
AN APPRAISAL OF COMPUTER AIDED INSTRUCTION FACILITIES FOR TEACHING BUILDING TECHNOLOGY IN COLLEGES OF EDUCATION IN NORTH-EASTERN NIGERIA.

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ABSTRACT

The study appraise the CAI facilities used for teaching Building Technology in colleges of Education in North-Eastern states of Nigeria. The investigation way guided by four objectives with four corresponding research questions. Relevant literatures related to the research question were reviewed. The study employed the analytical survey design. The population of the study consists of thirty eight (38) teachers and 10 technologist form the five College of Education under investigation. The instrument used for data collection was a checklist adopted from the like of CAI materially from the Minimum Bench Mark for Academic standard (MBMAS) of the National commission of Colleges of Education (NCCCE). The research personally went to the five colleges to ascertain the availability and functionality of the CAI facilities. While the formulae for establishing the time utilization rate and adequacy was employed for research question 2 and 4. The finding of the study review that the CAI facilities are available in all the colleges, and functional in COE Azare, FCE (T) s Gombe, Potiskum and Hong. The CAI facilities are over utilized in all the colleges except COE Hong where the student enrolment matches MBMAS. The study recommends that the CAI facilities should he provided by the colleges to match the students enrolment to avoid over-utilization.

Key words: Computer Aided Instruction, Building Technology

INTRODUCTION

Changes have been the most consistent features of modern learning and it has been so intense that people now requires continuous adaptation mechanism to survive in this world of change. The modern approach to learning of Building technology through the computer aided instruction (CAI) has continued to dictate the pace in the emerging learning world (Jadas, 2004).

The multimedia computer that combines sound, graphics, animation and video has become an integral part of CAI and also a valuable tool for learning Building Technology. A teacher of the twenty-first century is

expected to be computer literate in order to deliver competent instruction so as to cater for the individual students needs in the classroom. Eastman (2003), Kursh and Rhodes (2013), Ralph and Stair (2006) observed that in recent years computer literacy and key boarding skills are ranked next to reading, writing and arithmetic, and as basic skills for survival in business world. Hence, the preponderance of access to learning sources through the internet has hereby made the era of Building technology teacher as the only custodian of knowledge, come to be a thing of the past.

Moreover, in teaching situation, not all learners digest information at the same time and pace. Still others

have special learning needs and demands (Iyaderau, 2014). Some differences among learners under the same learning environment are in mental ability, motivation, physical and socio-economic disposition, differences in learning habit, self-discipline and retention span (Abimbade, 2007). The traditional lecture method of teaching takes little or no attention of (these needs) the individual students' needs. Students under this method are passive; the teacher is the source of information in front of fifty students or more. This method suppresses the spirit of inquiry and discovery because learners are taught in group and are not allowed to master tasks at their own pace before moving to the next (NTI, 2009). Under the lecture method students do not receive immediate feedback. According to Cross (2014) a limited feeling of success and progress increases confidence, stimulates further interest and guarantee faster pace of working.

In order to meet up with the demand of CAI in teaching and learning Building technology in Nigeria, the Federal Government in the philosophy of technical education in Nigeria stresses the need for providing Building technology teachers with the intellectual and professional background adequate for teaching Building technology courses and to make them adaptable to any changing situation in technological environment not only in the lives of their country, but also in the wider world (NCCE, 1990).

Similarly, Ukeje (1991) stresses that the quality of education provided in any society and the nature of the change affected by the education are both dependent on the quality of teachers and the effectiveness of their teaching in the school. In line with this, the National Commission for Colleges of Education (NCCE) mandated its entire academic staff to acquire a minimum qualification in computer technology before 2005 academic session or be denied promotion (NCCE, 2004). This is a positive move towards the integration of CAI into the classroom instructions. But the knowledge acquired

on CAI by the building technology teachers will be of less importance if the CAI facilities for an effective teaching and learning are not available or adequate for an effective Computer Aided Instruction to take place.

An effective Computer Aided Instruction (CAI) in Building technology Instruction programme can only be offered and sustained if the facilities required are available, adequate, functional and frequently used for delivering building technology Instruction in the classrooms. The traditional lecture method of instruction has been widely criticized for being teacher centred; it is only the teacher that dominates the entire activities of the class while the students remain passive. Since students learn at different rate and learning is said to be more effective when different senses are impinged upon (Obumoeke, 2000).

The fundamental question is how available are these CAI facilities in our schools? How are they being put to use by the building technology teachers in imparting knowledge to the students? The answers to these questions will form the basis for an ideal CAI approach to teaching of Building technology in Nigeria schools. In the light of these, this research study focused on the appraisal of Computer Aided Instruction (CAI) facilities for teaching Building Technology at Nigeria Certificate of Education (NCE) (Tech) level. The research therefore answered the following questions

1. What are the CAI facilities available for the teaching of Building technology in Colleges of education in North-Eastern Nigeria?
2. What is the utilization rate of CAI facilities for teaching Building technology in colleges of education in North-Eastern Nigeria?
3. How functional are CAI facilities for the teaching of building technology in Colleges of Education in North-Eastern Nigeria?
4. How adequate are CAI facilities for teaching Building technology Building technology in Colleges of Education?

METHODOLOGY

Survey research was used for this study Nwogu (1991) explains survey research as the research design in which a group of people or items are studied by collecting and analyzing data. The study was carried out in five colleges of Education duly accredited by National Commission for Colleges of Education [NCCE] that offers Building technology as a course in the North East Zone. The population of this study comprised of 38 lectures and 10 technologists in the colleges. The instrument used for data collection was 12 item checklists. The items on the checklist were adopted from the list of equipment and materials required in computer centre’s of Colleges of Education as provided in the Minimum Standard for Colleges of Education for teaching CAI. The response categories on the checklist for Research question 1 was: Available (AV), and Not Available (NA), Research question 3 was functional (F) or not functional (NF). The data that

was collected for research questions 1, and 3 which sought information about availability and functionality of the CAI facilities were verified/analyzed using the check list. Research question 2 which sought information on utilization of the CAI facilities of teachers in teaching building technology in colleges of education was analyzed using the formula

$TUR = \text{Numbers of actual utilization} / \text{number of hours of theoretical utilization}$, while research question 4 was analyzed using the formula as:

$\text{Adequacy} = \text{number of students enrolled} \times 100 / \text{number in the minimum standard} \times \text{number of facilities}$ expressed in percentages.

RESULTS

Research Question 1: What are the CAI facilities available for the teaching of Building technology concepts in Colleges of Education

Table 1: Availability of CAI facilities for teaching building technology in Colleges of Education

S/N	College	SE	CS	VPJ	VP	SP	DP	FP	MB	PAS	CTV	Cam.	VS	PM
1	Coe Azare	34	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	FCE(T) GM	62	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	FCE(T) Pot	48	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	COE Bama	37	✓	✓	✓	✓	✓	X	✓	X	✓	✓	✓	✓
5	Coe Hong	28	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Key: ✓ - Available, X - Not Available

SE=Students’ Enrolment, CS=Computer System, VPJ=Video Projector, VP=Video Player, SP=Slide Projector, DP=Overhead Projector, FP=Film Projector, MB=Magnetic Board, PAS=Public Address System, CTV=Colour TV, Cam=Camera, VS=Voltage Stabilizer, PM=Printing Machine

Result of the analysis on table 1 on the availability of CAL facilities for teaching building technology in college of education recent that all the college of education have the CAL facilities for teaching

building technology, except college of education Bona that do not have oriented projector and majestic board.

Research Question 2: What are the utilization rate the CAI facilities for teaching Building Technology in Colleges of Education

Table 2: Utilization rate of CAI facilities for teaching building technology in colleges of education.

S/N	College	Student enrolment	TUR for practical	Total hours of actual utilization	TUR for tutorial	TUR theory	No of house of theoretical utilization	Total production required	Calculated	Remarks
1	Coe Azare	34	2hrs	31	1hrs	2hrs	64	118hrs	57.2	Over-utilized
2	FCE (T) Gombe	62	2hrs	36	1hrs	2hrs	64	118hrs	66.4	Over-utilized
3	FCE (T) Potiskum	48	2hrs	36	1hrs	2hrs	64	118hrs	66.4	Over-utilized
4	COE Bama	37	2hrs	32	1hrs	2hrs	64	118hrs	59.0	Over-utilized
5	COE Hong	28	2hrs	34	1hrs	2hrs	64	118hrs	62.7	Over-utilized

Table 2 shows the analysis on the utilization rate of CAI facilities in teaching by building technology teachers. The utilization rate in compound to the standard are set out by UNESCO (1989) which recommended that for TUR to adequate in term of workshop facilities, it should not be less than or equal to 80%. Hence table 2 indicated that the CAI facilities are over-utilized for teaching by building technology teachers in all the colleges of education under investigation

Research Question 3: How functional are CAI facilities (equipment and software) in Colleges of Education?

Table 3 shown the functionality of CAI facilities for teaching building technology in the college of education. The table 3 reveal that all the CAI facilities are functional in COE Azare, FCE (T) Gombe, FCE (T) Potiskum and COE Hong. In COE Bama, overhead projector and magnetic board are not available and video Recorder video player, slide projector and film projector are not functioning while the remaining six CAI facilities are functional

Table 3: Functionality of CAI facilities for teaching building technology in college of education.

S/N	College	SE	CS	VPJ	VP	SP	OP	FP	MB	PAS	CTV	Cam.	VS	PM	S/N
1	Coe Azare	34	F	F	F	F	F	F	F	F	F	F	F	F	Functional
2	Fee (T) Gombe	62	F	F	F	F	F	F	F	F	F	F	F	F	Functional
3	FEE(T) Potiskum	48	F	F	F	F	F	F	F	F	F	F	F	F	Functional
4	COE Bama	37	F	NF	NF	NF	NA	NF	NA	F	F	F	F	F	Functional
5	Coe Hong	28	F	F	F	F	F	F	F	F	F	F	F	F	Functional

F – Functional, NF- not functional and NA- not Available

Table 3 shows the functionality of CAI facilities for teaching building technology in the colleges of education. The table reveals that the CAI facilities are all functional in COE Azare, FCE (T) Gombe, FCE (T) Potiskum and COE Hong. In COE Bama, overhead projector and magnetic board is not available and video Recorder video player, slide projector and film projector are not

functioning while the remaining six CAI facilities are functional

Research Question 4: How adequate are CAI facilities for the teaching of Building Technology Concepts when compare to the population of Building Technology students in Colleges of Education?

Table 4: Adequacy of CAI facilities for teaching building technology in COE

S/N	College	SE	CS	VPJ	VP	SP	DP	FP	MB	PAS	CTV	Cam.	VS	PM	S/N
1	COE Azare	34	28.3	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7	Inadequate
2	FCE(T) Gombe	62	51.7	103.3	103.3	103.3	103.3	103.3	103.3	103.3	103.3	103.3	103.3	103.3	Inadequate
3	FCE(T) Potiskum	48	40	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	Inadequate
4	COE Bama	37	30.8	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7	Inadequate
5	COE Hong	28	23.3	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	Inadequate

Table 4 present the adequacy of the CAI facilities for teaching building technology in colleges of education in north-eastern states, the adequacy of the CAI facilities were computed on the basics of the minimum facilities in the minimum bench Marks of Academic students (MBMAS)of the NCCE against the students enrolment in each of the college under investigations in percentage. The table reveals that there CAI facilities are inadequate in all the colleges except for college of education Hong, where the number of student enrolment in less than 30 student per class as spell out in the MBMAS of NCCE which the result range from 23.3% to 46.7% indicating the adequacy of CAI facilities for teaching building technology.

FINDINGS OF THE STUDY

1. The findings of this study are presented in this order in which research questions were arranged.
2. The facilities are available in all the colleges.

3. The CAI facilities in the colleges were underutilized.
4. The CAI facilities in the colleges are functional in COE Azare, FCE (T) Gombe, FCE (T) Potiskum and COE Hong but video recorder, video player, slide projector, overhead projector, film projector and magnetic board are not functional in COE Bama.
5. All the CAI Facilities in the colleges for teaching building technology are all inadequate

DISCUSSION OF FINDINGS

On the availability of CAI facilities for teaching Building Technology in Colleges of Education, the finding stressed the point of Tahir (2005) which states that teacher education is obvious of the recent advances in the area of computer aided instruction. He states further, that Nigerian educational system does not have sophisticated electronic gadget used for instruction today. The education learners receives direct relevance

on the availability or lack of CAI facilities and the overall atmosphere in which the learning take place. According to Adesina (2009), the availability of CAI facilities is one potent index of evaluating educational standard and quality is an examination of physical facilities available for teaching experiences. It is therefore imperative that necessary CAI facilities should be made in Colleges of Education in order to enable the graduates of Building Technology of Colleges of Education to possess the intellectual and professional background.

The findings of this study on the utilization of the CAI facilities for teaching reveals that all the Institutions used for this study have CAI equipment and the facilities re all over- utilized. According to Ogbodo (1995), Colleges education facilities, if not properly and effectively utilized, managed and maintained, they dilapidates and wear out faster than their normal life span. In line with this, Ehiamentalor, (2001) observed that CAI facilities are the operational input of every instructional programme. The frequency of use of the instructional materials needed to be improved upon because researches have shown that the effectiveness in the use of CAI facilities to support learning is a function of the curriculum content, and the instructional strategy such that when appropriate context is addressed using appropriate strategies students and teachers will benefit (Cradler and Birdgeforth, 2002).

The findings on the adequacy of the CAI facilities reveals that the equipment are grossly inadequate when scored on the requirement of 1:30 students for all the CAI equipment as extracted from ICT centres (NCCE, 2002). This ratio of 1; 30 students per equipment cannot be said to be too much for a developing nation like Nigeria, if a developed nation like America has a ratio of 1:9; one computer for every nine students (OTA, 1995). All the institutions used for this study have students' population of above one hundred and fifty each the equipment in all of the institutions was inadequate.

RECOMMENDATIONS

Okwara, O. K. & Ekele, G. E.

Based on the findings of the study and their implications, the following recommendations were made:-

1. The National Commission for Colleges of Education (NCCE) should make funds available to the Colleges for equipping CAI Centres in Colleges of Education and make policies that will enforce the use of CAI facilities for teaching and learning.
2. The Colleges' managements should organize in-house workshop for teachers on the importance and use of CAI facilities in teaching and learning of Building technology education.

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