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# The application of information and communication technology in Nigerian secondary schools

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This study examined the application of information and communication technology (ICT) in Nigerian secondary schools. The study investigated the level of availability of ICT facilities in schools, the capacity for using ICT facilities for teaching learning, the perceived benefits of using ICT and the problems facing the use of ICT in secondary schools. The descriptive survey design was used for the study. The population consisted of all the teachers and principals of the secondary schools in Ondo and Ekiti States. The sample consists of 320 teachers and 40 principals randomly selected from the secondary schools in Ondo and Ekiti States. A self designed questionnaire tagged “ICT” and secondary schools (ICTSS)” was used to collect the data for the study. Data collected for the study were analysed using frequency counts and percentage scores. The study revealed that ICT facilities were lacking in schools and teachers and students were to a little extent exposed to the use of ICT. Moreover, the study revealed the perceived benefits of using ICT in schools which include making teaching-learning-interesting; helping the distance learning programme; helping teachers to be up-to-date; enhancing quality of work by both the teachers and the students. However, despite these perceived benefits, the study also revealed some of the challenges facing ICT in secondary schools as: irregular power supply; inadequate computer literate teachers; high cost of purchasing computers in schools; inadequate facilities to support full application of the ICT and lack of fund. It was therefore recommended that government should increase the funding of the education sector. There should also be periodic training for teachers on computer and ICT skills acquisition.

**Key words:** Application, information and technology, secondary schools.

## INTRODUCTION

Information and community technologies (ICT) have become key tools and had a revolution impact on how we see the world and how we live. Today, the place of ICTs in education and the world in general cannot be undermined. Modern day businesses are conducted and facilitated through the use of telephones, fax machines and computer communication networks through the internet. This phenomenon has given birth to the contemporary e-commerce, e-government, e-medicine, e-banking and e-education among others.

According to Bandele (2006), ICT is a revolution that involves the use of computers, internet and other tele-

communication technology in every aspect of human endeavour. The author posited that ICT is a simply about sharing and having access to data with ease. It is regarded as the super highway through which formation is transmitted and shared by people all over the world. Ozoji in Jimoh (2007) defined ICT as the handling and processing of information (texts, images, graphs, instruction etc) for use, by means of electronic and communication devices such as computers, cameras, telephone. Ofodu (2007) also refer to ICT as electronic or computerized devices, assisted by human and interactive materials that can be used for a wide range of teaching and learning as well as for personal use. From these definitions, ICT could therefore be defined as processing and sharing of information using all kinds of electronic device, an umbrella that includes all technologies for the manipu-

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lation and communication of information.

The field of education has certainly been affected by the penetrating influence of ICT worldwide and in particular developed countries; ICT has made a very profound and remarkable impact on the quality and quantity of teaching, learning research in the educational institutions. Information and community technology has the potentials to accelerate, enrich, and deepen skill; to motivate and engage students in learning to help relate school experiences to work practices; to help create economic viability for tomorrow's workers, contribute to radical changes in school; to strengthen teaching and to provide opportunities for connection between the school and the world.

Aribisala (2006) posited that ICTs are increasingly playing an important role in organisations and in society's ability to produce access, adopt and apply information. They are however being heralded as the tools for the post-industrial age and the foundations for a knowledge economy due to their ability to facilitate the transfer and acquisition of knowledge. Stressing the importance of the use of ICT in schools, Olurunsola (2007) posited that through ICT, educational needs have been met; it changes the needs of education as well as the potential processes. Message can be communicated through the e-mail, telex or telephones particularly the mobile ones.

The pervasiveness of ICT has brought about rapid teleological, social, political and economic transformation, which has eventuated in a network society organized around ICT (Yusuf, 2005). The author posited that ICT is an indispensable part of educational administration as its application makes institutions more efficient and productive, thereby engendering a variety of tools to enhance and facilitate teachers' pedagogical activities. For instance, e-learning is becoming one of the most common means of using ICT to provide education to students both on and off campus by means of teaching online offered via web-based systems.

Looking at the role of education in nation building and the population explosion in the secondary schools these days, the use of ICT in the teaching-learning process becomes imperative. This is true because its adoption by the teachers will enhance effective teaching. Such issues like good course organisation, effective class management, content creation, self-assessment, self-study collaborative learning, task oriented activities, and effective communication between the actors of teaching learning process and research activities will be enhanced by the use of ICT based technology.

Teaching and learning has gone beyond the teacher standing in front of a group of pupils and disseminating information to them without the students' adequate participation (Ajayi, 2008). The author posited that with the aid of ICT, teachers can take students beyond traditional limits, ensure their adequate participation in teaching and learning process and create vital environments to experiment and explore. This new development is a strong indication that the era of teachers without ICT skills are

skills are gone. Any classroom teacher with adequate and professional skills in ICT utilization will definitely have his students perform better in classroom learning.

A cursory look at the secondary schools in Nigeria has shown that many teachers in the system still rely much on the traditional "chalk and talk" method of teaching rather than embracing the use of ICT. According to Okebukola (1997), computer is not part of classroom technology in over 90% of public schools in Nigeria, thus the chalkboard and textbooks continue to dominate classroom activities. This is an indication that the students are still lagging behind in the trend of changes in the world. This presupposes that there is the tendency for the teachers and students to be denied the opportunities which ICT offers in the teaching-learning activities. There is the need to replace the traditional pedagogical practices that still underpin the educational system in the country, hence the need for the application of ICT in Nigerian Secondary Schools.

The various ICT facilities used in the teaching learning process in schools according to Babajide and Bolaji (2003), Bryers (2004), Bandele (2006) and Ofodu (2007) include; radio, television, computers, overhead projectors, optical fibres, fax machines, CD-Rom, Internet, electronic notice board, slides, digital multimedia, video/VCD machine and so on. It appears some of the facilities are not sufficiently provided for teaching – learning process in the secondary schools. This might account for why teachers are not making use of them in their teaching. According to Ajayi (2008), the use of these facilities, involves various method which include systematized feedback system computer-based operation/network, video conferencing and audio conferencing, internet/worldwide websites and computer assisted instruction. It must however be stressed that the effective use of the various method of the ICT in teaching leaning depends on the availability of these facilities and teachers' competence in using them. Observation has shown that there are no functional internet facilities in most of the secondary schools. This appears to hinder the extent of teachers' exposure to the use of ICT in teaching. Teachers as well as students appear not to be knowledgeable in the use of ICT because there appears not to be any official training for both the teachers and the students in the schools.

It has also been observed that most secondary schools in Ondo and Ekiti states lack computer literate teachers; irregular power supply appears to thrive in the schools. Moreover it seems the schools could not purchase computers for use because of inadequate fund. Besides, the non-inclusion of the ICT programmes in teachers' training curriculum seems to be another major challenge facing the adoption of ICT in secondary schools.

Various studies have shown the multifaceted problems militating against the effective use of ICT in the teaching learning process in schools. These include: irregular power supply (Yusuf, 2005; Ofodu, 2007); inadequate

**Table 1.** Availability of ICT for teaching in secondary schools.

S/N	Items	Available	%	Not Available	%
1.	Computer	146	40.5	214	59.5
2.	Radio (Tape recorder)	208	57.8	152	42.2
3.	Projectors	53	14.7	307	85.3
4.	Television sets	212	58.9	148	41.1
5.	Video	193	53.6	167	46.4
6.	Slides	126	35.0	234	65.0
7.	Films trips	108	30.0	252	70.0
8.	Electronic notice boards	56	15.6	304	84.4
9.	Internet	83	23.1	277	76.9
10.	Disc Player	146	40.5	214	59.4
11.	Bulletin boards	215	59.7	145	40.3
	Mean		39.0		61.0

computer literate teachers (Oyebanji, 2003; Dabesaki, 2005; Kwache, 2007); inadequate fund (Ogunmilade, 1988; Nwite, 2007), reluctance to change (Selwyn, 1997) among others.

### Purpose of the study

The purpose of this study is to examine the level of availability and the capacity of using the ICT facilities in secondary schools. The paper also investigated the perceived benefits of using ICT for teaching and the perceived problems of using ICT in the secondary schools.

### Research questions

The following research questions were raised to guide this study:

- i.) To what extent are the ICT facilities available for teaching in secondary schools in Nigeria?
- ii.) To what extent are teachers and students in secondary schools exposed to ICT facilities?
- iii.) What are the perceived benefits of ICT in secondary schools?
- iv.) What are the challenges facing the adoption of ICT in secondary schools in Nigeria?

### METHODOLOGY

The descriptive survey design was used for this study. The population for the study consisted of all the teachers and principals of the secondary schools in Ondo and Ekiti States. The sample for the study is made up of 320 teachers and 40 principals randomly selected from 40 secondary schools in the two states.

A self-designed questionnaire tagged "ICT and Secondary Schools (ICTSS)" was used to collect the data for the study. The instrument was validated by research experts in educational management and test and measurement. The Cronbach Alpha was to determine the reliability of the instrument and the reliability coefficient was 0.85. The questionnaire was administered by the

researchers with the help of research assistants in the two states. Personal contacts of the researchers with the respondents enhanced good and prompt response from the respondents. Data collected were analysed using frequency counts and percentage scores.

## RESULTS AND DISCUSSION

### The results of the study are presented below

**Research question 1:** To what extent are the ICT facilities available for teaching in secondary schools?

Table 1 showed that ICT facilities like computers, radio (tape recorders), television sets, video disc players, bulletin boards were available in schools, while some facilities like projectors, electronic notice boards, internets, film-strips are scantily available in schools.

**Research question 2:** To what extent are teachers and students in secondary schools exposed to using ICT facilities?

Table 2 showed the extent to which the teachers and students are exposed to the use of ICT facilities in secondary schools. Only 17.8% of the respondents agreed that there were functional internet facilities for browsing in the schools, while 25.6% of them agreed that teachers were exposed to the use of ICT in teaching. 39.4% of the respondents also agreed that there were enough ICT materials to teach the students. Of the respondents, 23.9% agreed that teachers had the knowledge of the use of ICT, while 26.1% of them agreed that students were knowledgeable in the use of ICT. Of the respondents, 6.9 and 6.1% agreed that there was periodic training for teachers in the use of ICT and periodic training for students on the use of ICT respectively.

On the average 18.2% of the respondents agreed that teachers and students had the necessary exposure to the use of ICT. This means that teachers and student were to a little extent exposed to the use of ICT.

**Table 2.** Exposure of teachers and students to the use of ICT.

S/N	Items	Agree	%	Disagree	%
1	There are functional internet facilities owned by the school for browsing	64	17.8	296	82.2
2	Teachers are exposed to the use ICT in teaching	92	25.6	268	74.4
3	There are enough ICT materials to teach the student	142	39.4	218	68.6
4	Teachers are knowledgeable in the use of ICT	86	23.9	274	76.1
5	Students are knowledgeable in the use of ICT	94	26.1	266	73.9
6	Periodic training is organized for teachers on the use of ICT	25	6.9	335	93.1
7	Periodic training is organized for students on the use of ICT	22	6.1	338	93.9
	Mean		18.2		81.8

**Table 3.** Perceived Benefits of ICT in the secondary schools.

S/N	Items	Agree	%	Disagree	%
1	ICT helps in making teaching-learning more interesting.	310	86.1	50	13.9
2	ICT helps in distance learning programme.	256	71.1	104	28.9
3	ICT enhances quality of work of both teachers and students.	321	89.2	39	10.8
4	It makes teachers to be up-to-date in their various disciplines.	306	85	54	15
5	It helps teachers to reach out to colleagues in other part of the country.	317	88.1	43	11.9
6	ICT enhances efficiency of workers.	317	88.1	43	11.9
7	ICT help reduce bureaucracy in administration.	296	82.2	64	17.8
8	It makes decision-making in the education sector easy and faster.	293	81.4	67	18.6
9	It enhances the management of financial records in schools.	306	85	54	15
	Mean		84.1		15.9

**Research question 3:** What at the perceived benefit of using ICT in secondary schools in Nigeria?

Results in Table 3 showed the perceived benefits of ICT in the secondary schools. These include enhancing quality of work of both teachers and students (89.2%); helping teachers to reach out to colleagues in other parts of the country (88.1%); enhancing efficiency of workers (88.1%) and making teaching-learning more interesting (86.1%). Other perceived benefits include making teachers to be up to date in their various disciplines (85%); and enhancing the management of financial records (85%); reducing bureaucracy in administration (82.2%); making easy and faster the decision making in the education sector (81.4%) and helping in distance learning programmes (71.1%).

**Research question 4:** What are the challenges facing the adoption of ICT in secondary schools?

From Table 4, it shown that the major challenge facing the adoption of ICT in Nigerian secondary schools is irregular power supply (98.1%). Another challenge facing the adoption of ICT is lack of computer literate teachers (89.4%). Other major challenges are lack of fund in schools (84.7%); inadequate facilities to support the application of ICT (82.2%) and the fear of exposing too much information on the school to the public (82.2%).

## DISCUSSION

This study revealed that ICT facilities such as computer, projectors, electronic notice boards, internet filmstrips were not available in secondary schools. This could be as a result of inadequate funding of the schools by the government. This finding has grave consequences on the resourcefulness of the teachers. Even if these teachers are willing to learn and use ICT in their, the non-available of the facilities will hinder them.

The study also revealed that teachers and students were to a little extent exposed to the use of ICT. This is a pointer to the low level of application in the teaching-learning in secondary schools. The implication is that most of the teachers are still fond of the old method of chalk and talk, the practice which will make them lag behind in the world of ICT.

It was also revealed that the perceived benefits of using ICT in schools include making teaching-learning interesting; helping the distance learning programme; help teachers to be up-to-date; enhancing quality of work by both teachers and students. This finding might not be unconnected with the fact that the teachers know the importance inherent in the use of ICT in the teaching-learning. This finding corroborates Kwache (2007) who submitted that the application of ICT makes institutions

**Table 4.** Challenges facing ICT in secondary schools.

S/N	Items	Agree	%	Disagree	%
1	Most secondary schools lack computer literate teachers.	322	89.4	38	10.6
2	There is lack of computer information technology in the secondary schools.	296	82.2	64	17.8
3	Irregular power supply hinders the use of computers in schools.	353	98.1	07	1.9
4	The cost of purchasing computers in the school is high.	204	56.7	156	43.3
5	There are inadequate facilities to support full application of the information and communication technology.	304	84.4	56	15.6
6	The non-inclusion of ICT programmes in teachers' training curriculum affects its adoption in schools.	294	81.7	66	18.3
7	Teachers are very reluctant to adapt to use of ICT in teaching-learning process.	256	71.1	104	28.9
8	Lack of fund hinders school from embracing ICT.	305	84.7	55	15.3
9	There is fear of exposing too much information on the institution to the public.	296	82.2	64	17.8

more efficient and productive, enhance and facilitate pedagogical activities. Similarly, Ayeni (2007) posited that the fact that ICT is accurate, fact and reliable and has the capacity to store and disseminate large information within the shortest periods, makes it a veritable and indispensable instrument for distance education programme.

The study revealed that irregular power supply is major challenge facing the application of ICT in secondary schools in the country. The epileptic power supply is a national phenomenon that has a detrimental effect on all sectors of the economy. This can also be attributed to low level of funding in the school system. If schools are well funded, the management of the school can always make provision for alternative power supply in the schools. This finding support Yusuf (2005) and Ofodu (2007) who submitted that irregular power supply in the country is a major obstacle to the usage of ICT in all spheres of the economy.

The study showed that most schools in the sampled areas lack computer literate teachers. The lack of computer literate might not be unconnected with the non-inclusion of ICT in teacher training programmes in school curriculum at all levels of education in Nigeria. This finding is in support of Kwache (2007), Dabesaki (2005) and Oyebanji (2003) who submitted that lack of skilled manpower to manager available system and facilities for ICT hinders its use in schools. Kwache (2007) remarked the most institutions lack computer literate teachers and ICT experts that would support and manage the internet connectively and / or application of computing in the teaching – learning process.

Other problems facing the application of ICT in secondary schools include inadequate facilities, high cost, reluctance to adapt to use of ICT in teacher learning. This finding also corroborates that of Akubuilu (2007).

## Conclusion and Recommendations

The finding of this study has shown that Nigeria secondary schools are lagging behind in the level of application of ICT in the teaching-learning process. The ICT facilities are lacking in schools, the capacity for using ICT by both teachers and students is also very low. Despite the perceived benefits in the use of ICT in school, there are a lot of factors inhibiting the successful application of ICT in secondary schools. In order to fit into the new scientific order, it is necessary for Nigerian institutions and individuals alike to develop a society and culture that places a high value on information and communication technology. The following recommendations are therefore made.

The government should increase funding for the entire educational sector with emphasis on ICT this will help improve the level of ICT facilities in the schools. There should also be continuous and periodic training of teachers on computer and ICT skills acquisition. This will help provide them with practical and functional knowledge of the computer, the internet and associated areas of ICT with the hope of integrating it with instructional methods of teaching and leaning.

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