

Assessment of Digital Literacy and Technology Utilisation among Secondary School Students in Ilaro Metropolis, Ogun State, Nigeria

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Abstract

This study examined the digital literacy levels and technology utilization among secondary school students in Ilaro metropolis, Ogun State, Nigeria. Three research questions were raised and answered, using a descriptive survey method as the research design. data were collected from 210 students across six schools through a structured questionnaire. The instrument was validated and the reliability index obtained was 0.76. The findings revealed a moderate digital literacy among students, the students are using digital technologies in the school and factors like high device costs, limited access to infrastructure, and inadequate training opportunities within schools were identified as barriers affecting the use of digital technologies. Among the recommendations was to enhance digital literacy, making digital infrastructure available in the schools.

Keywords Digital Literacy, Digital Technologies, Utilisation, Digital Infrastructure

Introduction

Technology integration in every sector is rising, and education is no exception. There has been a significant shift in the teaching-learning process in the past few years with digitalization in education. The transformation of all information types (texts, sounds, visuals, video, and other data) of digital language can be termed digitalization (Machekina, 2017). In comparison, Keane (2012) divided digital learning into four components: digital teaching material, digital tools, digital content delivery, and autonomous learning. Koh (2016) stated that a new level of personalized learning was created to integrate technology into the education process. The use of digital technologies presents numerous opportunities for teacher teaching and student learning. In an article, Johari (2017) stated that digitalization in education has made the teaching-learning process stress-free, broad, and more participatory. Schools are gradually implementing digital learning solutions like Smart Interactive boards, laptops, interactive screens, projectors, and an internet connection to support teaching-learning. Digitalization in education can be felt by increasing accessibility, availability, and usage of digital devices in the early years of the student's life. In other words, the learner needs digital literacy skills to use digitalization in education effectively. Information and Communication Technology (ICT) has led all processes based on information, therefore there is a need for

every individual in the country to be digitally literate and technology competent (Oshin & Badmus, 2018).

Digital learning media such as web, blog, video, and multimedia can be used for all primary, secondary, and higher education subjects. This digital media can be defined as a tool/learning platform or application designed for teaching and learning. Digital learning media can facilitate and stimulate students' cognitive skills with a more meaningful learning experience (Paidí *et al.*, (2021; Sidauruk *et al.*, 2021). Digital media is essential in the learning process because it can package the material to be more contextual, interesting audiovisual, reduce verbalism, and be more interactive (Rusydiyah *et al.*, 2020). Technology-based media uses digital tools that need computers and mobile phones as supporting devices. Using digital learning media also aimed to increase students' writing and computer skills, digital skills, interactive, responsive, and share knowledge to enrich learning experiences and resources (Nelson *et al.*, 2011). Regarding digital learning in the 21st century, digital media is proposed to improve student engagement involvement and enhance knowledge and competencies (Purwadi *et al.*, 2020). The use of digital media in learning is an effort to grow student interest, motivation, attractiveness, digital literacy, and student learning outcomes.

Digital literacy refers to the learners' skills in searching for information on the internet browser and operating various software tools (Buckingham, 2010; Law *et al.*, 2018). Digital literacy is not only just understanding how to use technology but also knowing the benefits of the tools and when to utilize them (Alexander *et al.*, 2016), having the capability to organize information, and critical and creative thinking skills (Law *et al.*, 2018). There are twenty aspects related to digital literacy as follows: information research and retrieval, information evaluation, learning resources, utilization tools, data transmission, information communication, social responsibility, authorization of digital information, choosing appropriate computing devices, systems analysis, system design, tools development, programming, security of data and the information, security of financial and personal identity, administration of the database, data management, networking, computer technology; photography and digital video (Nelson *et al.*, 2017). Aspects of digital literacy competencies include capability in utilizing technology, applying technology to acquire, assess, create, and communicate information (Oh *et al.*, 2021).

Digital literacy skills are a particular set of competencies that allow an individual to fully function and participate in a digital world by understanding, finding, utilizing, and creating information from various internet sources. Over time, the advancement of technology has modified the meaning of digital literacy. In some researcher works digital literacy is the ability to understand and use information when presented via computers. Digital literacy is the ability to navigate various digital platforms and understand, assess, and communicate through them. In an article, Phuapan *et al.*, (2015) argued that digital literacy means using digital technology, communication devices, and networks in digital environments to survive in the digital world successfully. According to them, the

essential elements required to attain digital literacy skills are accessing, managing, integrating, evaluating, creating, communicating, analyzing, and synthesizing through digital devices.

Teachers worldwide are encouraged and expected to implement Information and Communication Technology (ICT) in instruction as it now places high demand on education. However, teachers might find it difficult to know how to use the Internet in the classroom. Researchers assert that most teachers in Nigeria lack pedagogical knowledge of effective utilization of ICT resources for teaching in Nigeria (Adikwu, *et al.*, 2018, Nwana *et al.*, 2017; Onasanya, 2010; Yusuf *et al.*, 2013; Yushau & Nannim, 2018). It was also observed that graduates who are hired to work in companies have difficulties manipulating basic ICT tools (Okolocha & Onaigho 2015). There were indications that ICT facilities and digital literacy were not adequately utilized in schools. Students are also seen enrolling in roadside computer centers to acquire knowledge of ICT skills and to be relevant to this digital age. In 1988, the Federal Government of Nigeria introduced computer education.

Statement of the Problem

Despite the National Policy on Education, NPE (2004) recognizing ICT as a product of technological change and innovation in education which called for the integration of computer studies into the curriculum and made the study a compulsory subject in secondary schools, there is still a huge gap in the literacy and utilization of ICT resources in schools.

The Ogun State Government's efforts towards the digitalization of education in all schools have always been discussed in the system, but some secondary schools in the state, particularly in Ilaro metropolis, have not been able to witness this development. Recently, scholars in the field of educational measurement and evaluation have advocated switching all Paper-Based Tests/Exams to Computer-Based Tests (CBT) to further extend the like of JAMB which is completely using CBT as a means of conducting her examination. Some of the digital devices available in some schools are underutilized because digital literacy is lacking among the teachers and students and some secondary schools do not have these digital technologies for both the teachers and students to use.

Since the digitalization of education has come to stay there should be reasons to justify the schools' readiness, digital literacy and technology utilization in secondary school. What we need to know is, if the students are digitally literate, if available the technologies are utilized and what are the like factors hinder the digital utilisation in the school. Therefore, this study assessed the digital literacy level and utilization of digital technologies among secondary school students in Ilaro metropolis, Ogun State, Nigeria.

Objectives of the Study

The purpose of this study was to assess digital literacy and technology utilization among secondary school students in Ilaro metropolis, Ogun State, Nigeria. Specifically, this study;

1. Assess the level of digital literacy among secondary school students.
2. Investigate the level of digital technology utilization among secondary school students.
3. Identify the factors influencing digital literacy development and utilization among secondary school students.

Research Questions

The following raised research questions were answered

1. To what extent is the level of digital literacy among secondary school students in Ilaro metropolis?
2. To what extent do secondary school students utilize digital technologies in their schools for academic purposes?
3. What key factors hinder digital literacy and technology utilization among secondary school students?

Methodology

This study used a descriptive survey design to collect information from the respondents who participated in the study. The target population comprised all senior secondary school students in Ogun State, particularly in Ilaro metropolis. There are twelve (12) public secondary schools in Ilaro.

This study utilized a simple random sampling technique to select six (6) schools out of twelve (12) public secondary schools available in Ilaro metropolis. Thirty-five (35) senior secondary school students (SS2) participated in the study and were selected using a simple random technique in each of the schools, therefore making two hundred and ten (210) students serve as respondents. In this level of class, i.e. SS2 class, have gained enough experience to understand the facilities available in the school, the styles of teaching among the teachers, instructional materials provided by school management and government to facilitate their learning, and the presence of digital technology or computer laboratory in their various schools. In all 112 (one hundred and twelve) male students and 98 (ninety-eight) female students were involved in the study. Table 1 displayed the names of the schools and numbers of the students.

Table 1: Participated Schools in Ilaro Metropolis

S/N	Schools	Nos
1	Promising Generation Secondary School, Ilaro	35
2	Itolu Community Secondary School, Ilaro	35
3	Yewa (Egbado) College, Ilaro	35
4	Ansar-ud-Deen Model Academy, Ilaro	35
5	Okepata Secondary School, Ilaro	35
6	Orona High School, Oke-	35
	Total	210

The questionnaire used to collect data for this study was a researcher-developed one. The questionnaire has two sections (A and B). Section A contained information on respondents' bio-date while section B has items that were used to collect information from the respondents to answer the stated items. The items were measured using Likert's rating scale from strongly agree (SA), agree (A), disagree (DA) to strongly disagree (SD).

The instrument was subjected to face and content validity. Three experts were used to validate the instrument, one from education technology, one from ICT, and one from educational evaluation. Their suggestions and observations were effectively taken care of before the final production of the instrument was made for distribution. The reliability coefficient was achieved through the use of Cronbach alpha and an index of 0.76 was obtained.

The questionnaire was administered with the help of researcher assistants. In each of the participating schools, a researcher assistant was used and helped to distribute and collect the questionnaire back from the respondents. It took two weeks to complete the administration of the collection of data. The analysis of the data collected was made with the use of simple frequency distribution, percentage, means score, and standard deviation through the aid of the Statistics Package for Social Science.

Results

The results of this study are presented according to the research questions as follows:

Answers to the Research Questions

Research Question 1: To what extent is the level of digital literacy among secondary school students in Ilaro metropolis?

Table 2: Level of Digital Literacy among Secondary School Students in Ilaro Metropolis

S/N	Items	SA		A		D		SD		Mean	Std. Dev.
		No	%	No	%	No	%	No	%		
	I am confident in my digital skills, such as using social media (Facebook, Twitter, Instagram, etc.)	72	34.3	81	38.6	37	17.6	20	9.5	2.98	0.951
	I am confident in digital skills like using search engines (e.g. Google, etc.)	92	43.8	88	41.9	12	5.7	18	8.6	3.21	0.893
	I use the internet for academic purposes daily	83	39.5	75	35.7	29	13.8	23	11.0	3.04	0.987

I am confident in digital skills like creating documents (e.g. Word processing, Power presentation, etc.)	69	32.9	92	43.8	32	15.2	17	8.1	3.01	0.899
I do send and receive emails (Gmail, Yahoo emails, etc.)	85	40.5	63	30.0	41	19.5	21	10	3.01	1.002
I can download educational resources (Research Gates, Academia, etc.)	77	36.7	68	32.4	41	19.5	24	11.4	2.94	1.010
I have received formal training on how to use digital devices for academic purposes	62	29.5	79	37.6	39	18.6	30	14.3	2.82	1.013
My teachers incorporate digital tools in their teaching (e.g., using projectors, digital boards)	64	30.5	69	32.9	48	22.9	29	13.8	2.80	1.025
I can search for online information without assistance	56	26.7	68	21.9	46	21.9	40	19.0	2.67	1.069
I can operate different digital devices like smart phones, computers and others	60	28.4	75	35.7	32	15.2	43	20.5	2.72	1.089
Grand Mean = 2.92										

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