

EFFECTS OF COMPUTER-ASSISTED-INSTRUCTION ON THE ACADEMIC ACHIEVEMENT OF ENGLISH LANGUAGE STUDENTS IN LAGOS STATE SENIOR SECONDARY SCHOOL

SHIKU, G. O.

and

ABDULKAREEM, K. M.

Department of Science and Technology Education,
Faculty of Education, Lagos State University, Ojo, Lagos.

Abstract

Using the quasi-experimental design involving the pre-test and post-test. The population of the study comprised of all English Language Senior Secondary School Student of Education District V in Lagos State, Nigeria. The sample of the study consisted 100 students. Three research questions guided the study and three null hypotheses were tested at 0.05 level significance. The instrument for data collection was English Achievement Test (ENGACT) which is made up of 20 multiple choice test items with. The instrument was validated by experts. Data collected were analyzed using Analysis of Covariance (ANCOVA) to test the hypotheses. Hypothesis one state that there is a significant difference in the effects of Computer Assisted Instruction (CAI) on student' academic achievement in English Language as compared to the traditional method of instruction in Senior Secondary Schools in Lagos State with the result $[F(1, 97) = 6.380; p < .05]$. Hypothesis two states that there is no significant difference in the mean achievement score of male and female English Language Students when exposed to Computer Assisted Instruction in Senior Secondary Schools in Lagos State with result $[F(1, 97) = .243; p > .05]$. Hypothesis three state that there is a significant difference in the pre-test and post-test mean achievement scores of Senior Secondary Schools Students in Lagos State exposed to Computer Assisted Instruction (CAI) with result $05 [F(25, 45) 19.415; p < .05]$. Based on the findings it was recommended that Computer Assisted Instruction should be encouraged in the teaching and learning of Use of English.

Keywords: Computer-Assisted-Instruction, English Language, Academic Achievement and students.

Introduction

English Language occupies a unique position in the school curriculum. English language as a subject in senior secondary schools has compulsory status, that is, it is a core subject for students in social science/commercial class, art class and science class offered. It is a subject for the fulfillment of maximum requirement of nine subjects by WAEC/NECO (2017). English language is one of the widely used languages in the world. It is used by most developed and economically developed countries in the world which has made it the second most spoken language in the world after Chinese (Ebernard, Gray & Charles, 2017). It is the language widely used in the internet. All these have given English language the status of a world language. It has become a global language and the most studied language especially in countries where it was language on colonization such as Nigeria and Ghana. Nigeria, a multi lingual nation has about five hundred (500) indigenous language. English language is used as an official medium of communication, a de facto lingua franca in Nigeria. As a lingua franca, it is the language of unification, the language of administration, law and diplomacy, world trade politics and intra and inter-ethnic medium of communication (Millar, 2017).

The English language occupies a central position in the school system. It is a core subject which is required for admission into higher institutions and for occupation and employment. It is a core subject from pre-primary to Lower Basic level and the language of instruction from Upper Basic to the tertiary level. This means that the Nigerian child's access to cultural and scientific knowledge of the world is largely through the English language. In line with this, the examination bodies such as the West African Examination Council (WAEC), the National Examination Council (NECO) and the Joint Admission Matriculation Board (JAMB) made English a core subject in their examinations. A critical analysis of West African Senior School Certificate results from 2012-2017 attest to poor performance of students in English language. (WAEC Examiner, 2017).

Computer Assisted Instruction (CAI) is defined as a teaching process directly involving the computer in the presentation of instructional materials in interactive mode to provide the controlled, individualized learning environment for each individual student (Habib, Muhammad & Hajjakaltum, 2019). There are now several Computer assisted instructions packages on different subjects. It is obvious that the current trend in research all over the world is the use of computer facilities and resources to enhance students' learning. This may be the reason why Okolo (2022) opined that many exercises that depart from traditional method are now readily accessible on the web, even though teachers do not use these facilities. He further observed that the interactive approaches to lecturing significantly enhance learning. Advantages of Computer-Assisted Instruction (CAI) as identified by Adegboye (2017) include: Immediate feedback- the interactive terminals which keep students interacting and eager to keep trying; active participation- whereby weaker students are obliged to participate actively and not remain passive in lectures; No annoyance- where the computer will wait patiently for an answer and does not express annoyance with wrong response; graphics facility-which are interactive graphics that makes possible to sample many more illustrations that could easily be shown in a textbook; mathematical calculations- which can be done as readily for realistic examples as for artificially simple class that can be solved analytically; and accurate data- where large volumes of data can be handled with accuracy and without drudgery.

Adegboye (2017) asserted that the adoption and application of Computer Assisted Instructions in teaching at senior secondary school level has come to occupy an important place in the education sector and national development and indeed the development of the world. This is because it has not only ensured scientific and technological development but it has also opened up more learning opportunities, improved the techniques of teaching and production of materials which reduce time consumption and distance. Educators utilizing technology to enhanced instruction have increased in number across a variety of disciplines and the method has been proven to be effective. Research has indicated that technology in the classroom can be useful in pedagogy management and an effective teaching enhancement (Ajayi, 2015). He further described technology as a systematic and integrated organization of man, machine, idea and procedure to achieve a desire goal. He further asserted that the adoption of Computer assisted instructions in teaching of English Language in secondary schools could be helpful in the task of capacity building and negative view in this direction could constitute a draw back to the achievement of our Computer assisted instructions objectives.

Computer-Assisted Learning provides a good base for students to work at their own pace with immediate feedback (Carlson & Schodt, 2012). The ability to use Computer is necessary just as formal education; as reading, writing and arithmetic. As jobs become increasingly oriented towards the use of Computer, society demands and rewards individuals who know how to use Computer systems, by giving them special preference over those who doesn't know how to use

computer. Learning any skill without the necessary equipment and facilities negates Aristotle's saying that one learns to be a good flute player by filing the flute.

Purpose of the Study

This study was set out to achieve the following objectives:

1. To determine the effects of Computer Assisted Instruction (CAI) on Students' Academic Achievement in English Language as compared to the traditional method of instruction in Senior Secondary Schools in Lagos State.
2. To determine the mean achievement score of male and female English Language Students when exposed to Computer Assisted Instruction in Senior Secondary Schools in Lagos State.
3. To determine the difference of in the Pre-Test and Post-Test mean achievement scores of Senior Secondary Schools Students in Lagos State exposed to Computer-Assisted Instruction (CAI).

Literature Review

Computers are already in use in Nigeria, in banks, large firms, transport companies, the armed forces and elsewhere. Either owing to excessive compartmentalization of administrative departments or to the relative order of political priorities, it appears that the Ministry of Education was not involved at higher levels of decision-making. With the growing use of computers in education and instruction, computer training for teachers and teacher-educators is being considered a prime objective for the advancement of educational technology (Aubineau, 2016). The use of computers in schools may conveniently be divided into learning about computers and learning with, from or through computers. Knowledge of computers may be thought of as a continuum, ranging from skills and awareness of computers as learning and educational tools at one end of the continuum, through programming in higher and lower level languages, and to solid-state physics at the other end of the continuum.

The terminology concerning computers as a learning medium varies widely and there are no universally agreed-upon definitions among those frequently encountered are: (a) Computer-Assisted Instruction (CAI) where computer acts as teaching new skills or concepts or providing practice for learners. Software in this mode is often referred to as drill practice; and tutorials. (b) Computer-based learning (CBL) or computer-assisted learning (CAL) which includes various categories such as simulations and modeling, instructional games, problem solving, information handling, and demonstrations (Anderson, 2016). According to Fourie (2019), Computer-assisted instruction (CAI) is an interactive instructional technique whereby a computer is used to present the instructional material and monitor the learning that takes place. It is also known as computer-assisted learning (CAL), computer-based education (CBE), and computer-based training (CBT). CBT allows the students to direct their own progress.

Computer-assisted instruction (CAI) learning uses a combination of text, graphics, sound and video in learning process. It is especially useful in distance learning situations. The explosion of the Internet as well as the demand for distance learning has generated great interest and expansion of computer-assisted instruction. The first university formed to provide degrees entirely through Internet courses was Jones International University in 1993. It received full accreditation by the North Central Association of Colleges and School (NCA) on March 5, 1999. Currently, there are more and more colleges and universities offering web-bases courses and programs (Helfer, 2019). The computer has many purposes in the classroom, and it can be utilized to help a student in all areas of the curriculum. CAI refers to the use of the computer as a tool to facilitate and improve instruction. CAI programs use tutorials, drill and practice, simulation, and problem solving approaches to present topics, and

they test the student’s understanding. These programs let students progress at their own pace, assisting them in learning the material.

Thomas (2017) quoted Lepper and Gurtner (2014); and Roblyer (2015) as —CAI suffers from some of the same problem as programmed instruction. It is often repetitive, and it reduces learning to discrete units that sometimes obscure the relationship between ideas. CAI is better suited for drill and practice than for building concepts and promoting comprehension. Research has shown that when used in addition to regular instruction, CAI improves students’ attitudes, motivation and academic achievement.

Methodology

A quasi-experimental design was used for the study. It allows the researcher to control the assignment to the treatment condition, but using some criterion other than random assignment. Quasi-experimental design does not use random assignment of subjects, rather, intact class are usually used. A random sampling technique was adopted to select public schools used for the study. A random sampling technique was used to select the Educational District which is Education District V and intact classes were used to select the respondents for this study. A total of 100 students were pretested to ascertain their group equivalence. Four schools were selected; two of the school was selected as control group while another two school was selected as the experimental group. The following instruments were used for the study: Development of English Achievement Test (ENGACT) and Development of Computer Assisted Instructions (CD ROM Package).

H0₁: There is no significant difference in the effects of Computer Assisted Instruction (CAI) on students’ academic achievement in English Language as compared to the traditional method of instruction in Senior Secondary Schools in Lagos State.

Table 1:

Analysis of Covariance (ANCOVA) summary table of the effects of Computer Assisted Instruction (CAI) on students’ academic achievement in English Language as compared to the traditional method of instruction in Senior Secondary Schools in Lagos State.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	663.856 ^a	2	331.928	52.024	.000
Intercept	126.091	1	126.091	19.762	.000
Posttest	229.958	1	229.958	36.042	.000
Groups	164.741	1	164.741	25.820	.000
Error	618.894	97	6.380		
Total	10213.000	100			
Corrected Total	1282.750	99			

The table shows that since F value of 25.820 was obtained with the associated p value of .000 and the associated p value is lesser than 0.05 [$F(1, 97) = 6.380; p < .05$]. Hence, the null hypothesis one which stated that “There is no significant difference in the effects of Computer Assisted Instruction (CAI) on students’ academic achievement in English Language as compared to the traditional method of instruction in Senior Secondary Schools in Lagos State” is hereby not rejected. The result further indicates that students taught English language topics using Computer Assisted Instruction (CAI) had a higher mean score 12.50 than their counterparts using conventional method mean score 9.45 with a mean difference of 3.05. This implies that the computer assisted instruction (CAI) was more effective than the conventional methods in teaching English language topics.

H0₂: There is no significant difference in the mean achievement score of male and female English Language Students when exposed to Computer Assisted Instruction in Senior Secondary Schools in Lagos State.

Table 2:

Analysis of Covariance (ANCOVA) summary table of the mean achievement score of male and female English Language Students when exposed to Computer Assisted Instruction in Senior Secondary Schools in Lagos State.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8.222 ^a	2	4.111	24.975	.000
Intercept	8.651	1	8.651	52.553	.000
Pretest	7.031	1	7.031	42.710	.000
Gender	.040	1	.040	.243	.623
Error	15.968	97	.165		
Total	277.000	100			
Corrected Total	24.190	99			

Source: SPSS Version 20

The table shows that since f value of .243 was obtained with the associated p value of .623 and the associated p value is greater than 0.05 [$F(1,97) = .243; p > .05$]. Hence, the null hypotheses that “There is no significant difference in the mean achievement score of male and female English Language Students when exposed to Computer Assisted Instruction in Senior Secondary Schools in Lagos State” is hereby rejected. This implies that gender does not have a significant effect on the academic achievement of the pupils.

H0₃: There is no significant difference in the pre-test and post-test mean achievement scores of Senior Secondary Schools Students in Lagos State exposed to Computer Assisted Instruction (CAI).

Table 3:

Analysis of Covariance (ANCOVA) summary table of the difference in the pre-test and post-test mean achievement scores of Senior Secondary Schools Students in Lagos State exposed to Computer Assisted Instruction (CAI)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1076.460 ^a	54	19.934	598.033	.000
Intercept	359.606	1	359.606	10788.166	.000
Pretest	476.389	14	34.028	1020.834	.000
Posttest	739.752	15	49.317	1479.504	.000
Pretest * Posttest	16.179	25	.647	19.415	.000
Error	1.500	45	.033		
Total	1966.000	100			
Corrected Total	1077.960	99			

The table shows that since F value of 19.415 was obtained with the associated p value of .000 and the associated p value is lesser than 0.05 [$F(25,45) 19.415; p < .05$]. Hence, the null hypothesis one which stated that “There is no significant difference in the pre-test and post-test mean achievement scores of Senior Secondary Schools Students in Lagos State exposed to Computer Assisted Instruction (CAI)” is hereby not rejected. The result further indicates that post-test have a higher mean score of 12.50 than the pretest which have a mean score of 9.45 with a mean

difference of 3.05. This implies that the post-test was more effective than the pretest in teaching English language topics.

Discussion of Findings

The findings of this study revealed that CAI has significant effect on students' academic achievement. Students who were taught using CAI approach performed better than those taught using lecture method. The findings of this study are also consistent with earlier studies of Barad, 2014 and Kumar, 2014) which revealed that CAI leads to higher achievement. The result of this study however, contradicts the conclusion of Mill (2014) who said that CAI does not support learning and Imhanlahini (2018) that convectional approach group performed better than the CAI group. The difference in their reports may be due to the types of school used, the facilities in the schools and knowledge of students in computer.

The findings of this study revealed that there was no significant difference between the mean achievement score of male and female students in both the experimental and the control groups respectively. This is in line with the findings of Uduosoro (2014) who found out that gender does not affect the academic achievement of students whether male or female and also the findings of Igboegwu and Okonkwo (2013), Busari (2016), and Samuel and Okonkwo (2020) who revealed that there was no significant gender difference in the performance of students in English Language. Findings also revealed that male and female students performed better than their male and female counterparts in the control group (that is, when they are both exposed to CAI). This is in agreement with the submission of Jegede (2017), Nbina and Wagbara (2012), and Julius (2018) who found out females achieving better than males. But this is contrary to Okereke and Onwukwe (2011), Ezeudu and Obi (2013), Achor, Kurumeh and Orokpo (2012) and Ukozor (2011) who found out that the male students performed better than their female counterparts.

Conclusion

In Conclusion, The findings of this study are consistent with earlier studies of Barad, 2014 and Kumar, 2014) which revealed that CAI leads to higher achievement. The purpose of this study is that Computer Assisted Instruction (CAI) has the potential to improve students' academic achievement in Use of English. Hence, it could be used in the teaching and learning of Use of English in senior secondary school to enhance performance, motivation and mastery. Based on the findings, it is also to determine the effects of Computer Assisted Instruction (CAI) on Students' Academic Achievement in English Language as compared to the traditional method of instruction in Senior Secondary Schools in Lagos State so as to ascertain the way teaching is been effective and efficient using traditional method and the Computer Assisted Instructions Conclusion was also made that the mean achievement score of male and female English Language Students when exposed to Computer Assisted Instruction in Senior Secondary Schools in Lagos State was also determined to as to know how the gender will achieve their academic achievement using the Computer Assisted Instruction. However, this study was concluded that the difference of the Pre-Test and Post-Test mean achievement scores of Senior Secondary Schools Students in Lagos State exposed to Computer Assisted Instruction (CAI) made an impact in this study.

Recommendations

Based on the findings from this study, the following recommendations were made:

1. English language curriculum planners and developers should include CAI approach in the suggested teaching methods.
2. Teachers should be encouraged to use CAI in classroom instructions by their supervisors. CAI is still a novelty in secondary schools in Nigeria.
3. There should be literatures on CAI available to schools. This will make teachers and students more informed on how to use CAI. Teachers Training Institutions should

Shiku, G. O & Abdulkareem, K. M. (2024). Effects of Computer-Assisted-Instruction on The Academic Achievement Of English Language Students In Lagos State Senior Secondary School. *Journal of Library, Science Education and Learning Technology (JOLSELT)*, (5)1, 33-41

incorporate CAI approach into their teaching method courses so that pre-service chemistry teachers will be equipped with this innovative approach.

References

- Anderson, J. (2016). Developing Computer Use in Education-Guidelines, trends and issues. UNESCO *Journal of Regional Office for Education in Asia and the Pacific, Bangkok, Thailand*. P.57-59.
- Andrew, C. & Andrew, S. (2018). *The Foundations of Positive and Normative Economics*, Oxford University Press; Ablex.
- Arthur, M. D., Jr. (2018). *Science, Economics of The New Palgrave Dictionary of Economics*, (2nd Ed.). Basingstoke and New York: Palgrave Macmillan.
- Aubineau, J. P. (2016). *Computers and Education-Report of a Mission to Pakistan*, UNESCO, Paris. P. 5.
- Barad, S. A. (2010). Effectiveness of CAI for Science Teaching in Urdu Area. *International Research Journal of Education*, Vol 1(12), 19-21.
- Becker, H. (2014). How exemplary computer-using teachers differ from other teachers: Implications for realizing the potential of computers in schools. *Journal of Research on Computing in Education*, 26(3), 291-321.
- Carlson, J. A. & Schodt, D. W. (2015). Beyond the lecture: Case teaching and the learning of economic theory. *Journal of Economic Education* 26 (Winter): 17-28.
- Fourie, I. (2019). The Use of CAI for Distance Teaching in the formulation of Search strategies. *Mousaion*. 17, 48-52.
- Helfer, D. S. (2019). Has the Virtual University Library Truly Arrived? *Searcher*. 7, 62-65.
- Thomas, K. C. (2017). *Educational Psychology: Windows on Teaching*. Brown & Benchmark Madison, West Indies.

Shiku, G. O & Abdulkareem, K. M. (2024). Effects of Computer-Assisted-Instruction on The Academic Achievement Of English Language Students In Lagos State Senior Secondary School. *Journal of Library, Science Education and Learning Technology (JOLSELT)*, (5)1, 33-41