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Assessment of E-Learning Facilities for Effective Teaching and Learning of Building Trades in Benue State Technical Colleges

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ABSTRACT

The study is an empirically based research which assessed the adequacy of e-learning facilities and the factors affecting their use for teaching and learning of building trades in Benue State Technical Colleges, Nigeria. A descriptive survey research design was adopted for the study. 235 respondents were used as the sample of the study which comprises 30 building trades' teachers teaching in the six out of twelve State Technical Colleges, 205 NTC three students. The instrument used was questionnaire which contained 27 items. The reliability coefficient of the instrument stood at 0.81. The data collected were analyzed using mean and standard deviation. The findings revealed that e-learning facilities such as Computer (palmtop, desktop, and laptop size), Internet services, Computer Aided Drawing software's (AUTOCAD, REVIT, ARCHICAD), Projector, Video conferencing, Teleconferencing, an Electronic device for marking multiple choice questions among others are inadequate. It was also revealed that the few e-learning facilities face some challenges which affect the use of e-learning and teaching of building trades in Benue state technical colleges. These among others include; Lack of infrastructures; Shortage of trained personnel; Poor maintenance service; Poor quality of teachers to handle e-learning facilities; Not all topics of building trades can be taught through e-learning; Teachers resistance to e-learning trend. It was recommended among other things that; all technical teachers particularly those in building trades need training workshops/seminars to upgrade them in e-learning. E-learning facilities and other support services should be made adequate and available for technical colleges.

Keywords: E-learning Facilities, Building Trades, ICT

INTRODUCTION

E-learning facilities are those facilities are that use in this age of Information and Communication Technology (ICT), to make learning easier and effective. These facilities include a computer, printer, palmtop, laptop, electronic board, internet service, and scanner, etc. E-learning according to Anthony (2012), refers to microelectronics and telecommunications that are used in the acquisition, analysis, retrieval, storage, manipulation, management, movement, control, display, transmission, reception and interception of data. According to Adesoji (2012), e-learning comprises computer and information communication technology (ICT) materials and applications, which aid information collection and dissemination, research and global exchange of ideas that are critical for advancing meaningful, educational initiatives and understanding issues related to global development. The introduction of e-learning facilities to the education systems is aimed at improving educational delivery and preparing students for a role in an information age. E-learning promotes effective learning as students learn at their own pace.

Application of e-learning facilities provides productive teaching and learning in order to increase people's creative and intellectual resources especially in today's information society and gives ample and exceptional opportunities to the teachers and students to develop capacities for high-quality learning and to increase their ability to innovate (Aduwa-Ogiegbaen & Iyanmu, 2005).Teacher's effort in all disciplines of education is to ensure that students do not only understand the concepts of practical skills that are taught during practical's so that they can manipulate the tools and equipment effectively during practical. Brick laying, block laying and Concreting (BBC) is a practically oriented subject which requires the use of activity-based instruction strategy. It requires the use of precise instructional materials to enable learners to follow the process and thereafter repeat the skills. The need for e-learning in Nigerian educational sector especially in technical colleges cannot be over-emphasized in a technology-driven age. E-learning is a form of computer-mediated instructional strategy that has been found useful in both pedagogic and administrative functions (Okoy e&

Onwuachu, 2013). It refers to the technologies used for collecting, storing, editing and passing information in various forms.

Agreeing to Adebayo (2002),that e-learning facilities comprise the use of computers, radios, satellites, online self-learning packages, teleconference systems, interactive CDs, video conference, digital cameras, electronic e-mails, video cassette recorder, internet optical fiber technologies and all types of Information Technology (IT) hardware and software. The significance of e-learning facilities for teaching and learning cannot be overemphasized; Onuigbo & Onuigbo (2006) stated that the world is moving through the information superhighway with a network of computers that enables one to obtain relevant information for specific purposes. The e-learning source which includes all forms of information technology (IT) required for classroom instruction can be termed multimedia teaching package.

According to Oshinaike & Adekunmisi (2012), multimedia is defined as the combination of various digital media types such as text, images, sound, and video, into an integrated multi-sensory interactive application or presentation to convey a message or information to an audience. In other words, multimedia means "an individual or a small group using a computer to interact with information that is represented in several media, by repeatedly selecting what to see and hear next. Multimedia are useful resources for teaching and learning in schools and colleges. According to Abdullahi (2014), these include encyclopedia on CD-Rom, educational games, educational software for teaching in different subject areas including building trades, as well as presentation software such as Microsoft Power-Point for making lesson presentation using digital projectors. All these e-learning resources may optimize the teaching and learning of building trades in technical colleges. Ogunbote and Adesoye (2006) expressed that multimedia technology adds a new dimension to learning experiences because concepts were easier to present and comprehend when the words are complemented with images and animations. The use of multimedia educational packages makes the learning process more

effective, interesting and improves student achievement.

Block laying and concreting is an integral part of vocational and technical education which leads to the acquisition of skills and techniques to enable an individual to earn a living. For graduates of block laying and concreting to practice in their trades, technical and managerial skills practiced in school have to be put to test on their own outside of the school environment. Block laying and concreting is offered at both intermediate and advanced levels in technical colleges. The curriculum of intermediate block laying and concreting in addition to what may be termed general education subjects such as Mathematics, English Language, Physics, Chemistry, Social studies, etc. has the core trade subjects to include: Introduction to Building Construction, Concreting, Block laying, Bricklaying, Land Surveying, Quantity Surveying, Technical Drawing, Building Materials, Building Drawing and Construction Management.

At the end of the programme, the students are registered to take one or all of the technical Certificate examinations listed below:

a. National Business and Technical Examination Board (NABTEB).
b. Trade Test III/II.
c. Federal Craft Certificate Examination.

The use of the computer in teaching and learning of block laying, brick laying and concreting is very crucial especial when applying those building software's packages such as AutoCAD, ArchiCAD, Revit, and Corel Draw. They make learning more effective as it ensures adequate implementation of the curriculum. The E-learning is an instructional medium that permits alternative approaches to curriculum implementation in an ICT age. Consequently, technology is used to complement instruction the emphasis is on providing opportunities to practice skills taught and extending learning by working with specific software applications (Badau & Sakiyo, 2013). Simulators are often used in TVET to address safety concerns during the initial phase of training and to offset the cost of renting equipment for training crane operators and truck drivers. In its simplest form, technology can be used for drill and practice to complement instruction.

Although ICTs are by far the most significant element underpinning the foundation of TVET, there is a paucity of literature and research regarding its implementation and use in building trade's education and training (Bell & Avis, 2006). Consequently, there is a wealth of studies and debate on the use of information and communication technologies in university and higher education, there has been only limited work on the potential impact for vocational education and training

Ekpenyong (2008) have a common stand on the need to train and graduate products with high demonstrative capacity. Their stand is in line with the objective of technical education in Nigeria. Building trades formed one of the core areas in Technical Vocational Education and Training (TVET). The trades are to prepare trainees in various fields in the building construction industry. Nwachukwu (2001) pointed out that the utilization of instructional aids in technical and vocational education would facilitate skills development, teaching process, learning process and evaluation of the level of skills acquired. Perhaps e-learning is the ideal teaching aid to be adopted in teaching and learning of building trades.

The place of ICT in teaching Building trades in colleges is crucial considering its promises in effective teaching and learning. However, considering the electric power fluctuation facing the entire nation has brought setbacks on resources spent on e-learning projects. The use of poor teaching aids contributes to poor performance and acquiring relevant skills by students of building trades. Studies revealed that many trade teachers show less interest in providing innovative instructional strategies that could help students acquire relevant skills in building trades (Anaele, 2001). Technical teachers' motivation to use e-learning in the classroom is at present, adversely influenced by a number of constraints thereby making well integrated and effective classroom use of e-learning facilities is currently rare.

The goal of mounting building trade's curriculum is yet to be achieved due to some constraints that stand in the way. According to Abdullahi (2014), one of the constraints of effective achievement of the goal of any trade is lack of students' motivation on the side of

the teachers. The poor performance of students in NTC examination (NABTEB, 2016), poor performance on the job by the graduates of TVET as noted by Edokpolo-Nosayaba, (2008), has shown that the objectives of building trade have not been fully achieved due to many factors among which could be the inadequate educational facilities, such as poor quality of teachers, inadequate e-learning, and teaching aids as well as poor implementation of building trades curriculum.

The role of ICT in curriculum implementation is recognized by the Nigeria National Policy on Education (FRN, 2004, p. 53) where it stated that "the government shall provide facilities and necessary infrastructures for the promotion of ICT and e-learning." It is this fact that the researcher intends to assess the availability and use of e-learning facilities in teaching and learning of building trades in Benue State technical colleges.

Purpose of the Study

The main purpose of this study is to examine the adequacy of e-learning facilities for effective teaching and learning of building trades in Benue State technical colleges. Specifically, the study seeks to assess:

1. The adequacy of e-learning facilities uses in teaching and learning of building trades in Benue State Technical Colleges.
2. The factors affecting the use of e-learning facilities in teaching and learning of building trades in Benue State Technical Colleges.

Research Questions

The following research questions guided the study:

1. How adequate are e-learning facilities used in teaching and learning of building trades in Benue state technical colleges?
2. What are the factors affecting the use of e-learning facilities in teaching and learning of building trades in Benue state technical colleges?

METHODOLOGY

The study was conducted in Benue State of Nigeria located in the North-Central part of Nigeria. Its geographic coordinates are Latitude 6O 25`and 8O 8` North and longitudes 7O 47` and 10O 0` East. Benue State has a population of 4,780,389 (National Population Census, NPC, 2006) and occupies a landmass of 35,518km2, comprising

23 Local Government Areas divided into three senatorial zones. The focus of the study was on six (6) out of the twelve (12) Technical Colleges in Benue State located in the urban and rural areas of zones A, B, and C. The six Technical Colleges are Usar Science and Technical College Adikpo, and Government Science and Technical Secondary School, Zaki Biam in zone A, Benue State University Science and Technical College, Makurdi and Saint Joseph Science and Technical College, Makurdi in zone B, and Government Science and Technical College, Otukpo and Elabo Science and Technical College, Adoka in zone C. A descriptive survey research design was adopted for the study. The population of this study was 235 respondents made up of 30 building trades' teachers teaching in the six State Technical Colleges, 205 NTC three students. The population for this study was manageable hence; there were no sampling and sampling techniques in this study. The entire population was used as a sample in the study. A questionnaire was used as an instrument for data collection and it was validated by three experts in Vocational and Technical Education, Benue State University, Makurdi. The data collected was analyzed using Cronbach Alpha Correlation Co-efficient which yielded 0.81. The coefficient indicated high internal consistency which proved that the instrument was reliable to be used for fieldwork. The data collected were analyzed using simple descriptive statistics of mean and standard deviation to answer research questions whereby a mean cut-off point of 3.50 was used for decision making. Any mean score of 3.50 and above was agreed to be a factor while any mean score below 3.50 was disagreed upon.

RESULTS AND DISCUSSION

Research Question One: How adequate are e-learning facilities used in teaching and learning of building trades in Benue state technical colleges?

Table 1: Mean and Standard Deviation of the Adequacy of e-learning Facilities Used in Teaching and Learning of Building Trades in Benue State Technical Colleges

S/No	Questionnaire Items	$\bar{x}$	STD	Remarks
1	Computer palmtop size	4.27	2.40	Inadequate
2	Computer desktop size	4.14	2.30	Inadequate
3	Computer laptop size	4.43	2.37	Inadequate
4	Internet services	4.74	2.82	Inadequate
5	Computer Aided Drawing software's	4.24	2.60	Inadequate
6	Projector	4.44	2.55	Inadequate
7	Video conferencing	4.19	2.38	Inadequate
8	Teleconferencing	4.65	2.70	Inadequate
9	Electronic device for marking multiple choice questions	4.43	2.70	Inadequate
10	Screen touch electronic board	4.80	2.87	Inadequate
11	Functional standby generator	4.54	2.74	Inadequate
12	Steady Electricity	4.59	2.74	Inadequate
13	Electronic or interactive boards	4.56	2.65	Inadequate
14	Facsimile machine (fax)	4.54	2.58	Inadequate
15	Digital camera	4.65	2.58	Inadequate
	Grand Mean	**4.48**		**Inadequate**

Source: Field Survey 2016/2017

From Table 1, the responses of the respondents revealed that all the questionnaire items 1 to 15 were agreed upon as inadequate e-learning facilities in Benue state technical colleges. As the mean score is above the cut-off point of 3.50 for respondents from the colleges and thus some of the e-learning facilities are not available for teaching and learning of building trades in the various colleges. The grand mean of 2.99 reveals thepoor level of e-learning facilities availability. This means that there is an inadequacy in the needed e-learning facilities and support services are for the teaching and learning of building trades in Benue state technical colleges.

Research Question Two: What are the factors affecting the use of E-learning in teaching and learning of building trades in Benue State Technical Colleges?

Table 2: Mean and Standard Deviation of the Factors Affecting the use of E-learning in Teaching and Learning of Building Trades in Benue State Technical Colleges

S/No	Questionnaire Items	$\bar{x}$	STD	Remarks
1	Lack of infrastructures needed for e-learning	4.25	2.37	Agree
2	Shortage of trained personnel	4.15	2.31	Agree
3	Poor maintenance service on the available e-learning facilities	4.40	2.33	Agree
4	Poor quality of teachers to handle e-learning facilities	4.48	2.71	Agree
5	Not all topics of building trades can be taught through e-learning	4.15	2.47	Agree
6	Most software required for teaching and learning of building trades are not available	4.32	2.41	Agree
7	Teachers resistance to e-learning trend	4.11	2.30	Agree
8	Poor awareness to the use ofe-learning facilities for teaching and learning	4.48	2.59	Agree
9	No network/social media group for exchange of ideas and information technology	4.35	2.60	Agree
10	Building trade classrooms not equipped with technology/internet facilities	4.29	2.87	Agree
11	Poor Government commitment to advancement in technology	4.29	2.47	Agree
12	Poor internet services	4.46	2.57	Agree
	Grand Mean	**4.31**		**Agree**

Source: Field Survey 2016/2017

From Table 2, the responses of the respondents reveal that all the questionnaire items 1 to 12 were agreed upon as factors affecting the use of e-learning facilities for teaching and learning of building trades in Benue state technical colleges. The Mean responses illustrate the level of agreement with the items for which all the items have higher levels of mean responses with reference to the cut-off point.

Discussion of Findings

The findings shows that e-learning facilities such as Computer (palmtop, desktop, and laptop size), Internet services, Computer Aided Drawing software's (AUTOCAD, REVIT, ARCHICAD), Projector, Video conferencing, Teleconferencing, Electronic device

for marking multiple choice questions, Screen touch electronic board, Functional standby generator, Steady Electricity Supply, Electronic or interactive boards, Facsimile machine (fax), Digital camera and other computer support-services are not adequately provided for e-learning of building trades in Benue State Technical Colleges. This finding is consistent with the findings of Ikemenjima (2005) and Jegede and Owolabi (2008) that there are infrastructural deficiencies and a shortage of facilities, including computers, computer laboratories and online-classroom for the study of Computer Education in secondary schools. The importance of adequacy and availability of these e-learning facilities cannot be over-emphasized in teaching and learning of building trades in colleges and schools. The availability of resources instructional facilities, equipment, and supplies as well as adequate personnel motivates the learners, increases the teacher's efficiency and promotes the productivity of the teacher. Facilities, supplies and equipment provision are an important aspect of Building Trades programme.

The findings further proved that the few e-learning facilities face some challenges which are termed as factors affecting the smooth e-learning and teaching of building trades in Benue state technical colleges. These are: Lack of infrastructures needed for e-learning; Shortage of trained personnel; Poor maintenance service on the available e-learning facilities; Poor quality of teachers to handle e-learning facilities; Not all topics of building trades can be taught through e-learning; Most software required for teaching and learning of building trades are not available; Teachers resistance to e-learning trend; Poor awareness to the use of e-learning facilities for teaching and learning; No network/social media group for exchange of ideas and information technology; Building trade classrooms not equipped with technology/internet facilities; Poor Government commitment to advancement in technology; and Poor internet services. This is in accordance study conducted by Thompson and Lamshed (2006) states that there was a degree of teacher resistance to moving towards the adoption of e-learning in trade training. They believe this was due to the perception of their relevance of e-learning to trade

teaching, teachers' views on the non-acceptance of new modes by learners and access issues. Some teachers also had concerns about stepping outside their existing comfort zone by having to change their approach and style of teaching and the necessity to learn new skills.

E-learning facilities are changing the way people learn, offering new alternatives to the traditional classroom. In this new economy, it is essential for learners to have access to education anytime and anywhere. Learners should have the opportunity to learn from their comfort zones. In order to address the issue of lack of adequate skills amongst technical college graduates of building trades, an intervening measure is to develop the use of e-learning facilities for teaching and learning building trades.

CONCLUSION

Based on the study conclusion was that in spite of the potentials inherent in the use of e-learning in the process of educational development, its use for teaching and learning of building trades in colleges are abysmally low. The e-learning facilities are inadequate. There is, therefore, need for school management and government authorities to brace up to this challenge through acquisition and installation of modern e-learning infrastructures and active involvement of e-learning in all school curriculums.

RECOMMENDATION

The findings of this study showed that all technical teachers particularly those in building trades need training workshops/seminars to upgrade them into e-learning, this is in line with findings of Bharatkar (2006) who said technical teachers that translates science curriculum into actual practice in the classroom should be computer literate enough to enable them to adapt to the dynamic world of today's global challenges and modern technology.

E-learning and other support services like adequate computers, network services, standby generators, video/teleconferencing, digital cameras among others should be made adequate and available for technical colleges by the state government. This will go a long way in making the students cope with the modern world as they become self-reliant after graduation.

Parents, through PTA (parent teachers association), should support the proper translation of e-learning facilities for effective learning in technical colleges thereby funding as well motivating their children about the importance of the application of ICT resources in learning.

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