

Extent of Availability and Usage of Information and Communication Technologies (ICTs) in Secondary Schools in Anambra State

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Abstract

The study investigated the extent of availability and usage of ICTs in secondary schools in Anambra State. The population of study comprised of teachers in 269 governments owned- secondary schools in six educational zones of Anambra State supplied with computer sets by the Anambra State Government. The sample was made up 180 teachers randomly selected from four educational zones of Anambra State. The instrument employed for data collection was a structured questionnaire for the teachers. The data obtained were analyzed using the mean, standard deviation and Z-test statistics at 0.5 level of significance. The findings of the study revealed that information and communication technologies in secondary schools is not yet adequate and equally that there is no effective usage of ICT gadgets provided in secondary schools. Based on the findings, some recommendations were made.

Keywords: ICT, Availability, Secondary School, Anambra State

Introduction

Education is the transmission of social, philosophical, economical, moral values and ideas of the society either formally or informally. Okafor (1992) defined education as a process of acculturation through which the individual is helped to attain the development of his potentialities and their maximum activation when necessary, according to right reason and to achieve thereby his perfect self-fulfillment. This implies that education brings about perfect changes and complete development of an individual.

In line with these, stages were provided in Nigeria to ensure that the purpose of education is achieved. The stages of education include: Pre-primary, Primary, Secondary and Tertiary education. Federal Republic of Nigeria (FRN) (2004) stipulated among the curriculum of primary and secondary school education the study of computer education. It further stated that the secondary education should provide trained manpower in the applied science, technology as a foundation for national development.

This computer education embodies in it Information and Communication Technology (ICT).

Information and Communication technology (ICT) is an umbrella term given to the new generation of information technology spanned by the merger of computers and telecommunications. (Flor, 2001). ICT encompasses radio, television, cellular phones, computer systems, internet, network hardware and software, satellite systems and so on, as well as various services and applications associated with them. (Scardamadia and Bereiter, 1994). At the heart of this integration is the computer. Thus, when we speak of the application of ICTs in education, we are basically speaking of computerization of education. The ICT gadgets are utilized in schools in two basic ways: the internet and a wide range of computer software for learning.

The emergence and application of Information and Communication Technology (ICT) in the 21st century had led to the concept of globalization. Globalization is a process of international integration arising from interchange of world views, product ideas, and other aspects of culture. (Al-Rodhan, Nayef and Stoudmann, 2006). Hence, the world is seen as a global village. Information and Communication Technologies (ICTs) are major factors in globalization. Their introductions into learning have made learning easier and more interesting and have improved the effectiveness and efficiency of learning. Some researchers have attested to this fact. Akude (1995) and Duru (2010) have respectively reported great improvements in teaching and learning when ICTs are integrated into them. Duru (2011) noted that such improvements could be felt greatly in such areas as in enhancing creativity, active engagement, acquisition of skills, student's performance, production of industrial packages, and access to basic skills, exchange of ideas and globalization of knowledge. Madichie and Akaenyi (2012) rightly observed that a major step towards the attainment of globalization through ICT is making computer literacy mandatory to all levels of our school system right from the primary school and to equip the schools with computer facilities that will include accessing the internet.

Based on the above inherent advantages of ICTs and the need for its availability and usage, the researchers set out to investigate the extent of the availability and usage of such gadgets in our secondary schools for enhanced learning.

Meaning of ICT

Information and communication technology (ICT) is an umbrella term given to the new generation of information technology spanned by the

merger of computers and telecommunications (Flor, 2001). ICT encompasses radio, television, cellular phones, computer systems, internet, network hardware and software, satellite systems and so on, as well as the various services and applications associated with them (Scardamadia and Bereiter, 1994). At the heart of this integration is the computer. Thus, when we speak of the application of ICTs in education, we are basically speaking of computerization of education. The ICT gadgets are utilized in schools in two basic ways; the internet and a wide range of computer software for learning.

Statement of the problem

The call for application of ICT in secondary education is to infuse efficiency and effectiveness in teaching and learning processes. However, in developing countries like Nigeria, ICT is faced with challenges of insufficient ICT material or services such as computer, computer laboratories, internet and e-mail facilities, digital library, digital classrooms, fax and wireless applications, videophone systems and teleconferencing devices, etc. Previous studies by some scholars in the field of study show that there is a dearth of adequately trained teachers for e-learning, lack of facilities, infrastructures and equipment. Hence, there is the need to determine the extent of the availability and usage of such gadgets in our secondary schools for enhanced learning.

Purpose of study

The study aims at determining the extent of availability and usage of ICTs in secondary schools in Anambra State and to determine the possible ways and strategies to improve on the *status quo*. More specifically, the study sets out

- to determine the extent of availability of ICT in secondary schools.
- to determine the extent of usage of ICT in secondary schools.
- to determine the strategies that could be used to enhance ICT availability and usage in secondary schools.

Significance of the study

The study will help the government, school administration, the Non-governmental organizations (NGOs), philanthropists and charity organizations to seek to seek greater ways of improving the provision of ICTs in secondary schools. It will help the government and education policy makers to be informed on the extent of the availability of ICT in the secondary schools and if there is need to improve on it. It will also help

determine the usage of such ICTs and if need be, to improve on its utilization through adequate employment of trained manpower. The study will also enable the teachers and students to acquire enough skills in order to fulfill the objective of the National policy on Education towards the promotion of ICT in schools.

Scope of the study

The study is limited to government-owned secondary schools in Anambra State.

Research Questions

The following research questions guided the study:

- To what extent are ICTs available in secondary schools?
- To what extent are ICT gadgets provided utilized in secondary schools?
- What strategies could be used to enhance the availability and usage of ICT in secondary schools?

Hypothesis

The following null hypothesis was formulated for the study:

There is no statistically significant difference ($P < 0.5$) in the opinion of teachers on the extent of availability and usage of ICTs in secondary schools.

Methodology

Design of Study

The study is a survey research. It encompasses measurement procedures aimed at eliciting responses on the extent of the availability and usage of ICTs in secondary schools in Anambra state.

Area of study

The area of study was public secondary schools in Anambra State supplied with computers by the state government.

Population of Study

The population of study comprised of teachers in 269 governments owned- secondary schools in six educational zones of Anambra State supplied with computer sets by the Anambra State Government via Governor Peter Obi.

Sample and Sampling techniques

The sample was made up 180 teachers randomly selected from four educational zones of Anambra State.

Instrument of Data collection

The instrument to be employed for data collection was a structured questionnaire for the teachers. The questionnaire involved responding to a four-point scale weighted as follows:

For the research questions 1 and 2:

Very High Extent	(VHE)	4
High Extent	(HE)	3
Low Extent	(LE)	2
Very Low Extent	(VLE)	1

While research question 3 had

Strongly agree	(SA)	4
Agree	(A)	3
Disagree	(DA)	2
Strongly Disagree	(SD)	1

Validation of Instrument

The questionnaires prepared for the teachers' response were revised a number of times before they were submitted to an expert in measurement and evaluation for content and face validation. The corrections made were effected before a final copy was made.

Reliability of Instrument

To determine the reliability of the instrument used, it was administered to 10 teachers of Demonstration Secondary School Eziagu, a subsidiary of Federal College of Education (Technical), Umuze. Two weeks later, the instrument was re-administered to the same group of teachers. Using the first and second scores after the administration of the instrument, a test-re-test reliability estimate was computed using Pearson's moment coefficient of correlation. The value obtained was considered high enough to permit the conclusion that the instrument was reliable.

Method of Data Collection

The researchers made personal visits to the schools to administer the questionnaires to the respondents. The copies of the questionnaires were collected immediately after completion to avoid loss and problems that may arise from late returns.

Method of Data Analysis

The data obtained were analyzed using mean and standard deviation. Mean was used to answer the three research questions posed while the null hypothesis will be tested using Z-test statistics at 0.05 level of significance. Based on the four-point scale, the cut-off point for accepting or rejecting responses to an item was pegged at 2.5; which means that many item that attracted mean responses of 2.5 and above was taken to have been positively responded to, while item with mean responses below 2.5 was taken to have attracted negative responses.

Analysis

Research Question 1

To what extent are ICTs available in secondary schools?

Table 1: Mean responses of teachers on the availability of Information and Communication Technologies in secondary schools in Anambra State.

S/N	Item DECISION	VHE	HE	LE	VLE	$\bar{X}$	SD
1.	There are not enough High Extent computers.	100	68	8	4	3.47	0.21
2.	Internet facilities are Low Extent available.	20	60	60	40	2.33	0.17
3.	Satellite dish is not installed High Extent for internet services.	48	80	36	16	2.89	0.17
4.	TVs and Radios in secondary schools is not yet significant.	80	80	8	12	3.27	0.20
5.	Compact disks (CDs), High Extent machines, are not enough.	72	92	9	7	3.28	0.20
6.	Ipads are not available. High Extent	120	52	8	-	3.26	0.23

7.	Printers, UPS and sanners High Extent are not enough.	170	40	2	2	3.83	0.26
8.	The ICTs are lacking in Low Extent our secondary schools.	80	88	8	4	2.44	0.17
9.	The ICTs are very High Extent expensive and not affordable by many schools	94	56	20	20	3.30	0.21

Table 1 above showed that items 1,3,4,5,6,7 and 9 have mean above the cut-off point of 2.5 and indicated that the availability of ICTs are inadequate. Item 2 and Item 8 with mean responses of 2.33 and 2.44 respectively indicated that the internet facilities are not available and ICTs adequate ICT equipment are not available as expected in the secondary schools.

Research Question 2

To what extent are the ICT gadgets provided utilized in the secondary schools?

Table 2: Mean responses on the extent the ICTs are being used in secondary schools.

S/N	Item	VHE	HE	LE	VLE	$\bar{X}$	SD
	DECISION						
10.	The ICTs provided in schools High Extent are not being adequately used.	80	40	50	10	3.06	0.19
11.	The students lack the basic High Extent Knowledge of computer application.	130	44	4	2	3.68	0.24
12.	Secondary schools lack the High Extent adequate man-power in terms teachers that are computer literate to provide this basic learning.	110	56	12	2	3.52	0.23
13.	The installation of these Extent equipment in schools is not feasible because secondary	130	44	4	2	3.68	0.24

	school lack security						
14.	The use of I CTs needs High Extent needs adequate supply of electricity which are lacking in our secondary schools.	40	100	30	10	2.94	0.18

Table 2 showed that all items (10-14) have mean which were above the cut-off point of 2.5 indicating that the ICTs in schools were poorly utilized.

Research Question 3:

What strategies could be used to enhance the availability and usage of ICT I secondary schools?

Table 3: Mean responses on the strategies that could be used to enhance the availability and usage of ICTs in secondary schools?

S/N	Item	SA	A	DA	SD	X	SD
	Decision						
15.	Teachers should be trained 0.18 Agree adequately in computer literacy.		48	72	50	10	2.88
16.	Government should ensure 0.20 Agree that computer literacy dictates the tone for employment opportunities in various fields of endeavour		80	76	18	6	3.28
17.	Computer education should 0.18 Agree be made part of the curri- culum of studies right from Junior secondary schools.		56	80	36	8	3.02
18.	Adequate security should be 0.19 Agree provided to secure the ICT equipment provided.		40	120	14	6	3.08
19.	Government, Philanthropists 0.25 Agree as well as well-spirited individuals or organizations		150	20	8	2	3.77

	should help provide adequate power supply to schools by providing a stand-by generator or power system.						
20.	All stakeholders in Agree education should help in the provision of more ICT gadgets to secondary schools.	24	136	10	10	2.97	0.18

Table 3 above showed that all items (15-20) have mean which were above the cut-off point of 2.5 indicating that the identified strategies to enhance the availability and usage of ICTs in secondary schools were adequate.

Test of Hypothesis

H₀ = There is no statistically difference ($P < 0.5$) in the opinion of teachers on the extent of availability and usage of ICTs in secondary schools.

Table 4: Z-test analysis of availability and usage of ICTs in secondary schools.

	N	X	SD	DF	STD error	Z-cal	Z-critical
Decision							
Total	140	3.9	4.3				
Agreement				179	0.32	12.27	1.96
Rejected							
Total	40	1.2	5.4				
Disagreement							

Table 4 showed the Z-test analysis of the hypothesis where Z-calculated is 12.27 and the Z-critical (table value) is 1.96. Since the calculated value of 12.27 is greater than the table value of 1.96 ($12.27 > 1.96$), then the null hypothesis (H_0) is rejected following the decision rule. Therefore, the alternative hypothesis (H_1) that there was a statistically significant difference in the opinion of teachers on the availability and usage of ICTs in secondary schools. This demonstrated that the available ICT were not adequately utilized.

Discussion of results

On the availability of information and communication technologies in secondary schools, the result indicated that the ICTs are lacking in our secondary schools; the Government has made huge investment by trying to make ICTs available to secondary schools but the availability of ICTs in secondary school is not yet significant. The findings showed that computers, satellite dish, Ipods, TVs, Radio, Compact disks, printers, UPS, scanners, etc are to the high extent not available in the secondary schools and that ICTs are very expensive and not affordable by many schools. These indicated that the availability of ICTs in our secondary schools is not yet adequate as noted by the respondents. This implies that there is great and urgent need to make more huge investment towards the provision of ICTs. Many of the respondents acknowledged the importance of ICTs in our educational system as they improve students' academic performance and arouse their interest in learning. This agrees with observation of Haddad *et al* (2002) that ICTs can enhance the quality of education in several ways, namely; by increasing learner motivation and engagement by facilitating the acquisition of basic skills; by enhancing teacher training.

These findings are in tandem with the researches made by Akude (1995) and Duru (2010) respectively. On the extent the ICTs are being used in secondary schools, the findings showed that the ICTs provided in schools are not being adequately used. The students lack the basic knowledge of computer application; secondary schools lack adequate man-power in terms of teachers that are computer literate to provide this basic learning. The installation of these equipment in school is not feasible because secondary schools lack adequate security. The use of ICTs needs adequate supply of electricity which is lacking in secondary schools. This is a very dangerous trend as the students are not given the basic foundation for the current technological development that have enveloped the whole world which depended much on the knowledge of ICTs. This distorts the Nigeria's philosophy of education that stipulates full integration of the individual into the (technologically-developed) community. (FRN 2004). It negates also the vision of Nigeria towards self reliance and breeds lack of skills and unemployment which is the foundation for violence in the society today.

The respondents recommended adequate training of teachers in computer literacy and even beckoned on the government to use computer literacy as one of the criteria for employment opportunities. Equally, computer literacy education as advocated by the respondents should be made compulsory in the school curricula right from the Junior Secondary Schools. This policy, if implemented, will enable the students acquire

appropriate skills and develop mental and physical competencies in order to live and contribute to the development of the society and thereby achieve national unity and development devoid of youth violence emanating from lack of skills and employment.

Recommendations

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

- The government and educational authorities should step up their provision of information technology gadgets in our secondary schools. The Non-Governmental Organizations (NGOs) and philanthropists should be encouraged to assist the schools in this laudable venture.
- The alumni of various secondary schools should endeavour to assist their *alma mater* become ICT-compliant.
- It should be impressed on the parents through the Parents Teachers Association (P.T.A) meetings the need for effective learning via ICT and the desirability of providing some affordable ones at home to augment classroom learning.
- Federal, State and Local Governments should provide more funds for equipping schools with information and communication technologies.
- Education authorities, universities, parastatals, teachers' advisory bodies, etc should encourage and emphasize computer literacy among teachers a *sine qua non* to employment opportunities.
- Every state and/or Educational Zone should have the programme of training and re-training of their teachers on the use of ICT.
- Government should adopt a system of providing more actively committed supervisors to schools in line with the National Policy on Education. Increased supervision compels and helps teachers to be more committed.

Conclusion

The positive impact of the new information and communication technologies on social interactions in the secondary schools is an *indubitandum*. They open up new avenues of contact between students and teachers. The application of these new technologies not only helps to provide more materials for learning both for teachers and students but also, they render teaching and learning less tedious and more enjoyable. But the inadequacy of ICT in the schools and the poor utilization will definitely

destroy the functionality of education and hamper effective technological development of the nation, Nigeria.

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