
Assessment on Utilization of Information and Communication Technology in Teaching Vocational Subjects in Ika North East Local Government Area of Delta State

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Abstract

Education has evolved greatly in this last two decades. Educators and other stakeholders have sought for ways to deploy the use of information and communication technology (ICT) for effective delivery of vocational subjects to students. This study assessed the extent ICT is used in teaching vocational subjects in Ika North East Local Government Area of Delta State. Three (3) research questions and two hypotheses guided this study. The study adopted the descriptive survey design with a population of 130 vocational subject teachers which was made up of both male and female teachers. The instrument used for data collection is a structured questionnaire. The content validity of the research instrument was obtained through the scrutiny of three experts from department of Vocational and Technical Education in University of Benin. The reliability of the instrument was determined through a test-retest administration of the instrument. The result of the study was treated to Cronbach Alpha Reliability Co-Efficient Analysis through which the reliability coefficient found to be 0.73. The analysis and interpretation of data involved the use of mean and standard deviation to answer the research questions. It was found out that most schools have ICT facilities but they are underutilized by the teachers and students. This is as a result of over population in most schools and limited ICT facilities available. Based on the findings, the study recommend that government should provide mass and functional ICT facilities that are accessible by teachers and students and the price of ICT facilities should be subsidized so as to make it easier for its acquisition, Government should revisit the curriculum and incorporate the use of ICT facilities, among others.

Keywords: *Technology, ICT facilities, ICT utilization, teaching, Computer, Vocational subjects*

Introduction

The rapid growth in the use of computers and computer-based technologies during the past two decades have similarly had an impact on the educational system around the world, and has become a part of life for many. Teaching is becoming one of the most challenging professions in our society today as knowledge is expanding rapidly and modern technologies demand the use of Information and Communication Technology (Geoffrey, 2010). The vocational education teacher development program has become an important component in this new discovery system, to ensure they cope with new technologies in preparing students to enter the world of works.

Vocational education is an education that exposes learners to skills, knowledge and attitude necessary for effective employment in specific occupations (Mbah & Azubuike, 2015). Gabriel (2018) opined that the National Policy on Education 2013 edition stated that vocational education is a comprehensive term that refers to those aspects of the educational process involving in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. Some of the vocational subjects in secondary schools are Agriculture, Business studies, Home economics, Local crafts, Computer education, Fine arts, Commerce, Food and Nutrition, Music, Wood work,

Technical Drawing and so on (Mbah & Azubuike, 2015). These subjects are practical in their approaches and need adequate preparation and training to deliver the instructional content as innovative skills through ICTs are discovered daily. Ugwuanyi, Chiegwu, Osuagwu & Ogbu (2017) posited that an understanding of ICT in education is vital in keeping abreast of rapidly changing technologies.

There are many explanations to the concept of ICT. Ihechu & Ugwuoji (2017) defined information and communication technologies (ICTs) as information handling tools that are used to produce, store, process, distribute and exchange information. Tella (2011) stated that ICT is a generic term which refers to technologies used for collecting, storing, editing and passing on information in various forms. Its efficiency makes its use indispensable and inevitable because it aids the collection and collation of data, stores data and disseminates information for a perfect assimilation. According to Nwachukwu (2018), information and communication technology (ICT) includes the entire modern electronic device used in various sectors of our economy. Its utilization cut across education, industry, medicine, financial institutions and other sectors. Teaching and learning processes are enhanced through the use of Information and Communication Technology.

The use of Information and communication technology (ICT) facilities in teaching vocational subjects implies the application of the facilities in collecting, processing, analysing, managing, storing and retrieving information or data which could be used to enhance, stimulate or promote teaching and learning (Nwachukwu, 2018). Therefore, knowledge and use of ICT by teachers of vocational subjects no doubt plays a significant responsibility in developing a nation. The impact of vocational education in curtailing the menace of unemployment, reduction in poverty and the breakthrough in industrial development makes it an important field of study that requires full deployment of ICTs, especially in the present era where world of works is rapidly

changing its requirement for workers from skill based to ICT capable.

The knowledge, skills and self-reliance with ICTs are assets for a striving economy, those who want to enter into the competitive market and for sustainability. Ugwuanyi, et.al (2017) asserted that with the increasing use of ICT in education all over the world, new skills and competencies among the students are necessary for them to learn effectively. The utilization of ICT by vocational subjects' teachers in secondary schools simply involves the full integration of ICT in instruction delivery, literature search, assignments, e-mail among others. ICT utilization remains paramount, if a teacher must develop his or her technological competencies and train students to be relevant in every dimension, as well as compete favourably in any global setting. Ugwuanyi et.al (2017) added that the key thing is not in ICT itself, but in understanding ICT and effectively employing it in teaching and learning process. However, the use of ICT is not without its challenges. Some of which according to Amuchie (2015) includes; poor power supply, lack of adequately trained teachers in the use of ICTs in teaching, high cost of computers and its accessories among others.

In line with the fast pace of ICTs development; all vocational teachers should be prepared to meet the new culture of teaching and learning based on 21st century skill's requirements for educational technologies (Chai, Tan, Deng & Koh, 2017). However, this study is triggered by the fact that the level of utilization of ICT by teachers needs to be assessed; hence the researchers' study of vocational subject teachers in Ika North East Local Government area as a case studies. This work will also give an insight into the availability of some ICT facilities in selected secondary schools in Ika North East Local Government Area.

Statement of the Problem

Studies have shown that in most secondary schools in Nigeria that ICT facilities hardly exist for teaching and learning and where

they exist, teachers hardly make use of them during instructional delivery. It has been observed that despite the efforts by both government and non-governmental agencies in making ICT facilities readily available and accessible to schools, teaching and learning process in secondary schools in Ika North East Local Government area of Delta State still use traditional method of teaching such as face-to-face method, use of blackboard, charts, and textbooks, among others. Also, teachers are the primary and only source of knowledge for the students. In most cases, these teachers do not possess adequate knowledge to supplement the view of the students and their main source of knowledge remains limited to the textbooks. Some of these teachers do not possess the required skills to use ICT facilities. There is the need therefore to replace the traditional pedagogical practices that still underpin our educational system in the state, hence the need for the utilization of ICT to boost the teaching process and method. This study therefore seeks to find out the extent of utilization of ICT facilities for teaching vocational subjects in Ika North East Local Government area of Delta State.

Purpose of the Study

The purpose of this study was to find out the extent of the use of Information and Communication Technology (ICT) in teaching vocational subjects in Ika North East Local Government Area of Delta State. Specifically, the study sought to determine:

1. ICT facilities available for use by teachers in teaching Vocational subjects in Ika North East Local Government Area of Delta State.
2. The extent to which teachers use ICT facilities in teaching Vocational subjects in secondary schools in Ika North East Local Government Area of Delta State.
3. Factors that hinders ICTs utilization in teaching Vocational subjects in secondary schools in Ika North East Local Government area of Delta State.

Research Questions

The following research questions guided the study.

1. What are the ICTs available for use in teaching and learning Vocational subjects in Ika North East Local Government Area of Delta State?
2. To what extent do teachers use ICT facilities in teaching Vocational subjects in secondary schools in Ika North East Local Government Area of Delta State?
3. What are the hindrances encountered by teachers' in the process of using ICT in teaching Vocational subjects?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

1. There is no significant difference in the mean ratings of male and female teachers on the availability and use of ICT facilities in teaching Vocational subjects in secondary schools in Ika North East Local Government Area of Delta State.
2. There is no significant difference in the mean ratings of male and female teachers on the factors that hinders the use of ICT in teaching Vocational subjects in Ika North East Local Government Area of Delta State.

Methodology

This study adopted descriptive survey design. According to Nworgu (2015), a survey research design is one in which a group of people or items is studied by collecting and analysing data from only a few people or items considered to be representative of the entire group. This design, therefore, was considered appropriate for the study as it collected data on the opinions of vocational male and female subject teachers in secondary schools in Ika North East Local Government area of Delta State. The population used for the study consists of 130 respondents made up of 80 female teachers and 50 male teachers that were randomly selected from 8 schools in Ika North East Local Government Area of Delta State.

The entire population was used for the study because of its manageable size; hence, there was no sampling. The data for the study were collected using a structured questionnaire. The instrument was constructed using a four-point rating scale of Strongly Agreed (SA) 4 points, Agreed (A) 3 points, Disagreed (D) 2 points and Strongly Disagreed (SD) 1 point. Three experts in the department of Vocational and Technical Education in University of Benin validated the questionnaire. The questionnaire has a reliability index of 0.73, which was established through a test-retest administration of the questionnaire. The internal consistency was determined using Cronbach Alpha coefficient. Copies of the questionnaire were administered and collected by the researcher. All distributed copies of questionnaire were retrieved and data was analysed using mean and standard

Results

Table 1: Mean Responses on the Availability of ICT for Teaching Vocational Subjects in Ika North East Local Government Area of Delta State

S/N	Item Statement	$\bar{X}$	S.D	Remark
1.	There are enough computers in my school	2.65	0.764	Agree
2.	There are enough projectors in my school	2.35	1.057	Disagree
3.	Our computers are connected to the internet	1.75	0.879	Disagree
4.	We have interactive smart boards in our school	1.96	0.770	Disagree
5.	My school has educational software for teaching	2.44	0.855	Disagree
6.	Multimedia facilities are available for teaching	1.50	0.811	Disagree
7.	There is digital library to source for information	2.10	1.121	Disagree
8.	My school has public address system in all classes	1.96	0.770	Disagree
9.	There is a functional computer laboratory in my school	2.20	0.850	Disagree

The data presented in Table 1 revealed the availability of ICT facilities for teaching Vocational subjects. It was shown that the respondents agreed to the availability of computers in secondary schools in Ika North East Area of Delta State base on the mean of

deviation for the research questions. Bench mark mean response for deciding on the research questions was determined by adding the weight assigned to each response and dividing by 4 ($4+3+2+1=10/4=2.50$). Items with mean response of 2.50 and above were considered as 'Agreed' and items with mean response of 2.49 and below were regarded as 'Disagreed'. t-test was used to test the null hypotheses at 0.05 level of significance. In testing the null hypotheses, where the calculated p-value is less than the stipulated level of significance (0.05), it means that there was significant difference and the hypothesis was rejected. Conversely, where the calculated p-value is equal to or greater than the stipulated level of significance (0.05), it means that there was no significant difference and the hypothesis was accepted/retained.

2.65 but disagrees to the availability of other ICT facilities based on the means which ranged from 1.50 to 2.44. The standard deviation (SD) ranges from 0.770 to 1.121 shows that the respondents are close in their responses.

Table 2: Mean Responses of Respondents on the Extent Teachers of Vocational Subjects use ICT Facilities in Teaching

S/N	Item Statement	$\bar{X}$	S.D	Remark
10.	I use computer systems regularly for teaching	1.96	0.770	Disagree
11.	I use the internet to search for teaching materials	2.35	1.90	Agree
12.	I use smart/ white board in the classroom	2.80	0.719	Agree

13.	I use projector in every lesson	2.24	1.117	Disagree
14.	I use smart phone, emails or fax to exchange information with parents / students during the holiday	2.35	1.057	Disagree
15.	I give students assignment to search the internet	2.65	0.765	Agree
16.	Students submit assignments to me through email	2.16	1.934	Disagree
17.	I use public address system when I have large class	1.50	0.811	Disagree
18.	I incorporate technology in teaching such that my students use technology to collaborate with individuals at other classes/school	1.96	0.770	Disagree
Data presented in Table 2 revealed that items 11, 12 and 15 had the mean value above 2.50 while items 10, 13, 14, 16, 17 and 18 have means values below 2.50				

Table 3: Mean and Standard Deviation on the Hindrances Encountered in the Process of using ICT in Teaching Vocational Subjects in Ika North East Local Government Area of Delta State

S/N	Item Statements	$\bar{X}$	S.D	Remark
19.	The number of students in each class is too large for the available facilities	3.10	0.989	Agree
20.	Non reliability of power supply	3.24	1.058	Agree
21.	High cost of ICT procurement and maintenance	3.52	0.764	Agree
22.	Deficiency of skills in ICT utilization	2.44	0.855	Disagree
23.	Constant innovations in ICT industry	3.10	0.764	Agree
24.	Inadequacy of computers for teachers use	2.95	1.054	Agree
25.	Lack of adequate accommodation for ICT facilities has hindered its procurement	2.57	0.978	Agree

The result and analysis presented in Table 3 revealed that only item 22 had a mean value below 2.50 while others have mean values above 2.50. The Table also showed that the

standard deviation (SD) of the items are within the range of 0.764 – 1.058. This indicated that the opinion of the respondents was not far from one another.

Testing of Hypotheses

Table 4: Summary of the t-test Result of the Difference between the Opinions of Male and Female Teachers on the Availability and Use of ICT Facilities in Teaching Vocational Subjects in Secondary Schools in Ika North East Local Government Area of Delta State

Variable	Sex	No.	$\bar{X}$	S.D	Df	t-cal	P-value	Decision
Availability and use of ICT facilities	Female	80	7.45	2.160	78	1.668	0.099	Not Significant
	Male	50	6.68	1.992				

From the above table, the t-calculated value (1.668) is not significant to p-value (0.099). Since the p-value is greater than 0.05 level of significance, the null hypothesis is retained. This means that, there is no significant

difference between the responses of male and female teachers on the availability and utilization of ICT facilities in teaching Vocational subjects in Ika North East Local Government Area of Delta State.

Table 5: Summary of the t-test Result of the Difference between the Opinions of the Male and Female Teachers on the Factors that Hinders the Use of ICT in Teaching Vocational Subjects in Ika North East Local Government Area of Delta State

Variable	Sex	No.	$\bar{X}$	S.D	Df	t-cal.	P-value	Decision
Factors that hinders the utilization of ICT	Female	80	8.15	2.165	78	1.805	0.075	Not Significant
	Male	50	7.32	1.916				

From the table above, the t-cal of 1.805 is not significant when p-value is 0.075. Since the p-value is greater than 0.05, the null hypothesis is retained. This means that there is no significant difference between the mean response of male and female teachers on the factors that hinders the use of ICT.

Discussion of Findings

The study on research question 1 identified the availability of computers and the unavailability of other ICT facilities such as projectors, internet connections, interactive smart boards, educational software, multimedia facilities, digital library, public address system and a functional computer laboratory in teaching Vocational subjects in Ika North East Local Government Area of Delta State. Nwana, Ofoegbu & Egbe (2017) agreed to the findings above and reported that majority of ICT facilities are not available in schools. The study is in consonance with the findings of Obakhume (2012) who revealed that ICT facilities are not readily available and most schools with computers are not connected to the internet or even have the relevant educational software required by the students. Fekeye (2010) added that schools that have computers do not use them for teaching but solely for administration purposes. The result of hypothesis 1 of no significant relationship was upheld, while the mean score of 7.45 on female teachers and the mean score of 6.68 recorded on male students implied that both the female and male teachers had similar opinion on the level of availability and utilization of ICT facilities. This generally confirms the findings of Teck and Lai (2011) that there is no significant gender difference in the extent of availability and utilization of ICT

facilities. This further confirmed that both the male and female teachers are constrained by inadequate ICT facilities to advance teaching of vocational subjects.

The findings in Table 2 indicated that respondents agreed to a certain level on the use of ICT facilities such as the use of internet to search for information online and the use of smart board for teaching but disagreed to the use of other ICT facilities such as computer, projector, and use of phone to send mails, public address system and other technology. Findings from this research question revealed that teachers do not incorporate technology in instruction delivery. This agrees with the findings of Ayeni & Ogunbameru (2013) who revealed that teachers' utilization of ICT facilities in instructional process was very low. Furthermore, Amuchie in Nji & Idika (2018) concluded that there were low and inadequate utilization of ICT in teaching and learning in schools.

Findings in Table 3 revealed that teachers have skills in ICT utilization but they are hindrances to the use of ICT. Large class size, non-reliability of power system, high cost of ICT procurement and maintenance, and so on. This was supported by Ajuzie & Akukwe (2015) who believed that factors militating against the availability of ICT resources, such as inadequate ICT tools, lack of electricity supply and others fight against the effective use of ICT. Mavellas, Wellington & Samuel (2015) concluded that ICT facilities are not available but where available are inadequate and numerous factors cause the inadequacy to be underutilized. The hypothesis of no significant relationship was upheld, while the mean score of 8.15 on female teachers and the mean score of 7.32 recorded on male teachers implied that both male and female teachers had similar

opinion on the militating factors that hinders the use ICT facilities. This confirms that a factor that hinders the use of ICT affects both male and female teachers.

Conclusions

The study assessed the utilization of ICT in teaching Vocational subjects in Ika North East Local Government Area. From this study, it is evident that the only available ICT facilities in most secondary schools are computer. They lack other facilities. Even the available computer is not used because of the militating factors hindering its usage. Vocational subjects are important life changing subjects that require up-to-date skill acquisition and knowledge. Considering the findings of this study, it is concluded that ICT have significant impact in teaching. In order to fit into the new technology driven era, Nigerian school and individuals should as matter of necessity develop a culture that places high premium on acquiring ICT skills. However, the researchers strongly believe that if the recommendations made in this study are adopted, the knowledge and utilization of information and communication technology (ICT) in teaching vocational subjects in Ika North East Local Government area of Delta State will be greatly improved.

Recommendations

Based on the above findings, the study therefore recommended that;

- i. Government should encourage and put in place policies to attract nongovernmental organizations (NGOs) and proprietors to invest on ICT related projects in secondary schools. Government, non-governmental organizations, and proprietors should adequately supply sufficient ICT teaching equipment to schools; equipment like computer, projectors, educational software and ensure all schools are internet compliant. The equipment should be well monitored by teachers and other school authorities and accessible always.
- ii. Most of these ICT facilities rely on electricity for its usage. Therefore, the Federal ministry of mines and power should work towards stabilizing electricity in Nigeria.
- iii. Every school administrator in Ika North East Local Government area of Delta State should always train and retrain her teachers to keep them abreast on the constant innovations arising from the use of ICT.
- iv. Teachers should incorporate practical session with the use of ICT into their vocational classes. Therefore, the population of students in each class should be such that every student will participate optimally. Public address system should be provided in cases where the population cannot be managed to get every students attention and participation.
- v. Ministry of education team should regularly supervise schools to make sure they always meet up the appropriate standard.

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