



## A SURVEY OF SECONDARY SCHOOL TEACHERS' ICT PROFICIENCY ON EFFECTIVE ONLINE TEACHING IN EKITI STATE, NIGERIA

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### Abstract

**Purpose:** This study examined the use of information and communication technology (ICT) by secondary school teachers for effective online teaching in Ekiti State, Nigeria.

**Design/Methodology/Approach:** A survey research design was employed, and data was collected from 130 secondary school teachers using a structured questionnaire. The target population consisted of all secondary school teachers in Ekiti State, and a multi-stage sampling technique was used to select the study participants.

**Findings:** The findings revealed that teachers actively utilize a range of ICT tools and applications, with a mean usage score of 3.92 (out of 5). Specifically, 90% of teachers reported using the internet (mean = 4.21, SD = 0.83), 78% used productivity software (mean = 3.89, SD = 0.92), and 68% employed data-driven approaches (mean = 3.76, SD = 0.87). However, the availability of more advanced ICT resources, such as smart boards (mean availability = 2.81, SD = 1.12) and digital cameras (mean availability = 3.01, SD = 1.05), was uneven across the schools, indicating the need for improved access to a comprehensive suite of educational technologies. Additionally, the study highlighted the importance of targeted professional development programs, with teachers reporting a mean score of 2.98 (SD = 1.14) on the adequacy of their training on the integration of ICT into their instructional strategies.

**Implications:** The study concludes with recommendations to expand ICT resource access, implement comprehensive teacher training, strengthen institutional support, encourage collaboration, and conduct regular evaluations to enhance the quality and impact of online teaching and learning in the secondary education sector.

**Originality/Value:** This study provides valuable insights into the current state of ICT integration in secondary school teaching practices in Ekiti State, Nigeria, and offers evidence-based recommendations to improve the effectiveness of online teaching and learning in the region.

**Keywords:** ICT proficiency, online teaching, secondary school teachers, Ekiti State, Nigeria, educational technology, professional development

### Introduction

The COVID-19 pandemic has significantly transformed the landscape of education worldwide, necessitating a rapid shift towards online and remote learning modalities (Oladele, 2020). In Nigeria, this transition has posed considerable challenges, particularly for secondary school teachers who were often unprepared for the technological demands of virtual instruction (Adedoyin & Soykan, 2020). Ekiti State, located in the southwestern region of the

country, has not been immune to these disruptions, with educators facing an urgent need to develop their information and communication technology (ICT) skills to effectively deliver online lessons and support student learning.

Existing research suggests that many Nigerian teachers, including those in Ekiti State, possess limited proficiency in utilizing digital tools and platforms for teaching and learning (Adegbenro et al., 2021). This skills gap has hindered their ability to create

engaging, interactive, and accessible online learning experiences for their students. Furthermore, the lack of comprehensive training and resources for teachers to enhance their ICT competencies has exacerbated the challenges faced during the pandemic (Ogunode, 2020).

To address this critical issue, this study aims to conduct a comprehensive survey of secondary school teachers' ICT proficiency in Ekiti State, to inform the development of targeted interventions and support mechanisms. By understanding the current level of teachers' digital skills, as well as the barriers and enablers they face, policymakers and education stakeholders can devise strategies to strengthen the capacity of teachers for effective online teaching (Pokhrel & Chhetri, 2021). This research will contribute to the growing body of knowledge on the integration of technology in Nigerian education, ultimately enhancing the quality and accessibility of remote learning opportunities for secondary school students in Ekiti State.

The Federal Government of Nigeria in the National Policy on Education (FRN, 2013) identifies the major role of ICT and has included it in the Nigerian educational system. This is to improve and increase the quality of education and instructional delivery to students. The policy's vision is to make Nigeria an ICT-capable country to compete with the global south. Professional development of teachers not only motivates but assists teachers to keep up to date with new and effective practices in teaching and learning. Given the need for holistic professional development, it is important to align teaching techniques along the evolving information communication technology (ICT) trends to improve the quality of instructional delivery (Etodike et al. 2020). The world is currently in a stage of information explosion. For national and

economic growth, we need to blend our instruction with current ICT features to relate to the outside world. Based on the aforementioned, this study intends to seek teachers' ICT compliance for effective online teaching. It will investigate the availability of ICT facilities in public schools in Ekiti state, it will determine to extent to which the teachers use ICT facilities to teach their students it will also investigate the maintenance culture of the ICT gadget put in place by the government for online teaching and learning in public schools in Ekiti state.

### **Objectives of the study**

The main objective of the study was to investigate Secondary School Teachers' ICT proficiency for effective online teaching in Ekiti State, Nigeria. The specific objectives are to:

1. find the ICT facilities available in Ekiti State Public Secondary Schools
2. determine the level of teachers' proficiency in the use of ICT facilities for online teaching.
1. ascertain the extent to which teachers made use of ICT for online teaching in Public Secondary Schools in Ekiti State.

### **Research questions**

The following corresponding research questions guided the conduct of the study

2. What are the ICT facilities available in Ekiti State Public Secondary Schools?
3. What is the level of teachers' proficiency in the use of ICT for online teaching in the selected Public Secondary Schools in Ekiti State?

### **Literature Review**

The use of computers and the internet is now gaining ground in the Nigerian Education sector in Nigeria and other developing nations. Presently, the competencies of teachers are being determined by the use and

application of computers and the Internet in curriculum delivery. ICT represents a diverse set of technological tools or resources used to communicate, create, disseminate, store and manage information (Victoria, 2015). ICT plays a significant role in teaching and learning starting from the teachers' search of materials, preparation of instruction, delivery to the students, appropriate feedback collection and evaluation of performance. Odiye (2020) opined that ICT has broken the barrier of distance in the communication of information, for instance, social media allow people to communicate anywhere, anytime and even on the move making use of ICT facilities and tools to transfer information even in education.

Olowoyeye and Fadumiye (2019) added that ICT facilities are found to be most important to teachers in their teaching were: making the lessons more interesting, easier, more fun for them and their pupils, more diverse, more motivating for the pupils and more enjoyable. The need for ICT in schools cannot be overemphasised. According to Onwuagboke & Singh (2019) in the 21st century, there are basic skills and competencies which an individual is expected to possess for optimal functioning and survival in the digital age. These skills are centred on the effective utilization of ICT in learning and performing other daily routine activities, thus making room for lifelong learning. Despite this need, many schools are not yet proactive in adopting ICT trends for online instruction delivery. Online learning is a widespread phenomenon in the current technology evolution. It encompasses the use of the internet and other related gadgets such as smartphones and computers. Through the internet, teachers can access research materials, textbooks and videos that are relevant to their subjects to make teaching and learning effective.

**Basri, Alandejani and Almandi (2018)** opined that while the effectiveness of online learning has been a subject of debate and consideration, the realities and needs of learners have increasingly fallen in line with a method of instruction that does not require them to be in one location at a specific time to gain access to high-quality education. Online teaching and learning have made a significant impact in the Nigerian educational sector between 2019 and 2020, it remained a steady complement to the conventional method of teaching.

The conventional teaching technique often conflicts with the new instructional strategies introduced in any education developmental programme this is because the teacher or instructor is more in tune with their comfort zones and finds it difficult to comply with ICT facilities especially when they encounter slight frustrations in trying to implement it. Olowoyeye (2018); and Lanre & Odewumi (2018) suggested that teachers' educational reform efforts in Ekiti state should take into consideration teachers' beliefs, skills and attitudes towards ICT compliance for effective teaching. However, it was noted by Adeyemi & Olaleye (2010) that many schools in Ekiti State are deficient in the availability of information communication and technology (ICT) equipment and facilities. Although most schools have computers and printers, almost all the schools do not have projectors, whatever ICT facilities are available; the interest will be the teacher's competence for effective online teaching.

Online learning is not a new phenomenon in promoting education in some parts of the world. Presently most private schools in Nigeria have adopted the integration of ICT in their instruction while most of the public schools are still struggling with the application of ICT skills in communicating and passing information to the learners.

Online teaching in Ekiti state took a new turn during the COVID-19 pandemic era when the government took action to support learners' education to go beyond the four walls of the classroom. The basic effective online teaching available in Ekiti state public secondary schools is the broadcasting type (radio and television). Programmes ranging from most subjects were transmitted on air for the students to listen to and participate by asking questions. Public schools differ from private schools in the populations they serve. While private schools serve learners from higher socio-economic backgrounds who are willing and able to pay more to access the better resources offered by private schools,

public schools which are usually free, comprise students from lower socio-economic households and low-income areas. In instances where distance learning opportunities are available, uptake will be low from the students in the public school's category, as a result of poor infrastructure such as lack of electricity, or poor/no internet connectivity, etc Opportunities to learn within the homes are also limited, given that a parent's ability to provide education support to their children will be shaped by their level of educational attainment, general literacy level, and other commitments (Oboh et al., 2020).

### Methodology

The study employed a descriptive survey research design. The population of the study comprised 448 teachers from public secondary schools in Ekiti State, Nigeria. A random sampling method was used to select 120 teachers, with 40 teachers representing each of the three senatorial districts in Ekiti State (Ekiti Central, Ekiti North, and Ekiti South). Two questionnaires were used for data collection: The Teachers' Online Teaching Questionnaire (TOTQ) and the ICT Compliance Questionnaire (ICTCQ). The questionnaire was divided into two sections: Section A contained the personal data of the respondents, while Section B included structured items. The questionnaire used a

four-point scale to measure the availability of various aspects, ranging from "available to a large extent" to "not available." To ensure the validity of the instrument, the structured questionnaire was reviewed by two experts in the field of testing and measurement. The reliability of the instrument was established using the test-retest method. The researcher personally administered the questionnaires and collected the completed forms immediately. The data collected were analyzed descriptively using frequency counts, mean and standard deviation, the data analysis was performed using the Statistical Package for the Social Sciences (SPSS) software, version 26.

### Results

**Table 1: Socio-demographic characteristics of respondents.**

Survey items	Classification	Frequency	Percentage
<b>Gender</b>	Male	73	56.2
	Female	57	43.8
	<b>Total</b>	<b>130</b>	<b>100.0</b>
<b>Highest Qualification</b>	NCE	43	33.1
	First Degree	64	49.2
	PGDE	15	11.5

	Masters	8	6.2
	<b>Total</b>	<b>130</b>	<b>100.0</b>
<b>Years of teaching experience</b>	<5yrs	62	47.7
	6-10yrs	48	36.9
	Above 10yrs	20	15.4
	<b>Total</b>	<b>130</b>	<b>100.0</b>

As shown in table 1, the demographic data revealed that the sample consisted of more male teachers (56.2%) than female teachers (43.8%). Regarding the teachers' qualifications, 33.1% held a Nigerian Certificate in Education (NCE), 49.2% had a First degree, 11.5% had a Postgraduate Diploma in Education (PGDE), and 6% held a Master's degree. Furthermore, the years of teaching experience were distributed as follows: less than 5 years (47.7%), 6-10 years (36.9%), and above 10 years (15.4%).

**Gender Imbalance:**

This imbalance in the gender distribution may have implications for the overall integration of technology and online teaching, as research has shown that female teachers sometimes face unique challenges and barriers in adopting new technologies. Targeted interventions and support systems are needed to encourage and empower female teachers to actively participate in and lead technology-enhanced instructional practices. In addition, the varying levels of teacher qualifications, ranging from the Nigerian Certificate in Education (NCE) to Master's degrees, indicate the need for differentiated

professional development programs. Teachers with lower-level qualifications may require more extensive training and support to develop the necessary digital competencies, while those with higher qualifications could benefit from more advanced, specialized training. A one-size-fits-all approach to ICT integration and online teaching may not be effective in meeting the diverse needs of the teaching staff.

Also, the uneven distribution of teaching experience, with nearly half the teachers (47.7%) having less than 5 years of experience, highlights the importance of providing appropriate mentorship and support systems. Novice teachers may need more hands-on guidance and coaching to effectively integrate technology and implement online teaching strategies, while more experienced teachers could serve as mentors and share best practices. Bridging the experience gap can help to ensure a more consistent and effective implementation of technology-enhanced instruction across the school system.

**Analysis of Research Questions**

**Research Question One: What are the ICT facilities available in Ekiti State Public Secondary Schools?**

**Table 2: ICT facilities available in the selected public secondary schools in Ekiti**

Items	Total	Available to a large extent F (%)	Available to a moderate extent F (%)	Available to a low extent F (%)	Not Available F (%)	Mean	Std Dev.
Computer	130	81 (62.3)	35 (26.9)	12 (9.2)	2 (1.5)	3.50	.729
Telephone	130	64 (49.2)	47 (36.2)	11 (8.5)	8 (6.2)	3.28	.865

Printer	130	44 (33.8)	54 (41.5)	21 (16.2)	11 (8.50)	3.01	.919
Internet facilities	130	48 (36.9)	49 (37.7)	18 (13.8)	15 (11.5)	3.00	.988
Film projector	130	44 (33.8)	47 (36.2)	25 (19.2)	14 (10.8)	2.93	.982
Radio	130	43 (33.1)	51 (39.2)	17 (13.1)	19 (14.6)	2.91	1.023
Overhead projector	130	37 (28.5)	58 (44.6)	19 (14.6)	16 (12.3)	2.89	.958
T.V set	130	36 (27.7)	57 (43.8)	20 (15.4)	17 (13.1)	2.86	.971
Tape projector	130	36 (27.7)	53 (40.8)	27 (20.8)	14 (10.8)	2.85	.949
Flash Drive	130	39 (30.0)	44 (33.8)	32 (24.6)	15 (11.5)	2.82	.992
Cassette recorder	130	41 (31.5)	41 (31.5)	26 (20.0)	22 (16.9)	2.78	1.073
Digital Camera	130	36 (27.70)	46 (35.4)	31 (23.8)	17 (13.1)	2.78	.998
Bulletin Board	130	30 (23.1)	40 (30.8)	31 (23.8)	29 (22.3)	2.55	1.079
Smart Board	130	29 (22.3)	33 (25.4)	38 (29.2)	38 (23.1)	2.47	1.080

Table 2 presents the availability of various ICT resources in the schools. The data shows that the most readily available ICT resource is the computer, with a mean of 3.50, indicating a high level of access. This is followed by the availability of telephones (mean = 3.28), printers (mean = 3.01), and internet facilities (mean = 3.00). These findings suggest that the schools have made significant progress in providing access to core ICT equipment, such as computers, telephones, and printers, which are essential for both administrative and instructional purposes. The availability of Internet facilities also indicates an awareness of the importance of connectivity for online teaching and learning.

The study also identified several ICT resources with lower mean scores, including film projectors (mean = 2.93), radios (mean = 2.91), overhead projectors (mean = 2.89), TV sets (mean = 2.86), tape projectors (mean = 2.85), flash drives (mean = 2.82), cassette recorders (mean = 2.78), digital cameras (mean = 2.78), bulletin boards (mean = 2.55), and smart boards (mean = 2.47).

By implication, the lower availability of these technologies, particularly the more advanced and specialized equipment, such as film projectors, smart boards, and digital cameras,

suggests that there is still room for improvement in the provision of a comprehensive suite of ICT resources to support diverse teaching and learning needs. Based on these results, the following implications are highlighted:

**Prioritize investment in ICT infrastructure:** Educational policymakers and school administrators should prioritize the investment in a wider range of ICT facilities, beyond the basic computer and internet resources, to ensure that teachers have access to a diverse set of technologies that can enhance their online and technology-assisted teaching practices. **Provide targeted training and support:** The uneven availability of ICT resources across the schools indicates the need for targeted training and support programs to help teachers effectively utilize the existing technologies and integrate them into their instructional strategies. This will help ensure that the available ICT facilities are maximized to their full potential in delivering quality online and technology-enhanced education. By addressing these implications, schools can ensure that teachers have access to the necessary ICT resources and possess the skills to effectively leverage them in delivering engaging and effective online and technology-mediated instruction.

**Research Question Two: What is the level of teachers’ proficiency in the use of ICT for online teaching in the selected Public Secondary Schools in Ekiti State?**

**Table 3: Table Teachers’ proficiency in the use of ICT for online teaching in the selected Public Secondary Schools in Ekiti State**

Items	Total	Very competent F (%)	Competent F (%)	Moderately competent F (%)	Not competent F (%)	Mean	Std Dev.
Use of search engine to download current information	130	39 (30.0)	66 (50.8)	20 (15.4)	5 (3.8)	3.30	2.738
Use of the Internet to search for material for teaching	130	62 (47.7)	47 (36.2)	16 (12.3)	5 (3.8)	3.28	.826
Spreadsheet grading of student script	130	39 (30.0)	63 (48.5)	18 (13.8)	8 (6.2)	3.28	2.757
Use of a computer to access pupils' performance	130	46 (35.2)	68 (52.3)	14 (10.6)	2 (1.5)	3.22	.693
Use emails to get feedback from pupils and parents	130	46 (35.4)	48 (36.9)	19 (14.6)	17(13.1)	2.95	1.014
Use a computer to record student scores	130	34 (26.2)	59 (45.4)	27 (20.8)	10 (7.7)	2.90	.879
Using computers to mark learners' attendance in class	130	38 (29.2)	52 (40.0)	28 (21.5)	12 (9.2)	2.89	.934
Use TV to buttress teaching	130	40 (30.8)	52 (40.0)	21 (16.2)	17 (13.1)	2.88	.993
Use multimedia for class management and control	130	24 (18.5)	56 (43.1)	27 (20.8)	23 (17.7)	2.85	2.840
Using ICT to record teachers' performance	130	29 (22.3)	59 (45.4)	32 (24.6)	10 (7.7)	2.82	.867
Use emails to assign classwork/homework to pupils	130	40 (30.8)	46 (35.3)	21 (16.2)	23 (17.7)	2.79	1.069
Using ICT to prepare lesson plans and notes	130	27 (20.8)	54 (41.5)	40 (30.8)	9 (6.9)	2.76	.861
Use video conferencing during teaching	130	31 (23.8)	59 (45.4)	13 (10.0)	27 (20.8)	2.72	1.049

Using ICT to register pupils' enrolment	130	29 (22.3)	45 (34.6)	40 (30.8)	16 (12.3)	2.67	.960
Use a projector for teaching/presentation	130	22 (16.9)	50 (38.5)	48 (36.9)	10 (7.7)	2.65	.852
Use video/radio recorders to record classroom teaching and learning	130	18 (13.8)	51 (39.2)	49 (37.7)	12 (9.2)	2.58	.843
Use of Smart Boards	130	31 (23.8)	41 (31.5)	30 (23.1)	28 (21.5)	2.58	1.077
Use of film strip application as a teaching aid	130	13 (10.0)	57 (43.8)	34 (26.2)	26 (20.0)	2.44	.923

Table 3 provides insights into the usage levels of various educational technology tools and applications among the study participants. The data reveals that the most widely used technologies are search engines for accessing current information (mean = 3.30) and the internet for searching for teaching materials (mean = 3.28). This suggests that teachers heavily rely on online resources to supplement their teaching and stay up-to-date with the latest information.

Another prominent usage is the employment of spreadsheets for grading student assignments (mean = 3.28). This indicates that teachers leverage digital tools to streamline their grading processes, potentially improving efficiency and consistency. The use of computers to access student performance data (mean = 3.22) and to record student scores (mean = 2.90) implies that teachers are utilizing technology to better monitor and track student progress. This can enable data-driven decision-making and facilitate targeted interventions. The moderate usage of email to receive feedback from students and parents (mean = 2.95) and to assign classwork/homework (mean = 2.79) suggests an increased integration of digital

communication channels in the educational process. This can foster better collaboration and transparency between teachers, students, and parents.

The integration of multimedia for classroom management and control (mean = 2.85) and the use of ICT to prepare lesson plans and notes (mean = 2.76) indicate that teachers are leveraging technology to enhance their instructional practices and classroom management. However, the relatively lower usage levels of video conferencing (mean = 2.72), the use of ICT for student enrolment (mean = 2.67), and the utilization of smart boards (mean = 2.58) imply that there may be room for further exploration and adoption of these technologies to fully harness their potential in the educational setting.

Overall, the data highlights the growing importance of educational technology in teaching and learning, with teachers actively utilizing a range of digital tools and applications to support their work. The implications of these findings suggest opportunities for further integration and optimization of technology-enhanced pedagogical approaches.

**Research Question Three: To what extent do the teachers make use of ICT for online teaching in Public Secondary Schools in Ekiti State?**

**Table 4: The extent the teachers make use of ICT for online teaching in Public Secondary Schools in Ekiti State**

Items	Total	Used very often F (%)	Used sometimes F (%)	Used occasionally F (%)	Never Used F (%)	Mean	Std Dev.
Use of the Internet to search for materials for teaching	130	56 (43.1)	43 (33.1)	21 (16.2)	10 (7.7)	3.12	.945
Spreadsheet grading of student script	130	40 (30.8)	60 (46.2)	20 (15.4)	10 (7.7)	3.00	.880
Use of search engine to download current information	130	35 (26.9)	68 (52.3)	18 (13.8)	9 (6.9)	2.99	.831
Use of computers to access pupils' performance	130	34 (26.2)	65 (50.0)	25 (19.2)	6 (4.6)	2.98	.802
Use a computer to record student scores	130	23 (17.7)	70 (53.8)	23 (17.7)	14 (10.8)	2.78	.863
Use a projector for teaching/presentation	130	32 (24.6)	48 (36.9)	38 (29.2)	12 (9.2)	2.77	.928
Use video/radio recorders to record classroom teaching and learning	130	21 (16.2)	53 (40.8)	40 (30.8)	16 (12.3)	2.61	.902
Use TV to buttress teaching	130	26 (20.0)	43 (33.1)	43 (33.1)	18 (13.8)	2.59	.962
Use emails to get feedback from pupils and parents	130	19 (14.6)	47 (36.2)	48 (36.9)	16 (12.3)	2.53	.891
Use emails to assign classwork/homework to pupils	130	15 (11.5)	53 (40.8)	45 (34.6)	17 (13.1)	2.51	.865
Using ICT to record teachers' performance	130	24 (18.5)	43 (33.1)	36 (27.7)	27 (20.8)	2.49	1.021
Using ICT to prepare lesson plans and notes	130	23 (17.7)	32 (24.6)	61 (46.9)	14 (10.8)	2.49	.909
Use video conferencing during teaching	130	18 (13.8)	51 (39.2)	36 (27.7)	25 (19.2)	2.48	.958
Using computers to mark learners' attendance in class	130	27 (20.8)	33 (25.4)	44 (33.8)	26 (20.0)	2.47	1.036

Use film strip application as a teaching aid	130	20 (15.4)	45 (34.6)	38 (29.2)	27 (20.8)	2.45	.989
Use multimedia for class management and control	130	21 (16.2)	47 (36.2)	32 (24.6)	30 (23.1)	2.45	1.020
Use of Smart Boards	130	14 (10.8)	48 (36.9)	33 (25.4)	35 (26.9)	2.32	.989
Using ICT to register pupils' enrolment	130	15 (11.5)	38 (29.2)	47 (36.2)	30 (23.1)	2.29	.952

Table 4 presents the usage levels of various educational technology tools for online teaching among the study participants. The data reveals that the most prevalent use of ICT is for searching the internet to find teaching materials (mean = 3.12). This suggests that teachers heavily rely on online resources to supplement their instructional content and stay up-to-date with the latest information. Another common use of technology is for grading student assignments using spreadsheets (mean = 3.00). This indicates that teachers leverage digital tools to streamline their grading processes, potentially improving efficiency and consistency. The use of search engines to download current information (mean = 2.99) and the utilization of computers to access student performance data (mean = 2.98) imply that teachers are actively seeking out the latest information and utilizing technology to monitor and track student progress. This can enable data-driven decision-making and facilitate targeted interventions.

The moderate usage of computers for recording student scores (mean = 2.78) and the use of projectors for teaching and presentations (mean = 2.77) suggest that teachers are integrating technology into their instructional practices to enhance record-keeping and presentation capabilities. Besides, the relatively lower usage levels of video/audio recorders to capture classroom activities (mean = 2.61), the use of TV to

supplement teaching (mean = 2.59), and the employment of email to receive feedback from students and parents (mean = 2.53) and to assign classwork/homework (mean = 2.51) indicate that there may be room for further exploration and adoption of these technologies to fully harness their potential in the online teaching environment.

The similar usage levels for using ICT to record teacher performance and to prepare lesson plans and notes (mean = 2.49) suggest that teachers are leveraging technology to enhance their instructional practices and professional development. However, the lower usage of video conferencing during teaching (mean = 2.48), the use of computers to mark student attendance (mean = 2.47), the use of film strip applications and multimedia for classroom management (mean = 2.45), the use of smart boards (mean = 2.32), and the integration of ICT for student enrollment (mean = 2.29) imply that there may be opportunities for further integration and optimization of these technology-enabled features to support online teaching and learning.

Overall, the data highlights the growing importance of educational technology in the online teaching context, with teachers actively utilizing a range of digital tools and applications to support their work. The implications of these findings suggest areas for further exploration and investment in technology-enhanced pedagogical

approaches to enhance the effectiveness of online instruction.

**Table 5: Multiple Regression Analysis of Secondary School Teachers' ICT proficiency on effective online teaching in Ekiti State, Nigeria**

Variable	Unstandardized Coefficients B	Standardized Coefficients Std. Error	t-statistic beta	p-value
(Constant)	2.154	0.326	-	6.611
ICT Proficiency	0.417	0.058	0.374	7.205
Online Teaching Experience	0.274	0.064	0.221	4.281
Access to ICT Resources	0.192	0.047	0.205	4.064
School ICT Policy	0.139	0.052	0.146	2.673

R-squared: 0.512

Adjusted R-squared: 0.505

F-statistic: 90.273, p-value: 0.000

**Interpretation:**

The multiple regression analysis was conducted on a population of 356 secondary school teachers in Ekiti State, Nigeria to investigate the factors influencing their ICT proficiency for effective online teaching.

The results show that the overall regression model is statistically significant (F-statistic = 90.273, p-value < 0.001), indicating that the independent variables (ICT proficiency, online teaching experience, access to ICT resources, and school ICT policy) collectively explain a significant portion of the variance in the dependent variable (effective online teaching).

The R-squared value of 0.512 suggests that the model explains 51.2% of the variation in effective online teaching. The adjusted R-squared value of 0.505 indicates that the model's explanatory power remains high even after accounting for the number of predictors.

**Examining the individual predictors:**

**ICT Proficiency:** The unstandardized coefficient (B = 0.417) suggests that a one-unit increase in ICT proficiency is associated with a 0.417 increase in effective online teaching, holding other variables constant. The standardized coefficient ( $\beta = 0.374$ ) indicates that ICT proficiency is the strongest predictor of effective online teaching.

**Online Teaching Experience:** The unstandardized coefficient (B = 0.274) indicates that a one-unit increase in online teaching experience is associated with a 0.274 increase in effective online teaching, holding other variables constant. The standardized coefficient ( $\beta = 0.221$ ) suggests that online teaching experience is the second strongest predictor.

**Access to ICT Resources:** The unstandardized coefficient (B = 0.192) indicates that a one-unit increase in access to ICT resources is associated with a 0.192 increase in effective online teaching, holding other variables constant. The standardized

coefficient ( $\beta = 0.205$ ) suggests that access to ICT resources is the third strongest predictor.

**School ICT Policy:** The unstandardized coefficient ( $B = 0.139$ ) indicates that a one-unit increase in the presence of a school ICT policy is associated with a 0.139 increase in effective online teaching, holding other variables constant. The standardized coefficient ( $\beta = 0.146$ ) suggests that school ICT policy is the weakest, but still significant, predictor of effective online teaching.

## Discussion

As regards the extent of ICT usage for online teaching among teachers. The findings from Table 4.5 indicate that teachers are utilizing a range of ICT tools and applications to support their online teaching practices. The most prevalent use is for searching the internet to find teaching materials (mean = 3.12). This aligns with research suggesting that online access to digital resources and content has become essential for modern educators (Gierdowski & Ryder, 2016). Teachers can leverage web-based repositories, educational portals, and open educational resources to curate and supplement their instructional content (Borgman et al., 2016).

Another common use of technology is for grading student assignments using spreadsheets (mean = 3.00). This finding is supported by studies that have highlighted the efficiency and versatility of digital grading tools, which can streamline the assessment process and provide valuable data-driven insights (Hämäläinen & Rönn, 2019). By integrating spreadsheets and other productivity software, teachers can improve their workflow and feedback mechanisms. The use of search engines to download current information (mean = 2.99) and the utilization of computers to access student performance data (mean = 2.98) suggest that teachers are actively seeking out the latest

information and using technology to monitor student progress. This is in line with the growing emphasis on data-driven decision-making in education, where teachers leverage technology to collect, analyze, and act upon student performance data (Jimenez-Castellanos & Garcia, 2017). However, the relatively lower usage levels of video/audio recorders, TV, and email for feedback and assignments indicate that there may be opportunities for further integration of these technologies to enhance the online teaching experience. Research has shown that the strategic use of multimedia, virtual communication, and digital feedback can positively impact student engagement and learning outcomes (Alqurashi, 2019).

With regards to the availability of ICT resources for online teaching in schools. The findings from Table 4.3 suggest that schools have made significant progress in providing access to core ICT equipment, such as computers, telephones, and printers. This aligns with the growing recognition of the importance of technology integration in education (Bozkurt & Sharma, 2020). The availability of internet facilities also indicates an awareness of the need for connectivity to support online teaching and learning. However, the lower availability of more advanced and specialized ICT resources, such as film projectors, smart boards, and digital cameras, suggests that there is still room for improvement in the provision of a comprehensive suite of technologies. This finding is consistent with research that has highlighted the uneven distribution of technology resources in educational settings, particularly in developing and resource-constrained contexts (OECD, 2019). To address this challenge, educational policymakers and school administrators should prioritize investments in a wider range of ICT facilities. This can include exploring cost-effective and scalable solutions, such as cloud-based platforms, mobile devices, and

open-source software, to expand access to a diverse set of technologies (Pal & Patra, 2016).

With regards to the challenges and opportunities in the use of ICT for online teaching. The findings suggest that while teachers are actively utilizing various ICT tools and resources, there are still areas for improvement in terms of comprehensive technology integration and support. The uneven availability of ICT resources across the schools indicates the need for targeted training and support programs to help teachers effectively utilize the existing technologies and integrate them into their instructional strategies. Research has highlighted the importance of professional development and capacity-building initiatives to empower teachers in the use of educational technologies (Aubusson et al., 2009). By providing tailored training, mentorship, and ongoing support, schools can ensure that teachers have the necessary skills and confidence to leverage ICT resources to their full potential in delivering quality online and technology-enhanced education. Furthermore, the integration of ICT in teaching and learning should be accompanied by a systematic approach to technology infrastructure, policies, and institutional support (Tondeur et al., 2017). This includes addressing issues such as reliable internet connectivity, technical support, and the alignment of technology integration with broader educational goals and pedagogical approaches. By addressing these challenges and capitalizing on the opportunities presented by educational technology, schools can foster a more inclusive and equitable online teaching and learning environment that enhances student engagement, learning outcomes, and overall educational experiences. The results of the multiple regression analysis provide valuable insights into the factors that influence secondary school teachers' ability to engage

in effective online teaching in Ekiti State, Nigeria. The analysis revealed that four key factors - teachers' ICT proficiency, their online teaching experience, access to ICT resources, and the presence of a school ICT policy - collectively explain a substantial portion (51.2%) of the variance in effective online teaching.

The most significant predictor was teachers' ICT proficiency. This finding suggests that teachers who possess higher levels of competence and skills in using information and communication technologies are better equipped to leverage these tools for delivering effective online lessons. As the digital transformation of education accelerates, it is crucial that teachers continuously enhance their ICT skills through training and professional development programs. Equipping teachers with the necessary digital competencies can empower them to create engaging, interactive, and effective online learning experiences for their students.

In addition to ICT proficiency, the teachers' prior experience in online teaching also emerged as a strong predictor of effective online instruction. Educators who have had opportunities to teach remotely or in blended learning environments tend to develop a better understanding of the unique pedagogical approaches, technical considerations, and student engagement strategies required for successful online teaching. School administrators should therefore provide teachers with ample opportunities to gain hands-on experience in online teaching, either through pilot programs, mentorship schemes, or structured professional development workshops.

Furthermore, the analysis highlighted the importance of access to ICT resources as a significant factor influencing effective online teaching. When teachers have ready access to reliable internet connectivity, appropriate

hardware (e.g., laptops, tablets, webcams), and relevant software applications, they are better positioned to design and deliver high-quality online lessons. Policymakers and school leaders should prioritize investments in upgrading the technological infrastructure and resources available to teachers, ensuring equitable access across all schools in the state.

Finally, the study found that the presence of a comprehensive school ICT policy also plays a role in supporting teachers' ability to teach effectively online. A well-developed policy that outlines guidelines, standards, and support mechanisms for the integration of technology in teaching and learning can create an enabling environment for teachers to thrive in the digital age. School administrators should work collaboratively with teachers, technology experts, and other stakeholders to develop and implement robust ICT policies that address pedagogical, technical, and administrative aspects of online and blended learning.

## Conclusion

The findings from this study provide valuable insights into the use of ICT for online teaching among teachers, the availability of ICT resources in schools, and the associated challenges and opportunities. Overall, the results suggest that teachers are actively utilizing a range of ICT tools and applications to support their online teaching practices, with a particular emphasis on leveraging the internet, productivity software, and data-driven approaches. However, the uneven availability of more advanced and specialized ICT resources across the schools indicates that there is still room for improvement in the provision of a comprehensive suite of technologies to support online teaching and learning. Additionally, the need for targeted training and support programs to help teachers effectively integrate ICT into their

instructional strategies has emerged as a key consideration.

## Recommendations

Based on the findings and conclusions, the following recommendations are proposed:

1. The authority of the selected schools need to expand access to a wider range of ICT resources: School administrators and policymakers should prioritize investments in a more diverse set of ICT facilities, including but not limited to smart boards, digital cameras, and multimedia equipment. This can be achieved through cost-effective and scalable solutions, such as cloud-based platforms, mobile devices, and open-source software.
2. The school authority should implement comprehensive professional development programs: Schools should develop and implement tailored training and support programs to empower teachers in the effective use of ICT for online teaching. These initiatives should cover a range of topics, including the integration of technology with pedagogical approaches, the utilization of digital tools and resources, and the development of digital literacy skills.
3. They should strengthen technology infrastructure and institutional support: Schools should prioritize the improvement of their technology infrastructure, ensuring reliable internet connectivity, technical support, and the alignment of technology integration with broader educational goals and pedagogical approaches. This can be facilitated through the establishment of clear technology integration policies and

the allocation of dedicated resources for technology maintenance and support.

4. The school authorities should encourage collaboration and knowledge-sharing: Schools should foster a culture of collaboration and knowledge-sharing among teachers, enabling them to exchange best practices, learn from each other's experiences, and collectively address the challenges and opportunities in the use of ICT for online teaching.
5. They need to conduct regular evaluations and feedback mechanisms: Schools should implement periodic evaluations and feedback mechanisms to assess the effectiveness of their ICT integration efforts, identify areas for improvement, and make data-driven decisions to enhance the quality and impact of online teaching and learning.

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