EFFECTS OF COMPUTER ASSISTED INSTRUCTION ON PUPILS' RETENTION IN WORD-FORMATION IN ENGLISH LANGUAGE IN NIGER STATE, NIGERIA

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Abstract
The study investigated effects of Computer Assisted Drill and Practice Instruction on Pupils Retention in English Language Word-formation in Niger State. The study adopted quasi–experimental design. Purposive sampling was used to select four schools from 2,603 schools in the seven educational zones in Niger State. 120 pupils were drawn as study sample from a population of 135,245 primary two pupils'. The study sample comprised of 62 males and 58 females. Control group was taught with lecture method while experimental group was taught with CAI Drill and Practice package. Two research questions and two hypotheses guided the study. English Language Achievement Test (ELAT) was used for data collection. The CAI package and ELAT were face validated by experts while the reliability was established using Kuder Richardson (KR 20) analysis and the reliability coefficient was found to be r = 0.74. Mean and standard deviation were used to analyze the research questions while Analysis of Covariance (ANCOVA) was used in the testing of the hypotheses. Findings show that CAI drill and practice package enhanced retention of English language word-formation. It is recommended that, primary school English language teachers should employ CAI packages to teach English language concepts.

Keywords: English Language, Word-formation, Computer Assisted Instruction, Drill and Practice, Achievement, Retention

Introduction

English language is the most widely used language in the world. English is very crucial as a medium for teaching and learning of all school subjects in the Nigeria educational system and is a pre-requisite for admission into nearly all programmes in the universities. The role English language plays in the world of communication and scientific advancement cannot be over emphasized. The government of Nigeria considers English language as a core subject in the school curriculum and a major medium of communication both within and outside the school system. The national policy on education, Federal Republic of Nigeria (FRN, 2004) demands ability to communicate effectively at the primary school level. The policy demands that the medium of instruction at primary school shall be the language of the environment for the first three years and from the fourth year English language shall be taught as a subject and used progressively as a medium of instruction.

The objective of this study was to find out the effects of computer assisted instruction CAI drill and practice package and lecture method on the mean retention scores of pupils' taught English Language Word-formation and the mean retention scores of male and female pupils' taught the same concept using alphabet A-J.

Retention is the ability to reproduce the learnt concept when the need arises (Damiral, 2004). Retention involves the ability to recall the content that has been given within a specific period of time. It is the ability to demonstrate what the learner has learnt and being able to demonstrate his/her cognitive skills in the subject (Wushishi, Danjuma, & Usman, 2013). However, pupils' ability to reproduce the learnt material could be through the use of

appropriate instructional methods like innovative teaching strategies in teaching. Learning could be made more effective, lasting and enjoyable and topics that are abstract to students could be made clearer, easier and meaningful for better achievement of concept learnt. Unfortunately, in our present day schools, most teachers' do not carry on diction in their teaching of English language and this affects students' knowledge of word-formation.

Word-formation is a serious problem among learners particularly in primary and secondary school level; this problem is largely due to the fact that dictation which was a very vital tool in word-formation or learning of words has been relegated to the background. Wise (1992) defined word-formation as an aspect of language learning which prepares an individual for language use during the primary school years. In other words, it is an act of acquiring new words to equip oneself for effective communication orally or in written form. Word-formation is very important in a child's learning because it increases pupils' acquisition of new words and also enhances flexibility in their expression and communication both within and outside the school. Pupils' ability to form words using various learning activities thereby expanding the breadth and depth of vocabulary knowledge e.g. the use of cross-word puzzles is very important in any learning process especially now that Nigerian school system is shifting from theory (lecture method) to practice.

Lecture method of teaching is the most widely used method employed by teachers in our institutions of learning. In this method of teaching, students are encouraged to sit quietly, listen and perhaps take down notes. Adeoye (2002) describes lecture method as one which involves the lecturer talking according to pre-planned, structured scheme while the students listen and make notes. Adeoye (2002) explained that it might not be easy to write off lecture method stressing that this method of teaching is not ideal for immature learners especially primary school pupils. It makes learners considerably passive and does not carter for individual differences in learners.

With the advent and introduction of ICT into the field of education it became necessary to shift from lecture method of teaching to use of ICT interactive learning devices such as computer which makes leaner to be actively involved in the learning process unlike lecture method of teaching which makes learners passive and had contributed to learners 'poor achievement in English language. Computer Assisted Instruction (CAI) is a relatively new educational innovation in primary school classrooms in Nigeria and Niger State in particular. Nigeria as a developing nation requires solid foundation in computer assisted instruction at the primary school level if it must compete favorably with other nations of the world (Aniah, 2015).

Nwoji (2002) stated that students' retention could be attained through the use of CAI packages as medium of instruction in the teaching and learning of word-formation because it makes learning more meaningful and enjoyable. Kara (2008) investigated the effect of CAI package on physics students' retention in the area of (force and pressure) the experimental group that was taught with CAI had higher retention level than control group that was taught with conventional lecture method. Based on the above fact, it has become imperative for Nigeria and indeed Niger State to integrate and use CAI in teaching English language word-formation in primary schools to enhance students' retention.

Computer Aided Instruction (CAI) package according to Ash (2005) is an interactive instructional technique whereby a computer is used to present the instructional material and monitor the learning that takes place. Umaru (2003) defined Computer Assisted Instructional package as a program of instruction presented as computer software for instructional purposes. In line with this, Basturk (2005) referred to CAI as the use of the computer as a

tool to facilitate and improve instruction. The following are types of Computer Assisted instruction, drill and practice, tutorial, games, simulation, discovering and problem solving. In this study, the CAI that was used to carry out the research is drill and practice.

Drilling mean listening to a model provided by a teacher or a tape or another student and repeating what is heard. Drills are a form of very controlled practice. In drill exercises, there is one correct answer and the main focus is on 'getting it right' i.e on accuracy. Drills are usually conducted chorally (i.e. the whole class repeats) then individually. There is also the possibility of groups or pairs of students doing language drills together. Its' main purpose is to help learners master materials at their own pace. Drills are used as reinforcement tool and are mainly used for beginners or for students who are experiencing learning problems. Onyejekwe (2006) described drill as the condition in which a learner is encouraged to practice a skill over and over again until he masters such skill. Drill and practice software packages provide feedback to students, explain how to get correct answer and contain a management system to keep track of student progress. Onyejekwe (2006) stated that drill and practice is probably the most common and best known educational application of the computer. Such repetitive actions are employed in the learning of mathematics, reading, word-formation, and other basic skill areas. Drill and practice exercises with the appropriate software can enhance the daily classroom experience (Julie, 2015).

The procedure for using CAI drill and practice package instructional delivery in teaching letters A-J, demand that only one letter at a time is treated. For instance, if a child gets an option or answer correct after teaching letter "A" the teacher proceed to the next letter but if the child gets the option wrong, revisit the same letter until the child gets it right. This procedure is applicable to letters A-J used in this study. The study also determines the influence of CAI drill and practice on gender retention using letters A-J.

The concept of gender is used to describe those characteristics of men and women that are societal determined, in contrast to those which are scientifically determined which affect the use of computer in teaching and learning of science concepts (Nworgu, 2005). Gender difference is one of the factors affecting learning and many researchers have focused their attention on studies relating to its effect on pupils' academic achievement. Some findings indicated that significant differences existed between the achievement of male and female students. Abdullah, Jebreen, Aieman and Sadeq (2009) in their use of CAI for teaching English grammar revealed that there was significant difference in achievement in favour of male students. Noabi (2003) study shows that there was no significant difference in the mean achievement of male and female students while other findings showed that gender factor had no influence on students' achievement (Yusuf, 2004). The author noted that gender has no impact on students' academic achievement. This evidence in academic achievement due to gender had resulted in the need to verify the influence of computer assisted instructional packages on pupils' English language word-formation. This suggests why gender in academic had remained an issue of discussion and inconclusive among scholars. However, from the studies made so far on the use of CAI packages, no research has been carried out on the effects of CAI packages on retention and gender on pupils' English language word-formation in Niger State.

It is against this background that the study investigated the effects of computer assisted drill and practice instructional package on pupils' retention in English language word-formation in Niger State.

Statement of the Problem

The retention of pupils' in English language has not been encouraging despite its' importance to national development. The researcher observed that pupils have serious problems with English language word-formation because of mother tongue interference; pupils' use of cell phones or handsets for text messages which has negative impact on their learning because of short cut in word-formation. Pupils' poor retention has been attributed to poor teaching methods employed by teachers' and the non-utilization of instructional materials, poor knowledge of the subject and expression by teachers and inadequate relevant English language textbooks that contain activities on word-formation. Furthermore, some pupils cannot pronounce English language words correctly. This has contributed to pupils' poor formation in English language words at the primary and secondary school levels. This poor retention calls for urgent action to reverse the situation from primary school which is the foundation for other levels of education. Thus, to enhance the teaching of word-formation, the pupils must first know their alphabets and should be able to listen to people very well and also be able to inculcate in them the skills involved in listening. It was against this background that the researcher used CAI drill and practice package as media of instruction to find out its' effects on pupils' retention in word-formation in Niger State.

Research Questions

(i) What are the mean retention scores of pupils taught English language word-formation with CAI drill and practice package and lecture method using alphabet A-J?

(ii) What are the mean retention scores of male and female pupils taught English language word-formation with CAI drill and practice package and lecture method using alphabets A-J?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 Alpha Level of significance:

HO_1: There is no significant difference in the mean retention scores of pupils taught English language word-formation with CAI drill and practice package and lecture method using alphabet A-J.

HO_2: There is no significant difference in the mean retention scores of male and female pupils taught English language word-formations with CAI drill and practice and lecture method using alphabet A-J.

Methodology

This study adopted the quasi- experimental design. Specifically, the quasi-experimental design is the non-equivalent control group design. This is because intact classes (i.e pre-existing groups) were used, since randomization was not possible.

The design layout:

Group	Pretest	Treatment	Posttest	Retention
Experimental	O_1	X	O_2	O_3
Control	O_1		O_2	O_3

Where:

O_1 refers to pre-test performance,

O_2 refers to posttest performance,

O_3 refers to retention performance and

X refers to treatment for Experimental - CAI Condition

The study was carried out in Niger State due to the fact that the state is one of the states the primary school pupils have been identified with the problem of poor achievement in

English language. Niger State comprises of 25 Local Government Areas grouped into seven educational zones. These zones include Bida, Kutigi, Minna, Suleja, Kontagora, Rijau and New-Bussa. The choice of the schools in the seven educational zones is for equal representation and generalization of outcome of the study.

The population of the study comprises all the primary two pupils in public schools in the seven educational zones in Niger State. The number of public primary schools in the seven education zones is 2,603. The population of primary 2 pupils in these schools is 135,245. (Niger State Universal Basic Education Board, 2014).

The researcher adopted multistage sampling techniques. 120 pupils were drawn as sample from the seven Educational Zones made up of 25 Local Government Areas in Niger state. The study sample consists of 62 males and 58 females. Purposive sampling technique was used to draw four government owned public primary schools from three Educational Zones in Niger State comprising of (Zone A, B and C).

The instrument that was used for collecting the data of this study is the researcher made English language Achievement Test on Word-formation (ELAT). The English Language Achievement Test covered word-formation using ten English language alphabets A-J. The chosen concepts were selected from primary two pupils English language syllabus and it corresponds to what the pupils should be taught in their school at the time of study. Each item of the instrument was based on word-formation from English language alphabets or letters.

The English language test items on (word-formation) were subjected to face and content validity by four experts, two from school of General Studies, Federal University of Technology, Minna and the other two from the Department of English language, Niger State College of Education, Minna. The experts critically examined all the words-formed using alphabets A-J. They were to ascertain the relevance of the words formed to the content and extent to which the content covered the topics they are meant to cover. The test items and contents of the package were later modified on the basis of suggestions and recommendation of experts. Furthermore, the content of validation was carried out using table of specification.

The developed instructional package was also validated by four experts, two of them were from Science Education Department, Federal University of Technology Minna, Niger State and two from Department of Arts Education, University of Nigeria, Nsukka (UNN). They were requested to validate the package in terms of the appropriateness of the package for the chosen topics, clarity and simplicity as well as its suitability for the level of primary two pupils and possible errors in the structuring of the package. The experts comment and suggestions were used to correct some mistakes while their suggestions and recommendations were used to improve on the package.

The test on English language word-formation was administered to 30 primary two pupils' who constitute part of the population but were not used in the main study. The trial testing helped the researcher to determine the appropriate timing of the test as well as identify any problem which may affect the administration of the instrument during the study. The scores of the 30 pupils' were subjected to estimate of temporal stability using test-retest method with two weeks interval. The two set of scores obtained were subjected to Kuder Richardson (KR 20) correlation analysis. A correlation coefficient of $r = 0.74$ was obtained from the analysis. This value therefore revealed that the instrument is reliable for English Language Achievement Test on retention (ELAT).

The instrument that was used for data collection in this study was English language Achievement Test on retention (ELAT). Prior to the commencement of the experiment (ELAT) on word-formation was administered on all the primary 2 pupils as pretest in the participating schools. Similarly at the expiration of the experimental period (four weeks) the post-test on English language Achievement Test (ELAT) was administered on the experimental and control groups with the aid of English language research assistants. The scores obtained from the experimental and control groups were used to determine the academic retention of both groups. The scores of the experimental and control group on the posttest were computed, recorded and use for data analyses.

The instrument (ELAT) was administered to the experimental and control group as pre-test. To reduce the retest effects, the questions were reframed and administered as post-test. On the scoring of the test items, marks were awarded for correct responses based on marks assigned to each section and zero for incorrect answer.

The research questions were answered using mean and standard deviation. The hypotheses for the study were analyzed using Analysis of Covariance (ANCOVA) using Statistical Package for Social Sciences (SPSS).The significance of the various statistical analyses were ascertained at 0.05 alpha level

Results

The result was presented in line with research questions and hypotheses that guided the study.

Research Question 1: What are the Mean Retention scores of Pupils taught English Language Word Formation with CAI Drill and Practice and Lecture Method using alphabet A-J?

Table 1: Mean Retention Scores of Pupils taught English Language Word Formation with CAI Drill and Practice and Lecture Method.

Group	N	Pretest		Posttest		Mean Gain
		Mean	SD	Mean	SD	
Experimental	60	19.47	5.23	35.00	2.51	15.53
Control	60	16.27	7.29	25.80	8.94	9.53
Total	120	17.87	6.26	30.40	5.73	12.53

Table 1 shows the word formation posttest mean scores of Experimental group (CAI Drill and Practice) and Control (Lecture Method) to be 35.00 and 25.80 respectively. This shows that CAI Drill and Practice enhanced pupils' achievement in word formation more than lecture method.

HO_1: There is no significant difference in the Mean Retention Scores of Pupils taught English Language Word-Formation using alphabet A-J with CAI drill and practice package and those taught using lecture method.

Table 1: Summary of ANCOVA for Retention Scores of Pupils taught English Language Word-Formation using CAI Drill and Practice package and Lecture Method

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Decision
Corrected Model	1482.659	2	741.329	30.174	.000	
Intercept	2885.586	1	2885.586	117.450	.000	
Posttest	378.526	1	378.526	15.407	.000	
Method	253.331	1	253.331	10.311	.002	S
Error	2874.541	117	24.569			
Total	124944.000	120				
Corrected Total	4357.200	119				

Significant ($p < 0.05$)

Table 1 shows that there is significant difference in the mean retention scores of pupils taught English Language word formation with CAI Drill and Practice and lecture method since the $F(1,117) = 10.311$, $p = .002$ which is less than 0.05. Hence the null hypothesis was rejected.

Research Question 2: What are the Mean Retention Scores of Male and Female Pupils taught English Language Word-Formation with CAI Drill and Practice?

Table 2: Mean Retention Scores of Male and Female Pupils taught English Language Word Formation with CAI Drill and Practice.

		Pretest		Posttest		
Experimental Gender	N	Mean	SD	Mean	SD	Mean Gain
Male	28	19.14	6.00	34.86	2.85	15.72
Female	32	19.75	4.54	35.13	2.64	15.38
Total	60	19.47	5.23	35.00	2.72	15.55

Table 2 shows that the mean retention scores of male and female pupils taught Word-Formation with CAI drill and practice are 34.86 and 35.13 respectively with SDs of 2.85 and 2.64 respectively. The mean achievement score of female pupils is slightly higher than that of their male counterparts. The mean gain of male pupils is 15.72 while that of their female counterparts is 15.38. This suggests that both male and female pupils achieved almost equally when taught English language Word Formation using CAI drill and practice.

HO_2: There is no significant difference in the Mean Retention Scores of Male and Female Pupils taught English Language Word Formation using alphabet A-J with CAI drill and practice package.

Table 2: Summary of ANCOVA for Retention Scores of Male and Female Pupils taught English Language Word Formation using alphabet A-J with CAI Drill and Practice Package

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Decision
Corrected Model	23.777	2	11.888	.892	.416	
Intercept	276.190	1	276.190	20.715	.000	
Posttest	5.472	1	5.472	.410	.524	
Gender	20.293	1	20.293	1.522	.222	NS
Error	759.956	57	13.333			
Total	73168.00	60				
Corrected Total	783.733	59				

Not Significant ($p > 0.05$)

Table 2 shows that there is no significant difference in the mean retention scores of male and female pupils taught English language word formation with CAI drill and practice since the $F(1,57) = 1.522$, 0.222 which is greater than 0.05. This suggests therefore that CAI drill and practice is not gender sensitive in enhancing retention in English language word formation. Thus the null hypothesis 2 was accepted.

Discussion

The findings of this study showed that CAI Drill and practice package enhanced pupils' retention in English Language Word-formation more than lecture method. This result agrees with Nwoji (2002) who stated that students' retention could be attained through the use of CAI packages as medium of instruction in the teaching and learning of word-formation because it makes learning more meaningful and enjoyable. Kara (2008) work is in agreement with the findings of Nwoji (2002). Kara (2008) investigated the effect of CAI package on physics students' retention in the area of (force and pressure) the experimental group that was taught with CAI had higher retention level than control group that was taught with conventional lecture method. There was no significant difference in the mean retention scores of male and female pupils' taught English language word-formation using CAI drill and practice package. Noabi (2003) study on students' using computer assisted instruction package in tertiary institutions shows that there was no significant difference in the mean retention of male and female students. This suggests why gender in academic had remained an issue of discussion and inconclusive among scholars.

Conclusion

The following conclusions were made based on the findings of this study. The result of this study provides empirical evidence that the use of CAI drill and practice package enhanced pupils' retention in English language word-formation more than the use of lecture method. Pupils' taught English language word-formation with the use of CAI package (experimental group) retained better than the pupils' (control group) taught the same English Language word-formation using lecture method. There was no significant difference in gender retention of pupils taught English Language word-formation with CAI drill and practice package. This implies that gender has no significant effect on retention of pupils' in English language word-formation using CAI drill and practice package. Therefore, the use of CAI drill and practice package enhanced the teaching and learning of English language word-formation.

Recommendations

The following recommendations were made based on the findings of this study:

(i) Since the use of CAI drill and practice enhanced retention of pupils' in English language word-formation, the English language primary school teachers should use it as one of the techniques to be employed in classroom teaching and learning.

(ii) Curriculum developers should embrace and include computer assisted instructional strategies that will bring about improvement in learning, acquisition of critical thinking, problem solving and performance skills in students into the curriculum.

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