

# CHALLENGES IN THE APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN TEACHING-LEARNING PROCESS IN SECONDARY SCHOOLS IN NIGERIA

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## Abstract

The study examined the challenges in the application of ICT in teaching-learning process in secondary schools in Nigeria in this era of digitalization. The study was based on School-Centred Innovation Theory. A survey research design was adopted for the study which was guided by three research questions and three null hypotheses. The population of the study was 164,824. Proportionate random sampling technique was applied to draw a sample of 500. A structured questionnaire with 18 items was the instrument used for data collection, which was duly validated, and its reliability established using Cronbach Alpha, yielding a coefficient index of 0.70. 498 copies were properly filled and returned that was used for the study. The data collected were analyzed using means and standard deviations to answer the three research questions, and 't' test statistic to test the null hypotheses at 0.05 level of significance. The findings of the study showed that: ICT facilities were not available for teaching-learning process, and where they are available, teachers and students could not access them easily. There was this obvious lack of interest by administrators, teachers and students in the use of ICT in teaching-learning process. Based on the findings of the study, recommendations were made.

**Keywords:** *Information and Communication Technology (ICT); Challenges; Application; Development and Teaching-Learning.*

## Introduction

The contemporary world is being technologically driven, and this is evident in the cardinal roles being played by ICT in every sphere of life. The level of ICT knowledge and application is now one of the major determinants of a country's level of development. Education is the bedrock of national development and transformation. Education develops the human capital resources of a country through the impartation of necessary values, knowledge and skills needed for the survival of the individuals and the society.

Teachers are the hub of any education system, and as nation builders, they need to be prepared in such a way that they can transmit worthwhile skills, values and knowledge to the learners. In this era of digitalization, teachers

and students alike are bracing up in order to be digitally competent in order to fit into the global economy (Emesini, 2009). Information and Communication Technology (ICT) is the new communication trend globally. ICT according to Raheen (2010), is the electronic pathways with viable communication devices like computers and other electronics. Babangida (2011) states that ICT education is the scientific process of application of ICT technologies through teachers' vested interest and positive attitude. The use of ICT in education leads to sustainable development and global competitiveness, wealth creation, poverty alleviation and job creation (Nworgu, 2006). Mbachu (2008) made it clear that most of the developing countries have experienced the potentials of ICT in transforming their educational landscape at all levels. This is because with the use of ICT in education, teachers and students globally become more

connected, and develop more positive attitude to educational processes, as they interact (Villanueva, 2000). Villanueva reiterates that ICT have created pathways that stimulate teachers and students because of its interesting interactive procedures and linkages. (Villanueva, 2000). Villanueva reiterates that ICT have created pathways that stimulate teachers and students because of its interesting interactive procedures and linkages.

The need for ICT application in Nigerian secondary schools cannot be underrated. This is because secondary school is the bedrock of any solid human development. Evo (2007) reiterates that secondary education is essential for the creation of effective human capital in any country. There are developments in the Nigerian education sector which indicate the eagerness of the Federal Government's approval of the application of ICT in secondary schools. The Federal Government in its National Policy (FRN, 2004:54) section 11, sub-section 102(a&b) stipulates that "The government shall provide facilities and necessary infrastructure for the promotion of ICT at all levels of the education system". This is a step forward in the repositioning of the nation's education system in this era of digitalization. The indispensable role of ICT in education and other spheres of life informed government's effort in organizing ICT training for teachers and other personnels in other ministries. Many teachers have in recent time undergone ICT training in order to update themselves and become computer literate, in order to meet the challenges of our contemporary ICT-driven world. The teachers thus equipped with ICT skills are expected to apply same in teaching-learning process. Unfortunately, it seems that the ICT skills acquired by the teachers are not being applied in classroom instructions in many public schools. ICT usage and training is a complex undertaking that involve huge capital investment in the areas of proper training in software development and general ICT

integration, infrastructural installations, technical supports and regular power supply. These have been source of concern to the researchers, and a big challenge to ICT application in the Nigerian education system; hence the need for the study. application in the Nigerian education system; hence the need for the study.

#### Statement of the Problem

Over the years, one of the major concerns of educationists has been how to make teaching and learning more effective and efficient. This concern emanates from the need to achieve the stated educational objectives which holds the key to sustainable development in any nation. Current researches in education have shown that ICT possesses the potential for effective teaching and learning. Nigerian government in recognition of the indispensable role of ICT in education has been organizing ICT training for its workforce. Presently, many secondary school teachers have undergone training in the use of ICT, but the problem now lies on its implementation and application in teaching-learning process. It is one thing to acquire a skill, and another thing to put it into actual use. A cursory look into most public secondary schools in Nigeria reveals the prevalence of conventional teaching methods like the use of chalk/chalkboard, and reading from textbooks among others. These methods are still widely used inspite of the ICT training received by the teachers. This is an indication that secondary school teachers are facing obvious challenges in the use of ICT in teaching-learning process. What then could be the challenges facing secondary school teachers in applying the ICT skills in the classroom? This is now the problem of the study that secondary school teachers are facing obvious challenges in the use of ICT in teaching-learning process. What then could be the challenges facing secondary school teachers in applying the ICT skills in the classroom? This is now the problem of the

study

### Objectives of the Study

The study sought to find out how:

1. Lack of ICT facilities constitutes a problem in its application in teaching-learning process;
2. Inaccessibility to ICT facilities poses a challenge in its application in teaching-learning process, and
3. Lack of interest in ICT among teachers and students poses a challenge in its application in teaching-learning process

### Research Questions

To guide the study, three research questions were posed thus:

- (1) How does lack of ICT facilities constitute a problem in its application in teaching-learning process in secondary schools in Nigeria?
- (2) How does inaccessibility to ICT facilities pose a challenge in its application in teaching-learning process in secondary schools in Nigeria?
- (3) How does lack of interest in ICT amongst teachers and students pose a challenge in its application in teaching-learning process in secondary schools in Nigeria?

Furthermore, three null hypotheses were formulated to guide the study, and were tested at 0.05 level of significance:

Ho1: There is no significant difference between the mean ratings of teachers and students on how lack of ICT facilities constitutes a problem in its application in teaching-learning process in secondary schools in Nigeria.

Ho2: There is no significant difference between the mean ratings of teachers and

students on how inaccessibility to ICT facilities poses a challenge in its application in teaching-learning process in secondary schools in Nigeria.

Ho3: There is no significant difference between the mean ratings of teachers and students on how lack of interest in ICT poses a challenge in its application in teaching-learning process in secondary schools in Nigeria.

### Theoretical framework

The study is anchored on school-centred innovation theory of Blenkin; Gwyn, and Kelly (1975) and Stenhouse (1975), which values the relationship between curriculum innovation and teachers' development. According to Stenhouse (1975:40) "Teachers are community of researchers engaged in a continuing process of enquiry into their own educational practices, developing their professional understanding as a consequence". It then means that it is through curriculum development and innovation that significant teacher development take place. School-centred innovation theory is a preferred theory for curricular innovation in teaching and learning, as it is cost-friendly, and has diverse alternatives for its information dissemination and processes, making it easy for the adoption of an innovation. Blenkin et al (1975) reiterate that for any substantial and lasting change to take place in the education system, an active involvement of the practitioners (teachers) should be considered. As a result, the present study on challenges in the application of the new innovation- ICT in the education system of Nigeria is an off-shoot of school-centred innovation theory.

### Methodology

- a. **Research Design:** A survey research design was adopted for the study, as the opinions of the teachers and the students were sought on the challenges in the application of ICT in teaching-learning process.
- b. **Population/Sample and Sampling Technique:** The population of the

- study was 164,824, made up of 2,855 teachers and 161,969 students from the three Education Zones in Ebonyi State of Nigeria. Proportionate random sampling techniques were adopted to draw a sample of 500; 200 teachers and 300 students.
- c. **Instrumentation:** A structured questionnaire with 18 items designed by the researchers titled “Challenges in the application of ICT in secondary schools in Nigeria” was the instrument used for the study. It was based on a 4-point rating scale and scored thus: Strongly Agree (SA)=4pts; Agree (A)= 3pts; Disagree (D)=2pts and Strongly Disagree (SD)=1pt. The instrument had 3 clusters: Cluster one was based on the availability of ICT facilities; cluster two was based on accessibility of ICT facilities, and cluster three was on interest in the use of ICT facilities. Two experts in curriculum Studies and one in Measurement and Evaluation from Ebonyi State University, Abakaliki, Nigeria validated the instrument to determine its adequacy, clarity of language,

appropriateness and relevance in the achievement of the objectives of the study. Furthermore, the reliability of the instrument was determined by trial-testing it in Enugu State through administering 30 copies on the teachers and students in the state (10 copies for the teachers, and 20 copies for the students). Cronbach Alpha was used to test its reliability, and it yielded a reliability coefficient of 0.70, and this index was considered high enough for the instrument to be reliable for the study.

- d. **Administration/Procedure:** The instrument was administered personally on the respondents, and was collected back immediately. 498 copies were properly filled and returned that was now used for the study (99% return). Means and standard deviations were used to answer the research questions, while the null hypotheses were tested using 't' test of independent samples at 0.05 level of significance.

**Results**  
Table 1 presents the data that answered research question 1.

Table 1: Mean Responses of Teachers and Students on Availability of ICT Facilities for Teaching-Learning Process.

S/N	Items	n = 200			n = 298		
		Teachers			Students		
		$\bar{x}$	SD	Remarks	$\bar{x}$	SD	Remarks
1.	Most secondary schools in Ebonyi State do not have ICT facilities for teaching - learning process.	3.66	0.62	Strongly Agree	3.58	0.73	Strongly Agree
2.	Most secondary schools in Ebonyi State have inadequate ICT facilities for teaching-learning process	3.38	0.72	Strongly Agree	3.25	0.89	Strongly Agree
3.	Some available ICT facilities for teaching-learning process in secondary schools in Ebonyi State are obsolete	3.09	0.95	Strongly Agree	3.06	0.96	Strongly Agree
4.	The facilities are not adequate for installing ICT in secondary schools in Ebonyi State	3.25	0.82	Strongly Agree	3.23	0.94	Strongly Agree
5.	Inadequate power supply makes it difficult to use ICT in teaching -learning process in secondary schools in Ebonyi State	3.48	0.80	Strongly Agree	3.37	0.88	Strongly Agree
6.	Stand-by generators to augment inadequate power supply for the use of ICT in teaching-learning process in secondary schools in Ebonyi State are not readily available.	3.41	0.73	Strongly Agree	3.24	0.99	Strongly Agree
Grand Mean		3.37			3.28		

From table 1 above, the means of all the items (1 to 6) range from 3.09 to 3.66 on the sides of the teachers, and 3.06 to 3.58 on the side of the students. This shows that both the teachers and students strongly agree that most secondary schools in Ebonyi State do not have ICT facilities for teaching-learning process; have inadequate ICT facilities, and have obsolete ICT facilities. The table also indicates that the respondents strongly agree that the following adverse conditions are obtained in relation to availability of ICT facilities in teaching-learning process: Inadequate facilities for installing ICT in secondary schools; inadequate power supply for the use of ICT facilities in teaching-learning process; and unavailability of stand-by generators for augmenting inadequate power supply for the use of ICT in teaching-learning process. Table 2 presents the data that answered research question 2.

**Table 2: Mean Responses of Teachers and Students on Accessibility of ICT Facilities for Teaching-Learning Process**

S/N	Items	n = 200			n = 298		
		Teachers			Students		
		$\bar{x}$	SD	Remarks	$\bar{x}$	SD	Remarks
7.	Some secondary school teachers in Ebonyi State do not have access to ICT facilities.	3.47	0.72	Strongly Agree	3.31	0.93	Strongly Agree
8.	Some secondary school students do not have access to ICT facilities	3.36	0.80	Strongly Agree	3.37	0.89	Strongly Agree
9.	ICT room where available, is opened for teachers' use during School hours only.	3.0	0.97	Strongly Agree	2.95	1.11	Agree
10.	ICT room where available, is opened for students' use during school hours only.	3.04	0.88	Strongly Agree	2.82	1.13	Agree
11.	ICT room where available, is rarely opened for teachers' and students' use.	2.78	1.06	Agree	3.01	1.05	Strongly Agree
12.	There is no reliable network provider linked to the secondary schools in Ebonyi State.	2.95	1.05	Agree	3.05	1.17	Strongly Agree
Grand Mean		3.10			3.08		

Table 2 above indicates that amongst the teachers, items 7, 8, 9 and 10 have means ranging from 3.0 to 3.47, while items 11 and 12 have means of 2.78 and 2.95 respectively. Amongst the students, items 7, 8, 11, and 12 have means ranging from 3.01 to 3.37, while items 9 and 10 have means of 2.95, and 2.82 respectively. This is an indication that both the teachers and students agree that in some secondary schools in Ebonyi State, teachers and students do not have access to ICT facilities. The table also indicates that where ICT facilities are available, ICT room is opened for teachers' and students' use only during school hours and in some cases, rarely opened. There is also no reliable network provider linked to the secondary schools in Ebonyi State as shown in the table.

Table 3 presents the data that answered research question 3.

**Table 3: Mean Responses of Teachers and Students on interest in ICT Facilities for Teaching-Learning Process.**

S/N	Items	n = 200			n = 298		
		Teachers			Students		
		$\bar{x}$	SD	Remarks	$\bar{x}$	SD	Remarks
13.	Some secondary school teachers are not interested in using ICT facilities in teaching	3.41	1.09	Strongly Agree	2.82	1.23	Agree
14.	Some secondary school students are not interested in using ICT facilities in learning	2.35	1.07	Agree	2.37	1.24	Agree
15.	Some secondary school administrators are not too keen in procuring ICT facilities in schools	2.86	0.97	Agree	2.87	1.12	Agree
16.	Money for procuring ICT facilities is sometimes diverted to other things due to lack of interest in ICT	2.87	1.04	Agree	3.06	1.10	Strongly Agree
17.	Some secondary school administrators do not allow enough time in the timetable for ICT application due to lack of interest.	2.78	1.03	Agree	3.04	1.11	Strongly Agree
18.	Some teachers and students do not easily embrace innovation due to lack of interest	2.49	1.08	Agree	2.51	1.25	Agree
Grand Mean		2.62			2.78		

Table 3 indicates that items 13, 14, 15, and 18 have means ranging from 2.35 to 2.87 for both teachers and students, while items 16 and 17 have means of 3.06 and 3.04 respectively. This shows that all the respondents agree that some secondary school teachers and students in Ebonyi State are not interested in using ICT facilities, and do not easily embrace innovations in teaching-learning process. The table also shows that some school administrators are not keen in procuring ICT facilities in schools; therefore money for procuring ICT facilities is sometimes diverted to other things. There is also an indication from the table that where ICT facilities could be available, some school administrators do not allow enough time for their application in teaching-learning process. Table 4 presents the data obtained after testing the three null hypotheses.

**Table 4: t-test Analysis of Secondary School Teachers' and Students' Opinions on Availability, Accessibility and Interest on ICT Facilities in Teaching-Learning Process**

S/N	Variables	Status	N	$\bar{x}$	SD	Df	t-cal.	Sig. (2 tailed)	Decision
1.	Availability of ICT facilities	Teachers	200	3.37	0.47	496	2.048	.040	S.
		Students	298	3.28	0.48				
2.	Accessibility of ICT facilities	Teachers	200	3.10	0.46	496	0.320	.744	N.S.
		Students	298	3.08	0.52				
3.	Interest on ICT facilities	Teachers	200	2.62	0.75	496	2.415	.018	S.
		Students	298	2.78	0.70				

Note: S. = Significant

N.S. = Not Significant

Table 4 is the t-test analysis of the three hypotheses for the study. The decision rule is: If the 2-tailed 'sig' value is less than 0.05 level, reject the null hypothesis, but if it is greater than the 0.05 value, then the null hypothesis is accepted. Hypothesis one says that there is no significant difference between the mean ratings of teachers and students on how lack of ICT facilities constitutes a problem in its application in teaching-learning process in secondary schools in Nigeria. From table 4 above, in hypothesis one, the 2-tailed 'sig' value is .040 and is greater than the 0.05 level, so the hypothesis is rejected, which means that there is a significant difference in the respondents' mean ratings on the availability of ICT facilities.

Hypothesis two states that there is no significant difference between the mean ratings of teachers and students on how inaccessibility to ICT facilities poses a challenge in its application in teaching-learning process in secondary schools in Nigeria. Table 4 shows that in hypothesis two, the 2-tailed 'sig' value is 0.744 which is greater than the 0.05 level, so the hypothesis is accepted that there is no significant difference in their mean ratings on inaccessibility of ICT facilities. Lastly, the third hypothesis is stated that there is no significant difference between the mean ratings of teachers and students on how lack of interest in ICT poses a challenge in its application in teaching-learning process in secondary schools in Nigeria. From the table, the 2-tailed 'sig' value is 0.18 which is less than the 0.05 level. This implies that the hypothesis is rejected, meaning that there is a significant difference between the teachers' and students' opinions, on how lack of interest poses a challenge in the application of ICT. These results show that there are areas of agreement, and varying areas in the opinions of the respondents on the challenges in the application of ICT facilities in teaching-learning process.

## Discussion

The findings of the study in table 1 show that lack or inadequate ICT facilities pose a serious challenge in their application in teaching-learning process. This finding is in line with Enebechi and Otiji (2011) who in a study found that majority of the secondary schools in Enugu State, and the neighbouring States including Ebonyi State, do not have computers. Okwudishi (2005) also identified non-availability of ICT facilities as one of the factors hindering teachers' and students' application of ICT in teaching-learning. The table also indicated inadequate power supply as an impediment in the use of ICT facilities where available, in teaching-learning process. This finding agrees with Mbah (2010) who observed that ICT facilities are electrically powered, and since there is inadequate power supply in Nigeria, it will be difficult to apply ICT facilities in classroom instruction. The problem of non-availability of ICT facilities and inadequate power supply is very worrisome owing to the fact that every sphere of life is going digital. The teachers who have undergone ICT training may lose the skills acquired if they are not provided with ICT facilities to practice with.

Findings in table 2 show that inaccessibility to ICT facilities where available is one of the major challenges facing the application of ICT in teaching-learning process. This finding agrees with Ekoko (2006) views, who observed that although many teachers in secondary schools are now aware that classroom activities can be presented via computer, many of them do not have access to computers in their schools. To make Nigerian teachers and students relevant in ICT driven world of today, ICT facilities should be within their reach.

Lack of interest on the use of ICT facilities is another impediment in their application in teaching-learning process as shown in table 3. This finding is contrary to the

expectation of the researchers, since government is laying much emphasis on computer literacy in every aspects of the economy. This finding is also contrary to the finding of Nwoaba (2011) who in a study found that teachers are eager to have access to ICT facilities and adopt them to effect e-learning in students. However, non-availability and inaccessibility of ICT facilities in secondary schools could have dampened the interest of the teachers and students in the use of ICT facilities in teaching-learning process.

In table 4, hypothesis one was rejected because there was a significant difference in the respondents' opinions on the availability of ICT facilities in teaching-learning process. These differing opinions might be as result of lack of knowledge on the part of the students on what might likely be the basic facilities needed. Hypothesis two was accepted that there is no significant difference in their mean opinions on inaccessibility of ICT facilities as a challenge in its application in teaching-learning process. This finding agrees with the views of Ekoko (2006) who stated that teachers and students do not have access to ICT facilities where it is available. Again hypothesis three recorded a significant difference between the mean opinions of the teachers and students on how lack of interest poses a challenge in the application of ICT facilities in teaching-learning process. This finding seems to be so because, according to Mbachu (2008), youths in the Nigerian classrooms are more eager to learn with ICT facilities in order to catch up with the youths of the developed economies. This interest and eagerness are not too obvious with teachers; hence the significant difference. Howbeit, both teachers and students are now aware of the loaded benefits in the application of ICT in teaching-learning process in Nigerian classrooms.

#### Conclusion

The study revealed that the challenges in the application of ICT in teaching-learning process in secondary schools in Nigeria include: non-availability of ICT facilities in

secondary schools, inaccessibility of ICT facilities by teachers and students, and lack of interest in the use of ICT facilities in teaching-learning process. Should this scenario continue to be, the nation's education standard which many believe is falling, will continue to be so. This now implies that Nigerian secondary schools teachers and students will find it difficult to compete favourably with their counterparts in other parts of the world that are ICT compliant if these ugly trends continue.

#### Recommendations

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

1. The respective State Governments in Nigeria should provide ICT facilities for secondary schools.
2. Non-governmental organizations and philanthropists should help fund secondary education in Nigeria by providing ICT facilities for teaching and learning.
3. ICT facilities provided in secondary schools in Ebonyi State of Nigeria should be made accessible to teachers and students, and backed up with stand-by generators
4. Secondary school administrators in Nigeria should develop interest in the use of ICT facilities in teaching-learning process by de-emphasizing the conventional teaching methods.
5. Teachers and students that are ICT compliant should be rewarded in order to motivate them the more in its application.
6. Monitoring committee should be set up by the various state governments in Nigeria to oversee the application of ICT in teaching-learning process, and
7. Reliable network providers should be linked to secondary schools in Nigeria

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