

Assessment of information communication technology proficiency of secondary school teachers

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Article Info	Abstract
<p>Article History Submitted: 12 January 2018 Revised: 26 March 2018 Published: 13 April 2018</p> <hr/> <p>Keywords ICT Secondary school teachers Technology proficiency</p>	<p>This study assessed Information and Communication Technology (ICT) Proficiency of Secondary School Teachers in Auchi Polytechnic Staff School. The study employed a descriptive surveyed design and purposive sampling techniques to select fifty-three (53) respondents for the study. A structured questionnaire was used to collect data. The data collected were analyzed and presented in frequency distribution tables. The results of the study show that majority of the teachers in the staff school do not use Information and Communication Technology as pedagogy for teaching. The teachers also have negative attitude towards Information and Communication Technology. Lack of ICT policy in secondary school, epileptic power supply, lack of regular and adequate training, lack of technical support from government and private sector, hardware and software problems and poor network/Bandwidth are some of the challenges militating against teachers' readiness and effective use of Information and Communication Technology for teaching. The study therefore recommends that Government should be committed to full implementation of ICT in secondary schools by providing the necessary infrastructure, equipment; formulate policies and implementing the existing one if any.</p>

1. Introduction

The use of modern technological tools and devices such as computer and internet is still in its infancy stage in most developing and emerging nations in Africa, Nigeria inclusive. However, across Africa, many countries have started investing considerable amount of resources and designing new policies aimed at influencing teachers to embrace the use of ICT in schools; notwithstanding that some challenges like poor proficiency in the use of ICT was a factor (Zaman, Shamim & Clement, 2011). The above situation is underscored by Lau and Sim (2008) who reported that despite the benefits accrue to the use of ICT for educational purpose, many teachers are still not fully ICT compliance. Studies have also revealed that secondary school teachers lack proficiency skills in use of ICT as pedagogy tools in teaching and learning (Nihuka & Voogt, 2011). The effective implementation of ICT in Schools is a multifaceted complex process that does not involve only providing the technology to schools but also involves teachers' competences, school readiness, long term financing and curriculum restructuring (Zaman et.al, 2011). Teachers are primary agents of educational innovation; therefore, ICT skill among secondary school teachers

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should be seen as an invaluable prerequisite that would facilitate the rapid teaching and learning procedure in this modern age of information explosion.

Abolade and Yusuf (2005) described ICT as essential tools in any educational system. ICT have potentials of being used to meet the learning needs of individual students, promote equality of educational opportunities, offer high quality learning material, increase self-efficacy and independence and improve teachers' professional development. Mselle (2012) noted that teachers are however not aware of the potentials that ICT offers in pedagogy. Satharasinghe (2003) posited that, the use of ICT can revolutionize teaching and learning and could bring advancement that would improve education dramatically. While Jegede (2008) opined that ICT is now recognized as an essential ingredient for creating 21st century learning environment.

Previous studies into teachers' uses of ICTs have identified staff development as one of the contributing factors in using ICT effectively in the classroom and professional development. Teachers would like to learn how to use new technologies in their classroom but the lack of opportunities for professional development obstructed them from integrating technology in certain subject such as Science or Mathematics. Other problematic issues related to professional development in ICT is that training course are not differentiated to meet the specific learning needs of teachers and the sessions are not regularly updated. McCarney (2004) gave a report on an investigation into effective staff development in ICT for teachers. The report is about a sample of Scottish Primary School Teachers being influenced by different models of staff development in ICT on the teachers and explores the knowledge and skills gained by teachers from staff development: technical; academic content - related and pedagogic. The result indicates the need for much greater emphasis to be placed on the pedagogy of ICT. This should be of interest to be all involved in teacher education and the continuing professional development of teachers. According to Ololube (2006) opined that slow access to basic ICT equipment low internet connectivity and computers are barriers to the effective and professional development of teachers.

Gray and Souter (2004) in a study of Secondary School Science Teachers use of ICT, conducted in America focuses on the data from one aspect of the use of ICT in secondary subject areas, and the perception of teachers in this area. Examination of the data indicated that, relative to the other subject teachers, Science teachers came out positively with regard to use of and confidence in ICT but felt that they needed much more in the way of support and professional development to maximize their use of ICT. There are developments in Nigeria educational sector which indicate some level of ICT application in secondary school. The National Policy on ICT by the Federal Government of Nigeria recognizes the prominent role of ICTs in Nigerian education sector. To actualize this goal, the document states that government will provide basic infrastructure and training at the primary school. At the junior secondary school, computer education has been made a pre-vocational elective, and is a vocational elective at the Senior Secondary School. It is also the intention of government to provide necessary infrastructure and training for the integration of ICTs in the secondary schools system. Okebukola (1997), (cited in Aduwa, Ogiegbaen, & Iyamu, 2005) concludes that the computer is not part of classroom technology in more than 90 percent of Nigerian public schools. This implies that the chalkboard and textbook continue to dominate classroom activities in most Nigeria secondary school.

Okwudishu (2005) discovered that the unavailability of some ICT components in schools hamper teacher's use of ICTs. Okaka (2005) observed that, lack of adequate search skills and of access points in the school were reported as factors inhibiting the use of the internet by secondary school teachers. In addition, efforts have been made to ensure that ICTs are available and use in Nigeria Secondary Schools, the level of uptake is still low. It has been observed by Goshit (2006), that most schools both private and government; do not offer ICT training programs. Another study by Ayere, Odera and Agak (2012) on E-learning in secondary schools' teachers in Kenya, reported that a number of schools had not received any training in ICT use during their formative years at teacher training institutions before joining the profession. However, 55% of the sampled teachers stated that they didn't receive any ICT training at all. Moreover, the study found that 51% of the

teachers had taken self-initiative to undertake ICT training during the last three year they had been employed.

Traditional educational environments do not seem to be suitable for preparing learners to function or be productive in the work places of today's society (Yelland, 2001). The use of technology and how technology can support teaching and learning in secondary schools in Nigeria have become essential in today's world. The functions of teachers in education process is of paramount interest especially when considering teaching and learning process as the acquisition of knowledge and skills by individuals to enable him become useful member of the society (Adebayo, 2008).

Federal Republic of Nigeria (2004) National Policy on Education recognizes the prominent role of ICT in the modern world, but little could be seen in the professional development by teachers as pedagogy in teaching. Information and communication technology in Nigeria has not attained the required height which will affect its use in education system in the country. In this twenty first century, any educational organization that is not serious with the use of new technologies in schools cannot claim to prepare their students for life in the twenty-first century. It is against this background that this study attempts assessing Information Communication Technology Proficiency of Secondary School Teachers in Auchu Polytechnic Staff Schools.

The purpose of this study is to examine availabilities, challenges and use of print and electronic resources by students of Auchu polytechnic in the information age. Specifically, the study sets out to:

1. examine the extent of usage of ICT as a pedagogy for teaching in secondary schools.
2. assess teachers attitude towards ICT usage for professional development and teaching in secondary schools.
3. ascertain the challenges hindering teachers' readiness and effective use of ICT in secondary school.

Hence, the research questions can be stated as follows:

1. To what extent do teachers use ICT as pedagogy for teaching in secondary schools?
2. What are the attitudes of teachers towards the use of ICT for professional development in teaching in secondary schools?
4. What are the factors hindering teachers' readiness and effective use of ICT in secondary school?

2. Method

2.1. Research Design

This study employed descriptive survey research design to investigate Information and Communication Technology Proficiency among Secondary School Teachers in Auchu Polytechnic Staff School, Auchu Edo State, Nigeria. This is because survey design gives room for studying very small and large population (Foddy, 2004). It enables the researchers to gathered data from members of the selected participants with the aid of the questionnaire in order to determine the current status of the issue under study.

2.2. Participants

The population of this study consists of all the teachers in the secondary school. The total population for the study is fifty three (53) teachers. The population of this study is relatively small and as such the entire population was taken as representative sample using purposive sampling techniques. Egbule and Okobia (2001) posited that the entire population can be studied or investigated when the population is not large, when there is enough funds and time when the sole objective of the study is to provide accurate population. This study falls into this category.

2.3. Data Collection

This study employed the questionnaire as instrument for data collection. The questionnaire was constructed by the researchers. The questionnaire entitled "Assessment of Information and Communication Technology Proficiency of Secondary School Teachers (AICTPSSTQ) was used in this study. The questionnaire was administered and collected by the researchers. The researchers visited the sample institution and administered the questionnaire to the respondents.

2.4. Data analysis

The data obtained from the copies of questionnaire were analyzed using simple descriptive analysis of frequency counts and percentage. A total of fifty three (53) questionnaires were administered to the respondents and returned completed. Table 1 shows the details about the measurement of the study variables.

Table 1

Measurement of variables

Variables	Operationalized As	Measured As	Appears in the instrument
Gender	Male Female	2 point scale	Item 1
Educational Qualification	N.C.E BSc, B.A, B.ED MSc, M.A., M.ED Ph.D	4 point scale	Item 2
Working Experience	1 - 5 6-10 11-10 16-20 20 And Above	5 point scale	Item 3
Age	30 below 31-40 41-50 51 and above	4 point scale	Item 4
Dependent Variable	ICT as pedagogy for teaching in secondary school	2 point scale	Q1-Q2
Independent Variable	Teachers' attitude towards the usage of ICT	3 point scale	Q3-Q5
Independent Variable	Challenges hindering teachers' readiness and effective use of ICT	5 point scale	Q6-Q15

3. Results

The data generated from the copies of returned questionnaire are presented in the subsequent tables. Table 2 presents the demographic characteristics of the respondents.

Table 2 shows the gender distribution of the respondents with female 33 (62%) and male (38%). This is an indication that they are more female teachers in Auchi Polytechnic Staff Secondary School, Auchi than male.

Table 2

Respondents' demographic characteristics (n =53)

Gender	Frequency (n)	Percentage (%)
Male	20	37.7
Female	33	62.3
Education Qualification		
N.C.E	1	1.9
BSc, B.A, B.ED	40	75.5
MSc, M.A., M.ED	10	18.8
Ph.D	2	3.8
Working experience		
1 - 5	9	16.9
6 - 10	8	15.1
11 - 15	12	22.7
16 - 20	13	24.5
20+	11	20.8
Ages of the respondents		
30 below	10	18.8
31 - 40	12	22.6
41 - 50	20	37.8
51 and above	11	20.8
Total	53	100

The table also reveals the educational qualification of the respondents. The majority of the respondents with 40 (76%) have B.Sc, B.A, BEd. This is followed by M.Sc, M. A, ME. Ed with 10 (19%), P.hD 2 (4%) and N.C.E 1 (2%). It is obvious from the study that a majority of the teachers in Auchi Polytechnic Secondary School have higher qualifications. The table also shows the working experience of the respondents. Thus, respondents between 16 - 20 years 13 (24%) was rated high. This is followed by respondents between 11- 15 with 12 (22%). Respondents between 20 years and above came third with 11 (21%), while 9 and 8 with (17%) and (15%) was rated low. It is clear from the table that a majority of the respondents have between 16 - 20, 11- 15 and 20 and above working experience. This study clearly shows that Auchi Polytechnic Staff Secondary School has experience teachers. The above table shows the age distribution of the respondents. It is obvious from the study that respondents between 41 - 50 year of age are more with 20 (38%), followed by respondents between 31 - 40 years with 12 (23%), respondents between 51 and above was ranked third with 11 (21%), while, respondents between 30 years below came last with 10 (10%). This is an indication that Auchi Polytechnic Secondary School has matured teachers.

Table 3 presents the participants' use of ICT as pedagogy.

Table 3

Use of ICT as pedagogy for teaching in secondary school

ICT as Pedagogy	No of respondents	Percentage (%)
Yes	7	13.2
No	46	86.8
TOTAL	53	100

Table 3 indicates that respondents with 37 (69.8%) do not use ICT as pedagogy for teaching, while 16 (30.2%) use ICT as pedagogy for teaching in Auchi Polytechnic Staff Secondary School. These findings show that ICT is not employed for teaching by majority of the teachers in Auchi Polytechnic Staff Secondary school. Table 4 presents the teachers' attitudes towards the use of ICT as pedagogy.

Table 4
Teachers' attitude towards the usage of ICT

Attitude	No of respondents	Percentage (%)
Very positive attitude	6	11.3
Negative attitude	35	66.1
Neutral	12	23.6
Total	53	100

As shown in Table 4, the findings reveal that most of the respondents have negative attitude towards the usage of ICT package with 35 (66%), while 12 (23%) and 6 (11%) were for neutral and very positive attitude respectively. It is very obvious from the study that a majority of the secondary schools teachers studied have negative attitude towards the use of ICT for teaching. Table 5 presents the challenges that prevent teachers from using ICT as pedagogy.

Table 5
Challenges hindering teachers' readiness and effective use of ICT

Challenges	SA*		A		D		SD		Total	
	n	%	n	%	n	%	n	%	n	%
Anxiety over being replaced by technology	8	15.1	12	22.6	17	32.1	16	30.2	53	100
Lack of technical support from government and private sector	31	58.5	19	35.9	-	-	3	5.6	53	100
Lack of qualified teachers to teach ICT	12	22.6	22	41.6	12	22.6	7	13.2	53	100
Limited and epileptic power supply	39	73.6	11	20.8	-	-	3	5.6	53	100
Lack of ICT equipment in schools	35	66.1	15	28.3	3	5.6	-	-	53	100
Hardware and software problems often disrupt lessons	28	52.9	15	28.3	8	15.1	2	3.7	53	100
Lack of regular and inadequate training	35	66.1	15	28.3	3	5.6	-	-	53	100
Lack of ICT policy in secondary schools	50	94.4	-	-	2	3.7	1	1.9	53	100
Poor network/bandwidth	28	52.8	23	43.4	1	1.9	1	1.9	53	100
Most teachers see ICT as additional cost in teaching profession	8	15.1	13	24.5	13	24.5	19	35.9	53	100

*SA: Strongly Agree; A: Agree; D: Disagree; SD: Strongly Disagree

Table 5 reveals challenges hindering teachers' readiness and effective use of ICT. The study above reveals that the most prominent challenges hindering teachers' readiness and effective use of ICT is lack of ICT policy in secondary schools. This is indicated by 50 (94%) respondents who strongly agree, while 2 (4%) and 1 (2%) respondents disagree and strongly disagree with the statement. The table also revealed that 39 (74%) and 11 (21%) respondents strongly agree and agree that limited and epileptic power supply is a major challenge hindering teachers' readiness and effective use of ICT in secondary schools. This is less than the number of teachers who disagree 2(4%) and strongly disagree 1 (2%). It is obvious from the table that majority of the respondents 35 (66%) and 17 (32%) strongly agree and agree that most secondary schools in Nigeria lack ICT equipment which is a major setback hindering teachers' readiness and effective use of ICT, while 1 (2%) strongly disagree with the statement above. The result of the study also reveals that 28 (52%) strongly agree and agree that hardware and software problems often disrupt the lesson as a factor hindering teachers readiness and effective use of ICT. This is less than 8 (15%) and 2 (4%) teachers who disagree and strongly disagree with this statement. It is obvious

from the table that respondents who strongly agree 35 (66%) and agree 15 (28%) that most secondary schools lack regular and inadequate training on ICT. This is less than 3 (6%) of respondents who disagree with the findings from the study. The study also shows that 31 (59%) strongly agree and 19 (36%) agree that lack of technical support from government and private sector is one of the major challenges affecting teachers' readiness and effective use of ICT. Furthermore, the result from the table shows that 28 (53%) and 23 (43%) strongly agree and agree that poor network/bandwidth are major challenges hindering teachers' readiness and effective use of ICT. This is less than the number of respondents who disagree and strongly disagree 1 (2%) respectively.

Generally, the findings can be summarized as follows:

- The study revealed that majority of teachers in the study area do not use information and communication technology as pedagogy for teaching.
- It was discovered from the study that a majority of the teachers in the study area have negative attitude towards Information and Communication Technology.
- Lack of ICT policy in secondary school, epileptic power supply, lack of regular and adequate training, lack of technical support from government and private sector, hardware and software problems and poor network/Bandwidth are some of the challenges militating against teachers' readiness and effective use of Information and Communication Technology for teaching.

4. Discussion and Conclusion

The 21st century is characterized by advancement Information and Communication Technology in every sphere of human endeavor which includes education. This study reveals that secondary schools teachers do apply ICT as pedagogy for teaching. This finding corroborates the study of Okebukola (1997) (cited in Aduwa, Ogiegbaen and Iyamu, 2005) who posited that computer is no part of classroom technology in more than 90 percent of Nigeria public schools. This implies that the chalkboard and textbook continue to dominate classroom activities in most Nigeria secondary school. Majority of the teachers have negative attitude towards ICT. However, this study is in conformity with the study of Drent and Meclissen (2008) who revealed that positive attitude, personal entrepreneurship and computer experience has a direct positive influence on adoption and use of ICT by teachers.

Lack of ICT policy in secondary school, epileptic power supply, lack of regular and adequate training, lack of technical support from government and private sector, hardware and software problems and poor network/Bandwidth are some of the challenges militating against teachers' readiness and effective use of Information and Communication Technology for teaching. This is in conformity with Jimoyiannis and Komis (2007) who observed that most of the reforms and strategies in schools fail to take into consideration teacher's interest and skills as well as existing knowledge. On the power, Martin (2013) asserted that the government has not been able to connect all parts of the country to the National Electricity grid. Those schools that fall under such area are left handicapped and may not be able to offer ICT as a subject. Ololube (2006) posits that slow access to basic ICT equipment; low internet connectivity and computers are barriers to the effective and professional development of teachers. Goshit (2006) observed that, most schools both private and government, do not offer ICT training. The problematic issues related to professional development in ICT is that training course are not differentiated to meet the specific learning needs of teachers and the session are not regularly updated. Mselle (2012) noted that, teachers are however not aware of the potentials that ICT offers in pedagogy.

Based on the findings of this study the following recommendations are hereby made:

- The school management should deem it necessary to always organize training and retraining for their teachers in order to expose them to the use of information and communication technology as tool for teaching.
- Teachers should try as much as possible to improve on their information and communication technology usage by embarking on personal development.

- Government should be committed to full implementation of ICT in secondary schools by providing the necessary infrastructure, equipment, formulate policies and implementing the existing one if any.
- School management should ensure that alternative power source is provided to reduce the effect of unnecessary power failure that poses challenges to information and communication technology usage.

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