



Availability and Accessibility of Information and Communication Technology Facilities for Teaching Geography in Public Secondary Schools Zaria Metropolis, Kaduna State, Nigeria

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Abstract

This study investigated the availability of information and communication technology facilities and how accessible they are for teaching geography in Public Secondary Schools in Zaria Metropolis. Descriptive method adopted with sample of 40 Geography Teachers. Two research instruments used; Checklist for the Availability of ICTs in the schools and Questionnaire on how accessible the Available ICTs for teaching geography and factors hindering ICTs accessibility for teaching geography (QAAFTG). Instruments were validated and the reliability coefficient of the questionnaire was 0.78. Frequency and Percentage used to analyze collected data. The study found the availability of ICT facilities in the schools were low, resulting in low accessibility for teaching geography in the government secondary schools in Zaria Metropolis and some of the factors hindering the accessibility were inadequate power and ICT expertise. Government should ensure that required ICT facilities are provided and accessible in all public secondary schools in the State was recommended.

Keywords: Available ICTs, Geography Education, Secondary School, Accessible ICTs

Introduction

The use of Information Communication Technology facilities is unquantifiable in today's world, ranging from administration, transportation, health, agriculture and education among others; which made the world a global village, creating a new landmark in sophisticating the educational system. Thanks to internet and websites! educational methods, techniques and resources have become more accessible; ICTs has gained prominence and is becoming one of the most important elements defining the competency of teachers and students. The nation needs to produce ICT literate citizens who will build the infrastructure required to survive in this digitally-age of society (Niño, 2018). The objective of education is for society to survive and thrive in every era, in this technological era ICT accessibility to both teachers and students is required in today's education, and any education system or educator with no ICT accessibility, today's basic educational requirement has not been made. As an academician one cannot imagine education without ICT (Bodo, 2019). It shows how significant ICTs are in education.

Nigeria with two types of educational systems; the public and the private. The provision of teaching

and learning facilities in public schools is the sole responsibility of the government, both ICT and non-ICT facilities. Government bears the responsibility of providing educational services to their citizens and according to some studies, the availability of ICTs in public schools in some parts of Nigerian is inadequate (Awan, 2021) ; there is a dearth of ICT facilities in secondary schools in Kaduna as there were very few of such facilities available in most of the schools visited (Hanna , Bashir, & Michael, 2013). Supported by (Adeyeni, & Ogunbameru, 2013)The most commonly used ICT facilities were computer set, which were adequately available in approximately 47% of the schools, non-availability of software and hardware infrastructure is a major factor challenging the use of computer and ICT in schools and not all public secondary schools across Adamawa state are equipped with computer and ICT resources (Gadzama, 2019) and most of the ICT facilities were not available and the little ones available were not accessible in most of the time (Asubiojo & Aladejana, 2019). The government has to own to their responsibility either by providing the proved lacked ICT facilities in schools or find a private individual or organization to but first have to find what



and why the ICT facilities are not available and accessible in the schools.

When educational facilities and materials are inadequate, unavailable or not accessible it is as a result of one factor or the other, technological factors that hinder adequate ICT facilities include, low Internet connectivity bandwidth, unreliable telecommunication network, expensive hardware and software, expensive ICT facilities, unstable power supply and inadequate ICT facilities for networking (Oluwatosin, 2022). Managerial factors causing hindrance include, insufficient funding, poor policy on ICT adoption and lack of good maintenance of ICT facilities which is in conformity with (Sagir, Wakala, S., & Zainab, 2019). Supported by Ismail (2022) ICT integration in schools suffers due to the non-availability of ICT resources and lack of teachers' relevant skills and knowledge, Winfred & Ozofor (2019) added insecurity and over protectiveness are the leading factor militating against accessibility of ICT resources. Any factor hindering the availability of ICT facilities in school also affects why, when and how it can be used and non-availability or inadequate ICTs is the first hindrance to be eradicated, only available ICT facilities can be accessed. This hindrance all affects the teaching and learning processes of those school subjects or topics that can hardly be managed without ICTs, like GIS and RS in geography.

Geography education educates students about man, the environment and the relationship between both. The subject is offered in both tertiary and secondary schools in Nigeria by the senior secondary students, which entails topics like GIS and remote sensing both can only be fully taught and comprehended with the use of some ICT facilities. According to (Thomas & Daniel, (2021) advanced level Geography teachers find Information and Communication Technology (ICT) as a useful tool that improves their efficiency and performance. Therefore, for effective teaching to take place information communication technology facilities must be provided and teachers must have access to various types of resources, particularly in their areas of specialization (Odunlade, 2018). Geography education needs specific ICT facilities so as other subjects, availability of ICT in public senior secondary schools does not guarantee availability of ICT facilities for teaching Geography unless the specialized geography ICT facilities are part of the available ICT facilities.

As the government is solely responsible for the provision of teaching and learning resources in secondary schools in Zaria Metropolis which is under

Kaduna State, Kaduna State. are they able to provide needed geography ICT facilities adequately with the non-stop population increase and do geography teachers have access to those provided ICT facilities to teach in the schools? These are what prompt the researcher to undergo this research: Availability and accessibility of information and communication technology facilities for teaching geography in public secondary schools Zaria Metropolis, Kaduna state, Nigeria. Which can benefit the government to know the state of geography ICT facilities in school, how accessible they are to the teachers and what hinders the accessibility if there is any

Statement of Problem

Despite the importance of ICT facilities in the teaching and learning process of the modern geography education (Geography Information Science, Geographic Positioning System, Remote Sensing and Map Analyses & Interpretation among others) as said by Kadhim, (2020) used well GIS and RS have the ability to change the method of teaching geography from less to more attractive and motivational. And the governmental and non-governmental organization effort made to make ICT facilities readily available and accessible to public secondary schools in Nigeria, the availability and accessibility of existing ICT facilities is a concern with present growing population, as schools may not have equal availability of ICTs and teachers may not have equal and convenient access to these resources. Disparities in access could result in unequal educational opportunities and hinder students' proficiency in utilizing technology for geography studies that is why this researcher feels the zeal to investigate the availability and accessibility of ICT facilities for the teaching of geography in public secondary schools in Zaria Metropolis.

Research Questions

The following research questions were posed for the study:

- 1 What are the available ICT facilities for teaching Geography in Public Secondary Schools in Zaria Metropolis?
- 2 How often do Geography teachers access the available ICT facilities to teach Geography in Public Secondary Schools in Zaria Metropolis?
- 3 What factors Hinder Geography Teachers from accessing ICT facilities to Teach Geography in Public Secondary Schools in Zaria Metropolis?

Methodology

The researcher adopted a descriptive research design which aims to accurately and systematically describe a population situation or phenomenon. Descriptive research helps researchers gain a deeper understanding of a specific issue and provides valuable insights that can inform future studies (Sirisilla, 2023). A survey method is employed when a researcher is intending to evaluate opinions and thoughts on a given phenomenon by gathering quantitative data from the respondents (Fisher, 2010). The population consists of all the geography teachers in public secondary schools in Zaria Metropolis, Kaduna State. This population was used because of its proximity, resources available, time and teaching geography is the researcher’s profession. Updating and improving the learning and teaching process is part of the goal. The researcher used the population as the sample (40 geography teachers) because of the small-sized population and had 39 responded (98.3%), one of the research instruments was misplaced by one of the respondents.

A checklist for identifying available ICT facilities for teaching geography with a section containing list of common ICTs used in teaching geography in secondary schools with yes or no answer point scale. And a structured questionnaire for how often geography teachers access available ICT facilities

and factors that hinder geography teachers from accessing the available ICT facilities to teach Geography in Government Secondary Schools in Zaria Metropolis. Section A addressed issues on geography teachers’ access to ICTs to teach geography in public secondary schools. Section B addressed issues on factors that hinder geography teachers from accessing the available ICTs to teach geography in the public secondary schools. Section A with a three (3) point answer scale and section B with yes or no answer point scale.

The instrument was validated through pilot test done in GSS Tudun Nupawa Kaduna, tested using 8 geography teachers who were not part of the main study but had the same characteristics as those in the main research, according to Connelly, (2018) pilot study sample should be 10% of the sample projected for the larger parent study. Test-re-Test approach using Person Product Moment Correlation (PPMC) and reliability coefficient of 0.78 was established.

The questionnaire was self-administered by the researcher which was possible because of the small sample size. After the data collection the data was examined to detect missing value which one of the instruments was found missing. The collected data was analyzed using frequency count and simple percentage.

Results

Table 1

Teachers Response on Availability of ICT facilities for Geography Teaching in Public Secondary Schools Zaria Metropolis.

ICT Facilities	Available		Not available		Total	
	Freq	%	Freq	%	Freq	
E-library	17	85	3	15	20	100
Computer	15	75	5	25	20	100
Printer	14	70	6	30	20	100
Internet service	14	70	6	30	20	100
Projector	1	5	19	95	20	100
Projector screen	1	5	19	95	20	100
Photocopy machine	9	45	11	55	20	100
Scanning machine	3	15	17	85	20	100
Computer Accessories	6	30	14	70	20	100
Geography Software	2	10	18	90	20	100
Radio Tape	2	10	18	90	20	100

Television	6	30	14	70	20	100
Lap top	8	40	12	60	20	100

Table 1 shows that the following ICT facilities were available in more than 50% in the government senior secondary schools in Zaria Metropolis for teaching geography: E-Library 17(85%), Computer 15(75%), internet service 14(70%), and printers 14(70%), availability of other ICT facilities like photocopy machines 9(45%), laptops 8(40%),

computer accessories 6(30%), television 6(30%), scanning machines 3(15%), radio 2(10%) projector 1(5%) and projector screen 1(5%) were available in less than half of the schools; few ICT facilities for teaching geography in secondary schools in Zaria metropolis are most found in the schools under study.

Table 2

Teachers 'Response on the Accessibility of available ICT Facilities for Geography Teaching.

Task	Highly Accessible		Rarely Accessible		Never Accessible	
	freq	%	freq	%	Freq	%
Access to the computer for presentation in geography class	3	8	8	20	28	72
Access to the computer to keep records of geography students	5	13	4	10	30	77
Access to word processor in creating text-based documents.	0	0.0	2	5	37	95
Access to PowerPoint for Presentation	0	00	2	5	37	95
Access to a search engine such as Google to browse the internet for geography teaching materials.	17	44	9	23	13	33
Access to the e-mail address to communicate with students	0	0.0	0	0.0	39	100
Access to software such as Arc GIS for teaching	0	0.0	3	8	36	92
Access to a scanner to copy images into a computer.	3	8	7	18	29	74
Access to a printer to print out materials from a computer.	9	23	11	28	19	49
Access to a projector to support lessons	0	0.0	0	0.0	39	100
Access to audio and video, CDs, and DVDs to convey lessons to the students	3	8	4	10	32	82

Table 2 indicates that approximately 44% (17) of respondents have access to search engines to get teaching materials, followed by the use of a computer to present lessons 28% (11), printer & photocopy machine 23% (9), scanning machine 8% (3), and audio & video 8% (3), which shows less than 50% of the respondents have access to the ICT facilities to teach geography. The use of a word processor to create text-

based documents and PowerPoint for presentation 5% (2), Email to communicate and projectors to convey lessons is 0% (0) is very rare. Accessibility of ICT facilities for the Government secondary school Geography Teachers for teaching geography is very poor when compared to available ICT facilities. This is possible because most ICT facilities for teaching geography were not available in the schools.

Table 3

Teachers' Response on Factors Hindering Geography Teachers from accessing ICT Facilities for Teaching Geography.

Factors	Yes		No	
	Freq	%	Freq	%
Electricity/Power	32	82.1	7	17.9
Inadequate ICT facilities for teaching geography	35	89.7	4	10.3
Inadequate ICT Training	37	94.9	2	5.1
Lack of expertise in the use of ICT facilities to teach geography	28	71.8	11	28.2
Lack of interest in adopting the use of computers and others to teach geography	15	38.5	24	61.5
Lack of interest in learning the usage of ICT facilities in teaching geography	19	48.7	20	51.3

Based on table 3 above the variable inadequate ICT Training" 37 (94.9%) ranked first, followed by inadequate ICT facilities 35 (89.7%), electricity 32 (82.1%), Lack of expertise in the use of ICT facilities 28(71.8),Lack of interest to learn the usage of ICT facilities in geography education 19 (48.7), Lack of interest to adopt the use of computers and others to teach geography was the least 15(38.5) as what hinder geography teachers access to available ICT facilities to teaching geography in the schools. The respondents' interest in both learning and adopting ICT to teach geography is much more than does that are not.

Discussion of Findings

The findings of this study on research question one on the level of availability of ICT facilities in the government secondary schools being studied revealed that, ICTs like; e-library, computer, internet service and printers are available in more than 50% of the schools. Others like, ICTs like; photocopy machines, laptops, computer accessories, television, scanning machine, radio, projector and projector screen are found in less than 50% of the schools. This is supported by the study by Adeolu & Mercy , (2013) where the findings indicated that the most commonly used ICT facilities were computer set, printer, and bulletin board Also, in Ikolo (2020) there was availability of most ICT tools to a moderate extent. These included: mobile phones, Internet connectivity, computers, OPAC, printers, and E-mail. The ICTs found available in most schools are low which makes them inadequate.

The findings of this study on research question two present the accessibility of the available ICT facilities for geography teaching, the accessible ICT facilities are; search engines to get teaching materials, followed by the use of a computer to present lessons, printer & photocopy machine to make and duplicate hard copies teaching document, scanning machine, audio, and video player, word processor to create text-based documents, PowerPoint for presentation, Email for communication, which less than 50% of the respondents have access to and none of the respondent have access to projectors to convey geography lessons. Accessibility of ICT facilities for the Government secondary school Geography Teachers for teaching geography is not encouraging when compared to the geography ICT facilities been available in more than 50% of the schools under study. The study shows that some of the ICT facilities are available, however the accessibility is very poor which can be as a result of its inadequacy or other factors.

The findings of this study on research question three present the factors that hinder geography teachers from accessing ICT facilities for teaching geography in government secondary schools. The findings on the factors showed that even though there are ICT facilities available in more than 50% of the schools, inadequate ICT training was a major factor that was hindering the geography teachers from accessing the available ICT facilities for teaching geography in most of the schools. Other factors are: inadequate power, lack of expertise, lack of interest to use and to learn. This showed that the accessibility of available ICT facilities is hindered by



some factors for geography teaching. Supported by Ismail (2022) ICT integration in schools suffers due to the non-availability of ICT resources and lack of teachers' relevant skills and knowledge and Afful-Arthur (2018) study on some of the major impediments to e-resources access are, poor internet connectivity, power outages and insufficient ICT skills.

This result reveals that the secondary schools may experience setback in the utilization of available ICT facilities if the hindrance issues persist.

Conclusions

The conclusion is drawn on the basis of the findings. It is concluded that ICT facilities for the teaching of geography in government secondary schools in Zaria Metropolis is not adequate in most of the schools under study, which contributed to its poor accessibility to teach geography due to factors like Inadequate power, Lack of ICT Experts and Lack of Interest in the use of ICTs hindering geography teachers from accessing the ICT facilities.

There is urgency in addressing these issues for the overall improvement of geography education in the schools.

Recommendations

- ❖ The Government should make the relevant ICT facilities available to all Government senior secondary schools in the State.
- ❖ The access to the provided ICT facilities should be managed, monitored, and supervised well as it is part of the policy thrust in the National Policy on Information Communication Technology in Education 2019.
- ❖ The schools should develop ways of encouraging geography teachers to access the available ICT facilities to teach

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