Assessment of Lecturers' Preparedness for Integrate Digital Technology Instructional Delivery in a Dwindling Economy for Teaching Electrical and Electronics Technology in Colleges of Education in North-Eastern Nigeria

Mbaga, Emmanuel Vandi[1] and Bello, Nasiru Mohammed[2]

[1](*Department of Electrical Technology education, School of Technology and Science Education, Modibbo Adama University of Technology Yola, Admawa State, Nigeria)*

[2](*School of Education, Federal College of Education (Tech.) Gombe, Gombe State, Nigeria)*

Abstract*: The purpose of this study was to assess the level of lecturers' preparednessfor integrate digital technology in instructional delivery in dwindling economy for the teaching of Electrical/Electronics Technology in Colleges of Education in Northern Nigeria. The study was guided by 2 research questions. The area of the study was Northern Nigeria with a population of 137 respondents which included 45 Educational Technology Centers (ETCs) personnel and 92 Electrical/Electronic Technology lecturers. Proportionate stratified random sampling was used to obtain a sample size of 80 respondents, which included 28 ETCs personnel and 52 Electrical/Electronic Technology lecturers. Data were collected using a 36 items questionnaire developed by the researchers the reliability coefficient of* $r_{t=}$ *0.7was obtained for questionnaire using split half method of estimating reliability. The instruments were validated by experts from ModibboAdama University of Technology Yola. Mean and standard deviation were used to answer research questions.The findings of the study revealed that lecturers were not prepared for the use of Educational Technology facilities. Based on this finding it was recommended that government should review the types of personnel needed by Educational Technology Centers and ensure that competent personnel and relevant digital training facilities should be provided effect in the development and delivery of their courses*

Keywords: *Educational Technology Center, Information Communication Technology*

I. INTRODUCTION

Education is dynamic and tends to follow the pattern of development in the world and industrial revolution taking place in the dwindling economy. To thrive in a rapidly evolving technology-mediated world, students must not only possess strong skills in areas such as language arts, mathematics and science, but they must also have skills such as critical thinking, problem-solving, persistence, collaboration and curiosity. All too often, however, students in many countries are not attaining these skills. In this context, the World Economic Forum has taken on a multi-year initiative, New Vision for Education, to examine the pressing issue of skills gaps and explore ways to address these gaps through digital educational facilities (World Economic Forum, 2015). For teachers in technical colleges in North-eastern Nigeria to be successful in today's dwindling economy, the teachers must be prepared to have knowledge of recent advances in the core technology employed in teaching. Inability to prepare lecturers in the Colleges of Education who drive the objectives of the technical colleges to integrate digital technology in instructional delivery may pose a challenge to the Colleges of Education (COEs) in North-eastern Nigeria.

The call for the integration of digital technologies learning facilities in instructional delivery in COEs in dwindling economy is a means of infusing and injecting efficiency and effectiveness in its curriculum implementation in technical education. However, in developing countries like Nigeria, the use of digital technologies in instructional delivery is challenged with problems ranging from lack of trained personnel, lack of digital technologies learning materials such as off-line, ordinary computers, on–line internet computers, telephone or wireless scanners, printers, e-mail facilities, Multi Media Television, Multi Media Projectors, Digital Library, Computer Assisted Instructions (CAIs) among others (Global Information Technology Report, 2005 in Atueyi & Ikemelum, 2014).

Colleges of Education have not discharged their duties well to influence the lives of the youths to equip them with relevant teaching skills necessary for effective instructional delivery in the 21st century. Inability to

integrate recent digital technologies into instructional delivery in Electrical/Electronic Technology Education may put the Colleges of Education at a global competitive disadvantage as the colleges would probably be producing low quality Electrical/Electronic Technology teachers at higher cost. The danger is, if the old analog facilities remain in instructional delivery in the Colleges of Education, the objectives of Technical Education in Nigeria may became illusion and may have a ripple effect on higher education, this situation will eventually bring the Colleges of Education to a halt. It also poses serious limitations to students' learning as they continue to look up to the teachers as the ultimate source of knowledge.

Various initiatives have been adopted by the Federal Government of Nigeria (FGN) to advocate for the greater employment of digital technologies in curriculum implementation at all levels of education in order to improve capacities in every field of business, technical, education and life in general. The National Commission for Colleges of Education (NCCE) mandated the entire academic staff of the Colleges of Education in Nigeria to acquire minimum qualification in Information and Communication Technology (ICT) before 2005 academic session or be denied promotion (NCCE, 2012). NCCE also made ICT compulsory under general studies in Colleges of Education and established ICT centers in all Colleges of Education.

Tella (2011) indicated that the lecturers of the Colleges of Education have not been prepared enough to take advantages of digital technologies on teaching, learning and research or some of the lecturers are unwilling to be resourceful. Some of the lecturers are waiting for their college management to train them through capacity building. Oshinaike, & Adekunmisi, (2011) indicated that majority of the lecturers did not make use of the multimedia resources in practical teaching but rather in forming lecture notes for teaching their students, paper presentations, research and publication activities. Emmanuel, Chiaka, & Edna, (2014) said that the level of ICT utilization in junior secondary school is determined by the lecturers of Colleges of Education level of ICT accessibility and preparedness.

Despite Government's effort in using colossal amount of money in provision of Educational Technology equipment to public technical colleges, many students remain Information Communication Technology (ICT) incompetent; factors leading to this problem have not been adequately investigated. Therefore the purpose of this study was to assess the level of lecturer's preparedness in the use of digital technologies for the teaching of Electrical/Electronic Technology in Colleges of Education in North-eastern Nigeria.

Research Questions

To achieve the stated general purpose, the following research questions guided the study:

1. How prepared are the lecturers in the use of Educational Technology facilities in Colleges of Education in North-eastern Nigeria?
2. What is the frequency of lecturer's utilization of Educational Technology Center's facilities for teaching and learning in the Colleges of Education in North-eastern Nigeria?

II. METHODOLOGY

The researchers used a descriptive survey design because the study deals with current events in terms of digital facilities in the Colleges of Education in North-eastern Nigeria.The area of the study was Northern Nigeria with a population of 137 respondents which included 45 Educational Technology Centers (ETCs) personnel and 92 Electrical/Electronic Technology lecturers. Proportionate stratified random sampling was used to obtain a sample size of 80 respondents, which included 28 ETCs personnel and 52 Electrical/Electronic Technology lecturers. Proportionate stratified random sampling was used for the study, which according to Mars, (2007) this techniques divide the population of the study into strata (sub-population). A structured questionnaire was developed by the researchers to collect data on lecturer's preparedness in the use of digital facilities in the Colleges of Education to answer research questions 1 and the frequency of utilization of the digital facilities to answer research question 2. To maximize the content validity of the instrument for the study and ensure objectivity, the instruments was faced validated to determine whether or not the items in the questionnaire represent the objectives dictated, with the intent of ensuring that significant information is elicited (Gall, Gall and Borg, 2007).

The split-half method, which involved single administration of the instrumentwas used to test the instrument reliability. Spearman Rank Order Correlation coefficient was used to determine the instrument reliability and the instrument yielded a reliability coefficient (r_t)=0.7.

Data analysis was facilitated by the use of Predictive Analysis Software to compute the Meanrating and Standard Deviation, which were used to answer the research questions. All items with the mean rating equal to or greater than 2.50 were considered agreed and any item with Mean rating less than 2.50 were considered disagreed.

III. RESULTS AND DISCUSSION

The results are presented in Tablesin order of the research questions.

Research Question one

How prepared are the lecturers in the use of Educational Technology facilities in Colleges of Education in Northern Nigeria?

Table1: MeanResponses of Lecturers on Preparedness in Using Educational Technologies

SN	preparation on the use of educational technologies	Mean	SD	Remark
1	Prepared to use CCTV for teaching	3.6	0.9	Agreed
2	Prepared to use digital Video Camera video clips	2.8	0.6	Agreed
3	Prepared to use Video Player	2.6	0.6	Agreed
4	Prepared to use video Recorder	3.3	0.5	Agreed
5	Prepared to use editing Machine for cropping video clips	3.1	1.1	Agreed
6	Prepared to use Public Address System for public lectures	2.8	0.4	Agreed
7	Prepared to use Slide visualizer	3.2	0.6	Agreed
8	Prepared to use Projectors for Multimedia Projection	2.5	0.5	Agreed
9	Prepared to use Video Projectors in teaching	3.2	0.6	Agreed
10	Prepared to use hyperlinks to gather multi-media information	3.2	0.6	Agreed
11	Prepared to interface amplifier and magnifiers with computers	2.6	0.6	Agreed
12	Prepared to use Web pages o gather multi-media information	2.7	0.5	Agreed
13	Prepared to use of digital printers	2.3	0.6	Disagreed
14	Prepared to use of Interactive Whiteboard	1.5	0.6	Disagreed
15	Prepared to use Computer to store e learning packages	2.1	0.9	Disagreed
16	Prepared to use of web based software	2.4	0.5	Disagreed
17	prepared to use Cable Satellite Facilities	2.1	0.8	Disagreed
	Grand Mean = 2.3			

Results in Table 1, indicate lecturers' preparedness in integrating Educational Technologies facilities in teaching Electrical Electronics. The results revealed that the respondent's agreed that they are prepared to use items 1-12 and disagreed on they preparedness to use items 13-17 for in instructional delivery.

Research Question Two

What is the frequency of lecturer's utilization of Educational Technology Center's facilities for teaching and learning in the Colleges of Education in North-eastern Nigeria?

Table2: Analysis of lecturers Frequency of Utilization of ETCs Facilities

S/N	Utilization of educational technology facilities	Mean	S D	Remark
18	Use of CCTV for teaching and drill work in Electrical Technology	1.9	0.5	Never use
19	use of digital Video Camera with accessories to produce my own video clips of electrical circuits	1.9	0.6	Never use
20	Use of Digital Video Player/Recorder for Electrical/Electronic Technology students on field trips	1.9	0.6	Never use
21	Use of Editing/Dubbing Machine for cropping video clips and animations of my electric components	1.9	0.6	Never use
22	Public Address System with Accessories is used to address my crowded class and public lectures	2.6	0.6	Frequent
23	Use of Slide visualizer with Accessories for electrical circuitry images and displays	1.8	0.6	Never use
24	Use of interactive board to display electrical visual pictures that are tiny	2.0	0.7	Never use
25	Use of Projectors for Multimedia Projection of electronic curriculum materials	2.0	0.7	Never use
26	Use of Video Projectors in teaching	2.0	0.7	Never use
27	Amplifier and magnifiers are connected to computers to projecting tiny electronics circuits	2.0	0.7	Never use
28	Use of Web pages and hyperlinks to gather relevant multi-media information for better concept clarity of electrical circuits	2.1	0.7	Never use
29	use of digital Camera with Accessories to snap still circuits images	2.0	0.8	Never use
30	Use of tripod stand for Video and Photographic Cameras to snap clips shots of circuits for my students	2.1	0.8	Never use
31	Use of digital printers	2.4	0.9	Never use
32	Use of voltage stabilizer	2.2	0.9	Never use
33	Use of Interactive Whiteboard in the CET for drag and drop	2.0	0.9	Never use

34	Use of Computer Equipment to store large readymade learning packages	2.0	0.8	Never use
34	guide of students in accessing online Electrical curriculum contents	2.0	0.7	Never use
35	use of web based software for teaching	1.9	0.6	Never use
36	Use of Cable Satellite Facilities for recording in life broadcast	1.9	0.6	Never use
	Grand Mean = 2.0			

Results in Table 2, revealed that lecturers in colleges of education in the north-eastern Nigeria never used digital technologies facilities except item 22in teaching electrical technology, it is clear from the grand mean of 2.0, that digital software packages were never used by the lectures. The use of the digital technologies facilities in teaching electrical technology was not common among the respondents.

IV. FINDINGS AND DISCUSSIONS

Findings

- Table 1 revealed that lecturers in colleges of Education in the North-eastern Nigeria were not fully prepared for integrating digital technologies into instructional delivery in teaching electrical and electronics technology.
- Lecturers in colleges of Education in the North-eastern Nigeria never utilize digital technologies facilities in instructional delivery during teaching electrical and electronics technology.

Discussions

Findings with reference to research question 1 indicated that lecturers in colleges of Education in the North-eastern Nigeria were not fully prepared for integrating digital technologies into instructional delivery in teaching electrical and electronics technology. This finding is in agreement with Tella (2011) who found that the lecturers of the Colleges of Education in South-Western Nigeria have not been prepared enough to take advantages of digital technologies in teaching, learning and research and some of the lecturers are unwilling to be resourceful.

It was discovered by the findings in Table 2 that the lecturers of the Colleges of education never used at all any of the digital facilities for teaching electrical technology, it is clear from the findings that digital software packages were never used by all the lectures and this may not be far from total lack of the digital facilities and inadequacy of the analog facilities in the educational technology centre's of the colleges of education. The use of the digital facilities in teaching electrical technology was not common among by the respondents this revealed that the centers were not digitized and the little analog facilities were not used by the lecturers.

The finding in Table 2 goes in line with the findings of Oshinaike, & Adekunmisi, (2011) when they conducted a study titled: Use of Multimedia for Teaching in Nigerian University System: A Case Study of University of Ibadan". The study seeks to specifically to determine the availability of instructional multimedia in the Faculties of Arts and Education for teaching and learning. Also to determine the pattern and frequency of use of multimedia by lecturers in these selected faculties for teaching and learning and Investigate the adequacy of multimedia facilities for teaching and learning in these faculties. The study employed a survey research method. The instruments used for the study were structured questionnaire, personal observation and short interview. The population of the study was lecturers in the Faculty of Arts and Faculty of Education whose statistics were seventy-one (71) and one hundred and twenty-five (125) respectively for the 2007/2008 academic session. However, the simple random sampling technique was used in arriving at a workable sample size. One hundred (100) questionnaires were administered but only eighty (80) were returned, giving a response rate of 80%. The data generated were analyzed using frequency and percentages. The findings indicated that majority of the respondents did not make use of the multimedia resources in practical teaching but rather in forming lecture notes for teaching their students, paper presentations, research and publication activities.

The finding with reference to research question 2 , also agreed with the finding of Emmanuel, Chiaka, & Edna, (2014) when conducted a study titled "Integration of Information Communication Technology (ICT) in the Curriculum of Federal Unity Schools (FUS) in Nigeria: Implications for Learning". The study examined the extent to which Information Communication Technology (ICT) is integrated into various school subjects in the curriculum as well as students' utilization of and access to ICT in order to establish a fact on its implications to e-learning. The findings concluded that ICT was not integrated into various school subjects in the Federal Unity Schools except Computer Studies. Computer studies seem to be the only means through which knowledge of ICT could be acquired. In addition, the outcome of the study indicated that the low utilization of ICT in teaching and learning in the Federal Unity Schools in Nigeria were as a result of low level of access to ICT facilities. Therefore, it can be said that the level of ICT utilization in junior secondary school is determined by the lecturers of Colleges of Education level of ICT accessibility and utilization. This situation is similar to those reported by Thomas, (2013) in which none of lecturers use CD-ROM, Slides, and other digital technologies.

V. REFERENCES

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