The Impact of ICT Usage on Classroom Teaching of Geography in Secondary Schools in Anaocha Local Government Area Anambra State, Nigeria

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ABSTRACT

The study was carried out to find out the Impact of ICT usage in teaching geography in secondary schools in Anaocha Local Government Area in Anambra suite. In an attempt to carry out the study, five (5) research questions were formulated to guide the study. Literature reviews were carried out under conceptual framework, theoretical framework, theoretical studies, empirical studies and summary of literature review. The study was a descriptive survey design with the target population of all public secondary schools in Anaocha L. G. A., Anambra State. The collected data were analyzed using means and presented in tables; the results indicated that students were not properly exposed to the level the subject required; lack of skilled teachers; inadequate power supply; etc. Based on the findings, recommendations were made; the government should be made to put in place a regular power supply as well as reducing the cost of computer facilities to affordable price. In addition, lecturers should be sensitized on the various ways and process of using ICT materials in teaching and learning of geography through workshops, seminars, and conferences.

Keyword: ICT Education; Geography Teaching; Technology Integration; Nigerian Schools; Classroom ICT

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1. INTRODUCTION

Geography is a broad field subject that cuts across and meddles with so many other subjects. It is a bridging subject, which equips the learner with knowledge and skills that are of great educational value even for these other subjects. It requires ICT as a result to strengthen it. Emergence of Information Technology in the national agenda and the announcement of ICT policies by various State Governments have recognized the "Convergence of Core Technologies and E. Governance" as the tool for sustainable development and globalization of economy through education (Kessy, 2006). Successful utilization of ICT depends on the nature of the teaching force in geography. As one of the key points in the hub of the educational systems, teachers institute an important aspect in students' learning. Towards this end, Krower (2006) argued that advancement in the ICT in teaching of subjects like Geography is a crucial step in enhancing performance. The teachers may help their students to be familiar with the faster developing ICT use and satisfy one of the most common goals of teaching Geography. It gives a coherent, comprehensive image of our world on a scientific basis, and appreciation of information (Ford, 2007). For this reason, this study explores the use of ICT in teaching Geography in -secondary schools in Nigeria.

The rapid developments over the last two decades in computer and internet technology have resulted in many changes and reforms in education as well as in other sectors of society. Teacher, textbook, and blackboard were the three most significant components of teaching and learning in classrooms not more than a few decades ago.

However, teaching no longer centers around the transfer of knowledge from teacher to student; learning comes from student inquiry, critical thinking, and problem living based on information accessed from a variety of sources (Scheffler, 1999).

Technology has now changed how teachers and students access, gather, analyze, present, and transmit information by giving them more power in the classroom (Dooley, 1999). Information and communication technology (ICT) has not only changed the role of teachers in classrooms but has also provided them with a large number of software and websites which can be utilized for educational purposes (Ruthven et al., 2005; Seal and Prasnyski, 2001). PowerPoint, MS Word and Excel are among the most commonly used software packages in schools today and their pedagogical benefits and contributions to learning and teaching have been 'Studied and tested long ago (Fitzpatrick, 1993; Bartsch and Cobern, 2003; Rozalind and Muir, 2004; Joshua, 2005). Rapid technological development is giving teachers new7 opportunities to test many more software packages and websites in their lessons. Google Earth, online games, virtual reality and YouTube are only a few examples of resources that are being tested in classrooms today (Ramasundaram et al., 2005; Patterson, 2007; Dickey, 2007; Snelson, 2008).

A positive outcome of using technology in education has led many governments to initiate programs for the integration of technology into schools. Governments are competing to equip schools with more computers, assessing progress in terms of computer-to-student ratio. In the US, around $8 billion was spent by school districts in the 2003-2004 school years alone to equip schools with necessary technology, primarily in the form of computers. In the US, the computer-to-student ratio was 1:3.8 and the internet-connected computer-to-student ratio was 1:4.1 in 2004 (Hew and Brush, 2007}. The computer-to-student ratio in schools was around 1:7 in Canada and the UK in 1999 And the same ratio in those countries is close to that of the US now (Watson. 2001; Granger et al., 2002).

Supplying schools with high number of computers does not necessarily mean that educational goals to integrate technology into the curriculum are accomplished. Many studies report failure in different countries to incorporate ICT into educational systems (Dooley, 1999; Russell 2003; Scheffler, 1999; Ottesen, 2006; Eteokleous, 2008; Keengwe and Onchwari, 2008). Despite reports of an increased number of computers at schools, computers are not extensively used in classrooms in many countries (Scheffler, 1999; Eteokleous, 2008). As Watson (2001) indicated in his study), although teachers own and use computers for their own administrative work, many of them never use computers in their classrooms. The results of a survey conducted by Kcengwe and Onchwari (2008) indicate that many teachers use technology less today than they did in the mid-1980s. These studies show that merely making technology available to teacher and students in schools and classrooms is not sufficient to attain educational goals and to ensure that the technology contributes to learning and teaching. What is needed is effective integration of technology into instruction as an important instructional resource material.

Although research studies show that use of technology contributes to teaching and learning, this use is generally affected by certain barriers (Ertmer, 1999; Scheffler, 1999; Watson, 2001; Ottesen, 2006; Zhang, 2007; Hew and Brush, 2007; Keengwe and Onchwari, 2008). A number of different barriers to technology integration in classrooms have been identified. Ertmer (1999) categorized these barriers into external and internal. Lack of equipment, unreliability of equipment, lack of technical support and other resource-related issues form the external barriers while school level and teacher level factors such as beliefs about teaching and technology were considered internal barriers in His study. By making a very detailed literature review, Hew and Brush (2007) identified 123 barriers to technology integration in schools and classified them into six main categories: barriers related to (a) resources, (b) knowledge and skills, (c) institutions, (d) attitudes and beliefs, (e) assessment, and (f) subject culture.

Research studies in education have shown that technologies engage students in higher-order thinking only if they coupled with the necessary pedagogical strategies (Lim, 2007). If barriers are examined from this perspective, it is seen that teachers are at the heart of the success or failure of technology integration in classrooms (Watson, 2001; Cope and Warp, 2002; Ottesen, 2006). Technology integration is a complex phenomenon that involves understanding teachers' motivations, perceptions, and beliefs about learning and technology (Keengwe and Onchwari, 2008). If teachers like a type of technology and believe that it is beneficial for their lessons, technology integration can be achieved more easily (Hew and Brush, 2007). In other studies, teachers' lack of competence, lack of knowledge, lack of prior experience and their resistance to apply new technologies in their lessons have been found to be major obstacles (Scheffler, 1999; Ottesen, 2006; Zhang, 2007; Sadrk, 2008; Paraskeva et al.s 2008).

When teachers lack the necessary confidence to integrate a technology into their lessons, they tend to ignore it (Dooley. 1999). Access to resources, quality of software and hardware, ease of use, incentives to change, support, and collegiality in the school and commitment to professional learning are among other factors influencing teachers' decisions to use new technologies in classrooms (Mumtaz, 2000). The number of new technologies which can be utilized for educational purposes increases rapidly today. However, incorporating these technologies into school curriculums and utilizing them effectively in classroom settings is not easy. This is even more obvious with the integration of advanced technologies like the Geographic Information Systems (GIS)

Which was specifically designed for professional spatial analysis? GIS is a set of integrated software programs designed to store, retrieve, manipulate, analyze and display geographical data-information concerning people, places and the environment (Filzpatrick and Maguire 2000). GIS, which was first developed in the 1960s, is today utilized in more than 100 disciplines (Phoenix, 2000). Although it was not designed for educational purposes, GIS has been used in education over the last two decades. Today it is used at secondary schools in diverse programs including Geography, Science, [Environmental and Social Sciences, Biology and Mathematics mainly in the USA, Canada and some European countries (Broda and Baxter 2003; Kerski 2003; Wisslesworth 2003; Bednarz 2004; Bednarz and Van der Schee 2006).

2. RESEARCH METHOD

A. Study Area

The study was carried out in all the ten towns in Anambra east Local Government Area Anambra state, with an area of 171.62 square kilometers and a population 284215 according to 2006 census. The inhabitants are mainly Christians followed by cultural believers. The occupation of the people of Anambra east is diversified. Great numbers of them are business men and women; the remaining portion of the inhabitants is made up of civil servants, public servants, clerics, politicians. Over 90% of the populace is engaged in farming or farming related activities. Anambra east Local Government Area is one of the educationally advantaged local governments, based on the transformation of' the new chairman on educational sector.

B. Population of the Study

The population of the study was made up of all geography teachers in public Secondary school in Anambra east Local Government Area Anambra state. This population LS appropriate because the public secondary school 16 in numbers are the school involved with two hundred and seventy-eight (278) teachers in the population target for the study.

C. Sample and Sampling Technique

Sixteen (16) public secondary schools in Anambra east Local Government Area in, Anambra state were involved in the study. In general, we have two hundred and seventy-eight (278) teachers in Anambra east local government area of Anambra state but 150 were sampled.

D. Instrument for Data Collection

The instrument used in collection of data was a structured questionnaire titled "The importance of introducing information technology in the teaching of geography in secondary schools in Nsugbe" the construction of the questionnaire was guided by the four research questions raised in this study. The items in the questionnaire was made up of two parts (section A and B) section A of the questionnaire contains question on the personal data of the respondents, while section B requested information regarding the research question which the respondents were requested to tick [\] on a modified four point linker scale. The response categories indicated the level of agreement and disagreement.

These response categories were

Strongly agree	= SA
Agree	= A
Disagree	= D
Strongly disagree	= SD

E. Validity of the Instrument

The instrument was given to experts in measurement and evaluation and the project supervisor who made necessary corrections that established it content and face-validities. So, it was validly adequate for use in the collection of data for the study.

F. Reliability of Instrument

The reliability of the instrument was established using test-re-test method. 150 questionnaires were given to 150 geography teachers in different secondary school in Anambra east local government area of Anambra state. After two weeks the same questionnaire was given to same teachers in order to ascertain the reliability and Stability of the instrument used.

G. Method of Data Collection

Structured questionnaire were used to collect data for the analysis. However, one hundred and fifty (150) of the questionnaire was administered and seventy eight (78) copies were properly filled and return to the researcher.

H. Method of Data Analysis

The raw data collected through the questionnaire were analyzed using frequencies and statistical mean based on the four point scale (4=SA, 3=A, 2=D5 & 1 SO). The mean was used to determine respondents' opinions towards the usage of ICT in teaching geography in senior secondary school in Anambra East Local Government Area. Items with a mean of 2.50 or above were accepted while any items with a mean less than 2.50 were rejected. The statistical mean formula used for the analysis is as follows:

$X = \sum FX / \sum F$

$\sum f$= Sum of all the frequency

$\sum fx$ = When all the figures in column fx are added

$\sum$ = is the Greek letter Zigma which instruct one to sum

X= the symbol for mean

X= is the score

F= frequencies

Sum of all the frequency when all the figures in column fx are added is the Greek letter zigma which instruct one to sum the symbol for mean is the score frequency.

3. RESULTS AND DISCUSSION

Research Question 1: What are the different ICT used in teaching geography?

Table 1. The different ICT that is used in teaching of geography

S/N	ITEMS	SA	A	D	SD	∑fx	*X*	REMARK
1	Laptop and desktop	45	25	5	3	268/78	*3.43*	ACCEPTED
2	Projector and camera.	29	37	9	*3*	248/78	3.18	ACCEPTED
3	Graphic tablet and light pen.	18	38	17	5	225/78	2.88	ACCEPTED
4	Microphone and joy stick.	16	25	20	17	196/78	2.51	ACCEPTED

The above information contained in item one to four shows that the respondents mean score were above 2.50. It means really that the above listed points are ICT facilities necessary for teaching.

Research Question 2: How are these ICT materials used in teaching geography?

Table 2. How the different ICT materials are used in effective teaching of geography

S/N	ITEMS	SA	A	D	SD	∑fx	*X*	Remark
5	Laptops and desktops are used in typing, installing and given orders to the system Which involve geographical terms	52	20	3	3	277 70	3.55	Accepted
6	Projector is used to show images and video of the environmental features taken with Camera.	39	33	5	1	266 78	3.41	Accepted
7	Graphic tablet and light pen are used mainly for interpreting and reading of map as they Are used in writing into a computer.	30	43	2	3	756 78	3.28	Accepted
8	The joystick which is used to move the cursor as the teacher teach and talk with the microphone as the student hear with speaker in their different location in the classroom.	17	37	18	6	221 78	2.83	Accepted

Information contained in item five to eight shows that respondents mean score of 3.55, 3.41, 3.28, and 2,83 are above the average fixed mean score 2.50. So it were concluded that the use of the ICT materials are right.

Research Question 3: What are the impacts of using ICT in teaching geography?

Table 3. The impact of ICT usage in teaching of geography in secondary' school.

S/N	ITEMS	SA	A	D	SD	∑fx	X	Remark
9	It furthers understanding of geographical concepts.	44	29	5	0	273/78	3.5	Accepted
11	It awakens student's zeal to reach for wide range of knowledge and Information sources.	*46*	25	5	2	271/ 78	3.47	Accepted
12	It enhances skills of geographical enquiry	42	29	5	2	267/70	3.42	Accepted

From the above information nine to twelve were accepted since their mean values were greater than 2.5. Therefore it can be concluded that the impact of ICT in teaching geography is inevitable.

Research Question 4: What are the problems of using ICT in teaching geography?

Table 4. the problem facing the use of ICT facilities in teaching of geography in secondary school.

S/N	ITEMS	SA	A	D	SD	∑fx		Remark
13	Inadequate financial resources for funding ICT facilities.	42	28	4	3	2 S3 78	3.37	Accepted
14	Lack of skilled teachers.	36	28	12	1	253 78	3.24	Accepted
15	Inadequate power supply of electricity.	44	27	5	1	263 78	3.43	Accepted
16	Lack of interest by the ministry of Education.	10	39	18	10	20'3 7S	2.60	Accepted

From the above item thirteen to sixteen were accepted since their mean value were greater than 2.50. It means that these factors; poor finance, low skilled teachers (on ICT), poor electricity, and lack of interest from the ministry of education really are the problem facing ICT usage in teaching Geography.

Research Question 5: How can these problems be solved (solutions)?

Table 5. Possible ways in which the problem can be solved.

S/N	ITEMS	SA	A	D	SD	£fe	*X*	Remark
17	Government should develop interest and funding on ICT facilities.	59	17	1	1	290 *78*	3.72	Accepted
18	Creation of public awareness on the Importance of ICT in teaching.	35	38	8	2	272 78	3.48	Accepted
19	ICT specialist educating geography Teachers on ICT usage.	39	32	5	2	264 78	3.38	Accepted
20	Resolving electrical problems in our nation by the government.	32	30	9	2	260/ 78	3.33	Accepted
21	Organizing seminars/workshop to Educate the teachers on the skills of using ICT.	58	16	1	3	28 78	3.65	Accepted

Information contained in table 5 from the item seventeen to twenty-one were accepted, it show that respondents mean score of 3.72, 3.23, 3.38, 3.33, and 3.65 are greater than 2.50. Therefore it means that the points above can render normal standard to improvement to the students.

The finding in research question show that over 76% and 74% strongly agreed that government should develop interest and funding on ICT facilities and organizing seminar/workshop to educate the teachers on the skills of using ICT In agreement.

Francisca, A. (2007) Opined that Government should make converted effort to provide the required ICT facilities for secondary schools and they should provide policies to take care of issues such as class size.

Regarding numerous impact of ICT material used in teaching over 58% strongly agreed that laptop and desktop computers are ICT materials used in teaching and 85% also agreed that projector and camera can be use too in teaching geography.

As regards to research question two 67% strongly agreed that laptops and desktops computers are used in typing, installing and given orders to the system which involve geographical terms and also 92% agreed that projectors are used to show images and videos of the environmental features taken with cameras.

In research question three 56% of the response rate strongly agreed that the use of ICT in teaching geography furthers understanding of geographical concepts, 59% as well as 54% strongly agreed that usage of ICT in teaching geography enhances skills of geographical enquiry and it awakens student's zeal to reach for wide range of knowledge and information sources. This is line with Osborne, L, Hennessy, S., (2003) asserts that ICT has the capacity to provide higher interactive potential for users to develop their individual, intellectual and creative ability.

As regards to research question four, over 56% and 54% of the response rate strongly agreed that inadequate financial resources for funding ICT facilities and inadequate power supply of electricity are the major problems facing the use of ICT in teaching geography.

4. CONCLUSION

The finding show that sensitization of teachers on the use of computer materials, philanthropic organizations and donation of computer materials and organization of seminars and workshops for teachers on the use of computer will improve the use of ITC materials in teaching and learning of Geography.

These findings are in agreement with Okoye (2005) who opined that effective monitoring of computer facilities already provide in schools are properly maintained and utilized. Educational Implication

This study has the following implications, teachers' lack of basic computer skills high cost of computer equipment and inadequate power supply will hamper the use of the materials in teaching the student and also will increase the number of people without computer basic skills in the society. There is no doubt that this development will produce more job seekers than job creators in our society.

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