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Accessibility, Usability, and Readiness Towards ICT Tools for Monitoring Educational Practice in Secondary Schools

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ABSTRACTS

The accessibility, usability, and teachers' attitudes about using information and communication technology among secondary school teachers in the Ilorin Metropolis are investigated in this study. The research is a cross-sectional descriptive study. A total of 253 instructors (i.e. 179 from public and 74 from private schools; 123 males and 130 females) were chosen randomly from 2098 teachers in secondary schools in the Ilorin metropolitan using a random sample technique. The data for the study was collected using a specially constructed questionnaire. Three research questions were posed, and three of them were addressed. At the 0.05 level of significance, mean and standard deviation were employed to answer study questions. The study's findings revealed that most ICT facilities are inaccessible.

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1. INTRODUCTION

It is undeniable that information and communication technology (ICT) can revolutionize the learning environment and, when properly implemented, may improve the learning process. However, for technology to be used effectively in the classroom, teachers must be competent and confident in technical, pedagogical, and content expertise. Pedagogy is the act or practice of confidently educating with specific techniques, strategies, and technologies to achieve pedagogical goals. Because of its relevance in both teaching and learning, the role of information and communication technologies (ICT) in aiding education cannot be emphasized. Effective ICT integration is critical for increasing the quality of instruction both inside and outside the classroom. According to [Tezci \(2010\)](#), teachers should learn not only how to use technology to enhance traditional teaching or increase productivity, but also how to integrate ICT into classroom activities to promote student learning from a student-centered perspective. [Olakulehin \(2007\)](#) underlines that effective learning with the use of computers and other information technologies as learning aids, rather than supplementing the teacher, is central to the instructional application of ICT. Despite the benefits of using ICT in teaching and learning, [Eze and Aja \(2014\)](#) argue that their utilization, particularly in secondary schools, is still limited since instructors and school administration have yet to completely embrace and employ them for instructional reasons.

One of the issues impeding the proper execution of the secondary education curriculum in Nigeria is teachers' unwillingness to embrace and use ICT in the classroom. Teachers' lack of awareness of the use of ICT and their apathy toward innovation, according to [Kabiru and Sakiyo \(2013\)](#), is a contributing factor impeding the use of ICT for instructional reasons. The authors also discovered that teachers lacked time to learn new skills, had a significant number of students enrolled in their classes, and had an insufficient quantity of computers available in the classroom for student use. Secondary school instructors in Nigeria, according to [Ajayi and Ekundayo \(2009\)](#), rely on the conventional "chalk and talk" approach to teaching rather than embracing the use of technology. ICT development and utilization do not appear to be well established in Nigerian secondary schools, according to [Fakeye \(2010\)](#), due to secondary school teachers' insufficient informative knowledge of ICT usage. The inaccessibility of specific ICT components in schools has an impact on teachers' use of ICT. Expanding the discourse further, [Basargekar and Singhavi \(2017\)](#) opined those inadequate ICT resources; low teacher confidence; lack of motivation; lack of competence; and teachers' attitude toward the utilization of modern technologies for effective teaching and learning are major barriers experienced by school teachers in facilitating successful integration of ICT for teaching purposes, especially in a developing country like Nigeria.

This means that most teachers are confronted with pedagogical experiences while also having insufficient expertise in how to apply and use digital technology effectively in their professional activities. The authors emphasized that the success or failure of ICT deployment is determined by teachers' perceptions of their ability to use technology in the classroom. Instructors' perceptions of their ability are influenced by both non-manipulative (demographic features of the teachers) and manipulative (language of delivery, school board, and training facilities) teacher factors. Teachers' training should focus on pedagogical issues, if they are to be convinced of the value of employing ICT in their work. Individuals in Nigeria today may not use ICT services for a variety of reasons, including a lack of interest, illiteracy, lack of awareness, high service rates, and poor service quality. Operational terms include:

- (i) Accessibility can be defined as the ability to use a system or entity's capabilities and potential benefits. It is important to ensure that services and information are accessible

to a wide range of people when it comes to ICT accessibility.

- (ii) Usability is a fundamental criterion for assessing technological developments; it ensures the quality of e-learning devices and places users and their demands at the forefront of technological development. It also assures that a product can be used by specific users to achieve specific goals in a specific context with effectiveness, efficiency, and satisfaction.
- (iii) Readiness is a metric for assessing the quality of ICT infrastructure at the national level or within major businesses. It can assess a consumer's, a business's, or a government's ability to gain from ICT.
- (iv) Monitoring is a technique for ensuring and improving the efficacy and efficiency of a program's implementation.

The use of information and communication technology to assist, enhance, and optimize the transmission of information is referred to as ICT in education.

2. LITERATURE REVIEW

The use of ICTs in educational practice is widely regarded to empower both teachers and students, encourage change, and stimulate the development of 21st-century skills. ICT, can use shift teaching and learning processes from a teacher-centered to a student-centered approach. Related studies on technology integration in Nigerian education developments have opened up possibilities for bettering teaching and learning, particularly in terms of resource access. For example, the Internet provides learning venues and capacities for bridging the gap between students and teachers. As a result, technological advancements have led to numerous forms of technology integration in education, such as mobile learning, online learning, and blended learning. Educational activities can now be conducted via electronic mail, chats, web-based conferencing, messaging platforms, and web pages for sharing information resources as a result of these technological advancements (Utulu & Alonge, 2012). As a result of these educational activities, interactive and collaborative learning is facilitated, and assessment is improved during the teaching-learning process. Support, accessibility, infrastructure, learning tools, and cognitive are five categories of characteristics that influence the usage of ICT in Nigerian secondary schools, according to a factor analysis study (Ogundile *et al.*, 2019). Unfortunately, according to a recent assessment, ICT readiness in Sub-Saharan Africa is still quite poor, with most governments experiencing significant delays in the acquisition of facilities due to a lack of finances.

2.1. ICT Integration for Better Learning Outcomes

To improve learning outcomes, the National Policy on Education highlighted the importance of integrating ICT to support teaching and learning. Teachers use ICT resources to make their lessons more exciting and engaging for their students. According to Hidayet (2010), most teachers who use modern technology in teaching and learning find it to be highly useful and simple to use. The degree to which technology is integrated into the classroom can influence a country's educational quality. ICT has a significant impact on education, providing a wealth of tools for improving the teaching and learning process and assisting in the identification of individual students' learning requirements to promote equitable opportunity. Because today's students are digital natives who can retrieve essential information in a short amount of time and access and spread information such as e-books and e-journals that may be utilized for self-paced learning, the usage of ICT is unavoidable for teachers during instruction (Danner & Pessu, 2013). Teachers are an essential component of the educational process. Teachers must play a prominent role in employing ICT tools in

teaching and learning through the requisite skills required for their competency level in education is to effectively respond to the needs of the twenty-first century. To perform effectively in the profession, teachers must attain a particular degree of ICT competency, and their competency levels must be reviewed regularly due to evolving technology. As educators, teachers must constantly develop their skills in the use of ICT for instructional delivery.

2.2. Teachers' Attitudes Toward the Use of ICT

Regardless of the number and quality of ICT available for teaching and learning processes, the teacher is the key to how ICTs are utilized; therefore, teachers must have the competency to demonstrate the appropriate attitude toward ICT usage as new tools emerge daily. The capacity to combine and apply applicable abilities to tasks required in the process of using ICT for teaching and learning is referred to as ICT competency. Teachers must be able to bring together all of the attributes required in the use of ICT for teaching, including (high levels of knowledge, values, skill, personal dispositions, sensitivities, and capabilities, and the ability to put those combinations into practice in an appropriate way for teaching and learning). In his study, [Markauskaite \(2007\)](#) classified ICT competencies required of teachers as making personal use of ICT mastery of a range of educational paradigms that use ICT; making use of ICT as mind tools; using ICT as a tool for teaching and mastering a range of assessment paradigms that use ICT, and understanding the policy dimensions of the use of ICT for teaching and learning. Basic and educational ICT competencies are classified, although both are required by teachers for effective instruction and to allow for a positive attitude. The acceptance of ICT for instructional delivery, as well as future behavior, such as utilization in the classroom, is assumed to be influenced by attitudes about ICT. Teachers' attitudes about using ICT for teaching and learning are influenced by factors such as gender ([Mumcu and Usluel, 2010](#)). It is critical to promote and maintain good attitudes toward ICT use, particularly among instructors. Negative attitudes must not be permitted to hinder potential ICT users' knowledge and inventiveness, nor should worry be allowed to obstruct the learning process. If ICT is to be effectively integrated into the school curriculum, instructors' views about its use must be positive.

3. METHOD

The study will be done using a cross-sectional descriptive survey research approach. All secondary schools in the Ilorin metropolitan will be used to perform the research. In the Ilorin metropolitan, the population of this study includes 41 secondary schools and 2098 instructors. The number of respondents in the survey was determined using a multi-staging sampling technique. All 41 secondary schools in the Ilorin metropolitan were chosen using purposeful sampling. On a total of 253 teachers, 179 from public schools and 74 from private schools, the random sampling technique was utilized. There were a total of 123 male and 130 female teachers used in this study.

3.1. The Data Collection Instrument

The data collection tool is a structured questionnaire called the Teachers' Attitudes toward Information and Communication Technologies Questionnaire, which was developed by the researcher for the study (TATICTQ). TATICTQ is divided into three sections: 'A,' 'B' and 'C.' Section 'A' gathered information on the respondents' data, such as gender and school type. Teachers' use of ICT equipment and how they learn to utilize ICT are covered in section 'B.' Items in Section 'C' are used to assess teachers' attitudes toward ICT. The items were

categorized as Strongly Agree, Agree, Disagree, and Strongly Disagree on a Likert scale. The numerical numbers for the response categories were 4, 3, 2, and 1 accordingly. Cronbach Alpha was used to determine the instruments' reliability coefficients, which were 0.82 and 0.77 respectively.

3.2. Techniques for Data Collection and Analysis

The respondents were given the questionnaire by research assistants and it was returned to them within two weeks. At a 0.05 level of significance, the data from the questionnaire were analyzed using percentage, mean, and t-test statistics. The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 25.

3.3. Research Questions

The study addressed the following research questions:

- (i) What are the teaching resources accessible in secondary schools in the Ilorin metropolis?
- (ii) What is the attitude of instructors in the Ilorin metropolitan toward the use of ICT for instructional delivery?
- (iii) How accessible are ICT facilities for teaching and learning in schools?

4. RESULTS AND DISCUSSION

4.1. Research Question 1: What are the Teaching Resources Accessible in Secondary Schools in the Ilorin Metropolis?

The mean score of the respondents and the standard deviation were categorized as accessible or not accessible to analyze the accessible ICT tools for education in the Ilorin city (AV-2 or NAV-1). **Table 1** summarizes the findings.

Table 1. Responses on the accessibility of ICT tools for teaching.

Accessible ICT Resources	Std. Dev.	Mean (\bar{x})	Result
Television Set	.424	1.23	Not Accessible
Radio Sets	.445	1.27	Not Accessible
Desktop Computers	.487	1.62	Accessible
Printers	.500	1.53	Accessible
Overhead Projectors	.358	1.15	Not Accessible
Scanner	.415	1.22	Not Accessible
Internet Connectivity	.435	1.25	Not Accessible
Video Sets	.390	1.19	Not Accessible
CD-ROM	.493	1.41	Not Accessible
Electricity	.470	1.67	Accessible
Radio Cassettes Players	.427	1.24	Not Accessible
VCD/CD/DVD	.433	1.25	Not Accessible
Laptop Computers	.487	1.38	Not Accessible
Electronic Typewriters	.449	1.28	Not Accessible
Manual Typewriters	.498	1.55	Accessible
Cameras	.368	1.16	Not Accessible
Generators	.485	1.63	Accessible
Flash drive	.493	1.41	Not Accessible
Telephone	.482	1.36	Not Accessible
Motion Camera	.289	1.09	Not Accessible
Tape Record Players	.335	1.13	Not Accessible
Audio Tape Recorders	.327	1.12	Not Accessible
Grand Mean (\bar{x})		1.32	

Table 1 presents the responses to the question of accessibility of ICT tools for teaching, with a mean score of 1.5 as the criterion. Items with a mean score of 1.5 or higher are considered accessible for teaching, while items with scores below the norm are considered inaccessible. **Table 1** shows that televisions, radios, overhead projectors, scanners, internet connectivity, video sets, CD-ROM, radio cassette players, VCD/CD/DVD, laptop computers, electronic typewriters, cameras, flash drives, telephones, motion cameras, and audiotape recorder players/recorders were not available for use in the classroom. Desktop computers, printers, electricity, manual typewriters, and generators, on the other hand, had mean ratings larger than 1.5. The accessibility of ICT tools for teaching had a grand mean score of 1.32. Most of the ICT tools identified were not accessible for teaching in secondary schools in Ilorin city, according to the findings.

4.2. Research Question 2: What is the Attitude of Instructors in the Ilorin Metropolitan Toward the Use of ICT for Instructional Delivery?

Table 2 shows teachers love utilizing ICT for my teaching and learning process, 3.54, and ICT usage assists me to perform effectively and efficiently, according to the table above 3.07, teachers are always excited and encouraged to employ ICT in their classrooms, 3.39, 2.68. The use of ICT will improve my student's focus on the subject matter. The average mean of teachers' attitudes toward using ICT as a pedagogical instrument for teaching basic technology in Ilorin is 3.26, which is higher than the national benchmark of 2.50. This indicates that teachers in the Ilorin metropolitan have a good attitude toward the use of ICT for instructional delivery.

Table 2. Teachers’ attitude towards ict usage for instructional delivery.

S/N	ITEM	MEAN	SD
1	I enjoy using ICT for my teaching and learning process	3.54	0.31
2	ICT usage allows me to perform effectively and efficiently	3.07	0.25
3	I am always motivated and interested to use ICT for my teaching	3.39	0.63
4	Using ICT extends communication and interaction with my students	2.82	0.12
5	I believe that ICT makes the subject more interesting, systematic, broad, and detailed	3.21	0.23
6	The use of ICT allows me to gather more information about a particular topic for my instruction	3.61	0.27
7	Using ICT helps me to learn new things	3.64	0.31
8	I feel confident when it comes to working with technology in the class	3.21	0.29
9	The use of ICT will enhance my student’s concentration on the subject matter	2.68	0.23
10	Using ICT for instruction will enhance productivity in my teaching	3.41	0.27
	Grand mean	3.26	0.28

4.3. Research Question 3: In Terms of Teaching and Learning, How Accessible are ICTs in Schools?

Table 3 shows the results of the analysis as they relate to the aforesaid study topic. **Table 3** shows the results of a survey of secondary school students' access to ICT facilities. With items 1 to 10, the results revealed that ICT facilities are not easily available. 75% of the teachers claimed that they do not have enough PCs. 9% of those polled indicated they have educational software and television, while 19.8% said their computers are connected to the internet. Photocopiers are used in 45% of the schools, according to the survey.

Table 3. Accessibility of ICT facilities in schools.

S/N	DECLARATION	YES	%	NO	%
1	There are enough computers in my school	63	24.9	190	75.1
2	My school has Educational Software for teaching	23	9.1	230	90.9
3	Our computers are connected to the internet	50	19.8	203	80.2
4	We have interactive Boards in our schools	60	23.8	193	76.2
5	There are Television sets that we use for teaching	23	9.1	230	90.9
6	We have enough printers	70	27.7	183	72.3
7	There are Photocopiers in my schools	114	45	139	55
8	Multimedia Facilities are available for teaching	0	0	253	100
9	We have Projectors in our schools	38	15	215	85
10	Presence of a virtual library	63	24.9	190	75.1

4.4. Discussion

Teachers have a favorable attitude toward using ICT for instructional delivery, according to the study's findings. In keeping with the findings of this study, Bakr (2011) added that attitudes have cognitive, affective, and performance components that teachers will demonstrate to improve their use of ICT for instructional delivery. The findings of this study reveal that ICT facilities are not readily available in the schools studied. It also demonstrates that the majority of schools do not have access to the internet. Schools with computers lack the necessary educational software to meet the needs of their students. Furthermore, the computer resources available in these schools are insufficient to satisfy the needs of the vast student population. Some schools with internet access have been disconnected due to a failure to pay their access fee.

5. CONCLUSION

According to the findings of the study, ICT facilities are not widely available in our secondary schools, and ICT usage is low in our secondary schools. According to the findings, the majority of teachers lack fundamental computer and ICT skills. Secondary school teachers should be trained in the use of ICT facilities through frequent seminars and computer literacy workshops to stay current with computer and ICT-based instruction. According to the findings of this study, the number of teachers who use ICT should be increased, seminars for teachers to increase their level of knowledge and competence, which will help their attitude toward usage, and schools, should engage and employ teachers who are competent in the use of ICT should be organized.

6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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