

An Effective Use of ICT For Teaching And Learning In Nigeria Educational Sector

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Abstract

The use of Information and Communication Technology (ICT) in education has changed the structure and content of courses and how teaching and learning are being undertaken. Thus, this paper tends to examine the effective use of ICT for teaching and learning in Nigeria Educational sector. To successfully accomplish this research study, three null hypotheses were formulated and tested. The study was a descriptive survey design with a population of 280 respondents randomly sampled and selected from the seven higher institutions currently operating in Delta State. A six point Likert type of questionnaire was developed, validated and administered to the respondents through simple random sampling technique. The responses gathered were coded and analyzed using independent t-test statistics for data analysis. Three null hypothesis were formulated and tested at critical t-test value of 1.96 at 0.05 level of significance. Based on the results of the findings, it was concluded that the availability of ICT tools and facilities, ICT integration and implementation, and the presence of ICT teachers as both motivators and initiators will without doubt greatly enhance the effective teaching and learning in our schools. Hence, for effective teaching and learning to take place, it was therefore recommended that Government should ensure the availability of ICT tools and facilities in our institutions, there should be well equipped and furnished computer laboratories in our schools, Government and the stakeholders in our educational sector should ensure the full integration and implementation of the available ICT tools/facilities and the Government should employ experience ICT teachers to initiate and motivate the use of ICT tools in the classroom.

KEYWORDS: ICT, ICT tools and facilities, teaching, learning, availability,

Introduction

Today, according to Adamu et al (2010:51), the strategic use of Information and Communication Technology (ICT) in acquiring knowledge and skills has become an essential ingredient in education and training and these ingredients in the educational process have magical effects. Education in our tertiary institutions without the strategic use and support of information and communication technology makes the lives of the learners and teachers equally difficult. According to them, ICT can provide powerful tools to help learners access vast knowledge resources, collaborate with others, consult experts, share knowledge and solve complex problems using the three domains of learning (cognitive, affective and psychomotor domains). Thus, Okonta, et al (2013:211), defines information and communication technology as the science and skills of all aspects of computing, data storage, and communication. It is a new rapidly growing area that is radically changing the world by making possible new ways of doing business, making entertainment, creating art and teaching and learning.

ICT based presentation skills have been used to drive our course delivery processes faster and more successfully. Projectors, the web cam and PowerPoint application software are common tools found in our institutions, and used for teaching, seminar, project, and other presentations. In our virtual libraries, course materials from libraries located all over the globe can be accessed. Most courseware's are graphically oriented; animations are used to present problems which hitherto would have been difficult to appreciate (Ihekweaba and Ihekweaba, 2008:206).

According to Okoro, 2005 in Ihekweaba and Ihekweaba, 2008:206, ICT has created room for joint activities amongst researchers located several thousands of kilometers apart, which has greatly stimulated collaborative research. ICT has made it possible for simulation and modeling kits to be applied to the understanding and solution of major scientific and engineering problems. This method is such as will not only conserve the existing poor laboratory facilities but also reduce the enormous efforts wasted in the design of a system and testing of results.

Nowadays the role of Information and Communication Technology (ICT), *especially internet* in the education sector plays an important role, especially in the process of empowering the technology into the educational activities. Education sector can be the most effective sector to anticipate and eliminate the negative impact of ICT. Technology (internet) in another side can be the most effective way to increase the student's knowledge. Being aware of the significant role of ICT (internet) in our life, especially in the educational activities, education authorities should be wise enough in implementing the strategies to empower ICT in supporting the teaching and learning process in the classroom. ICT is not just the bloom of the educational activities, but also it will be

the secondary option to improve the effective and meaningful educational process. *The main purpose* of the Strategy for Information and Communication Technology Implementation in Education is to provide the prospects and trends of integrating information and communication technology (ICT) into the general educational activities (Saverinus, 2008:25). **Therefore, this paper discusses the effective use of Information and Communication Technology for teaching and learning in Nigeria Educational Sector.**

Statement of the Problem

Integrating ICT into education seems to be a necessary issue for educators' / education administrators in the world. However, if teachers cannot make good use of the ICT tools, the money and time spent on the ICT is going to be a waste. Also, if the educational budget is limited, **looking for a cost-effective and high-performance ICT tool can be the first priority.** Hence, this paper tends to investigate and ascertain the extent to which ICT has been effectively used to enhance teaching and learning in Nigeria Educational Sector.

Purpose of the Study

The main purpose of the study was to determine the **effective use of Information and Communication Technology for teaching and learning in Nigeria Educational Sector.** Specifically, the study is aimed at determining:

1. The availability of ICT tools and facilities for teaching and learning.
2. The extent of the integration and implementation of ICT tools for effective teaching and learning.
3. The degree of the presence of ICT teachers as the main motivators and initiators of the ICT implementation at schools.

Research Questions

The following research questions guided the study:

1. Does the availability of ICT tools and facilities enhance teaching and learning?
2. To what extent has ICT been integrated and implemented for effective teaching and learning?
3. Does the presence of ICT teachers as the main motivators and initiators of the ICT implementation at schools brings about effective teaching and learning?

Research Hypothesis

The following null hypothesis guided the study.

HO1: There is no significant difference in the availability of ICT tools/facilities between schools having such facilities and those without such facilities for effective teaching and learning.

HO2: There is no significant difference on the performance of students between schools where ICT has been integrated and implemented and the

schools where ICT has not been integrated and implemented for effective teaching and learning.

HO3: There is no significant difference between schools where the presence of ICT teachers as the main motivators and initiators of the ICT implementation brings about effective teaching and learning and the schools where teacher's presence as the motivators and initiators of ICT implementation is hardly available.

Research Design and Population

The research design adopted for this study was the survey descriptive study. The study area was Delta State of Nigeria. The study population comprises of all the tertiary institutions within the State. The sample consists of 280 respondents (male and female) randomly selected through the simple random sampling from seven higher institutions in the state.

Validation and Instrumentation

The research questions were reviewed for face and content validities by experienced personnel's in the field of computer. A test-retest method was adopted in testing the reliability of the instrument.

Data Analysis

The data analysis and results were presented with special reference to the research hypothesis in the study. Each hypothesis was tested using the responses from respondents to the questionnaire questions which relates to and explain the various null hypothesis and the t-test statistical analysis.

Results

Hypothesis One

HO1: There is no significant difference in the availability of ICT tools/facilities between schools having such facilities and those without such facilities for effective teaching and learning.

Table 1: Summary Table of calculated-t-test analysis for hypothesis 1.

Availability of ICT tools/facilities	N	Mean	SD	df	t-calculated	t-critical	Decision
Available	178	13.79	4.21	278	4.17	1.96	Significance
Not Available	102	7.34	2.13				No Significance

$p > 0.05$, $df = 278$, $critical-t = 1.96$, $calculated-t = 4.17$

In the table 1 above, it was revealed that schools having ICT tools/facilities were positive in their perception for effective teaching and learning (mean=13.78, SD= 4.21), compared to schools with non availability of ICT tools/facilities (mean=7.34, SD= 2.13). Similarly, the t-calculated of 4.17 is far greater than t-critical value of 1.96. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. These portend the fact that there is a significance difference between the schools with the availability of ICT tools/facilities

and those schools with no provisions of ICT tools/facilities for effective teaching and learning.

Hypothesis Two (2)

HO2: There is no significant difference on the performance of students between schools where ICT has been integrated and implemented and the schools where ICT has not been integrated and implemented for effective teaching and learning.

Table 2: Summary Table of calculated-t-test analysis for hypothesis 2.

Level of ICT Integration and Implementation at Schools	N	mean	SD	df	t-calculated	t-critical	Decision
Presence of ICT integration and Implementation	182	16.79	6.21	278	7.89	1.96	Significance
No Presence of ICT integration and Implementation	98	5.34	2.01				No Significance

$p > 0.05$, $df = 278$, $critical-t = 1.96$, $calculated-t = 7.89$

In the table 2 above, it was revealed that the mean scores and standard deviation (SD) of schools were ICT has been integrated and implemented for effective teaching and learning (mean=16.79, SD= 6.21) is greater than the mean and SD of schools were ICT has not been integrated and implemented for effective teaching and learning. Also, the t-calculated value of 7.89 is far greater than the t-

critical value of 1.96. Hence, the null hypothesis is rejected and the alternative hypothesis is accepted. These equally portend the fact that there is a significance difference between the schools were ICT has been integrated and implemented and schools were ICT has not been integrated and implemented for effective teaching and learning.

Hypothesis Three (3)

HO3: There is no significant difference between schools where the presence of ICT teachers as the main motivators and initiators of the ICT

implementation brings about effective teaching and learning and the schools where teacher's presence as the motivators and initiators of ICT implementation is hardly available.

Table 3: Summary Table of calculated-t-test analysis for hypothesis 3.

Level of the presence ICT Teachers as motivators.	N	mean	SD	df	t-calculated	t-critical	Decision
Presence of ICT Teachers as motivators	153	11.23	5.42	278	6.94	1.96	Significance
No Presence of ICT Teachers as motivators	127	3.11	3.02				No Significance

$p > 0.05$, $df = 278$, critical- $t = 1.96$, calculated- $t = 6.94$

Table three above shows that the mean scores and standard deviation (SD) of schools where ICT teachers are present as both motivators and initiators were mean=11.23 and SD=5.42 respectively when compared to the schools where there is no presence of ICT teachers as motivators and initiators with mean =3.11 and SD=3.02. Moreover, the t-calculated value of 6.94 is far greater than the t-critical value of 1.96. Hence, the null hypothesis is rejected and the alternative hypothesis is accepted. This implies that there is a significance difference between the schools where ICT teachers are present as motivators and initiators for effective teaching and learning and those schools where there is no presence of ICT teachers as motivators and initiators.

Discussions of Findings

In testing hypothesis one as displayed in table above, it was observed that there is a significance difference between the schools with the availability of ICT tools/facilities and those schools with no provisions of ICT tools/facilities for effective teaching and learning. This implies that the availability of ICT tools and facilities will bring about an effective teaching and learning in our schools. This is in line with Onwubuya (2008:11), agreeing with Okoh (2013:42) stated that the availability of computer can relieve the teacher of some administrative duties, constructing teaching time table, monitor and schedule teaching resources, build and maintain comprehensive students and academic records. They argued further that computer is largely used in schools for researching, computing student's results and other learning activities. Similarly, in testing hypothesis two, as revealed in table two above, it was equally observed that there is a significance difference between the schools where ICT has been integrated and implemented and schools where ICT has not been integrated and implemented for effective teaching and learning.

This is in agreement with Okonta et al (2013:213), which is of the opinion that the integration of ICT in education such as the internet allows new types of teaching and learning experiences to flourish. Many technologies are interactive, making it easier to

create environments in which students can learn by doing, receive feedback, and continually refine their understanding and build new knowledge. Also the result of testing hypothesis three as shown in table three above, was that there is a significance difference between the schools where ICT teachers are present as motivators and initiators for effective teaching and learning and those schools where there is no presence of ICT teachers as motivators and initiators. This is in line with Okonta et al (2013:216-217), which state that E-teachers are the new ICT teachers who will work in an internet environment, in both regular and virtual classroom situations. The presence of E-teachers tends to collaborate, build and discover new learning communities and explore resources as they interact with information, materials and ideas with their students and colleagues. This will go a long way in enhancing teaching and learning in our schools.

Conclusion

From the foregoing therefore, it could be concluded that the availability of ICT tools and facilities, ICT integration and implementation, and the presence of ICT teachers as both motivators and initiators will without doubt greatly enhance the effective teaching and learning in our schools.

Recommendations

Based on the findings of this research study, the following recommendations were made.

1. Government should ensure the availability of ICT tools and facilities in our institutions to enhance efficient and effective teaching and learning.
2. There should be well equipped and furnished computer laboratories in our schools for effective teaching and learning to take place.
3. Government and the stakeholders in our educational sector should ensure the full integration and implementation of the available ICT tools/facilities.
4. Government should employ experienced ICT teachers to initiate and motivate the use of ICT tools in the classroom.

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