

Effectiveness of Information Communication Technology (ICT) in Teaching and Learning in Public Senior Secondary Schools in Ogoni Area, Rivers State

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Abstract

The study investigated effectiveness of Information Communication Technology (ICT) in teaching and learning in Public Senior Secondary Schools in Ogoni Area of Rivers State. A sample size of 400 (300 students and 100 teachers) was used for the study. Simple random sampling technique was adopted to compose the sample. Three research questions were answered. QTSEICTUC was used for data collection. QTSEICTUC was objectively used to investigate the extent of utilization of ICT tools, how ICT tools are used to evaluate teaching/learning processes and the constraint to effective utilization of ICT tools by teachers and students. Mean with standard deviation was used to analyze the data obtained from the respondents. It was found that ICT tools were not utilized in the school. Based on the findings, it was recommended among others that; the government of Nigeria should embark on a massive computer literacy training programme nationwide, particularly for the teachers and learners at all level of education, the cost of ICT tools like laptop should be made affordable to teachers and students.

Keywords: *Information Communication Technology (ICT), Ogoni, Effectiveness, Information Technology (IT), Computer, Internet and Multimedia.*

1. Introduction

With the introduction of Information Communication Technology (ICT) to align with the global best practices, ICT occupied a central stage in the senior secondary school curriculum in order to presents the total experiences to which all teachers and learners must be exposed and through which the content and performance objectives of the subject must be achieved for both teachers and learners. Also, the provision of teaching and learning materials for any subject are enhance for effective teaching and learning. Thus, these could be possibly realized if the teacher and learner can

effectively integrate ICT into the classroom. According to Olelewe and Amaka (2011), a good teacher can use various teaching and learning technologies (such as computer, internet and multimedia resources) which are increasingly being used in support of the teaching and learning process in presenting new challenges and opportunities for teachers and students to translate information into relevant knowledge that a student can understand, retain and pass on to others under a conducive school environment.

Today, the advent and advancement of new technologies (ICT) has challenged the traditional method and process of teaching and learning and have also changed the way education is managed to a more flexible, friendly and simplified form. The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2004) stressed that ICT has turned from being a technology of communication and information alone, but to a curriculum creation and delivery system for educators and learners. For Schiller and Tillett (2004), ICT enhances possibility by providing what teachers are able to do, by providing an entry point into the content and enquiries that were not possible without the use of ICT, by extending what students are able to produce and as a result of their investigations and by providing teachers with the opportunities to become learners again. It has made it possible for complicated collaborative activities of teaching and learning by dividing it in space and time with seamless connectivity between them (Olelewe & Amaka, 2011).

World Bank (2007) asserted that Information Communication Technology (ICT) involves the use of hardware, software, networks and media for the collection, storage, processing, transmission and presentation of information (voice, data, text, images etc) as well as related services. According to Obanya (2002), ICT is a broad term that has to do with the harnessing of process, the methods and the product of electronic communication related technologies and other related resources in today's knowledge driven society, for enhancing the productivity, the spread and efficiency of set programme activities geared towards the achievement of clearly defined goals. ICT and IT (Information Technology) are often used synonymously. However, the key difference is that IT is a subset of ICT which covers all forms of communication including telephone mobiles etc while information technology (IT) refers to an entire industry that uses computers, networking, software and often equipment to manage information.

According to United Nations Educational, Scientific and Cultural Organization (UNESCO, 2005), ICT is defined as the combination of all the computers, telecommunication and media technologies. They are also electronic technologies used for accessing, processing, gathering, manipulating and presenting or communicating information in education system. Edozie et al. (2010) explained that Information and Communication Technologies (ICTs) empowerment enhances the abilities of people to use ICT to improve their life skills and strengthen their capabilities. Such empowerment could be facilitated awareness and motivation for ICTs. In regards to their view, Umunadi (2011) added that the role of information and communication technologies in teaching and learning is rapidly becoming one of the most important widely discussed issues in senior secondary schools in Nigeria. In another view, Obanya (2009) opined that secondary schools in Nigeria must strive to meet common 21st century challenges of providing student with an education that is viewed by the general society as relevant and valuable; and that teaching and learning must be driven by ICTs for effectiveness.

For Ogwo (2005), the use of ICT in teaching and learning in senior secondary school today

can assist in reducing the teachers' workloads through its use for lesson preparation, instructional delivery as well as teaching and learning evaluation. Ogwo further buttressed that secondary school teachers will become learning facilitator, collaborator, coach, mentor, knowledge navigator and co-learner and not only a dispenser of knowledge. The educational reform policies were aimed at integrating the use of ICT tools in the Nigerian school system. The Nigerian National Policy for Information Communication and Technology (FRN, 2001) emphasizes the need for the implementation of ICT tools in education for three major objectives viz:

- to empower the students with ICT skills.
- to prepare the students for competitiveness in a global environment, integrate ICT into the mainstream of education and training and;
- establishment of multifaceted ICT institutions, as centres of excellence.

The document specifically noted the need for restructuring the educational system of all levels to respond effectively to the challenges of the 21st century where the global life is been digitalized. For the above listed objectives to be meaningfully realized, it means that ICT tools must be properly effective and judiciously utilized in the teaching and learning processes in secondary schools in Ogoni areas of Rivers State. According to Wadi and Sonia (2004), proper and effectiveness of information and communication technology tools in Rivers State secondary schools will definitely improve the quality of education in several ways such as increasing teachers' motivation and engagement, facilitating the acquisition of learner's basic knowledge and skills and also to enhance teachers training. Fajama (2002) stressed that the effectiveness and success of an institution lies on the quality of people (teachers/learner) who form and work within the institution.

In this paper, Information and Communication Technology (ICT) is defined as electronic media, devices and application used in the classroom to aid effective teaching and learning processes. All such materials, media and devices provided by ICT which appeal to all the senses and feeling and learning constitute teaching and learning materials. The materials help teachers communicate effectively to the students so that learning is facilitated. This is an exciting method of technological developments incorporated into the Nigeria classroom so well implemented as to enable teachers and students to do what has been impossible in the educational system (Osuala, 2004). It was further buttressed that teachers and students will be able to assimilate the new machinery and its skill requirements. The development of ICT into the schools system will have effect upon the technological "revolution" expected in business and economic environments and the global society.

Statement of the Problem

Based on the findings of Jegede and Owolabi, 2008; Ajisafe, 2014; it is clear that the call for effective utilization of ICT for teaching and learning is to enhance effectiveness in the secondary schools subject curriculum. It was observed that trained teachers for ICT tools, lack of facilities are some of the factors militating against the effective teaching and learning of subjects' curriculum in public senior secondary schools in Ogoni areas of Rivers State using ICT platform. In spite of all these, the National Communication Commission has been training teachers in secondary schools across the country in the utilization of ICT tools in the classroom because the teachers were found deficient in this area (Ishaya & Mohammed, 2014). The problem of the study therefore is: Does

ICT enhances effectiveness in teaching and learning in public senior secondary schools? This is the problem to be investigated by this study.

Purpose of the Study

The main purpose of this study is to examine Information Communication Technology and teaching and learning effectiveness in secondary schools in Ogoni area of Rivers State. Specifically, the study intends to;

- I. investigate the extent of utilization of ICT tools by teachers and students in public senior secondary schools in Ogoni areas of Rivers State.
- II. examine the use of ICT tools in evaluating teaching and learning process in public senior secondary schools in Ogoni areas of Rivers State..
- III. describe the constraints of effective utilization of ICT by teachers and students in public senior secondary schools in Ogoni areas of Rivers State.

Research Questions

- I. To what extent are ICT tools utilized by teachers and students in public senior secondary schools in Ogoni areas of Rivers State?
- II. How are ICT tools use in evaluating teaching and learning process in public senior secondary school in Ogoni areas of Rivers State?
- III. What are the constraints to effective utilization of ICT teachers and students in public senior secondary schools in Ogoni areas of Rivers State?

2. Methodology

A descriptive survey design was used to carry out the study. This is because it has the advantage of permitting description of conditions as they exist in their natural setting. A survey research is a kind of research which involves the assessment of public opinion using questionnaire. Since this study intends to obtain information from teachers and students on the use of effectiveness of ICT in teaching and learning, the use of descriptive survey research is considered appropriate. This research work was carried out in Ogoni axis of Rivers State. The population of the study consisted of all Senior Secondary Two (SS2) Students and teachers in the twenty (20) selected Public Senior Secondary Schools in four Local Government Areas of Ogoni, Rivers State. For Khana Local Government Areas, the schools selected are: Community Secondary School, Uegwere Boue, Community Secondary School, Kaani, Community Secondary School, Lueku, Government Secondary School, Luawii and Government Secondary School, Kaa. While for Gokana Local Government Areas, the schools selected are: Government Secondary, Kpor, Comprehensive Secondary School, Lewe, Community Secondary School, Biara, Community Secondary School, Bera and Community Secondary School, Nweol. For Tai Local Government Areas, the schools include: Community Secondary School, Bunu, Community Secondary School, Botem, Community Secondary School, Kira, Community Secondary School, Sime and Community Secondary School, Nonwa. In Eleme Local Government Areas, the selected schools are: Community Secondary School, Ebubu, Community Secondary School, Alode, Community Secondary School, Eteo, Comprehensive Secondary School, Alesa and Government Secondary School, Onne. The sample

size of the study was 300 students and 100 teachers totaling to 400 respondents. This was obtained by sampling 15 students and five (5) teachers from each of the selected schools. Simple random sampling technique was adopted for the study in the selection of sample.

A structured questionnaire was used as data gathering instrument. A-5 point likert type rating scale of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD) with the numerical value of 5, 4, 3, 2 and 1 respectively was used. The instrument used was titled "Questionnaires for Teachers/Student's Effectiveness on Information Communication Technology Utilization in the Classroom (QTSEICTUC)". The QTSEICTUC was objectively used to elicit both teachers' and students' responses on the extent of utilization of ICT tools, examine the use of ICT tools in evaluating teaching and learning and also to describe the constraints of effective utilization of ICT tools in the classroom. The instrument consists of twenty one (21) items based on the research questions. The use of questionnaire was considered necessary for the collection of data for the study because it has the characteristic of being used to ascertain facts, opinions, beliefs, attitudes and practices of the respondents. The respondent's responses in the questionnaire items were used to analyze the research questions. Two experts in the field of measurement and evaluation from Ignatius Ajuru University of Education, Rivers State validated the instrument. Their observations and corrections were effected before it was administered to the respondents.

The reliability of the instrument was established by test-retest method. The instrument was administered to 15 students and 10 teachers who were not part of the sample. After an interval of two weeks, the same instrument was re-administered to the same respondents and scores were taken. The two set of scores was computed and compared using Pearson Product Moment Correlation (PPMC) coefficients (r) and a reliability coefficient of 0.86 was obtained. The researcher visited some schools covered by the study and personally administered the instrument to the respondents while five trained research assistants were used in other schools. The respondents were given enough time to enable them carefully study and respond correctly to the questionnaire items and the questionnaire were retrieved from the respondents for analysis. The data collected which was based on the research questions that guide the study was analysed using statistical mean and standard deviation. An item with a calculated mean value of equal to or greater than 3.50 was accepted while item with mean value of less than 3.50 was rejected.

3. Results

Research question 1: To what extent are ICT tools utilized by teachers and students in senior secondary schools in Ogoni area of Rivers State?

Table 1: Mean ratings and standard deviation of respondents on the extent of utilization of ICT tools in Senior Secondary Schools ($N_1=100$; $N_2=300$).

S/N	ITEMS	Teachers		Students		Decision
		X_1	SD_2	X_2	SD_2	
1	E-laboratories	3.46	0.51	3.28	0.44	Rejected
2	E- examination	3.18	0.81	3.11	0.88	Rejected
3	E-books	3.48	0.43	3.38	0.82	Rejected
4	Personal computer, laptops	3.01	0.64	3.91	0.73	Rejected

5	E-library	3.19	0.48	3.22	0.52	Rejected
6	Internet and web browsing	3.18	0.45	3.34	0.82	Rejected
7	E-mail and Fax	3.47	0.41	3.39	0.80	Rejected
8	E-presentation (power point)	3.10	0.94	3.11	0.91	Rejected
	Total Mean (X_T)	3.25	0.58	3.34	0.74	Rejected

Source: *extract of Inije, Utoware and Kren-Ikidi (2013)*

Table 1 shows that the two respondents were coherent in their responses as all the listed items were strongly rejected with a mean value of less than 3.50. This indicated that teachers and students in Ogoni area of Rivers State are not utilizing the listed ICT tools in the teaching and learning processes in senior secondary schools.

Research Question 2: How are ICT tools use in evaluating teaching and learning in senior secondary school in Ogoni area of Rivers State?

Table 2: Mean rating and standard deviation of respondents on the use of ICT tools in evaluating teaching and learning in secondary school ($N_1=100$; $N_2=300$).

S/N	ITEMS	Teachers		Students		Decision
		X_1	SD_2	X_2	SD_2	
9	The use of ICT resources in stimulating teaching and learning.	3.13	0.83	3.32	0.88	Rejected
10	The use of emails and domain site in giving and submitting students' assignments.	3.30	1.01	3.43	0.78	Rejected
11	The use of ICT resources in publishing and checking result.	3.44	0.68	3.04	0.90	Rejected
12	The use of ICT resources for computing continuous assessment and self-study.	3.41	0.79	3.44	0.68	Rejected
13	I have used ICT resources to administer and write examination.	3.13	0.83	3.44	0.68	Rejected
	Total Mean (X_T)	3.28	0.82	3.33	0.78	Rejected

As shown in the table above, the five items were recorded less than the cut-off point of 3.50. This indicated that ICT is still poorly utilized in evaluating teaching and learning in senior secondary schools in Ogoni areas of Rivers State.

Research Question 3: What are the constraints to effective utilization of ICT tools in teaching and learning in Senior Secondary Schools in Ogoni areas of Rivers State?

Table 3: Mean ratings and standard deviation of respondents on the constraints to effective utilization of ICT tools in teaching and learning in classroom ($N_1=100$; $N_2=300$).

S/N	ITEMS	Teachers	Students	Decision
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		X_1	SD_2	X_2	SD_2	
14	Lack of strong government policies on ICT instructional delivery.	4.36	0.73	4.21	0.71	Accepted
15	Disruption and network failure.	3.67	0.88	4.31	0.82	Accepted
16	Narrow bandwidth with limited area covered by internet connectivity.	4.51	0.94	4.55	0.76	Accepted
17	Inadequate funding of programmes and ICT related activities.	3.65	0.85	4.16	0.48	Accepted
18	Shortage of qualified teachers with capacity in ICT application.	3.78	0.89	4.51	0.71	Accepted
19	Lack of adequate incentives.	4.21	0.45	4.42	0.94	Accepted
20	High cost of acquisition of ICT facilities.	4.18	0.85	4.29	0.68	Accepted
21	Incessant power failure	3.98	0.64	4.22	0.94	Accepted
	Total Mean (X_T)	4.04	0.78	4.33	0.76	Accepted

Source: *extract of Inije, Utoware and Kren-Ikidi (2013)*

As shown in the table above, all the eight items were recorded above the cut-off point of 3.50. This indicated that the two respondents agreed that ICT is constraint by these factors which militate against classroom teaching and learning using the ICT platform.

Discussion of Findings

The result revealed that there are many ICT tools and application that are available for utilization in Senior Secondary schools in Rivers State, Nigeria. However, the result indicated that all the ICT tools for applications were not utilized for instructional delivery. This result is in agreement with Nwagbo and Ugwanyi as cited in Agboeze et al (2012) which stated that the pace of developed and utilization of ICT tools for educational purposes including teaching and learning in classroom is still very low in Nigeria. The utilization of ICT in teaching and learning of secondary school subjects has not been effectively utilized. However, there is poor utilization of ICT resources in evaluation of students' achievement among teachers and students. This is in agreement to that of Ajisafe (2014) who carried similar study in colleges of education. The study also identified some constraints to effective utilization of ICT in classroom instructional delivery. These constraints include shortage of qualified staff, disruption and network failure, and high cost of acquisition of ICT facilities. This result is supported by Gold (2001) who in a study stressed that some of the constraints to effective utilization of ICT tools in instructional delivery are the quality and creativity of the teachers.

4. Conclusion and Recommendation

The study examined Information Communication Technology and effectiveness in teaching and learning in senior secondary schools in Ogoni areas of Rivers State. It revealed that ICT application like e-books, e-library, e-examination and e-classroom among others are available for use in teaching and learning. However, they are not extensively utilized in senior secondary schools in the area of this study. This is because of the constraints to effective utilization of the ICT application such as incessant power failure, high cost of acquisition of ICT facilities and shortage of trained qualified personnel. Based on the findings of this study, the following recommendations were made

in this paper:

1. The government of Nigeria should embark on a massive computer literacy training programme nation-wide particularly for teachers and learners at all levels. This should be accomplished through in-service training for teachers, workshops, seminar, and conference.
2. The government and its agencies should ensure that adequate ICT resources are put in place for the teaching and learning of secondary school subjects.
3. Teachers in Nigeria should be motivated and encouraged to develop and use multimedia courseware and software relevant to teaching and learning.
4. The cost of ICT tools like laptops, desktops etc should be reduce to affordable prices so that teachers and students can be able to acquire them.

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