EXTENT OF AVAILABILITY AND UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) RESOURCES FOR EFFECTIVE TEACHING AND LEARNING OF SCIENCE IN SECONDARY SCHOOLS INUDI L.GA OF ENUGU STATE, NIGERIA

BY

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Abstract
The study investigated the extent of availability and utilization of ICT Resources for effective teaching and learning of science in secondary schools in Udi Local Government Area of Enugu State. Three research questions guided the study. Survey Research design was used. A sample of 120 SS3 science students was randomly drawn from four schools out of 21 co-educational schools in Udi L.G.A. A structured questionnaire was used. The instrument was face validated by experts. The reliability co-efficient of 0.76 was obtained for the instrument using Cronbach alpha. Data analysis was carried out using frequency, percentage and mean. Findings showed that most of the required ICT resources were not available in the schools. The only ICT Resources utilized by the teacher are the mobile cellular phones and public address systems. The researcher recommended among others that Government should provide ICT resources in schools for effective teaching and learning.

Introduction

Advancement in Information and Communication Technology (ICT) have brought tremendous relief to the human race. ICT has reduced human labour and improved productivity. It has found application in accountancy, aviation, banking, engineering, medicine, Administration and of course Education. ICT has been defined in many ways by experts. Iheke (2010) define ICT as the technology which supports activities involving creation, storage, manipulation, and communication of information together with their related methods, management and application. Akachukwu (2004) define ICT as an umbrella term that includes any communication devices or application encompassing radio, television, cellular phones, computer and network hardwares and software satellite system and applications associated with them such as video conferencing and distance learning.

According to Iheanyichukwu (2001) ICT has helped to develop and promote programmes to eradicate illiteracy. With ICT, teachers easily explain complex instructions and ensure students comprehension (Iheke, 2010). Gusea, Olarionoye and Garba (2005) observed that ICT has the potential of transforming the nature of education, the

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The computers and internet facilities in the homes of the affluent students, complemented by the cybercafés in the entire country have provided hundreds of thousands of Nigerian students' opportunity to join millions of their counterparts around the world to browse. In addition, the important agencies dealing with students' examinations e.g NECO, WAEC, JAMB have all gone on-line thereby encouraging students to go on-line as well. The embarrassment is often as students challenge the information they receive from their teachers. Teachers must live with the fact that ICT is a development that has come to stay. Thus there is need for teacher to acquaint themselves with the use of ICT Resources if he/she is to keep abreast with development in his fields and beahead of hisstudents.

Information and communication technologies (ICT) can equally provide a wide range of aids to the teacher in the course of carrying out his/her personal professional duties. According to Etesike (2006:30), some of these aids are:-

Storing lesson plans and students lecture handouts, textbook etc in word processor files. These items can be easily modifies, updated and even retrieved back when need arises.

Test generation software includes data banks of examination, questions and marking schemes, continuous assessment questions, assignments, projects etc.

remote corner of some administrative offices without ever being used.

If Nigeria must advance in educational development, the use of ICT in teaching cannot be waved aside. However, one pertinent question that is eminent is, do our education industries satisfactorily address the issue of using ICT resources to teach at secondary school level? The objective of this study therefore is to find out the extent of availability ICT resources in our secondary schools and to what extent teachers utilize the available ICT Resources for effective teaching.

Research Questions

1. To what extent are ICT Resources available in secondary schools in Udi Local Government Area of Enugu State?
2. To what extent do teachers utilize the available ICT resources for their teaching?
3. What factors constrain the effective utilization of ICT resources in secondary schools in Udi Local Government Area of Enugu State?

Research Method

The research design used in this study was descriptive survey design. The study was conducted in Udi L.G.A of Enugu State. The population of the study comprised all the senior secondary class three (SSIII) science students in all the state owned secondary schools in 2013/2014 academic session. There were 27 secondary schools in Udi LGA made up of 21 co-educational schools, 2 boys school and four girls schools. Co-educational schools were preferred to enable the researcher collect data from both male and female students who has received instructions from the same teacher and at the same time. The population of the student is 1183 (one thousand, one hundred and eighty three) students. Four schools were randomly selected from the 21 coeducational schools and from the each of the four sampled schools, thirty students were randomly selected to give a sample size of 120 science students. Simple random sampling technique was used so that every member of the population have equal chances of being included in the sample.

The instrument for data collection is the structured questionnaire developed by the researcher. The instrument was face validated by three experts. The reliability of the instrument was determined using Cronbach alpha and a correlation co-efficient of 0.76 was obtained.

In research question 1, 2, and 3 were answered using mean of each item. For research question 1, a four point scale of very great extent (VGE) = 4 points, Great Extent (GE) = 3 points, Moderate extent (ME) = 2 point, Low Extent (LE) = 1 points, was used. For research question 2, a four point scale of highly utilized (Hu) = 4 points, fairly utilized (Fu) = 3 points, underutilized (Uu) = 2 points, Never used at all (NUA) = 1 point was used. For research questions 3, a four point scale of Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points, and Strongly Disagree (SD) = 1 point was used. A criterion mean of 2.5 and above will be taken as available and utilized while mean less than 2.5 taken as not available and underutilized.

Results

Results obtained from the analyzed data were presented below based on the research questions.

Table 1: Responses of Students on the extent of availability of ICT Resources in their schools

S/N	ICT Resource	Very Great Extent (2)	Great Extent (3)	Moderate extent (2)	Low Extent (1)	$\bar{X}$	Remark
1	Video cassette players	5	5	30	80	1.45	Not available
2	Radio sets	10	20	5	85	1.63	Not available
3	Computer sets	50	30	20	20	2.92	Available
4	Computer printers	12	12	46	50	1.88	Not available
5	Uninterrupted power supply	13	15	20	72	1.74	Not available
6	Stabilizer	11	12	20	67	1.56	Not available
7	Scanners	10	12	13	85	1.56	Not available
8	Internet facilities	5	15	5	100	1.45	Not available
9	Mobile cellular phones	90	10	15	5	3.54	Available
10	Public address system	60	20	15	25	2.96	Available
11	Television sets	-	02	18	100	1.18	Not available
12	Joy stick	-	03	16	101	1.18	Not available
13	Word processing software	-	02	10	108	1.12	Not available

Table 1 shows that the only ICT resources available are computer sets, mobile cellular phones and public address system with mean of 2.92, 3.54 and 2.96 respectively. Other ICT Resources are not available and have means ranging from 1.12 to 1.88.

Table 2: Responses of Students on the Extent the Teachers Utilize the Available ICT resources for their Teachings.

S/N	ICT Resource	Highly Utilized (Hu) (4)	Fairly Utilized (Fu) (3)	Under Utilized (Uu) 2	Never used at all (NUA)	$\bar{X}_1$	Remark
1	Video cassette players	-	2	3	115	1.05	Under utilized
2	Radio sets	3	2	3	112	1.13	Under utilized
3	Computer sets	22	36	40	66	1.92	Under utilized
4	Computer printers	2	3	5	110	1.14	Under utilized
5	Uninterrupted power supply	30	10	20	60	2.08	Under utilized
6	Stabilizer	-	2	10	108	1.12	Under utilized
7	Scanners	-	-	-	120	1.00	Under utilized
8	Internet facilities	-	-	5	115	1.04	Under utilized
9	Mobile cellular phones	83	32	05	-	3.65	Utilized
10	Public address system	85	20	05	-	3.34	Utilized
11	Television sets	-	-	3	117	1.02	Under utilized
12	Joy stick	-	-	-	120	1.00	Under utilized
13	Word processing software	-	-	-	120	1.00	Under utilized

Table 2 shows that only two items were utilized. They are the mobile phones with mean of 3.65 and public address system with a mean of 3.34. Other ICT resources were underutilized with mean ranging from 1.00 to 2.08.

Table 3: Responses of Students on the factors constraining the effective utilization of ICT Resources in Secondary Schools.

S/N	Constraining Factors	Strongly Agreed (4)	Agreed (3)	Strongly Disagreed (2)	Disagreed (1)	$\bar{X}$	Remark
1	Lack of material/financial support from the communities.	80	35	-	5	3.58	Agreed
2	Insufficient fund in schools.	100	10	-	10	3.71	Agreed

3	Lack of financial support from government.	80	30	-	10	3.50	Agreed
4	School environment not conducive for ICT utilization.	120	-	-	-	4.00	Agreed
5	Lack of necessary infrastructure.	117	3	-	-	3.97	Agreed
6	High cost of ICT facilities.	100	20	-	-	3.83	Agreed

Data analysis on table 3 above shows that the students viewed all the listed items as constraining factors to the effective utilization of ICT resources in secondary schools, with means ranging from 3.50 – 4.00.

Discussion

The result of the study revealed that in the sampled schools in Udi LGA of Enugu State, only computer sets, mobile cellular phones and public address system were available. This finding agrees with findings of Uzodimma (2006) that many schools in Nigeria lack adequate ICT resources. The result also revealed that only two ICT resources – mobile phones and public address system were utilized. Others were underutilized. The findings are in line with findings of Umeano (2006) that many secondary schools purchase computers, which are covered in one remote corner of the administrative building. It is also agrees with findings of Mkpa (2004) who noted that even when ICT resources are made available, the extent of utilization was very low. The findings is in line with the findings of Etesike (2006) that many teachers and school administrators are not yet computer literate and hence lack proper tutorials required for effective handling of ICT facilities. The findings are also in line with the opinions of Balanskat and Blamire (2007) who noted that most schools are in the early phase of ICT adoption, Characterized by patchy un-coordinated provision and use. The result of the analysis on table 3 revealed that the respondents all agreed on factors listed on the table as constraining factors to the effective utilization of ICT resources in schools. Among the constraining factors is insufficient fund in schools. This finding supports the findings of Etesike (2006) who observed that funds for the development and servicing of ICT centers are in most cases grossly inadequate. The findings are consistent with the report of Salau (2003) that funding is a major constraint for making Nigerian secondary schools ICT complaint.

Conclusion

Based on the findings of the study, the following conclusions were made:

1. Most of the required ICT resources are not available in most secondary schools in Udi Local Government Area of Enugu State.
2. The only ICT resources utilized by teachers are mobile cellular phones and public address system.
3. Some factors constrain the effective utilization of ICT resources. These factors includes insufficient fund, high cost of ICT facilities, lack of necessary infrastructure among others.

Recommendation

The following recommendations weremade:

1. Government as a matter of urgency should provide schools with funds for ICT development.
2. Workshops, conferences and seminar should be organized for teachers on the use of ICT resources.
3. Teachers should use ICT when provided to enhance teaching and learning.
4. Host communities should assist the government in providing ICT resources in secondary schools.

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