPACK model, developed by Mishra and Koehler (2006), provides a framework for understanding the knowledge teachers need to integrate technology effectively into their teaching. The model posits that effective digital lesson delivery requires a combination of

technological knowledge, pedagogical knowledge, and content knowledge. In the context of Osun State primary schools, the model highlights that teachers must be trained not only in the use of technology but also in how to blend it with their instructional strategies. Similarly, the constructivist theory emphasizes learner-centered education where students build knowledge through active engagement (Vygotsky, 1978). Digital tools can support constructivist teaching by providing interactive environments, simulations, and collaborative platforms that make learning more engaging. Digital training enhances teachers' ability to use such tools to create meaningful learning experiences (Alabi & Arogundade, 2020). Empirical studies have shown that the availability of digital training programmes for teachers in Nigerian primary schools is generally limited and irregular (Ajayi, 2018). A study by Olorunsola and Adeleke (2020) in Osun State revealed that while some digital training workshops were organized by state education boards and non-governmental organizations, their occurrence was infrequent and often limited to urban schools. Similarly, Olaitan (2017) reported that teachers in rural primary schools rarely have access to digital training due to resource constraints and poor infrastructural development. Furthermore, the study by Okebukola (2019) identified that many digital training sessions are not continuous, leading to skill gaps as technologies evolve. Continuous professional development is essential for keeping teachers updated on the latest digital teaching tools.

Several studies such as Yusuf and Balogun (2019) and Akinyemi and Fashola (2019), have highlighted that the digital proficiency of primary school teachers in Osun State remains low to moderate. The lack of regular training opportunities, poor internet connectivity, and limited access to digital devices have been cited as major contributing factors (Adebayo, 2017). A survey by Alabi and Arogundade (2020) indicated that while many teachers are familiar with mobile phones and basic computer operations, they lack proficiency in using educational software, virtual learning platforms, and interactive multimedia tools for lesson delivery. The proficiency gap is more pronounced among teachers in public schools compared to those in private schools, where more resources and support for digital literacy are typically available (Ajayi, 2018). Digital training has been widely acknowledged as a critical factor influencing the quality of lesson delivery in primary education (Obi & Akinola, 2020 and Oyetunde & Musa, 2021). A study conducted by Tella (2015) found a positive correlation between teachers' participation in digital training and improvements in lesson clarity, student engagement, and content delivery. Teachers with adequate digital training tend to adopt more innovative teaching strategies, including the use of visual aids, animations, and interactive content that facilitate better understanding among learners.

In Osun State, Olorunsola and Adeleke (2020) observed that schools that provided regular digital training to their teachers recorded higher student performance and improved classroom participation. Conversely, the absence of digital training was linked to the continued reliance on traditional, less engaging chalk-and-talk methods. Yusuf and Balogun (2019) also emphasized that without structured digital training, many teachers are unable to maximize the benefits of available digital infrastructure, thereby limiting the potential impact on learning outcomes. The literature reviewed consistently supports the importance of digital training in enhancing teachers' proficiency and lesson delivery quality in primary schools. However, there is limited region-specific empirical evidence focusing on public primary schools in Osun State. Studies conducted in broader Nigerian contexts may not fully capture the local challenges, such as infrastructural deficits and training inconsistencies unique to the state. Additionally, while some studies have addressed digital proficiency

levels, there is a lack of comprehensive research linking the availability and frequency of digital training directly to teachers' lesson delivery outcomes in Osun State primary schools. This study seeks to fill this gap by providing focused, location-specific evidence on how digital training influences teaching proficiency and lesson delivery in the region.

Statement of the Problem

In the 21st century, the integration of digital tools into education has become essential for improving instructional delivery and enhancing learning outcomes. For primary education, where foundational skills are taught, teachers' ability to effectively incorporate technology into lessons is critical. However, in Nigeria, particularly in Osun State, there is growing concern about the limited impact of digital training initiatives on teachers' actual classroom practices. While the Federal Government and education stakeholders have launched several digital training programmes, evidence suggests a persistent gap between training and teachers' proficiency in using digital tools for effective lesson delivery (Olanrewaju & Ogunleye, 2023). Many primary school teachers lack the technical competence to use basic educational technologies, and those who receive training often face challenges related to inadequate infrastructure, poor or inadequate follow-up support, or the irrelevance of training content to the realities of their classrooms (Adeoye & Kolawole, 2023). This disconnect raises questions about the design, implementation, and effectiveness of digital training interventions in improving pedagogical practices in primary schools. Moreover, existing studies have not sufficiently explored how digital training translates into proficiency at the grassroots level of education, especially in sub-national contexts like Osun State. There is therefore a need for a systematic investigation into the nature of digital training received by teachers, their level of proficiency in using digital tools, and how this affects their lesson delivery. Without such empirical evidence, policy and practice may continue to be misaligned, potentially undermining efforts to improve education quality and digital literacy at the foundational level. This study seeks to fill this gap by critically examining the relationship between digital training and teachers' proficiency in lesson delivery in primary schools across Osun State.

Research Questions

- i. What is the availability and frequency of digital training programmes provided for primary school teachers in Osun State?
- ii. What is the current level of digital proficiency among primary school teachers in Osun State?
- iii. How does digital training influence the quality of lesson delivery in primary education in Osun State?

Methodology

This study adopted a purely quantitative research design to investigate the relationship between digital training and teachers' proficiency in lesson delivery in primary schools across Osun State. The population consisted of primary school teachers, with a sample size of 56 teachers selected through random sampling from public and private schools in the state. Data were collected using a structured questionnaire designed to measure three key areas: the availability and frequency of digital training programmes, the current level of teachers' digital proficiency, and the influence of digital training on the quality of lesson delivery. The instrument was validated by experts in educational measurement, and reliability was confirmed through a pilot test, yielding a Cronbach's alpha value above 0.80. The

questionnaire items were rated on a 4-point Likert scale, and analysis was based on mid score interpretation, where a mean score of 2.0 and above was set as the threshold for acceptance, indicating agreement or effectiveness, while a score below 2.0 signified rejection or ineffectiveness. Mean score was employed to examine the influence of digital training on teachers' lesson delivery proficiency. Ethical considerations were observed by ensuring voluntary participation, anonymity, and confidentiality throughout the data collection process.

Results

Research Question 1: What is the Availability and Frequency of Digital Training Programmes for Primary School Teachers in Osun State? To answer this, the respondents' responses were analysed using mean score. The results are as presented in Table 1.

Table 1: Availability and Frequency of Digital Training Programmes for Primary School Teachers in Osun State

Item	Mean Score	Decision
My school organises digital training for teacher regularly	2.82	Acceptable
Attended more than one digital training session in past year	2.73	Acceptable
Digital training programmes are accessible to all teachers in my school	2.60	Acceptable
The ministry of education supports digital training initiatives	3.47	Acceptable
There is a well-structured plan for teacher digital training in the state	3.02	Acceptable

The findings in Table 1 indicate that digital training for primary school teachers in Osun State is generally available and supported, though not uniformly implemented. Teachers perceive that their schools occasionally organize digital training sessions, and many have attended more than one session in the past year. The Ministry of Education is recognized as a key supporter of these initiatives, as reflected in the highest mean score under this objective. However, slightly lower scores on training frequency and accessibility suggest some inconsistency in implementation across schools, indicating that while strategic frameworks exist, their reach and equity may require improvement.

Research Question 2: What is the Level of Digital Proficiency among Primary School Teachers in Osun State. To answer this, the respondents' responses were analysed using mean score. The results are as presented in Table 2.

Table 2: Digital Proficiency Level among Primary School Teachers in Osun State

Item	Mean Score	Decision
I can confidently use a computer to prepare lesson plans	3.55	Acceptable
I am proficient in using digital tools like PowerPoint, Zoom, or Google Classroom	3.33	Acceptable
I can troubleshoot basic issues with digital devices during lessons	3.16	Acceptable
I frequently use digital platforms to enhance classroom teaching	3.13	Acceptable
I have the digital skills required to support students' learning needs	3.30	Acceptable

In response to Table 2, teachers report a strong sense of digital proficiency. They express confidence in using computers for lesson planning and are comfortable with common digital tools such as PowerPoint, Zoom, and Google Classroom. Their ability to troubleshoot minor technical issues and integrate digital platforms into classroom teaching reflects a level of functional digital literacy that supports their daily instructional responsibilities. These

findings affirm that the current cohort of teachers in Osun State has developed the skills necessary to participate effectively in a digitally supported teaching environment.

Research Question 3: How does Digital Training Influence on the Quality of Lesson Delivery by Primary School Teachers in Osun State. To answer this, the respondents' responses were analysed using mean score. The results are as presented in Table 3.

Table 3: Influence of Digital Training on Lesson Delivery

Item	Mean Score	Decision
Digital training has improved my lesson planning and content delivery	3.75	Acceptable
I integrate digital tools more effectively after undergoing training	3.60	Acceptable
Digital training enhances student engagement in my lesson	3.40	Acceptable
My ability to enhance student learning has improved through digital methods	3.58	Acceptable
There is a noticeable improvement	3.52	Acceptable

From Table 3, results show teachers overwhelmingly agreeing that digital training enhanced the quality of their lesson delivery. The highest-rated items reflect significant improvements in lesson planning, content delivery, and the ability to integrate digital tools effectively post-training. Moreover, teachers observe increased student engagement and improved learning outcomes, directly attributing these gains to their exposure to digital training. Digital training is seen not just as beneficial but as transformative in shaping pedagogical effectiveness in Osun State's primary schools.

Discussion of Findings

The study's findings demonstrated that, although implementation varies throughout schools, the Ministry of Education in Osun State offers and supports digital training programs for primary school teachers. This is consistent with the findings of Olorunsola and Adeleke (2020), who discovered that although there are ICT training programs, they are sporadic and disproportionately focused in urban schools. Similarly, Olaitan (2017) noted that logistical difficulties and a lack of infrastructure make it difficult for teachers in rural primary schools to receive ICT training. These discrepancies imply that even with strategic frameworks in place, fair access is still a major issue. The study also found that Osun State instructors exhibit moderate to high levels of digital ability, especially when it comes to using programs like Google Classroom, Zoom, and PowerPoint and troubleshooting simple problems. This result is consistent with the findings of Alabi and Arogundade (2020), who observed that although instructors typically have some computer literacy, they frequently lack advanced skills in interactive multimedia and instructional software. The current study adds nuance by demonstrating that although teachers are becoming more comfortable with widely utilized tools, more sophisticated and pedagogically creative uses of digital technology are still lacking.

The revolutionary impact of digital training on class delivery is an important discovery. Instructors stated that training increased student engagement, improved subject delivery, and helped them plan better lessons. This supports the findings of Tella (2015), Obi and Akinola (2020), and Oyetunde and Musa (2021), who discovered that digital training greatly increases the efficacy of instruction by providing educators with tools that encourage engagement and interaction with students. In particular, educators who receive ongoing digital training are more likely to embrace cutting-edge techniques like interactive tests, animations, and audiovisuals that support constructivist ideas of active student participation (Vygotsky, 1978; Alabi & Arogundade, 2020). The fact that structural issues like inadequate

training continuity, inadequate ICT infrastructure, and the urban-rural divide still limit the full potential of digital integration in lesson delivery, even in the face of proficiency advances, is another noteworthy result. This is in line with international research by Mtebe and Raisamo (2014) in Tanzania and Ajayi (2018) in Nigeria, who found that ineffective ICT adoption was hampered by inconsistent training and inadequate connectivity. Therefore, even if Osun State teachers do not lack digital literacy, policymakers urgently need to address the sustainability and equality of their training opportunities.

Conclusion

According to this study, digital training programs are crucial and have a significant impact on improving teachers' competency and the way they teach in Osun State's primary schools. Lesson planning, material delivery, and student engagement all improve because of teachers' involvement in training programs and their growing proficiency with digital tools for teaching. However, the wider impact of these activities is limited by the differences between rural and urban schools, infrastructural limitations, and uneven training availability. The results highlight how crucial it is for teachers in Osun State and elsewhere to get ongoing, easily available, and contextually relevant digital training as part of their professional development. The advantages of digital competency might not be fully realized without consistent investment and fair distribution, which would prolong educational disparities.

Findings and Recommendations on Digital Training Programmes for Primary School Teachers in Osun State

Findings	Recommendations
The Ministry of Education in Osun State offers and supports digital training programmes, though implementation varies across schools.	Incorporate digital training into a structured Continuous Professional Development (CPD) framework to ensure frequent, updated training for all teachers.
Teachers demonstrate moderate to high levels of digital competence, particularly in using Google Classroom, Zoom, PowerPoint, and basic troubleshooting.	Training should emphasize pedagogical integration of technology (e.g., TPACK model) to promote learner-centered teaching, not just computer literacy.
Digital training has a transformative impact on lesson delivery.	Expand investment in reliable ICT infrastructure (interactive whiteboards, internet access, instructional software) to maximize classroom impact.
Structural barriers persist, such as inadequate training continuity, weak ICT infrastructure, and the urban–rural divide.	Provide targeted government support for rural schools, including infrastructure funding, internet connectivity, and mobile training units to bridge gaps.
Need for sustainability and wider reach of digital training initiatives.	Foster collaborations with NGOs, EdTech companies, and international organizations (e.g., models from Singapore and Finland) to sustain and scale digital training. Regular monitoring and evaluation should also be instituted to assess effectiveness and close gaps.

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