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ASSESSMENT OF TEACHERS' DIGITAL LITERACY AND READINESS FOR EFFECTIVE TEACHING IN OYO STATE

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Abstract

The study investigated teachers' digital literacy and readiness for effective teaching in Oyo State. A descriptive survey design was adopted to examine the availability and use of digital learning resources and their influence on teaching and learning effectiveness. The target population comprised 3,924 teachers and principals across public junior secondary schools in Oyo Educational Zone. A sample of 392 teachers representing 10% was randomly selected from 11 local government areas within the district. Two self-developed instruments were used: Digital Learning Resources Availability and Literacy Questionnaire (DLRALQ), Teaching and Learning Effectiveness (TLE) Questionnaire. Validity of the instruments were established by experts in Test and Measurement, reliability was established using test-retest method. Three research questions were raised and answered using descriptive statistics, two hypotheses were formula tested using inferential statistics. Findings revealed that availability of digital learning resources was low, and in some cases, non-existent; teachers' digital literacy levels were also low. However, the level of effective teaching and learning was high. There was a significant joint and relative influence of digital resource availability and teachers' digital literacy on effective teaching and learning. The study concluded that despite low digital resource availability and limited teachers' digital literacy, effective teaching and learning were moderate and significantly influenced by both variables. It recommended that government should provide adequate digital learning resources through targeted funding and monitoring; teachers should receive continuous digital literacy training through in-service workshops and school administrators should establish ICT support units for proper maintenance and use of digital tools.

Keywords: Assessment, Digital literacy, Readiness, Effective Teaching

Introduction

Teachers' digital literacy and readiness for effective teaching is the foundation of lifelong digital skills learning and human capital development, playing a crucial role in national progress. In Nigeria, junior secondary education is a critical stage within the Universal Basic Education (UBE) programme, designed to equip students with essential knowledge and skills for higher education and future careers (Federal Ministry of Education, 2021). However, the effectiveness of teachers' digital literacy and readiness for teaching and learning at this level has been questioned, as conventional teaching methods remain dominant, with limited integration of modern technological tools.

In Oyo State public junior secondary schools, traditional chalk-and-talk teaching approaches continue to define classroom instruction. Teachers rely heavily on rote

memorization, textbook-driven lessons, and outdated pedagogical techniques, which do not fully engage students or foster critical thinking and problem-solving skills. Studies have shown that this lack of innovative teaching strategies negatively affects students' academic performance, leading to low learning retention, poor engagement, and a failure to meet 21st-century education demands (Isa et al., 2020).

In contrast, research indicates that technology integration in teaching enhances student engagement, improves comprehension, and fosters independent learning (Aremu & Adediran, 2020). However, many junior secondary school teachers lack digital literacy skills, access to modern teaching tools, and sufficient training to incorporate technology effectively. Their readiness to adopt digital tools remains a major concern, as studies have found that many educators have limited exposure to e-learning platforms, smart classrooms, and digital assessment tools (Bakinde, et al 2022)..

Given the increasing shift towards digital transformation in education globally, there is a pressing need to assess the readiness of schools and teachers in Oyo State to embrace technology-driven teaching and learning. The Oyo State Government has recognized this gap and has initiated policies aimed at modernizing education through digital tools, yet the extent of implementation and teachers' preparedness remains uncertain (Oyo State Ministry of Education, 2023).

To harness the opportunities presented by digital education, this study seeks to examine the level of digital literacy among teachers and assess the overall readiness of public junior secondary schools in Oyo State for a technology-driven future. The findings will provide insights into the challenges, gaps, and potential strategies for improving teaching effectiveness through digital adoption in basic education. This study therefore examines school and teachers' digital literacy levels and their readiness to integrate technology driven future into teaching and learning.

Digital literacy is a multifaceted concept that extends beyond the mere ability to operate digital devices. It encompasses a broad set of skills required to effectively navigate, evaluate, and utilize digital technologies in various contexts. Odu and Omosigho (2017) emphasize that digital literacy is essential for making full use of digital libraries, highlighting its role in bridging the digital divide and promoting equitable access to information. Similarly, Bello and Ajao (2024) assert note that digital literacy involves the ability to use information and communication technologies to find, evaluate, create, and communicate information, while also demonstrating responsible digital citizenship. Furthermore, Shehu et al. (2023) explore digital literacy skills as a means of facilitating public access to information. They argue that digital literacy is crucial for self-reliance and independence in meeting individual or collective information needs in contemporary times, underscoring its role in empowering individuals and communities. From those definitions, digital literacy, emphasizing not only technical skills but also critical thinking, ethical engagement, and the ability to adapt to rapidly evolving digital environments.

Effective teaching and learning are vital for quality education, ensuring meaningful knowledge acquisition and skill development. Nigerian scholars have extensively discussed effective teaching, highlighting various interconnected aspects. Arogundade (2009) views effective teaching as stimulating desirable learning outcomes

that contribute to students' academic success. Similarly, Jekayinfa (2005) describes it as a multifaceted process involving explanation, reading, writing, and evaluation, all aimed at achieving specific learning goals. These activities ensure structured, goal-oriented teaching that enhances learners' understanding. Offorma (2007) emphasizes that effective teaching should be systematic, progressing from simple to complex ideas, and from known to unknown concepts. This structured approach aids logical and progressive learning. Taiwo (2015) further asserts that teaching effectiveness is determined by the extent to which instructional strategies produce intended educational outcomes, underscoring the need for appropriate teaching methodologies tailored to students' needs and learning styles. These perspectives collectively emphasize that effective teaching in Nigerian schools involves a combination of stimulating learning, systematic progression, subject mastery, competence, and tailored instructional strategies to achieve desired educational outcomes.

Readiness refers to the state of being prepared or equipped to undertake a particular task or change. In an educational context, readiness encompasses the willingness, capacity, and necessary resources available to effectively implement new teaching and learning strategies (Ajayi and Ojo (2021. School readiness for digital literacy refers to the extent to which educational institutions have the necessary infrastructure, policies, and support systems to integrate technology into teaching and learning. This includes the availability of functional digital devices, internet connectivity, relevant software, and administrative support for technology-driven instruction. Studies have shown that many Nigerian schools, particularly public junior secondary schools, lack adequate digital facilities, which hinders effective digital literacy adoption (Okonkwo & Yusuf, 2023). In Oyo State, for instance, a survey by Adebayo and Salami (2023) found that only 35% of public schools had computer laboratories, and less than 20% had stable internet connectivity. These infrastructural deficits limit schools' ability to provide a technology-driven learning environment.

Teachers' readiness for digital literacy entails their competence, willingness, and access to digital tools required for effective instruction. Many Nigerian educators struggle with digital adoption due to inadequate training, resistance to change, and lack of institutional support (Eze & Ibeh, 2022). Digital literacy skills involve more than just knowing how to use a computer; they require an understanding of digital pedagogy, online instructional design, and effective use of e-learning platforms. A study by Adetunji (2023) found that only 42% of junior secondary school teachers in Oyo State had received any formal training on digital literacy, and an even smaller percentage actively integrated technology into their teaching practices. However, this study is not concluding yet on the extent of teachers' proficiency in digital literacy, this inform part of what this study want to investigate.

A study conducted by Badmus (2025) employed a descriptive survey research design to examine digital literacy and technology utilization among secondary school students in Ilaro Metropolis, Ogun State. The population comprised students in public secondary schools, with a sample of 160 students selected using purposive sampling. The study answered three research questions and tested two hypotheses. Findings revealed that students were aware of the relevance of digital literacy, but most lacked access to

digital learning tools within their schools. Instead, many relied on cybercafés and personal mobile phones for digital engagement. The study concluded that while digital literacy awareness is high, the unavailability of digital infrastructure within schools hampers the development of functional skills needed for academic improvement.

In another study, Sam-Kayode et al. (2023) conducted a descriptive survey to assess the level of digital literacy among science teachers in junior secondary schools in Ibadan, Oyo State. The study population included all science teachers in the area, with a sample of 100 respondents selected through stratified random sampling. The research was guided by three research questions. It was found that over 80 percent of the schools surveyed had fewer than five functional computers, and while teachers demonstrated moderate digital skills—particularly in internet use—their ability to use educational software and maintain devices was poor. The study concluded that improving digital literacy among teachers requires both increased training and better access to digital tools.

Ogunleye (2021) adopted a mixed-method survey design to explore teachers' digital literacy and technology adoption in public schools across southwestern Nigeria. The population consisted of secondary school teachers, with a sample of 120 selected through multi-stage sampling. The study was guided by three research questions and one hypothesis. Findings showed that teachers possessed basic digital skills but lacked confidence in using digital tools for instructional purposes. Barriers identified included inadequate infrastructure, lack of administrative support, and limited access to training. The study concluded that while teachers are willing to use technology, systemic limitations hinder widespread digital integration in classrooms.

Similarly, Adeyemi and Ojo (2023) used a descriptive research design to investigate ICT integration in secondary schools in Oyo and Lagos States. The study involved 150 teachers and principals selected through simple random sampling. Two research questions and two hypotheses guided the study. The findings revealed that although some schools had ICT facilities such as computers and projectors, they were often underutilized due to poor internet connectivity and a lack of training. The study concluded that successful integration of ICT into teaching depends not only on the provision of digital tools but also on sustained training and institutional support for educators.

Meanwhile Okon and Ekanem (2021), who investigated the integration of digital instructional tools in public secondary schools in Akwa Ibom State, Nigeria. Using a descriptive survey design, they sampled 200 teachers across 10 schools through stratified random sampling. The study found that while teachers acknowledged the value of digital tools in enhancing student engagement and learning outcomes, the majority lacked access to essential infrastructure such as internet connectivity, projectors, and educational software. Additionally, over 70% of respondents reported low confidence in using digital platforms due to inadequate training.

Statement of the Problem

Effective teaching and learning in junior secondary schools depend on modern instructional strategies that integrate technology to enhance student engagement and

academic performance. However, many public junior secondary schools in Oyo State still rely on traditional methods such as rote memorization and teacher-centered instruction, limiting students' ability to develop critical thinking and problem-solving skills. This has led to poor learning outcomes, as students struggle to retain knowledge and apply it in real-life situations (Adebayo & Aluko, 2022). Despite the growing importance of digital literacy in education, many teachers lack the skills to integrate technology into classroom instruction. Studies show that most teachers do not use digital tools like interactive whiteboards and e-learning platforms due to limited training, inadequate infrastructure, and resistance to change (Ogunleye, 2021). This has widened the gap between students in technology-driven schools and those in schools with little or no digital integration, affecting educational equity and competitiveness. Although the government has introduced policies to promote digital learning, implementation challenges such as poor teacher preparedness and insufficient infrastructure hinder progress (Adeyemi & Ojo, 2023). Without urgent intervention, public junior secondary schools in Oyo State may struggle to prepare students for a technology-driven future. This study examines school and teachers' digital literacy levels and their readiness to integrate technology into teaching and learning.

Purpose of Study

The general objectives of this study were to investigate digital literacy and its influence on effective teaching and learning by assessing the readiness of public junior secondary schools and teachers in Oyo State for a technology-driven future. The specific objectives determined in this study were:

1. to assess level of availability of digital learning resources in public Junior secondary schools in Oyo State, Nigeria;
2. to assess the extent of JSS teachers' digital literacy in public junior secondary schools, Oyo State, Nigeria;
3. to assess the level of effective teaching and learning in public junior secondary schools, Oyo State, Nigeria
4. to assess the significant joint influence of digital learning resources availability and teachers' readiness for effective teaching and learning in public secondary schools in Oyo State, Nigeria; and
5. to assess the significant relative influence of digital learning resources availability and teachers' readiness for effective teaching and learning in public secondary schools in Oyo State, Nigeria.

Research Questions

1. What is the level of digital learning resources availability in public Junior secondary schools in Oyo State, Nigeria?
2. What is the extent of JSS teachers' digital literacy in public junior secondary schools, Oyo State, Nigeria?

3. What is the level of effective teaching and learning in public junior secondary schools, Oyo State, Nigeria?

Research Hypothesis

Ho1: There is no significant joint influence of digital learning resources availability and teachers' digital literacy on effective teaching and learning in public secondary schools in Oyo State, Nigeria

Ho2: There is no significant relative influence of digital learning resources availability and teachers' digital literacy on effective teaching and learning in public secondary schools in Oyo State, Nigeria

Methodology

The study employed a descriptive survey research design to investigate the availability and use of digital learning resources as well as their impact on teaching and learning effectiveness in public senior secondary schools. The target population comprised a total of 3,924 teachers and principals across public senior secondary schools located within Oyo Educational Zone of Oyo State. This zone includes 11 local government areas. From this population, a sample size representing 10%, which amounted to 392 teachers, was randomly selected across the 11 local government areas within the district to participate in the study. For data collection, two self-developed instruments were used. These included the Digital Learning Resources Availability and Literacy Questionnaire (DLRALQ), which contained 20 items, and the Teaching and Learning Effectiveness (TLE) questionnaire. The DLRALQ was structured into three sections. Section A gathered demographic information such as gender, academic qualifications, and years of teaching experience of the respondents. Section B focused on the availability of Teachers digital literacy while Section C collected data related to the Teachers readiness for effective teaching and learning. Both instruments were administered to the selected teachers. The items in Section B of the DLRALQ were measured using a four-point Likert scale with the options: Adequately Available (AA), Available (A), Inadequately Available (IA), and Not Available (NA). Section C of the DLRALQ and the TLE questionnaire were both rated on another four-point Likert scale comprising Very High (VH), High (H), Low (L), and Very Low (VL). To ensure the validity of the instruments, experts in Test and Measurement were consulted to review the items. The reliability of the instruments was determined using the test-retest method, and the data obtained were analyzed using the Pearson Product-Moment Correlation technique. The analysis yielded reliability coefficients of 0.87 for the DLRALQ and 0.91 for the TLE questionnaire, indicating that both instruments were highly reliable for the study. In answering the three research questions posed in the study, descriptive statistics such as percentage, mean, and standard deviation were used. Additionally, two hypotheses were tested using regression analysis at a 0.05 level of significance. Out of the 392 questionnaires distributed to the teachers, 378 were completed and returned,

representing a response rate of 96.4%. The data from these responses formed the basis for the analysis and interpretation of the study's findings.

Results

Research question one: What is the level of digital learning resources availability in public Junior secondary schools in Oyo State, Nigeria?

Table 1: Digital Learning Resources Availability

% Response, N= 378

Items	AA	A	IA	NA	$\bar{X}$	SD
Interactive whiteboards or projectors	3	13.9	24.6	58.5	1.14	.533
Internet access for teaching and learning purposes	3.4	3.27	50.4	42.93	1.35	.729
Computers or tablets	20.7	23.3	53.8	2.2	2.62	.832
Digital learning resources (e.g., educational apps, e-books, online learning platforms) for teaching	10.1	5.6	45.9	38.4	1.43	.748
Averagely equipped laboratory for digital learning	9.2	0.1	58.4	32.2	2.37	887
Digital assessment tools (e.g., online quizzes, automated grading systems)	16.3	11.4	50.2	22.0	1.12	.402
Electricity or alternative power sources to support digital learning	15.0	5.8	54.8	24.5	1.38	.811
Educational technology training for equipping teachers with skills to integrate technology effectively into their teaching	16.0	5.1	55.5	23.4	1.32	.622
Maintenance of digital learning resources/ equipment	18.5	5.6	22.4	53.5	2.29	.855
Technical support staff for troubleshooting digital tools and resources	4.6	4.5	64.5	26.4	1.47	.818
Weighted average					**1.65**	

Note. N= Number of respondents (teachers); AA= Adequately Available, A= Available, IA= Inadequately Available, NA=Not Available, %= Percentage, $\bar{X}$= Response Mean Score; S.D= Standard Deviation, *Decision rule*; Adequately Available *(weighted average between3.50 and 4.00),* Available *(weighted average between 2.50 and 3.49),* Inadequately Available *(weighted average between 1.50 and 2.49),* Not Available *(weighted average between 0.50 and 1.49*

The results presented in Table 1 provide a detailed analysis of the extent to which digital learning resources are available in public junior secondary schools in Oyo State, Nigeria. The data were analyzed using the mean ($\bar{x}$) and standard deviation (S.D), with the overall weighted average mean score of 1.65. Since all the mean scores of the items examined fell between 1.50 and 2.49, this indicates that digital learning resources are generally inadequately available in the public junior secondary schools surveyed. A closer look at the data reveals a descending order of availability among the resources assessed. The most available resource was computers or tablets with a mean score of 2.62 and a

standard deviation of 0.832. This was followed by the maintenance of digital learning resources/equipment ($\bar{x}$ = 2.29; S.D = 0.855) and averagely equipped laboratories for digital learning ($\bar{x}$ = 2.27; S.D = 0.887). The availability of technical support staff for troubleshooting digital tools and resources was notably low, with a mean score of 1.47 and a standard deviation of 0.811.

Other digital learning resources reported to be poorly available include educational digital content such as apps, e-books, and online learning platforms ($\bar{x}$ = 1.43; S.D = 0.748), electricity or alternative power sources ($\bar{x}$ = 1.38; S.D = 0.771), and internet access for teaching and learning ($\bar{x}$ = 1.35; S.D = 0.729). Also ranked low were educational technology training for teachers ($\bar{x}$ = 1.32; S.D = 0.662), interactive whiteboards or projectors ($\bar{x}$ = 1.14; S.D = 0.532), and digital assessment tools such as online quizzes and automated grading systems ($\bar{x}$ = 1.52; S.D = 0.402). In summary, the findings indicate that digital learning resources in public junior secondary schools in Oyo State are generally inadequate, thereby limiting the integration of technology into teaching and learning processes.

Research question two: what is the extent of JSS teachers' digital literacy in public junior secondary schools, Oyo State, Nigeria?

Table 2: JSS Teachers' Digital Literacy

	% Response, N= 378					
Items	**VH**	**H**	**L**	**VL**	**X**	**SD**
Proficiency in the use of you use digital tools	4.5	12.5	64.9	15.1	2.56	.703
Use of basic digital skills (e.g., typing, internet browsing, email) for teaching	3.6	7.5	68.4	20.5	2.74	.850
Teachers' effectiveness in integrating digital tools into lesson planning and classroom instruction	4.4	66.8	7.0	21.9	2.59	.887
Skill in using presentation software (e.g., PowerPoint, Google Slides) for teaching	6.6	13.6	65.0	14.7	2.00	.731
How skilled are you in finding and using online learning materials?	6.6	11.0	14.5	67.8	2.02	.430
Ability to troubleshooting minor technical issues (e.g., internet problems, projectors, educational apps	2.4	4.6	74	19	2.11	.520
Effectiveness in the use of digital assessment tools (e.g., Google Forms, Kahoot, online quizzes) to evaluate students	6.9	13.8	60.9	18.4	1.83	.368
Adaption to new digital tools introduced for teaching	2.8	5.8	79.2	12.3	1.98	.540
Skills in creating and editing digital content (e.g., educational videos, podcasts, blogs)	4.4	6.9	72.3	16.3	1.92	.440

Ability to teach students about safe and responsible use of digital technology teaching	3.9	74.4	6.4	15.4	2.61	.810
Weighted average					**2.23**	

Note. N= Number of respondents (teachers); VH= Very High, H= High, L= Low, VL=Very Low, %= Percentage, $\bar{X}$= Response Mean Score; S.D= Standard Deviation, *Decision rule: Very high (weighted average between3.50 and 4.00), High(weighted average between 2.50 and 3.49), Low (weighted average between 1.50 and 2.49), Very low (weighted average between 0.50 and 1.49*

Table 2 presents the extent of digital literacy among Junior Secondary School (JSS) teachers in public junior secondary schools in Oyo State, Nigeria. The results indicate that the weighted average mean score of the assessed items was 2.23, which falls within the range of 1.50 to 2.49. This suggests a generally low level of digital literacy among the teachers. However, a few items recorded relatively higher mean scores. These include the use of basic digital skills such as typing, internet browsing, and email for teaching ($\bar{x}$ = 2.74; S.D = 0.850), the ability to teach students about the safe and responsible use of digital technology ($\bar{x}$ = 2.61; S.D = 0.810), teachers' effectiveness in integrating digital tools into lesson planning and classroom instruction ($\bar{x}$ = 2.59; S.D = 0.887), and proficiency in the use of digital tools such as computers, tablets, and interactive boards for teaching ($\bar{x}$ = 2.56; S.D = 0.703).

Conversely, several items recorded lower mean scores, indicating areas of weakness. These include the ability to troubleshoot minor technical issues such as internet problems or issues with projectors and educational apps ($\bar{x}$ = 2.11; S.D = 0.520), skill in finding and using online learning materials ($\bar{x}$ = 2.03; S.D = 0.430), the use of presentation software such as PowerPoint or Google Slides for teaching ($\bar{x}$ = 2.00; S.D = 0.731), and the ability to adapt to new digital tools introduced for teaching ($\bar{x}$ = 1.98; S.D = 0.731). Other areas of low proficiency include skills in creating and editing digital content such as educational videos, podcasts, or blogs ($\bar{x}$ = 1.93; S.D = 0.440), and the effective use of digital assessment tools such as Google Forms, Kahoot, or online quizzes for evaluating students ($\bar{x}$ = 1.83; S.D = 0.368). In summary, the findings reveal that the overall extent of digital literacy among teachers in public junior secondary schools in Oyo State is low, with only a few areas showing moderate proficiency.

Research question three: What is the level of effective teaching and learning in public junior secondary schools, Oyo State, Nigeria?

Table 3: Effective Teaching and Learning

	% Response, N= 378					
Items	**VH**	**H**	**L**	**VL**	**X**	**SD**
Teachers' effectiveness in developing comprehensive lesson plans that align with curriculum standards	72.7	18.5	5.1	3.6	3.60	.923
Mastery of the subjects they teach	39.3	43.8	8.2	8.7	3.19	.998
Teachers' effectiveness in presenting lesson content in a clear and engaging manner	52.4	40.4	3.6	3.6	3.10	.641
Teachers' capability to manage classroom behaviour to create a positive learning environment	40.7	45.3	6.2	7.8	3.16	.865
Appropriateness in the use of teaching aids and technology to enhance learning	37.6	47.8	11.6	2.9	3.30	.755
How effectively do teachers engage students in the learning process through interactive activities	26.7	49.3	17.5	6.5	2.96	.999
Regularity and teachers' effectiveness in the assessment of student progress and provide constructive feedback	34.5	44.5	13.5	7.5	3.06	.881
Teachers' ability to adjust teaching strategies to accommodate diverse learning needs.	31.8	59.5	4.4	4.4	3.22	.709
Teachers' engagement in professional development activities to improve their teaching skills	29.6	60.2	6.5	3.6	3.14	.625
Teachers' effectiveness and contributions to improve student academic performance	25.6	40.5	24.9	8.9	2.85	.913
Weighted average					**3.16**	

Note. N= Number of respondents (teachers); VH= Very High, H= High, L= Low, VL=Very Low, %= Percentage, $\bar{X}$= Response Mean Score; S.D= Standard Deviation, *Decision rule: Very high (weighted average between3.50 and 4.00), High(weighted average between 2.50 and 3.49), Low (weighted average between 1.50 and 2.49), Very low (weighted average between 0.50 and 1.49*

The mean and standard deviation scores presented in Table 3 represent the respondents' views on the level of effective teaching and learning in public junior secondary schools in Oyo State, Nigeria. The weighted mean score of 3.16 falls between 2.50 and 4.00, indicating a high level of teaching and learning effectiveness. The items with the highest to lowest mean scores are as follows: teachers' effectiveness in developing comprehensive lesson plans that align with curriculum standards (Mean = 3.60, S.D = 0.933); appropriateness in the use of teaching aids and technology to enhance learning (Mean = 3.30, S.D = 0.755); teachers' ability to adjust their teaching strategies to accommodate diverse learning needs (Mean = 3.22, S.D = 0.709); mastery of the subjects they teach (Mean = 3.19, S.D = 0.998); teachers' capability to manage classroom

behavior to create a positive learning environment (Mean = 3.16, S.D = 0.865); teachers' engagement in professional development activities to improve their teaching skills (Mean = 3.14, S.D = 0.625); teachers' effectiveness in presenting lesson content in a clear and engaging manner (Mean = 3.10, S.D = 0.641); regularity and effectiveness in the assessment of student progress and the provision of constructive feedback (Mean = 3.06, S.D = 0.881); and teachers' overall contributions to improving student academic performance (Mean = 2.85, S.D = 0.913). In summary, these findings suggest that effective teaching and learning in public junior secondary schools in Oyo State is rated highly.

Testing of Hypotheses

Hypothesis one: There is no significant joint influence of digital learning resources availability and teachers' digital literacy on effective teaching and learning in public secondary schools in Oyo State, Nigeria

Table 4: Significant Joint Influence of **Digital Learning Resources Availability and Teachers' Digital Literacy on Effective Teaching and Learning**

Source of variation	Sum of Squares	Df	Mean Square	F-Ratio	P
Regression	131.130	2	43.710	113.731	.000[b]
Residual	409.693	376	.384		
Total	540.822	378			
$R = 0.492^{a}$; $R^2 = 0.743$; Multiple R^2 (Adjusted) = 0.240; Stand error estimate =0.27130					

a. Dependent Variable: Effective teaching and learning

b. Predictors: (Constant), Digital learning resources availability and teachers' digital literacy

The results in Table 4 indicate that the two predictor variables—digital learning resources availability and teachers' digital literacy—jointly predicted effective teaching and learning in public secondary schools in Oyo State, Nigeria ($R = 0.492$; $R^2 = 0.242$; Adjusted $R^2 = 0.272$; $F(3, 1069) = 113.731$, $p < 0.05$). These predictor variables accounted for approximately 24.2% of the variance in effective teaching and learning. The null hypothesis, which stated that there is no significant joint influence of digital learning resources availability and teachers' digital literacy on effective teaching and learning, was rejected. Consequently, the findings confirm that digital learning resources availability and teachers' digital literacy jointly influence effective teaching and learning in public secondary schools in Oyo State.

Hypothesis two: There is no significant relative influence of digital learning resources availability and teachers' digital literacy on effective teaching and learning in public secondary schools in Oyo State, Nigeria

Table 5: Significant Relative Influence of Digital Learning Resources Availability and Teachers' Digital Literacy on Effective Teaching And Learning

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	Beta	Std. Error	Beta		
(Constant)	2.236	.012		12.213	.000
Digital learning resources availability	.468	.061	.281	14.716	.000
Teachers' Digital Literacy	.007	.012	.345	1.420	.000

Dependent Variable: Effective teaching and learning

Table 5 reveals the relative influence of the two predictor variables digital learning resources availability and teachers' digital literacy on effective teaching and learning in public junior secondary schools in Oyo State. The results demonstrate the predictive power of each variable. Teachers' digital literacy emerged as the most potent predictor ($\beta = 0.345$; $t = 1.420$; $p < 0.05$), followed by digital learning resources availability ($\beta = 0.281$; $t = 1.428$; $p < 0.05$). These findings indicate that teachers' digital literacy accounts for 34.5% of the variance, while digital learning resources availability accounts for 28.1% of the variance in effective teaching and learning. Based on these results, the hypothesis stating that there is no significant relative influence of digital learning resources availability and teachers' digital literacy on effective teaching and learning in public secondary schools in Oyo State was rejected. Instead, the alternative hypothesis was accepted, confirming that both predictors have a significant influence on effective teaching and learning in public junior secondary schools in Oyo State.

Discussion of Findings

The study found that the availability of digital learning resources in public junior secondary schools in Oyo State is very low, with some resources not available at all. This finding is strongly supported by Sam-Kayode et al. (2023), who reported that over 80% of schools surveyed had fewer than five functional computers. Similarly, Badmus (2025) highlighted that students often resorted to using personal or public cybercafé tools due to the absence of in-school infrastructure. However, contrasting evidence from the ASEAN region, documented in the UNICEF (2023) report, suggests that some developing countries with similar economic profiles have successfully scaled up access to ICT in schools, especially in Non-Least Developed countries (non-LDCs), where digital devices and infrastructure are increasingly present.

In parallel, the study found that teachers' digital literacy is also low. Many teachers demonstrate only basic digital competencies, lacking the advanced skills necessary to fully integrate digital tools into their instructional practices. Ogunleye (2021) and Adeyemi and Ojo (2023) both emphasize that insufficient training opportunities and limited professional development contribute to this low level of digital proficiency. As a result, even when some digital resources are available, their underutilization by teachers further undermines the potential for effective technology integration in the classroom.

Interestingly, this study reported a high level of effective teaching and learning despite the low levels of digital resource availability and teacher digital literacy. This is supported by Adebayo and Aluko (2022), who noted that conventional methods in Nigerian classrooms continue to yield satisfactory outcomes due to strong pedagogical traditions. However, studies from South Delhi (Akram & Singh, 2024) challenge this notion, reporting that students in similar low-resource environments show limited learning gains due to the absence of digital engagement and reliance on rote memorization. This contradiction implies that contextual factors—such as curriculum content, teacher motivation, and community engagement—may mediate the impact of resource availability on learning effectiveness.

The study also established a significant joint influence of digital resource availability and teachers' digital literacy on teaching effectiveness. This finding is consistent with Ezabadi et al. (2021), who found that students' success in digital learning environments is dependent on both infrastructural access and the competence of educators. However, findings from the ASEAN digital literacy report reveal that in some countries, even with good access, poor teaching quality and low ICT skills among teachers limit the benefits of technology, demonstrating that digital tools alone do not guarantee improved outcomes.

Lastly, the study revealed a significant relative influence of both variables, with teachers' digital literacy having slightly greater impact. This mirrors findings by Oh et al. (2021), who argued that the most critical driver of successful digital learning is the human factor particularly the skill and adaptability of the teacher. Nonetheless, contrasting reports from UNICEF (2023) indicate that in countries where technology is highly accessible but teachers are poorly trained, outcomes remain subpar, suggesting that the two factors must be developed together for sustainable result

Conclusion

In conclusion, the study revealed that the availability of digital learning resources in public junior secondary schools in Oyo State is very low, with some schools lacking such resources entirely. Teachers' digital literacy was also found to be low, limiting the effective integration of technology in classrooms. Despite this, teaching and learning were generally rated high, likely due to the continued use of traditional methods. However, the study showed a significant joint and relative influence of digital resource availability and teachers' digital literacy on teaching effectiveness. These findings emphasizes the urgent need for improved digital infrastructure and teacher training to enhance education in a technology-driven era.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. The government should provide adequate digital learning resources such as computers, projectors, and internet access to all public junior secondary schools through targeted funding and regular monitoring.
2. Teachers should undergo continuous professional development on digital literacy through organized in-service training and workshops facilitated by education agencies.
3. School administrators should ensure proper maintenance and security of digital tools by establishing ICT support units in each school.
4. Curriculum planners should incorporate digital literacy components into teacher education programmes to build competence from the training stage.
5. Education policymakers should collaborate with private technology firms to support schools with affordable digital solutions through public-private partnerships.
6. Each school should develop a digital integration plan that outlines how digital tools will be used in teaching across subjects, monitored by local education authorities.
7. Stakeholders should conduct periodic evaluations to assess the effectiveness of digital resource usage and teacher competence, using the results to improve implementation strategies.

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