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# EFFECTS OF COMPUTER ASSISTED INSTRUCTION ON PUPILS' RETENTION IN ENGLISH LANGUAGE SPELLING 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 Spelling in Niger State. The study adopted quasi–experimental design. Purposive sampling was used to select two 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 II 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. Treatment lasted for four weeks. 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 spelling. Hence, It was recommended that, curriculum planners should infuse CAI packages into English programmes.*

**Keywords:-** *English Language, Spelling, Computer Assisted Instruction, 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, 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 achievement of pupils' in English language at all levels of education especially at the primary school level is poor (Okoro, 2002). Okoro further noted that the problem of poor level of achievement of primary school children is a serious issue in Nigeria. Furthermore, Kolawole (2002) also confirmed that the poor achievement of primary school pupils in English language. The author explained that the poor achievement was due to a number of reasons such as: the use of tribal language in the lower classes of primary school, some pupils do not understand the grammar because their teachers themselves do not know it and in most cases English language teachers in the senior primary schools resort to the use of mother tongue to explain English language even up to secondary school level. Other factors that have been identified as responsible for the poor retention in English language include non-utilization of audio-visual instructional materials, poor English language teaching and expression, poor knowledge of the subject by the teacher, inadequate relevant English language textbooks and use of cell phones or handsets for text messages which have negative impact on pupils' learning because of short cut in spelling of words among others. Hence, the poor retention of pupils' in the subject may be related to pupils' inability to retain what has been taught in class since the mode of communication outside the school is their local language.

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 retention of concept learnt. 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 especially at the primary school level if it must compete favorably with other nations of the world (Aniah, 2015). 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 CAI 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 is drill and practice because it allows for student interaction with computer and enhances repetition of concept learnt. 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 (200e) 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, spelling, 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 proceeds 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 achievement 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 (Victoria, 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. Studies on the influence of gender on achievement have not produced conclusive results. Some findings indicated that significant differences existed between the retention of male and female students while other findings showed that gender factor had no influence on students' retention (Yusuf, 2004). The author noted that gender has no impact on students' academic retention. This evidence in academic retention due to gender had resulted in the need to verify the influence of computer assisted instructional packages on pupils' retention in English language spelling. 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 spelling 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 spelling 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 spelling of words. Pupils' poor retention in English language 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 spelling activities. Furthermore, some pupils cannot pronounce English language words correctly. This has contributed to pupils' poor spellings in English language at the primary and secondary school levels. 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 English language spelling in Niger State.

**Research questions**

1. What are the mean retention scores of pupils taught English language spelling of words with CAI drill and practice package and lecture method using alphabet A-J?
2. What are the mean retention scores of male and female pupils taught English language spelling of words with CAI drill and practice package and lecture method using alphabet A-J?

**Hypotheses**

**$H_{O1}$:** There is no significant difference in the mean retention scores of pupils taught English language spelling of words with CAI drill and practice package and lecture method using alphabet A-J.

**$H_{O2}$:** There is no significant difference in the mean retention scores of male and female pupils taught English language spelling of words with CAI drill and practice package 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 were used, since randomization was not possible. The design layout is as follows:

| | | |
|---|---|---|
| 01 | | 02 |
| 01 | X | 02 |
| | | 03 |
| | | 03 |

Where:
01 refers to pre-test performance,
02 refers to posttest performance,
03 refers to retention-test performance, and
X refers to treatment for Group 1 (Experimental - CAI Condition)

The study was carried out in Niger State due to the fact that the state is one of the states that 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. 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. Source: Niger State Universal Basic Education Board (2014).

Multistage sampling techniques was used to draw 120 pupils from the seven Educational Zones. The study sample consists of 62 males and 58 females. Purposive sampling technique was used to draw two government owned public primary schools from three Educational Zones in the State. The instrument used in collecting data for this study is the researcher made English Language Achievement Test (ELAT). The English Language Achievement Test covered spelling 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 spelling using English language alphabets or letters.

The English language test items on (spelling) was 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 spellings using alphabets A-J. They were to ascertain the relevance of the words spelt to the content and extent to which the content covered the topics they are meant to cover based on the table of specification. The test items and contents of the package were later modified on the basis of suggestions and recommendation of experts.

The developed instructional package was also validated by four experts; two of them were from Educational Technology 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 test on English language spelling was administered to 30 Primary II pupils' who constitute part of the population but were not used in the main 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.

Prior to the commencement of the experiment (ELAT) on spelling 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 group with the aid of English language research assistants. The scores obtained from the experimental and control groups were used to determine the retention level of both groups. The scores of the experimental and control group were computed, recorded and use for data analyses.

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 Science (SPSS). The significance of the various statistical analyses was ascertained at 0.05 alpha levels.

## Results

**Table 1: Mean Retention Scores of Pupils taught English Language Spelling using CAI Drill and Practice and Lecture Method**

| Group | N | Mean | SD |
|---|---|---|---|
| Experimental | 60 | 54.93 | 5.41 |
| Control | 60 | 38.93 | 4.22 |
| **Total** | **120** | **46.93** | **4.82** |

Table 1 shows the English Language spelling mean retention scores of Experimental group (CAI drill and practice) and Control (Lecture Method) to be 54.93 and 38.93 respectively. This shows that CAI drill and practice enhanced pupils' retention in spelling more than lecture method.

**Table 2: Summary of ANCOVA for Retention Scores of Pupils taught English Language Spelling with CAI Drill and Practice and Lecture Method**

| Source | Type III Sum of Squares | Df | Mean Square | F | Sig. | Decision |
|---|---|---|---|---|---|---|
| Corrected Model | 7702.345 | 2 | 3851.172 | 163.190 | 0.000 | |
| Intercept | 3171.316 | 1 | 3171.316 | 134.382 | 0.000 | |
| Posttest | 22.345 | 1 | 22.345 | 0.947 | 0.333 | |
| **Method** | **2185.605** | 1 | **2185.605** | **92.613** | **0.000** | **S** |
| Error | 2761.122 | 117 | 23.599 | | | |
| Total | 274792.000 | 120 | | | | |
| Corrected Total | 10463.467 | 119 | | | | |

Significant ($p < 0.05$)

Table 2 shows that there is a significant difference in the mean retention scores of pupils taught English Language spelling with CAI Drill and Practice and lecture method since the F value (92.613) is significant at 0.000 which is less than 0.05. Thus, the null Hypothesis one ($H_{01}$) was rejected.

**Table 3: Mean Retention Scores of Male and Female Pupils taught English Language Spelling with CAI Drill and Practice**

| Experimental Gender | N | Pretest | | Posttest | | Mean |
|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | Gain |
| Male | 28 | 19.00 | 3.01 | 55.00 | 7.92 | **36** |
| Female | 32 | 20.81 | 2.82 | 54.56 | 6.47 | **33.75** |
| Total | 60 | 19.97 | 3.03 | 54.77 | 7.12 | **34.88** |

Table 3 shows that the mean achievement scores of male and female pupils taught English language spelling using CAI drill and practice package are 55.00 and 54.56 respectively with SDs of 7.92 and 6.47 respectively. The mean achievement score of male pupils is slightly higher than that of their female counterparts. The mean gain of male pupils is 36 while that of their female counterparts is 33.75. This suggests that both female and male pupils achieved almost equally when taught English language spelling using alphabet A-J with CAI drill and practice.

**Table 4: Summary of ANCOVA for Retention Scores of Male and Female Pupils taught English Language Spelling using alphabet A- J with CAI Drill and Practice**

| Source | Type III Sum of Squares | Df | Mean Square | F | Sig. | Decision |
|---|---|---|---|---|---|---|
| Corrected Model | 3.294 | 2 | 1.647 | 0.031 | 0.969 | |
| Intercept | 3721.299 | 1 | 3721.299 | 70.954 | 0.000 | |
| Pretest | 0.436 | 1 | .436 | 0.008 | 0.928 | |
| **Gender** | **1.997** | **1** | **1.997** | **0.038** | **0.846** | **NS** |
| Error | 2989.439 | 57 | 52.446 | | | |
| Total | 182956.000 | 60 | | | | |
| Corrected Total | 2992.733 | 59 | | | | |

Not Significant ($p > 0.05$)

Table 4 shows that F value (0.038) has a probability value of .846. Since 0.846 is greater than 0.05 level of significance, the null Hypothesis two ($H_{O2}$) was upheld. Therefore, there is no significant difference in the mean achievement scores of male and female pupils taught English language spelling with CAI drill and practice.

**Findings and discussion**

The findings of this study showed that the use of CAI enhances pupils' retention of spelling in English language. Abdullah, Jebreen, Aieman, and Sadeq (2009) findings on effect of CAI language learning in teaching grammar support the present study which showed that the instructional method (CAI drill and Practice) was in favour of the experimental group. This result is also in line with that of Tabassum (2004) who found out that the retention of students exposed to CAI was better than that of their counter parts exposed to lecture method. This result agrees with Mishra (2007) who reported that children exposed to computer have positive attitude towards learning than those not exposed to the same treatment. The study carried out by (Alongkorn, Wiphasith, Nipon and Tongluan, 2014) on use of CAI drill and practice on hearing impaired pupils agree with Mishra (2007) that the use of CAI enhanced learner's retention stressing that their satisfaction level was good.

The result of this work 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 spelling 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. In line with the above finding, Gultekin (2011) research on retention on grade 6th pupils' on the subject of (colour), the experimental group was taught with CAI package while the control group was taught with conventional lecture method. Result shows that experimental group retained higher than the control group. The study has relationship with the present study which investigated the effects of CAI drill and practice on pupils' retention in English language spelling in Niger State.

On male and female use of CAI in teaching of spelling, the result agrees with Chado, (2009) who stated that computer is gender friendly. Ezekoka (2010) study on use of computer in teaching and learning oral English language revealed no significant effect on gender retention. This result is in support of Chado (2009) whose findings show that computer is gender friendly. This shows that CAI drill and practice is not gender biased in teaching English language spelling using alphabet A-J. This result also agrees with Noabi (2003) research study on students' using computer assisted instruction in tertiary

institutions. The result revealed that there was no significant difference between the mean retention of males and females in favour of the female students while (Abdullah, Jebreen, Aieman & Sadeq, 2009) in their use of CAI for teaching English grammar revealed that there was significant difference in retention in favour of male students. This result is in disagreement with the findings of Noabi (2003) whose study 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 result of this study provides empirical evidence that the use of CAI drill and practice package enhanced pupils' retention in English language spelling more than the use of lecture method. Pupils' taught English language spelling with the use of CAI package (experimental group) performed better than their counterpart (control group) taught the same concepts using lecture method. There was no significant difference in gender achievement and retention of pupils taught English Language spelling with CAI drill and practice package. Primary school pupils should be trained on the use of computer so as to be computer literate and also fit in, in this present society of technological advancement. Finally, other researchers will use these findings as reference point for other studies.

## Recommendations

1. Since the use of CAI drill and practice enhanced retention of pupils' in English language spelling, the English language primary school teachers should use it as one of the technique to be employed in classroom teaching and learning.
2. Based on the above fact, it has become imperative for Nigeria and indeed Niger State to integrate and use CAI in teaching English language spelling in primary schools to enhance students' retention.

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