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Application of Educational Media Resources in Technical Education Programme in Tertiary Institutions in Rivers State

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Abstract

Technical education is the foundation for sustainable economic development. It is one way states can achieve desirable changes or development of their economic, sociological, political and human resources. In recent times, the objectives of technical education are hardly met in institutions for those offering courses in electrical/electronic, metal work, wood work, automobile technology, building technology, etc. The instructional delivery approaches adopted by teachers of technical education in tertiary institutions in Rivers State are no longer keeping pace with developmental effort or requirements with expectations of technical education students. The paper craves the indulgence of technical education lecturers to explore and integrate modern educational media resources like interactive clever board (lynx software) and computer aided multimedia package (VCD) in technical education

programme in order to facilitate the development of relevant skills in the students, who will in turn develop their states economically.

Technical Education is all about 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. Technical Education is further understood to be:

- (a) an integral part of general education;
- (b) a means of preparing for occupation fields and for effective participation in the world of work;
- (c) an aspect of lifelong learning and a (preparation for responsible citizenship;
- (d) an instrument promoting environmentally sound sustainable development;
- (e) a method of alleviating poverty (FRN, 2004).

Technical education has also been defined as a practically illustrated and attempted job or career skill instruction (Available from [Internet] <http://www.answers.com/topic/history-of-vocational-and-technical.edu>). It is meant to explore the avenues in integrating the conceptual methods of knowledge forms and thought processes and channelling them to bear on human learning with a view to bring about solution to socio-economic problems (Bart,1992).

Technical education is taught in the junior secondary schools as integrated aspect of Basic technology. Basic technology as a subject comprises basic electricity, electronics, metal work, elementary building construction, technical drawing, food preservation and storage and other miscellaneous topics. Basic technology as taught in the junior secondary school is meant to provide basic knowledge to industrial technology. It is designed to expose the students to the appreciation of technology and subsequently develop their interest in various areas of industrial technology (Usen, Jeremiah and Iniobong, 2012:5-6).

A vast majority of Nigerians or about sixty-seven million Nigerians live below poverty line (Onuegbu, 2012:5&7). Unemployment has increased to a level that university graduates now take odd jobs to survive. Technical education can turn around the situation and empower this unskilled pool of youths with a better future and career prospect. Nigerians have, therefore, come to realize that there ought to be a significant change in our country as regards our economic and technological development. To achieve this desired change, the Nigerian government identified or emphasized, in the national policy on education (2004:30-32), the need for technical education programme in the country in order to:

- (a) provide trained manpower in the applied sciences, technology and business particularly at craft, advanced craft and technical levels;

- (b) provide the technical knowledge and vocational skills necessary for agriculture, commercial and economic development
- (c) give training and impart the necessary skills to individuals who shall be self-reliant economically.
In pursuance of the above goals:
- (d) the main features of the curricular activities for technical colleges shall be structured in foundation and trade modules
- (e) the curriculum for each trade shall consist of four components:
 - a. General education
 - b. Theory and related courses
 - c. Industrial training/production work
 - d. Small business management and entrepreneurial training
- (f) trainees completing technical college programmes shall have three options:
 - a. secure employment at the end of the whole course or after completing one or more modules of employable skill;
 - b. set up their own business and become self-employed and be able to employ others;
- (g) Pursue further education in advance: craft/technical programme and in post-secondary (tertiary) technical institutions such as Science and Technical Colleges, Polytechnics or Colleges of education (technical) and universities (FRN,2004:30-32).

It has been observed that the traditional method and materials of lesson delivery and educational services can no longer meet the demand for education especially in Africa. The conditions under which technical education is imparted in tertiary institutions in Rivers State is poor. For instance, the technical education lecturers are still using chalk-talk method, direct teaching or lecturing method during lesson presentation with little or no emphasis on the practical aspects of the course. These methods are becoming obsolete (Effiong, 2013).

Educational Media Resources

Educational media resources refer to alternative means of communication used by the classroom teachers to transmit information or instructional content or messages to his learners (Dike, 1989). Nkweke (2012;129-133) identified a wide spectrum of educational media resources which lecturers are expected to be conversant with and explore their use during lesson presentation so as to facilitate students understanding of concepts. These include: Instructional charts, interactive clever board using lynx software (e.g. lynx 4), flannel board, electric board, magnetic board, environmental

resource materials, film equipment, computer accessories and other electronic gadgets including satellite and multimedia hardware, and so on.

Educational Media Resources and Technical Education Course

Nigerians are now in an era of new learning and periods when there are modern challenges and new realities in all fields of human endeavor including the field of technical education. The importance of using suitable educational media resources like computer, interactive clever board and multimedia materials (e.g. VCD, power point, closed circuit television, 16mm film, video- conferencing, etc.) in teaching technical education cannot be overemphasized. According to Samaras, Giouvanakis, Bousiou and Tarabanis (2006), these educational media resources are required in this new generation for learning, bearing in mind that we are now in information communication technology age. They blend varieties of instructional media at the same time, in a presentation, to cater for individual learning styles or learners peculiarities (Doff, 1998).

Staylor (2002) noted that synchronized media resources such as computer and other multimedia equipment –VCD, DVD, television, 16mm film projector, cine film device etc. have the following advantages:

1. Reduced learning time: self-paced, immediate interaction, feedback and personalized instruction can reduce training time 50% (avg.)
2. Reduced cost/students: in the classroom, the major expense is delivery, i.e., the instructor's salary. More money can be saved by using an interactive system
3. Instructional consistency
4. Privacy: the student avoids embarrassment, and the 'patience' of the interactive system encourages the student to ask questions
5. Mastery learning: the instruction won't move on until the student has mastered the lesson
6. Increased retention: the reinforcement of the interactive lessons increases learning
7. Increased safety: the technology allows exploration of 'dangerous' subjects which would be difficult or impossible in the classroom
8. Increased motivation: the responsive feedback and individual involvement makes the student a more willing participant
9. Increased access: student instruction is not confined to times when the instructor is available
10. Learners enjoy interactive learning
11. Efficient, effective and flexible

Tomic, Mance and Zivic (2010) posited that multimedia enables us to approach the traditional systems of teaching in a way, which makes it possible:

- (i) for teachers to focus on the interaction with students during the classes

- (ii) for pupils/students not to depend on the teacher as the main source of information
- (iii) for teaching contents, as well as for the teaching process, to become more adaptable
- (iv) for both pupils or students who prefer auditive, and for those who prefer visual learning to find their ways
- (v) for pupils/students to learn individually
- (vi) for pupils/students to determine their own pace of working and to focus on what they find the most relevant (depending on their pre-knowledge they can skip certain parts of teaching contents)
- (x) for pupils/students to find information in much simpler and more effective way in electronic form
- (xi) for pupils/students to save much more information, since it is impossible to do that using paper
- (xii) to perform multitasking , since computers are able to do that

Educational media resources, if well selected and skilfully utilized can multiply and widen the communication channels between teacher and learners. This view was supported by Nkweke and Eke (2010) when they noted that the computer, interactive clever board and multimedia offer multiple channel communication, which they see as superior to single channel communication. The effectiveness of these media in this regard, depends on using the appropriate ones.

Gbasibo (2007:140) asserts that, with the use of hypermedia and synchronized interactive multimedia software, students are made to be more involved in the learning process. It makes the students to be in control of the class as against teacher controlled media presentations, which are considered passive.

Computer aided multimedia technology provides educators with a range of very interesting opportunities for creating resources that allow learners different levels of interactivity, according to Eneh (2002). It presents support and reinforcement to learners. Dambo (2003) quoted Davids (1993) as saying that, "faculty members are, increasingly, using computers and interactive multimedia to synchronize lesson presentations and, therefore, make their teaching more efficient, effective, powerful and flexible".

Gbasibo (2006) also observed that, teachers/lecturers use computers and multimedia technology using power point to present lectures in the classroom, and papers in conferences. These tools provide learners with individualized activities that accommodate differences in learner's levels of preparation.

It becomes necessary for technical education teachers to effectively utilize modern educational media resources in technical education. Research findings have shown that the use of media resources has helped students to learn better and have enhanced their performance. NKweke and Okoro (2011) opined that the computers and multimedia package will enable learners to be better organized and to have enhanced performance.

Ezekoka (2010) observed that students spent longer time in the learning task when they use relevant educational media. Students who used modern educational media like computer develop new strategies for problem-solving, and also develop higher order thinking skills.

Statement of the Problem

Lecturers in tertiary institutions are expected, in the present dispensation, to effectively utilize modern educational media resources, such as computer, multimedia package, interactive or clever board etc. to facilitate teaching and learning encounter in various courses including technical education. One is worried as to what extent do lecturers in technical education utilize these media resources in their effort to facilitate the development of relevant industrial/technical skills in the technical education students as well as help to improve their academic performance in electrical / electronics, metal work, woodwork, automobile and building technology.

Purpose of Study

The main purpose of the study is to determine if integrating educational media resources like interactive clever board and computer aided multimedia will yield a positive impact on the academic performance of technical education students.

Research Questions

The following research questions were formulated to guide the study:

1. To what extent do the use of interactive clever board (lynx software) and computer aided multimedia package arouse interest of students in technical education?
2. Will the students taught technical education courses using interactive clever board(lynx software) and computer aided multimedia package perform better than those taught in the conventional way?

Hypothesis

There is no significant difference between the academic performance of the technical education students taught with computer and interactive clever board and those taught in the conventional way

Methodology

The research was a quasi-experimental study with control and experimental groups as subjects of study

Population of Study

The population for the study consisted of 20 technical education lecturers and 30 technical education students from 3 tertiary institutions in Rivers State offering courses in technical education.

Sample Size and Sampling Technique

The sample size consists of 10 technical education lecturers and 200 technical education students. To select these students, the presenter used purposive sampling technique to carefully select one tertiary institution (Federal College of Education, Technical, Omoku) and intact classes were used in the selected institution. The students were divided into two groups. Group 1 experimental group and group 2 control group made up of 20 students in each group.

Instrument

The presenter used: questionnaire, a lesson plan and 10 achievement test questions on technical education as well as a computer aided multimedia package.

Validation of Instrument

The instruments have been constructed to relate to the problems, research questions as well as hypotheses of the study. Questionnaire items were presented to two Educational Technology specialists from University of Port - Harcourt and two Biology specialists from Rivers State University of Education, Port – Harcourt. These specialists critically examined the instruments specifically for

Reliability of Instrument

The reliability of questionnaire was determined through test-retest approach. About ten percent of the questionnaire was administered on technical education students of similar tertiary institutions outside the sampled areas within an interval of one month. The scores of all the first and second sets were summed up and correlated using Pearson Product Moment Correlation [PPMC] statistics to determine the reliability co-efficient. The computed reliability co-efficient (r) was 0.79 which means that interactive clever board /computer aided multimedia questionnaire was reliable

Administration of Instrument

The instrument was administered on the students. The presenter used the technical education lecturer to do the teaching using clever board while the presenter supported the teaching with a computer aided multimedia device. The control group was taught using conventional teaching approach while the experimental group was taught using the clever board and the computer aided multimedia to arouse students interest and enhance their understanding of the lesson.

Method of Data Analysis

The presenter did the data analysis using mean and t-test statistics

Result

Table 1(a): Mean Distribution of Students' Responses on the Extent to which the use of Interactive Clever Board (Lynx Software) and Computer aided Multimedia Package Arouse the Interest of students in Studying the Technical Education Courses

S/No.	Item	Mean	Decision
1.	Interactive clever board (lynx software) and computer aided multimedia package arouse your interest in learning technical education when used during instructional delivery	3.42	Accepted
2.	The use of chalk-talk method does not arouse your interest to learn technical education	3.10	Accepted
3.	The use of educational media resources like clever board and computer aided multimedia package in technical education instruction, can accommodate individual learners' peculiarities	3.04	Accepted
4.	Effective use of interactive clever board and computer aided multimedia package can help to facilitate your understanding of technical education concepts	3.36	Accepted
5.	The use of interactive clever board and computer aided multimedia device like VCD can enhance mastery learning	3.0	Accepted
6.	Lessons involving the use of interactive board and computer enhances recall	3.40	Accepted

7.	If lecturers use interactive clever board and computer during lesson students retention ability is improved	3.44	Accepted
8.	You expect your lecturers to use interactive clever board with reinforced computer aided multimedia package whenever they come to present lessons in the lecture hall or workshop	2.99	Accepted
9.	The use of interactive clever board and computer aided multimedia devices lead to low interest in learning technical education	2.01	Rejected
10.	It does not interest you to attend lectures presented with the aid of interactive clever board and computerized multimedia package	2.00	Rejected

Looking at table 1a above, it reveals that responses to items 1-8 were accepted (mean scores >2.5) whereas responses to items 9-10 were rejected (mean scores < 2.5). Technical education students with accepted means were of the opinion that the use of interactive clever board and computer aided multimedia package in lesson presentation can arouse interest of technical education students in learning.

To analyze the hypothesis above, two sets of scores obtained from administered on the experimental and control groups were used. Result of t-test of significant difference in biology achievement is shown in table 2 below:

Table 2b: t- test Analysis of the Impact of the Use of Interactive Clever Board & Computer Aided Multimedia Package on the Academic Performance of Technical Education Students

	Control Group	Group	Exp.
Mean	23.52	41.17	
Variance	137.72	324.16	
Observation	100	100	
Hypothesized Mean Difference	0		
Degree of Freedom	169		
T Statistic	14.02		
P(T<=t)two tail	2.40028E-27		
T Critical two tail	1.97		

Since calculated t value (14.02) is greater than the critical t value (1.97), the null hypothesis is therefore rejected, which means that the alternate hypothesis is accepted. This is to say, that there is significant difference in the academic performance of the experimental and control groups. In other words, the experimental group exposed to lectures presented with the aid of interactive clever board and computer aided multimedia package performed academically better than the control group that was denied the media package.

Discussion of Findings

The use of interactive clever board and computer aided multimedia package during ;lesson presentation is said to arouse students' interest in learning as shown in table one. Motivation is a key variable in education. This view is in consonance with Okoroma's (2000) who affirms that motivation is an important variable that arouses learners' interest and reinforces learning. Gbasibo (2007) and Aggarwal (2007) also affirmed that when interactive clever board and computer aided multimedia package are integrated in teaching and learning encounter, it stimulates several senses thus making the learner more involved in the learning process. Students feel excited and desire to put in their best in leaning effort once they are motivated. Dike(2002) equally shares the views above but noted that for interactive clever board and computer aided multimedia package to be able to arouse and sustain students' interest; such media should be designed or packaged in line with educational technology principles or multimedia principles.

Conclusion

Educational media resources such as interactive clever board/lynx software and computerized multimedia package if used by technical education lectures during instructional development can arouse and improve the academic performance of the students in learning electrical/electronics, automobile technology, woodwork, metal work and building technology

Recommendations

1. Government should provide tertiary institutions offering courses in technical education with interactive clever boards, lynx software, computer accessories and multimedia projectors.
2. Managements of tertiary institutions in Rivers State should provide every technical education lecturer with laptop and ensure that they use clever board and multimedia during lesson presentations.
3. Veteran educational technologists and other information technology experts should be invited and sponsored to mount workshops periodically for technical education

lecturers on the use of interactive clever board, production and use of multimedia packages.

4. Technical Education lecturers should train on the use of computer and its application in technical analysis. Regular power supply should be provided in tertiary institutions.
5. Protection mechanism should be provided in tertiary institutions in the state to ensure that these instructional media gadgets are not vandalised.

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