EFFECT OF THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGY DEVICES ON SENIOR SECONDARY ACADEMIC ACHIEVEMENT IN ENGLISH LANGUAGE IN ENUGU STATE OF NIGERIA

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Abstract

The study investigated the effect of the use of Information Communication Technology Devices (ICTD) on academic achievement of the students in Senior Secondary schools in Nsukka Education Zone of Enugu state, Nigeria. Two research questions and two null hypotheses guided the study. The study adopted the quasi experimental design. The population consisted of 309,633 SSII students in the public secondary schools in Nsukka Education Zone. Two public secondary schools were selected randomly for the study. One intact class was used for the control group while another intact class in another school was used for the experimental group. Students in the control group were taught using the ICT devices both in the teaching and test the administrations. The experimental exercise lasted for four weeks of two periods in each week. Mean scores were used to answer the research questions while ANCOVA and t-test were used to test the hypotheses. The findings of the study revealed that there is no significance difference between the mean academic achievement scores of the senior secondary school students using the ICT devices to teach the English language and those taught without using the ICT devices. The study further revealed that there is a significant difference in the mean achievement scores of students taught the English language using ICT devices and those taught without the use of ICT devices. The implication of this finding is that the government and all other appropriate educational authorities should make the provision of adequate ICT devices in schools especially the senior secondary schools: It is recommend that the different levels of government should make adequate funds available for the provision of adequate ICT devices in all the secondary schools in the state.

Keywords: Information Communication Technology Devices (ICTD), Academic Achievements, Senior Secondary School, English Language.

Introduction:

Information and Communication Technology devices have become very essential part of the school system. These devices are used to store, produce, process, distribute and exchange information. (Yushall cited in Adenuga, Owoyele & Adenuga, 2011). ICT devices seem to be receiving global attention despite all the efforts made to eradicate computer literacy at every levels of educational system; (the primary, the secondary and the tertiary institutions). Presently, positive efforts are been made by the different levels of government, the local, the state and the Federal government in Nigeria to integrate and promote the ICT devices in Nigeria secondary schools through various support systems such as school Net Project (Osei, 2007).

The effective use of Information and Communication Technology devices depends on the inclusion in the curriculum and the preparedness of the teachers, who are the key factores to the way in which it is implemented in the classroom (eggs, 2000; Mumtaz, 2000). Kersaint, Hornton, Stohl, and Garofalo (2003) succinctly stated that teachers who have positive attitudes toward technology feel more comfortable with employing it and usually infuse it into their teaching Murat (2012) discovered that teachers attitudes were a crucial enabling or disabling factor in the integration of technology into teaching. These devices are expected to assist the secondary school teachers in their teachings. The World Bank Assisted Project in its good intention of improving the quality of education initiated a giant stride in making provision of desktops and laptops in the primary and the secondary schools. According to Osei (2007), these initiatives could be geared towards improving educational activities as well as in promoting the children academic development in most of the subjects especially the English Language which is regarded as one of the core subjects in the senior secondary schools.

The secondary school teachers have a lot of significant roles to play in the academic development of the students in the secondary schools especially presently, when ICT devices are globally recognized as means of storing, producing, processing and distributing information. However, the teachers at the secondary school level seem not to be utilizing ICT facilities in the teaching and learning environment. To support this assertion, Dawis (2001) is of the view that the teachers in the secondary schools appear to have little or no interest in the use of ICT devices.

Information and Communication technology devices could have a lot of effects on the quantity and quality of teaching, learning and research in traditional and distant education institutions. In concrete term, ICT devices could enhance teaching and learning through its dynamic, interactive and engaging content and it may provide real opportunities for individualized

instruction. ICT devices may have the potentials to accelerate, enrich and deepen skills, motivate and engage students in learning. It could also help to relate school experiences to work practices, create economic variability for tomorrow workers, strengthen teaching and learning and provide opportunities for connection between the school and the world (Dawes, 2011). Unfortunately these devices are underutilized.

The use of ICT devices in teaching and learning is becoming increasingly vital due to the global nature of the twenty first century teaching and learning. In line with this, Lefevre, Deuudelin and Loiselle (2006), opined that the use of modern technology such as ICT devices offer many means of improving teaching and learning in the classroom. Dawes (2001) is of the view that new technologies have the potential to support education across the curriculum and provide the opportunities for effective communication between the teachers and the learners. These potentials have implications for education in the sense that they could bring about changes in the secondary school teaching methodology in line with the demand of the 21st century. It is sad to note that these ICT devices are not physically seen in most public senior secondary schools at Nsukka. One begins to wonder what could be responsible for this ugly development. According to Adelsberger, Collis, and Pawlowski (2002) and Yildirim (2000), the best way to encourage the teachers to set up ICT device in the classroom and to maximize their level of competency, which is achievable through regular training and the provision of ICT devices related courses designed according to the individual's competency level. By training prospective teachers to employ ICT devices, it is assumed that they will transfer the knowledge and the skills to their future classrooms (Brush, Igoe, Brinkerhoof, Galzewski, Kill, & Smith 2991).

According to Apanpa and Lawal (2009), the effect of ICT devices on the academic achievement of the learners especially at the senior secondary school level has very great effect. According to the authors, One of the effects is that ICT devices could encourage communications and collaborations between the teachers and the learners and even among the learners. In the view of Gillespic (2006), New technologies can be used in the teaching and learning environment so as to enable the learners connect information and collaborate or interact with resources such as images and videos. Other researchers such as (Apampa & Lawal, 2009) opine that ICT devices help to increase learners motivation. But several visits to most of the public secondary schools show that these devices are not available in these schools.

In the view of Mavis and David (2003), features of ICT devices such as speed and flexibility could make a significant contributions to learners knowledge, understanding and skills in their various subjects. ICT devices

according to David (2003) can help the learners to observe, measure, record and manipulate variables in a variety of ways. The use of ICT devices could also enhance learners understanding of the science subjects, such as primary science, health science, Mathematics through stimulations and modeling. The ICT devices could also be used to present information to students and help them to complete learning tasks. To support this assertion, Waziri (2006) noted that the use of internet by the students will help the students to become experts in searching for information rather than receiving facts alone. Such use, not only increases the pupils awareness of the importance of the scientifically literate community but it could also help the English Language learners at the senior secondary schools acquire knowledge and skill.

The senior secondary school is the last three years of students in the secondary school. (FME, 2004). This level of education varies from country to country. In Nigeria, the National policy on education described it as the last three years of secondary school (NPE, 2004). The fact that the secondary school education is one of the keys to success or failure of the entire educational system is indisputable. Despite the importance of the secondary education in Nigeria, that level of education seems to be neglected in Nigeria in Enugu state due to enormous problems confronting it. Some of the problems could be the meager and unstable salaries of the teachers, low enrollment of students, inadequate teaching aids which include among others ICT devices such as computers, internet services, projectors. These problems could be one of the reasons for the poor academic achievement of these students.

The academic achievement of the secondary school students in the state, Enugu, seems to be deteriorating and this could be attributed to the non-provision or the inadequate provision of the teaching aids such as the ICT devices, Internet services. Other challenges are lack of confidence by most of the secondary school teachers in using the ICT devices, lack of competence, lack of access to ICT devices, inadequate time for using the ICT devices if made available, lack of training and inadequate technical support. The implication of these challenges to the secondary school education could lead to poor academic achievement among the children at this level, the senior secondary classes.

Statement of the Problem

Teaching using the ICT devices especially in the senior secondary school has been an issue that needs to be examined in order to determine the challenges hindering the effective utilization of these devices in the secondary school level. It is very sad to note that in most, if not all the public secondary

schools at Nsukka there is no ICT devices and the few schools that have these devices, they are very inadequate and this could adversely the learners academic achievement, especially presently when the world is advancing technologically. The major challenge confronting schools presently range from poor electricity, Power supply, inadequate ICT facilities or devices, lack of technical support, high cost of ICT devices, poor incentives, poor internet connectivity and lack of teacher confidence on the use of these ICT devices.

The federal government of Nigeria according to Waziri (2006) has spent over ₦1.32 billion building ICT laboratories and equipping them with ICT devices in 102 Unity schools in Nigeria. Despite the giant stride the Federal government is making to ensure that adequate ICT devices are provided in the teaching and the learning environment, the attainment of adequate ICT devices seems to suffer some set backs as observed in the poor academic achievement of the primary school learners. No doubt, when these children fail, it could be attributed to the ineffectiveness of the teaching, using the ICT devices which in most cases not very adequate at this level of education.

The effect of the ICT devices are not felt especially at the senior secondary school level. Fengchun, and Molly (2009-2010) stressed that providing teachers with devices to technology resources motivates them into using ICT devices.

One of the effects of the ICT devices in the teaching and learning environment is that it could empower not only the learners and the teachers but it could help to also improve the academic achievement of the senior secondary school students. The study therefore, examines the effect of information technology devices ICT on the academic achievement of the children in the senior secondary school.

Purpose of the Study:

The Purpose of the study is to determine the;

(1) mean academic achievement scores of students taught using the ICT devices and those students taught without using the ICT devices
(2) mean achievement scores of the male and the female students in English Language.

Research Questions:

1. What are the mean academic achievement scores of students using ICT devices to teach and those students taught without using the ICT devices.
2. What is the mean achievement scores of the male and the female students in the English Language.

Hypotheses

HO_1: There is no significance difference between the mean academic achievement scores of senior secondary students using the ICT devices to teach and those taught without using the ICT devices.

HO_2: There is no significant difference in the mean achievement scores of the male and the female students in English Language.

Methods

The study adopted a quasi-experimental design with the use of intact classes from two different schools. The justification for adopting it is in line with Nworgu, (2006), who described quasi-experimental as a type of design in which random assignment of subjects in the experimental and the control groups is not possible. In this case, intact or pre-existing groups are used. Here, the researcher uses two groups streams of a class as the experimental and the control groups respectively. Each intact class comprised 32 and 30 students respectively. 12 males and 20 females and the other 12 males and 18 females

The study was carried out in Nsukka education zone of Enugu State. Nsukka is one of the six education zones in the state. Other zones are Enugu, Agbani, Udi, Awgu and Obollo-Affor. The researchers were interested in carrying out the study in this area because it is an urban area where most of the residents are very educated and most importantly because of its commercial nature, there should be the availability of Information Communication Technology devices but contrary to the researchers' expectations, these facilities were either not available or inadequate in most of the public secondary schools in the area, Nsukka.

Instrument for Data Collection

The Instrument used for data collection includes a computer education Achievement Test.

Validation of Instrument

The instruments were carefully validated by three different experts. Two in Educational Psychology and the other one in Measurement and evaluation. Both experts are of the University of Nigeria, Nsukka.

Development of the Training Programme for the Groups: Treatment Programme (Experimental Group).

The Programme was developed by the researcher with the help of the school computer teachers. In developing the programme, the researcher

identified and stated the specific objectives to be achieved. There were teaching sessions where the projector was used and the test administration was conducted with the computers. The projector was set up and it was focused on the black board of the class used. The students were asked to pay attention to the projector which projected the passage. As we read through, the teacher/researcher explains some of the paragraphs. Some of the difficult words were also explained. Later the teacher requested the students to ask questions on the areas they do not understand.

The second stage of the exercise was to prepare the students to get ready to answer the questions using another ICT device, the desktop computers that were already provided by the school.

Since the questions were objective items, the students were required or asked to read through the question items and click on the option which is the most correct answer.

There were (10) question items, scored over (20) twenty,

The other group was taught using the traditional method of teaching and test administration.

The exercise lasted for four weeks of two periods in each week. Before the commencement of the actual treatments, subjects in both the experimental and the control group were pre-tested with a given comprehension passage based on objective questions. The pre-test scores were compared with the post test to find out the achievement level of the students taught with ICT devices and those taught without ICT devices.

The data generated from the instrument was analysed in line with the research questions and hypothesis ANCOVA, and t-test were used to test the hypothesis.

Results

Research Question

Table 1: Mean analysis of achievement scores of students in the experimental and the control group

Group	**N**	**Pre-test mean**	**SD**	**Post test Mean**	**SD**	**Mean**
Taught with ICT devices	30	5.67	4.70	11:20	5.27	**5.53**
Taught without ICT Devices	**20**	**7.38**	**5.59**	**16:91**	**3.38**	**11:32**

Table 1 shows that the students taught English language using ICT devices had lower post-test mean score (X = 11:20, SD = 5.27) than the students taught without ICT devices (X = 16.91, SD = 3.38).

Table 2 Mean analysis of the achievement scores of male and female students in English language

Gender	**N**	**X**	**SD**	**X**	**SD**	**Mean**
Male	24	6.17	5.03	13.45	5.32	**7.29**
Female	**38**	**6.79**	**5:37**	**14.58**	**5.05**	**7.79**

Table 2 shows that female students had higher mean achievement score (X = 14.58, SD = 5.05) than the male students (X = 13.46, SD = 5.52)

Table 3: Analysis of Variance for the effect of Treatment on Students Achievement in English Language.
Dependent Variable: Post test.

Source	**Type III sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	529.913[a]	4	132.478	6.660	.000	.319
intercept	4142.897	1	4141.897	208.281	.000	.785
pretest	.048	1	.048	.002	.961	.000
Group	412.767	1	412.767	20.752	.000	.267
Gender	13.176	1	13.176	.662	.419	.011
Group * Gender	10.971	1	10.971	.552	.461	.010
Error	1133.780	57	19.891			
Total	14069.000	62				
Corrected Total	1663.694	61				

Table 3 reveals that there is a significance difference in the mean achievement of students taught English language using ICT devices and those taught without ICT devices in favour of the students taught without ICT devices, $F(1.57) = 20.752$, $P = 0.000$

Table 4: Analysis of variance for the effect of treatment on students achievement in English language.

Source	**Type III sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	529.913[a]	4	132.478	6.660	.000	.319
intercept	4142.897	1	4141.897	208.281	.000	.785
pretest	.048	1	.048	.002	.961	.000
Group	412.767	1	412.767	20.752	.000	.267
Gender	13.176	1	13.176	.662	.419	.011
Group * Gender	10.971	1	10.971	.552	.461	.010
Error	1133.780	57	19.891			
Total	14069.000	62				
Corrected Total	1663.694	61				

Table 4 shows that gender does not have significant influence on the students achievement in English Language. $F = (1.57) = .662$, $P = .419$. Thus the null hypothesis was not rejected since P – value of 0.66 is greater than 0.05 level of significance.

Discussion of Results:

The finding of this work as shown in the background of the study and the research questions shows that the students taught the English language using ICT devices had lower post test mean score (x=11:20, SD = 5.27) than the students taught without ICT devices (x=16:19, SD = 3.38) The study further reveals that there is a significant difference in the mean achievement scores of students taught English language Using ICT devices and those taught without the use of ICT devices. This result is in line with view Waziri (2006) which revealed that despite the giant stride the Federal government is making to ensure that adequate ICT devices are provided in the teaching and learning, the provision of ICT devices are not only inadequate but seems to suffer some setbacks as observed in the poor academic achievement of these secondary school learners. The study also revealed that there is no significance difference in the mean achievement score of the male and the female students in English language. In other words, the female students had higher mean achievement score (X = 14.5, SD = 5.05) than the male students (X = 13.46, SD = 5.52). This result is equally in line with the opinion of Osi (2007) that revealed that parents seemed to be given more attention to the female education than the male. In his view, he asserted that presently that the world is preaching gender equality there is the need to ensure equal education of all irrespective of gender.

Recommendations:

Based on the findings of this study, the following recommendations became necessary.

(a) The different levels of government, the federal, the state, the local government should as a matter of urgency make reasonable budget for the provision of ICT devices in all the secondary schools not only in Nsukka Local government area but all the local government secondary schools in Nigeria.

(b) The school authorities should effectively monitor and supervise the supply of these ICT devices so as to ensure that the distributions of these devices are honestly made available for development of the educational system in Nigeria.

(c) The educational authorities should train and retrain the teachers or instructors on the effective and efficient use of ICT devices.
(d) The students irrespective of gender should be encouraged by the parents, the different levels of government and the educational authorities to key in on the use of the ICT devices especially presently that we are in the digital word.

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