EFFECT OF COMPUTER AIDED INSTRUCTION (CAI) ON STUDENTS' ACADEMIC ACHIEVEMENT IN ELECTRONIC LIBRARIES IN NIGERIAN TERTIARY INSTITUTION

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Abstract

This study investigated the effects of computer aided instruction (CAI) on students' academic achievement in selected federal tertiary institutions in Anambra State in electronic libraries course. Two (2) federal tertiary institutions in Anambra State, Nigeria were selected for the study through purposive random sampling technique. One institution was assigned to the experimental group while the other was assigned to the control group through a simple toss of the coin. The study employed pre-test, posttest non-equivalent groups quasi-experimental design involving two groups: experimental group (30) and control (30) was used to investigate the effect of CAI method of teaching on 3rd year library and information science students' academic achievement in electronic libraries. The instruments were validated by experts. A sample of 60 third year Library and Information Science students participated in the study. A researcher-developed instrument, Electronic Libraries Achievement Test (ELAT) was used for the collection of data. The instrument contained fifty (50) questions with a reliability coefficient of 0.91 using Pearson Product Moment Correlation. Two hypotheses were postulated and tested at 0.05 level of significance using analysis of covariate (ANCOVA). The experimental group and control groups were taught with CAI and Modified lecture methods, respectively. Data collected were analysed using mean and standard deviation. Results showed no significant difference in the posttest achievement mean scores of students taught electronic libraries using computer aided instruction method and those taught with modified lecture method. The study further revealed that female students in the experimental group had a higher mean gain than their male counterparts in the Electronic Libraries Achievement Test implying that computer aided instruction method of teaching enhance female students' academic achievement in Electronic Libraries more than the male students. The study recommends that lecturers should adopt the use of computer aided instruction in teaching of electronic libraries in tertiary institutions in order to enhance student's academic achievement in electronic libraries.

KEYWORDS: Computer aided instruction, Academic achievement, Gender, Electronic libraries

Introduction

Advancement in Technology has been widely accepted as that which triggers off development in any human environment. Technology is driving change across the entire range of Library and Information Science teaching and learning method, operational and services delivery methods. Students are channeled into dramatically different learning methods as new technological advances and new teaching, and learning methods that are more learner centered are implemented by their lecturers through Information and Communication Technology Education (Edet 2015). Technology according to Pitt (2020)" is the making, usage and knowledge of tools, machine, techniques, crafts and system of organization to solve problems". In the context of this study, technology refers to the knowledge of using tools, techniques, systems or methods, crafts, utensils, machines, skills to improve live, surroundings and perform tasks that will enhance tertiary education and library education in particular. "It paves the way for new learning experiences and provides innovative ways to achieve core goals for the new Academic year" (Promethean, 2018). Lecturers are now using computer in teaching to improve students' academic achievement. Due to information explosion which influences education, lecturers and students must learn to adapt with the constant changing world to meet with the challenges of these technological innovations. One way to improve the quality of education is to make use of

efficient technology in library education. "This will open up more opportunities for the teachers and students as well" (Team, 2017). "There is now clear evidence that ICT, when used well, improves attainment in all subjects" (Soni, 2020).

"Information and communication technologies (ICTs) is a broader term for Information Technology(IT), which refers to all communication technologies, including the internet, wireless networks, cell phones, computers, software, middleware, video-conferencing, social networking, and other media applications and services enabling users to access, retrieve, store, transmit, and manipulate information in a digital form"(AIMS,2020). However," one of the objectives of information and communication technology is to integrate information technology into the mainstream of education and training and also to empower the youths with ICT skills and prepare them for global competiveness"(Nwokike,2013). These technologies could include hardware e.g. computers and other devices; software applications, and connectivity (e.g access to the Internet, local networking, infrastructure, video-conferencing). ICT occupies a unique position in the tertiary institutions curriculum. It is applicable in all subjects, be it natural science (biology, physics, chemistry) or other sciences such as library and information science; and Home Economics, etc. It is obvious that no student intending to study any discipline can do without ICT at the tertiary education level.

The implication of this is that ICT is now placing different demands on education in general and electronic libraries in particular. Therefore, a second thought of how electronic libraries curriculum is taught in Nigeria tertiary institutions becomes important if our educational system is to be relevant to serve the societal needs in this present information age through employing ICT in teaching and learning situation to improve and enhance electronic libraries students learning, academic proficiency, effectiveness and efficiency in the world of work. Implementation of computer aided instruction (CAI) as teaching strategy in school is one prominent aspect of use of ICT

worldwide. (Olarewaju, Better and Ugwuanyi 2016).

Computer Aided Instruction method as the name suggests, stands for the type of innovative strategies carried out with the help of a computer as a machine to supplement classroom instruction. "As an interactive instructional technique, computer is used to present the instructional materials and monitors the learning that take place"(Okoli, and Onyeagba,2016)." CAI programs use tutorials, drill and practice, simulation and problem solving approaches to presents topics and they best test the students' understanding" (Adeyemi, 2012). It is learner-centered and activity-oriented. "The major objective of CAI is to enable all learners maximize their learning achievement, characterized by adaptability of instruction to the learner needs" (Okoli & Onyeagba, 2016). They further opined that CAI instruction is learner centered provides self-pacing, has multiple user approach with random access facilities for revision and updating. CAI is absolutely a medium of instruction. Effective use of Computer Aided Instruction as used in this study refers to successful application and adoption of CAI among the library educators to achieve objectives in instruction and library education programme in general.

Electronic libraries is one of the library and information science subjects being offered in the tertiary institutions. Electronic libraries is also known as internet and electronic libraries course. The study of electronic libraries from its inception was through verbal description of course content, which made the study very abstract and quite uninteresting (Sani, 2017). The undue emphasis on theoretical aspect of electronic libraries to the detriment of practical, power point exposure, computer exposure, multimedia concept and project approach had made the course very abstract and also uninteresting. Ineffectiveness in the utilization of above mentioned teaching methods by lecturers will retrogressively result into producing graduates with only a less than a complete education in practical subjects.

Academic achievement refers to the average marks obtained by an individual in the project, assignment, test added to the final

examination. It has long been recognized as one of the important goals of education (Rastogi, 2012)."Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in school, college, and university" (Nwatu, 2018). He further opined that school systems mostly define academic achievement in terms of cognitive goals that either applies across multiple subject areas. (e.g. critical thinking) or include the acquisition of knowledge and understanding in a specific intellectual domain (Numeracy, literacy, science, history). He further opined that it is commonly measured by examination, or continuous assessment. It is measured by the final grade earned in the course, which may be impeded or enhanced as a result of instructional method used by a teacher/lecturer. Achievement test questions are used to assess a person's academic achievement in a course of study which he/she has undergone.

Okwuduba (2016) "postulates that the method to be employed will depend on the subject matter, the students, the teacher and the environmental variables." He further opined that a good method, according to Balde in Egbunonu (2012) can be useless in the hands of a teacher who does not know how to use it; and a good teacher can be ineffectual with a poor method. Fakorede and Ikatule, (2011) "opines that the value of instruction depends to a large extent on the quality of the teacher, as teachers are life-wire of a sound educational process". "The technological and environmental demands of the 21st century, are such that, knowledge and information driven world period makes an essential prerequisite for lecturers to utilize adoptable and modern instructional methods, materials, resources and strategies effectively in order to adapt to the change from teacher centered education system to learner centered education" (Ubadi, 2011). Prominent among the teaching methods used in teaching "electronic libraries" are lecture and questioning methods.

Modified lecture method is a traditional/conventional method of teaching." Modified lecture method is a teaching method whereby the presenter or the lecturer teaches orally to a group of class participants and creates a break in the lecture during the process of teaching and learning in other to give room for relevant demonstrations' or activities" (Dimgba, 2016). "Modified lecture method is planned to overcome some of the drawbacks of a formal lecture" (George,2014).It is a type of lecture method and it is mostly used in tertiary institutions. According to Kufi (2015), there is no single method regarded as best for teaching "electronic libraries" in tertiary institutions. What is important is the ability of the "electronic libraries" lecturer to make up for the weaknesses of whatever method he wants to adopt. A number of instructional strategies/methods have been tried in the school system, yet poor achievement in "electronic libraries" still persists (Uwem, 2017). As it seems that all other teaching methods are not giving the needed result, this researcher wants to use the new teaching methods, that involves use of computer, to see if that will improve the students' academic achievement. The effect of computer aided instruction needs to be investigated to ascertain its effect on Library and Information Science students' academic achievement.

Statement of the Problem

Electronic libraries is one of the courses offered in Nigerian tertiary institutions. It is among the courses offered by undergraduate students of Library and Information Science in their third year. However, despite the importance and usefulness of electronic libraries, it appears that the students' learning outcomes have not been encouraging (Townsend, 2015). Reports from findings of David (2017) and Waritimi (2018)" attributed poor achievement to the use of ineffective methods of teaching the course". In addition, the researcher observed that most tertiary institutions offering library and information science in Anambra State are not using CAI in the class rooms despite its relevance in teaching electronic libraries course. The teaching of electronic libraries in tertiary institutions in the state generally

appears to be through lectures, note-giving and taking, chalk or white board illustrations, demonstration and other lecturer-centered methods which make students passive and unable to maximize their intellectual development(Townsend,2015). The continuous use of lecture method, in some areas even in the description of supposed electronic libraries practical lessons, has contributed to a large extent, to this problem of poor academic achievement. If this trend of poor academic achievement in electronic libraries should continue, there is the tendency that electronic libraries as a body of knowledge will continue to be abstract, learners will lose interest and Nigeria library science graduates will never meet up with the library science challenges of the day.

In the bid to curb poor academic achievement in electronic libraries, many researchers advised the use of teaching methods such as computer aided instruction, cooperative learning, advance organizer, computer simulation and multimedia synchronized instruction (MSI), in the teaching of electronic libraries to the students. Even so, the problem of poor academic achievement in electronic libraries tends to have persisted and had caused a lot of concern to library and information science educators (David, 2017).

Yusuf and Afolabi (2010) opined, "that students learn instructional contents faster with CAI than conventional instruction alone; they retain what they have learned better with CAI than with conventional instruction alone". In the light of these, this study determined the effect of computer aided instruction on tertiary students' academic achievement in electronic libraries course.

Purpose of the Study

The purpose of this study was to find out the effect of Computer Aided Instruction on the academic achievement of students on Electronic Libraries course.

Specifically, the study determined the following:

1. Effect of computer aided instruction on academic achievement of tertiary institution students in Electronic Libraries.

2. Effect of computer aided instruction on academic achievement of male and female students in electronic libraries.

Significance of the Study

The study will be beneficial to different persons and group of persons. These include: lecturers, curriculum planners, writers and students.

Lecturers of electronic libraries may benefit from the finding of this study. If computer aided instruction work best in teaching electronic libraries, then the lecturers having good understanding of the method will make them functional in teaching library and information science in general and electronic libraries in particular. It will give them an insight on the benefit of encouraging the learners to be active in the learning process and how to use computer aided instruction to achieve that.

The outcome of the findings will be beneficial to curriculum planners and writers. Suppose computer aided instruction is found to be relevant in library study, then during the review of electronic libraries curriculum, the planners may wish to incorporate CAI as one of the strategies that will help lecturers to deliver topics/concepts they perceived as difficult to teach.

The result of this study will be of immense benefit to the students. If it is proved that this method improves students' academic achievement, the students will appreciate the need for their involvement in electronic libraries activities in their classroom. As a result, this may help the students to acquire both electronic libraries skills and electronic libraries knowledge thereby enhancing students' academic achievement in electronic libraries.

Finally, the findings of the present study will help educational researchers and scholars to solve the current problem of dearth of empirical evidences on the effect of computer aided instruction on students' academic achievement and interest of learning in electronic libraries. This will be possible when the findings of this study are published in reputable journals or discussed at seminars and conferences.

Research Questions

The following research questions are posed to guide the study:

1. What are the effects of computer aided instruction method of teaching on academic achievement of tertiary institution students in electronic libraries as a course?

2. What are the effects of computer aided instruction on academic achievement of male and female students in electronic libraries as a course?

Hypotheses

The following null hypothesis are formulated to guide the study and will be tested at 0.05 level of significance.

1. There is no significant difference in the posttest achievement mean scores of students taught electronic libraries using computer aided instruction method and those taught with modified lecture method.

2. There is no significant difference in the posttest achievement mean scores of male and female students taught electronic libraries using computer aided instruction.

Review of Related Literature

CAI is an acronym for computer aided instruction." CAI is defined as an interaction between a student, a computer controlled display and a response entry device for the purpose of achieving educational outcomes" (Qureshi,2020). It is learner centered and activity oriented. According to Suleman, Hussain, Din and Igbal (2017) "CAI is an instructional approach where a computer is used to communicate the instructional materials and evaluate the learning outcomes". CAI is also known as computer assisted instruction. In CAI, the computer can be seen as an aid but not a replacement of teacher.

"CAI programs use tutorial, drill and practice, simulation, problem solving approaches to present topics and also test the students understanding" (Adeyemi,2012). These programs allow students to progress at their own pace. Computers provide immediate feedback, letting students know when their answer is correct. CAI according to Velasco (2020)" increases students' access to

information; increases the percentage of personalized instruction a student receives; increases students independence and personal responsibility for education; improves students attitudes, and lowers the amount of time required to master certain materials". Typical CAI provides (Ubia, 2010)Text or multimedia content, Worksheet databases and tests, Exercises for practice, Summarizes students' performance, Notes on incorrect responses, immediate feedback, Problems, Multiple choice questions.

"Instead of lecturing at the front of the room for an entire class period, teachers can incorporate technology into their lessons to keep students engaged while appealing to a variety of learning style"(Barroso, 2019). "Computer aided instruction improves instruction for students with disabilities because students receive immediate feedback and do not continue to practice the wrong skills "(Access Center,2020). The following is a list of reasons given by students for liking CAI activities for learning. Students say they like working with computer because th computer:

1. It is possible to experiment with different options

2. Computers are more objective than teachers/lecturers

3. It is impartial to race or ethnicity

4. Computers are self-paced

5. It is fun and entertaining

6. It never forgets to correct or praise

7. It never gets frustrated or angry

8. It never gets tired

9. "CAI has been found to enhance students achievement than conventional method in teaching and learning of chemical bonding using CAI and lecture method" (Nomolox, Ayiwah and Boi-Doku, 2019). Suileman, Hussain, Din and Igbal(2017) concludes, among others that the use of CAI as a supplementary to conventional method produces a significant positive effect on students' academic achievement and retention in physics. Furthermore, Nwafor and Obeten Okpoi (2016) conducted a study on the effects of CAI on junior secondary

school students' achievement in Basic studies. It was found that CAI as a method of teaching enhanced higher students' achievement in Basic Science than conventional method.

The use of computer in education can be traced to 1960s. Computer revolution has triggered the applicability of computer in the classroom for instructional purpose. According to Timothy in Orjika(2012) "the three possible ways in which computer can be applied in the classroom to enhance learning include: computer as a facilitator (teacher), computer as an assistant and computer as a learner". According to Mercer(2018) and Timothy in Agbo (2016)," the use of computer for classroom instruction is usually termed computer assisted instruction,(CAI) computer aided instruction (CAI) computer based instruction,(CBI) and computer assisted learning(CAL"). In this mode, the computer can be used to present instruction, use various media(such as text, graphics, audio, video,) provide instructional activities or situations, quiz or otherwise require interaction from learners, evaluate learner responses, and provide feedback.

Furthermore, "Gender simply means the character or characteristics of being male or female, man or women, boy or girl (male or female)" (Ukala, 2018). Depending on the sex, this attributes, opportunities, biological sex and relationships are socially constructed and learned through the socialization process. According to Ifedili cited in Abdulahi and Galle(2018)" maintained that gender discriminations which are highly peculiar to girl-child could only be eliminated through education and empowerment, this is because some girls have proved that they could be the best if given a chance academically".

Research Methodology

The design for this study is quasi experimental. Non-randomized groups was used because the researcher cannot randomly sample and assign the students into groups. Hence, the researcher used the students as groups already organized in classes. One group of students (experimental) was taught electronic libraries with computer aided instruction and another group (control) was taught electronic libraries using the modified lecture teaching method in a usual classroom setting. The intact classes were also used in order not to disrupt the school affairs and activities during school hours. Symbolically, this design can be represented as:

GROUP	PRETEST	EXPERIMENT	POST-TEST
Experimental (E)	O_1	CAI X_1	O_2
Control (C)	O_1	Modified Lecture-method X_2	O_2

Symbols:

E	=	Experimental Group
C	=	Control Group
O_1	=	Pre-Test for experimental and control group
O_2	=	Post-Test for experimental and control group
X_1	=	Experimental Treatment (CAI)
X_2	=	Control Treatment (Modified Lecture- Method)

The target population comprised all the one hundred third (3rd) year library and information science students in federal tertiary institution in Anambra State. The research sample comprised sixty (60) 3rd year electronic libraries students in two tertiary institutions in Anambra State. The two (2) selected tertiary institutions in Anambra State are Nnamdi Azikiwe University, Awka and Federal College of Education (Technical) Umunze. The institutions was selected using purposive random sampling technique. All the third year electronic libraries students in each in each intact class of the

institutions participated in the study. Each intact class was assigned to a treatment condition using the flip of coin technique.

One instrument was used for data collection in this study, which were Electronic Libraries Achievement Test (ELAT). The researcher developed the instrument. The constructed electronic libraries achievement test questionnaire were given to five experts who face validated them, making correction where necessary. One of the experts was from Measurement and Evaluation validated the lesson plans on the topics taught to the

students while four of the experts were from library and information science, computer science, and vocational education and carried out the content and face validation.

Reliability coefficient of the ELAT was determined with Pearson Product Moment Correlation technique. The reliability coefficient was found 0.91 which showed that the test was

Presentation of Results

Research Question 1: What are the effects of Computer aided Instruction method of teaching on students' academic achievement in Electronic Libraries?

Data related to research question 1 is presented in Table 1

Table 1: Mean Difference and Standard Deviation of the Pre-test and Post-test Scores of Students in the experimental and control groups in the Electronic Libraries Achievement Test (n = 60)

S/n	Group	n	Pretest	SD	Post test	SD	Mean Difference
1	Experimental	30	51.03	13.43	75.93	11.51	24.90
2	Control	30	39.57	12.74	51.80	13.27	12.23

The data in Table 1 is a summary of the mean pre-test and post test scores of students in the experimental and control groups in the Electronic Libraries Achievement Test. The result shows that the mean pre-test and mean post-test scores of students in the experimental group who were taught with Computer aided Instruction method of teaching are 51.03 and 75.93 respectively with standard deviation of 13.43 and 11.51 respectively. Table 1 also show that the mean pre-test and mean post-test scores of students in the control group who were taught with modified lecture method are 39.56 and 51.80 respectively with standard deviation of 12.74

and 13.27 respectively. It could be observed that students in the experimental group had a higher mean gain of 24.90 as against 12.23 obtained by those in the control group. This result suggests that the Computer aided Instruction method of teaching enhances students' academic achievement in electronic libraries than the modified lecture method.

Research Question 2: What are the effects of Computer aided Instruction method of teaching on the academic achievement of male and female students in Electronic libraries?

Data related to research question 2 is presented in Table 2

Table 2: Mean Difference and Standard Deviation of Pre-test and Post-testScores of Male and female Students in the experimental and control groups in the Electronic Libraries Achievement Test (n = 60)

S/n	Group	Gender	N	Pretest	SD	Post test	SD	Mean Difference
1	Experimental	Male	8	58.00	10.64	77.25	14.38	19.25
		Female	22	48.50	13.65	75.45	10.64	26.95
2	Control	Male	6	35.50	9.46	51.00	12.82	15.50
		Female	24	40.58	13.41	52.00	13.64	11.42

The data in Table 2 shows the mean pre-test and mean post-test scores of male and female students in the experimental and control groups in the Electronic Libraries Achievement Test. The result shows that the mean gain in the scores of male and female students in the experimental groups are 19.25 and 26.95 respectively. The corresponding figures for those in the control group are 15.50 and 11.42

respectively. It could be observed that the mean gain for female students in the experimental group is higher than that of male students. This result suggests that the Computer aided Instruction method of teaching enhance female students' academic achievement in Electronic Libraries more than the modified lecture method of teaching.

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Hypothesis 1: There is no significant difference in the post test achievement mean scores of students taught electronic libraries using Computer aided Instruction method and those taught with modified lecture method.

Data related to Hypothesis 1 is presented in Table 3

Table 3: Summary of Analysis of Covariance (ANCOVA) Test for Significant Difference in the Post-test mean achievement scores of students taught electronic library using Computer aided Instruction method and those taught with modified lecture method

Source	Sum of Squares	Df	Mean Square	F	Sig.	Decision	
Corrected Model	12793.78	2	6396.89	74.52	0.00		
Intercept	5468.97	1	5468.97	63.71	0.00		
Pretest1	4057.51	1	4057.51	47.27	0.00		
GROUP	3536.19	1	3536.19	41.19	0.00*	S	
Error	4893.16	57	85.85				
Total	262424.00	60					
Corrected Total	17686.93	59					

*S = Significant at 0.05 level of significance

The data in Table 3 shows the result of the analysis of covariance conducted to test for significant difference in the mean post test scores of students in the Electronic Library Achievement Test between those in the experimental and control groups with pre-test used as covariates. The students were divided into two groups by teaching methods namely experimental (Computer Aided Instruction method) and control group (modified lecture method). As shown, the F-value for group (or teaching method) is 41.19 with level of significance being 0.00. On this basis, the null hypothesis is rejected implying that there is significant difference in the post-test mean achievement scores of students in the experimental and control groups who were taught with the Computer Aided Instruction method and the modified lecture method respectively. The significant difference is attributed to the experimental group which obtained a higher mean post-test score in the Electronic Libraries Achievement Test as shown in Table 1.

Hypothesis 2: There is no significant difference in the post test mean achievement scores of male and female students taught electronic libraries using Computer aided Instruction method and those taught with modified lecture method

Data related to Hypothesis 3 is presented in Table 7

Table 4: Summary of Analysis of Covariance (ANCOVA) Test for Significant Difference in the Post-test mean achievement scores of male and female students taught electronic library using Computer aided Instruction method and those taught with modified lecture method

Source	Sum of Squares	Df	Mean Square	F	Sig.	Decision	
Corrected Model	9263.42	2	4631.71	31.34	0.00		
Intercept	2703.26	1	2703.26	18.29	0.00		
Pretest1	9180.32	1	9180.32	62.12	0.00		
Gender	5.84	1	5.84	0.04	0.84*	NS	
Error	8423.51	57	147.78				
Total	262424.00	60					
Corrected Total	17686.93	59					

*NS = Not Significant at 0.05 level of significance

The data in Table 4 shows the result of the Analysis of Covariance conducted to test for significant difference in the mean post test achievement scores of male and female students in Electronic Library. As shown, the F-value for gender is 0.04 with level of significance being 0.84. Since the level of significance is greater than the stipulated probability level of 0.05, hypothesis 3 is upheld. This implies that there is no significant difference in the post test mean achievement scores of male and female students taught electronic library using Computer aided Instruction method and those taught with modified lecture method.

Discussion of Findings

The study revealed that computer aided instruction method of teaching enhance students' academic achievement in electronic libraries than the modified lecture method. The trend of higher achievement may be as a result of computer aided instruction providing an opportunity for students to work at their own pace. This probably enhanced the electronic libraries students' learning and aroused their motivation and interest over what was taught.This result is not surprising as many studies in the past have confirmed that CAI group performed better than conventional classroom group(Yusuf,Afolabi,2010,Lashley,2017).

Furthermore, the media(text, video, graphics and audio) provided by the computer aided method were absent in modified lecture method, the privacy and individual attention afforded by a computer relieved the students the embarrassment of going more slowly through lessons than other classmates which made for a better academic achievement of CAI group.

The present study revealed that computer aided instruction method of teaching enhance female students' academic achievement in electronic libraries more than the male students. female students' as shown in research question 2.The finding with respect to students' academic achievement of male and female students agrees with that of Julius (2018), who found out that female students perform better than male in chemistry concept.

Recommendations

Based on the data collected and analysed in the study, the following recommendations were made with respect to the research questions and hypotheses of the study:

1. Electronic libraries lecturers should adopt the use of computer aided instruction in teaching of electronic libraries course.in order to enhance students' achievement in electronic libraries.

2. In-service training programmes such as seminars, in-service course, conference and workshops on the use and operation of CAI should be made compulsory for all practicing lecturers in tertiary institution to enable them develop up-to-date computer competencies.

3. There should be remedial programme for male students in the use of computer aided instruction method to enable them operate at the same level with their female counterparts.

4. Textbook writers and publishers should incorporate this method of teaching in their textbooks for the benefit of both the lecturers and the students.

Conclusion

Based on the findings of this study, the following conclusions were drawn. The study had shown that CAI enhanced students' academic achievement in electronic libraries than modified lecture method. The CAI appeared to be most effective instructional delivery system than Modified lecture method in engendering students' achievement in electronic libraries. As in -service training programmes such as seminars, conference and workshops on the use and operation of CAI should be made compulsory for all practicing lecturers in tertiary institutions to enable them develop up-to-date computer competencies, it is hoped that academic achievement in electronic libraries would increase also.

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