Using Computer-Assisted Language Learning To Improve Students' English Language Achievement in Universal Basic Education

OLIBIE, EYIUCHE IFEOMA (PhD)
Federal College of Education (Technical) Asaba,
Delta State, Nigeria.
E-mail utchackonsults@yahoo.co.uk

ABSTRACT
This study sought to determine if Computer-assisted language learning (CALL) would improve students' achievement in English grammar more than Conventional English Language Instruction (CELI). Guided by four research questions, this study was a quasi-experimental study involving four intact classes of junior secondary III students. Two of the classes were randomly assigned to the experimental group while the other two were randomly assigned to the control group. Grammar proficiency tests were used to collect data. The study, which lasted for 8 weeks, utilized the computer for the experimental group and printed texts for the control group. Data was analysed using mean and standard deviation scores. Findings revealed that CALL had an overall positive effect on students' achievement in English language more than CELI. Based on these findings, some recommendations made include that for improved English language instruction in the UBE, schools that have computers should encourage English language teachers to use CALL in their classroom; government at all levels should strive to provide schools with high quality teaching materials such as computers and teachers should be trained to use computer- assisted language learning in schools.

INTRODUCTION

Universal Basic Education is an intervention programme, which is aimed at providing basic education to every Nigerian citizen who is willing. It covers the formal and informal sector and spans from the early primary to the junior secondary levels of education. The UBE at the junior secondary level education is aimed at preparing the youths for gainful employment or progression into the senior secondary level and subsequent admission into higher education (Adediji, 2004). Undoubtedly, these functions are very essential to the survival, enhancement, and development of the Nigerian society. However, the extent to which the UBE in junior secondary education achieves the roles expected of it is largely dependent on competencies in the language of instruction, which is English language. Consequently, one of the greatest challenges of UBE in secondary education in Nigeria today is the fostering of instructional activities that would enhance students' achievement in English Language. Within the context of Ube and as we progress into a digital world, our education landscape simultaneously undergoes rapid and tremendous changes. In order to equip students with the necessary skills and knowledge to foster the growth of independent, creative and lifelong learners, schools must provide relevant experiences to support and facilitate the students' development. Such relevant experiences could be enhanced using Computer-Assisted Language Learning (CALL). This paper presents the findings of a study that investigated the effects of CALL on students' performance in English grammar.

LITERATURE REVIEW

The critical role that computers play in English language teaching and learning is best understood in terms of Computer-Assisted Language Learning (CALL). Computer-assisted language learning involves applying the principles of computer- assisted learning to language learning context. It is the use of computer programs to enhance learning. According to Huizhong (1985), Computer-Assisted Language Learning (CALL) is when the computer is being used as an instructional tool to improve learning by helping students acquire a better understanding of the learning content.. "It includes the use of simulations, drills, tutorials, word processing, authored programmes, games, database search/inquiry methods and programmed instruction" (Kearsley, 1983:195). This means that CALL lessons

may be presented through tutorials, drills, and practice and simulation software.

Computer-Assisted Language Learning (CALL) is a technique for using technology in the field of language learning (Januszewski & Molenda, 2008). According to Wikipedia encyclopedia (2005), CALL is defined as an approach to language teaching and learning in which computer technology is used as an aid to the presentation, reinforcement, and assessment of material to be learned, usually including a substantial interactive element. In the light of this definition and for the purpose of this study, the CALL refers to the use of multimedia CD-ROM combining text, pictures, audio, and video files for the purpose of teaching English as a second language.

Many studies worldwide have been conducted to investigate the effect of CALL on learning languages. Research results demonstrated a positive effect of CALL on students' learning and competency (Almekhlafi, 2006; Ertmer, Ottenbreit-Leftwich & York, 2006; Benson & Mekolichick, 2007; Teo, 2009). In other words, CALL has gained considerable attention from different entities including researchers and writers. In the context of Anambra State of Nigeria, studies involving CALL use in the teaching of English Language grammar is minimal.

PROBLEM AND PURPOSE OF THE STUDY

The WAEC Chief examiner's report on the May/June 2005 SSCE as contained in Okafor (2005) stated that many students fail English language because of inadequate mastery of English language grammar, which manifests itself in many forms: bad grammar, lack of coherency in essays, rough expression of ideas. Evidences abound that the average Nigerian student manifests significant grammatical incompetence and that students upon leaving school nowadays could not articulate sound communication, reading, writing, intellectual, and information processing potentialities, which are essential English language skills (Olibie, 2006 and Udosen, 2005). The purpose of this study, therefore was to find out whether Computer-Assisted Language Learning (CALL) will be more effective in improving students' achievement in English language grammar more that Conventional English Language Instruction (CELI).

Research Questions

The following research questions guided the study:

1. To what extent does Computer – Assisted Language Learning (CALL) enhance students' ability to produce grammatically correct sentences over a stipulated period of time more than Conventional English Language Instruction (CELI)?
2. To what extent does CALL enable students to accurately transform the order of constituents in grammatical units?
3. To what extent does CALL improve students' achievement in correlative substitution more than CELI?
4. To what extent does CALL enable students to respond freely to grammatical drills in classrooms more than CELI?

Research Design

This study was quasi-experimental because classroom grouping, rigid time-tabling and the location of the schools made it impossible for the researcher to randomly assign subjects to experimental and control groups. The non-equivalent control design group involving four intact streams of classes was adopted.

Population

he population for this study was the entire junior secondary III students in 33 state government owned co-educational secondary schools in Anambra State. This population comprised about 2080 male and female students enrolled for the 2000/2001 academic sessions. The student body embraced students from a variety of socio-economic status and academic ability levels.

Sample and Sampling Technique:

Multi Stage Cluster Sampling was used to select subjects for this study. According to Gay (1996), cluster sampling is sampling in which groups or units not individuals are randomly selected. Such groups or units can be classrooms, schools, or even larger clusters provided that all the subjects in the unit are studied. Out of the education Zones in Anambra State, 2 were randomly selected using the sampling with replacement method. The two zones selected had 11 co-educational schools. From the list of the 11 co-educational schools, four were randomly selected. Although the schools vary in the number of classes and students per school, there was an average of 160 students spread in 4 classes of 40 students each. Using simple random sampling, 1 intact class was selected from each of the 4 schools, thus yielding 4 intact classes. These classes were randomly assigned to 2 groups of 2 classes each. Using a flip of a coin, one of the groups was chosen as the experimental group and the other, the control group. The experimental group had intact class sizes of 40 and 39 students, while the control group had 41 and 40 students respectively. Thus, 160 subjects participated in this study, 79 in the experimental group and 81 in the control group.

Instruments for Data Collection

Two parallel Grammar Proficiency Tests (GPT) were selected from Basic English Brush up by Townsend publishers, and modified for this study. The tests were labeled Form A and Form B. While Form A was used for the pretest, Form B was used for the post test. The tests were designed to measure students' performance at the junior secondary school. Each of the tests comprised of three sections that covered each of the three grammar aspects being studied namely subject-verb agreement, Antecedent anaphor pair, and shift in tense, aspect and voice. Each section consisted of 20 multiple-choice items that requires students to transform, substitute, or respond to grammatical items. Students were instructed to fill the blanks with the appropriate forms in the brackets. Each question carried two marks thus bringing the total mark obtainable for the paper 1 to 60 marks.

Validation of instrument

The tests were presented in print form to four secondary school English language teachers for face, and content. The teachers affirmed that the contents are relevant and the page layout, font size, and bold facing of the materials were legible and appropriate for JSS III students. The tests were also presented to two experts in measurement and evaluation. They identified 2 items that contained more of distracters. These items were completely thrown and substituted with suitable ones.

Reliability

The KR-20s obtained for the Grammar Proficiency Tests in the Grammar Test Banks ranged from .82 to .91 with a median of .86. This was considered satisfactory for the use of the instrument in the present study.

Control of sources of invalidation

In view of the fact that it was not feasible to select subjects at random or to assign subjects at random to experimental and control classes, it was important to ensure similarity among the classes in terms of gender, background, organisation and teaching method. In this regard, all the classes were co-educational. All the classes adopt the team teaching approach to English language whereby a teacher teaches English Grammar, another teaches comprehension and summary and yet, a different teacher teaches oral English. The textbook in use in the classes was the Intensive English series by Oluikpe Otagburuagu, Obah & Okolie (2005). The classes were mixed ability groups. Hence non-randomization effect, experimenter bias, novelty and Hawthorne effects were controlled.

Experimental Procedure

A pretest was administered on both groups to check initial group achievement and to help control non-randomization effect, a potential threat to internal validity with this design. Then the study lasted eight weeks using the normal school timetable that allocated English Language 5 periods of 40 minutes each per week. The same teacher taught both groups while the 4 regular classroom teachers observed their classes and took notes of classroom processes in both groups. A basic grammar programme was used. This was programmed into a CD-ROM for the experimental group and presented in print form to the control group. While the experimental group was taught through the aid of a computer, the control group was taught using the conventional method of lecturing and open class discussion. The experimental group had 10 computers for students' use. The computers were networked to the teachers own to enable the teacher call students' work at any time and assess progress. The content covered for both the experimental and control groups were selected from the intensive English for SS III by Oluikpe et al, (2005), which was the textbook in use in secondary schools in Anambra State at the time of this study, and covered the grammatical aspects under study.

Throughout the study, the same subject matter was covered and both groups used the same text. Academic objectives were the same for both groups and the same homework was given. The Drills and practical exercises were also the same and although the experimental group worked in teams at the computer, the control group also works in team during grammatical drills and practices thus equalizing any effect due to co-operative learning. The experimental treatment used was Computer-Assisted Language learning (CALL) while conventional English Language Instruction (CELI) was the control measure. At the end of the treatment, both groups were given a post- test.

Method of data analysis

Mean and standard deviation scores were used to analyse the data collected through the pre– and post-tests.

Presentation of Results

Research Question 1: To what extent will CALL enhance students ability to produce more grammatically correct sentences over a stipulated period of time more than CELI?

Analysis in table 1 reveals that the CALL group obtained higher mean scores than the CELI group. This indicates that CALL enhances students' ability to produce more syntactically correct utterances within the available time more than CELI.

Table 1: Means and standard deviations on grammatically correct sentences produced by groups over a period of 8 weeks.

	CALL N=79		CELI N=81		REMARKS
	X	SD	X	SD	
Words	4.98	0.75	4.07	1.10	CALL
Phrases	4.76	0.88	4.17	1.06	performed
Clauses	4.39	1.07	3.99	1.14	better than CELI
Sentences	4.42	1.06	4.00	1.14	

Research Question 2: To what extent will CALL enable students to accurately transform the order of constituents in a grammatical unit more than CELI?

Table 2: Means and Standard Deviations on accurate transformation of constituents in grammatical units by CALL and CELI groups

Transformational Category	***CALL N=79***		CELI N= 81		REMARKS
	X	SD	X	SD	
Be – Question formation	4.10	1.25	4.01	1.12	CALL > CELI
Have – Question formation	4.18	1.17	3.68	1.25	CALL > CELI
Forming negative sentences	4.06	1.22	4.49	0.88	CALL < CELI
Pronoun modification	3.99	1.24	3.48	1.09	CALL > CELI
Relative clause formation	3.96	1.26	2.48	1.67	CALL > CELI
Integration of units	4.23	1.14	3.29	1.40	CALL > CELI

All the items in table 2 had higher mean scores for the CALL group except item 3, which scored higher mean for the CELI group. This shows that CALL enables students to accurately transform the order of constituents in grammatical units more than CELI.

Research Question 3: To what extent will CALL enhance students' achievement in correlative substitution more than CELI?

Table 3: Means and Standard Deviations on achievements in correlative substitution by CALL and CELI groups .

Transformational Category	***CALL N=79***		CELI N= 81		REMARKS
	X	SD	X	SD	
Single slot substitution	4.96	0.77	4.24	1.01	CALL
Double slot substitution	4.70	0.92	4.02	1.24	>
Multiple slot substitution	4.00	1.24	3.99	1.27	CELI
Moving slot substitution	4.00	1.23	3.68	1.26	

This result shows that with mean scores of 4.96 and 4.70, 4.00 and 4.02, the CALL group performed better than the CELI group whose mean scores were 4.24, 4.02, 3.99 and 3.68. According to this analysis, CALL enhances students' achievement in correlative substitution more than CELI.

Research Question 4: To what extent will CALL enable students to respond freely to grammatical agreement drills more than CELI?

Table 4: Means and Standard Deviation on free response to grammatical drills by CALL and CELI Table 4 indicates that item 1 scored below the acceptable mean of 3.00 for both the CALL and the CELI group while item 3 scored below

the acceptable mean for the CELI group only. The other items scored above the acceptable mean scores for both groups. The conclusion is that CALL enables students to respond freely to grammatical agreement drills more than CELI.

Grammatical Drill	*CALL N=79*		CELI N= 81		REMARKS
	X	SD	X	SD	
1. Chain Drills	2.54	0.36	2.20	0.52	CALL
2. Dialogue Repetition Drills	3.02	0.12	3.86	0.09	>
3. Discrimination Drills	3.12	0.20	2.14	0.41	CELI
4. Verbatim repetition Drills	3.86	0.51	3.60	0. 58	

DISCUSSION

Analysis of responses to research question 1 to 4 reveals that CALL enhanced students' ability to produce grammatical sentences, to accurately transform the order of constituents in grammatical units, to effectively substitute one grammatical unit for another, and to respond freely to grammatical drills more than Conventional English Language Instruction. (CELI). One factor that made it possible for the CALL group to demonstrate competence in generative grammar was the availability of help and options facility in CALL programs. The students were able to request the help or option parts of the programme to learn more about rules and appropriacy of grammatical forms and were then able to choose from a variety of options, clauses, and substitutes that create factually correct sentences and to edit the verbs, rendering them correct and appropriate to the meaning of the sentences. This facility was absent in the CELI text. The students only had to wait for their teachers to help them with grammatical hitches and explain the forms to them. They also consulted the textbooks, which set out a sequence or points of grammar, embedding them in contrived dialogues, or texts, whose meaning was mediated through pictures that accompanied the language form being presented. The class studied these dialogues and texts as a whole and the teacher attempted to ensure comprehension of each part through lengthy questions-and-answer routines. This was quite time consuming and left students with limited knowledge of a variety of options, restricting the extensive use of language resources and obstructing the pace of instruction

The other factor responsible for improved achievement in CALL was that the computer was providing the students with immediate feedback on their performance. This encouraged the students to attempt more exercises without delay. Chapelle (1990) noted that one of the greatest strengths of CALL is that the computer evaluates and returns detailed feedback messages for every sentences that the student forms. In addition, the computer worked as fast as the students. Using the computer, each group worked according to the pace of its members. The computer also called up grammatical drills, programs and facilities faster than it would take a teacher to do so. Thus, the CALL group was able to cover much within the available time, using a variety of drills and practices, and were able to acquire a generative capacity to transfer some of the routines and patterns to new situations and to create novel combinations.

This finding is in line with Chapelle (1990) and Akudolu (2004) who observed that the computer offers students, opportunities to review and practise correct forms and appropriate uses of the forms in contexts requiring attention to both meaning and form. Therefore, the ability of the CALL group to generate accurate grammatical structures can be attributed to the versatility of presentation of material, computer analysis of student performance, instant feedback and flexibility of the computer programmes.

IMPLICATIONS OF THE FINDINGS

The findings of this study have far reaching implications for English language teaching and learning in UBE in Nigerian Secondary Schools. The finding that CALL encouraged generative grammar within limited time is desirable. This implies if schools are to provided with computers for instructional use, the teacher may be able to structure classroom activities in such a way that students will cover much within the constraints of time.   Another implication of this study is that the adoption of CALL can go a long way in reducing the problems of poor grammatical performance of students in the UBE programme since CALL can be used to conceptualize grammar or make it interesting through games or other activities.

RECOMMENDATIONS

Based on the findings of this study, it is hereby recommended that:

[1]   For improved English language instruction in the UBE, more teachers should be trained in computer-assisted language learning and teacher-training institutions should make computer literacy a compulsory requirement for language teachers.

[2]   Existing course in special methodology in language teaching should be updated to include topics in computer – assisted language learning.

[3]   Language teachers should collaborate with the language development center of the NERDC to produce CALL materials suitable for the Nigerian learners.

[4]   Agreement between grammatical units should receive more attention in Language classrooms.

[5]   Schools that have computers should encourage English language teachers to use CALL in their classroom.

[6]   Government at all levels should strive to provide schools with high quality teaching materials such as computers, supplementary readers and textbooks.

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