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

[1]Aniah Anthony & [2]Shuaibu A. Emmanuel
[1]Department of Educational Technology, Federal University of Technology, Minna
[2]FCT Basic Education Board, Area II Garki, Abuja, Nigeria
Email: anthonyaniah@futminna.edu.ng Phone:08036195385.

Abstract

The study investigated the effects of two modes of Computer Assisted Tutorial, Drill and Practice Instructional packages (CAI) on Primary Two Pupils Retention in English Language Word-formation in Niger State. The study adopted quasi–experimental design. Purposive sampling technique was used to select six schools from seven educational zones in Niger State. The study sample comprised of 87 males and 93 females. Experimental groups were taught with CAI Tutorial, Drill and Practice packages while Control group was taught with lecture method. Three research questions and three hypotheses guided the study. English Language Achievement Test (ELAT) was used for data collection. The CAI packages 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 testing of the hypotheses. The findings show that teaching English language using CAI mode strategy (packages) enhanced pupils' retention. .It is recommended that, curriculum developers should infuse CAI packages into English language programmes so that primary school teachers' can use it to teach English language concepts.

Keywords: Computer Assisted Instruction, English Language, Gender, Retention, Word-formation.

Introduction

The role English language plays in the world of communication and scientific advancement cannot be over emphasized. English Language is Nigeria's lingua franca and the medium of instruction in the educational institutions from the primary schools to tertiary institutions. 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 aim of teaching English language especially at the primary school level of education is to understand the four language skills of listening, speaking, reading and writing.

The Federal Ministry of Education (FME, 2009) in her National Policy on Education demands the ability to communicate effectively in English language at the primary school being the foundation of all levels of education. However, the poor performance in English language at all levels of education especially at the primary school level leaves much to be desired. Kolawole (2002a) also confirmed the poor performance of primary school pupils in English language. Kolawole (2002b) explained that the poor standard 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 the English language even up to the secondary school level.

According to Adama (2009) the non - availability of teaching materials is one of the factors which contribute to poor teaching by teachers and the consistent failure in English language examinations. 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 and lack of textbooks among others.

Nigeria as a developing nation requires solid foundation in its education system especially at the primary school level if it must compete favorably with other nations of the world. 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 pupils' retention (Onwumere, 2012). In this study, the researcher developed computer assisted tutorial, drill and practice instructional packages will be used to teach English language word-formation using alphabets A-J in primary two with a view to

determine their effects on pupils' retention in Niger State. The focus of this work is on effects of two modes of CAI tutorial, drill and practice on pupils' retention on word-formation using letters A-J in English language in Niger State.

Wise (2015) defined word-formation as an aspect of English language learning which prepares an individual for language use during the primary school years. In order words, it is an act of acquiring words to equip oneself for effective communication orally or in written form. The aim of the exercise focuses on how to help develop 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, jigsaws, etc.

Several strategies have been employed to improve pupils performance in school subjects among which is the use of computer assisted instructional packages in classroom instruction. Based on this, the researcher think that the teaching of English language word-formation could be improved upon with the use of CAI packages as medium of instruction rather than the lecture method. Westwood (2010) stated that when selecting computer program (Tutorial, drill and practice) for teaching word-formation the following guidelines should be taken into consideration. It should contain structured and sequential approach, it should have the ability to enable the construction of words lists that reflect the particular needs and interest of the pupils, it should provide activities that requires the pupils to type the words and should use lowercase letters of a reasonable size in a clear font.

Westwood (2010) further posit that it is important for the student to hear as well as see the words being formed stressing that many students find using a computer motivating in improving word-formation. In many classrooms, students could be asked to type their lists using word program. The author believed that students with learning difficulties can develop positive attitude towards drill and practice using programs on computer. Pupils' activity on computer could require them to type words on the computer and check spellings, typing of words in alphabetical order, match letters with pictures or words and word search on cross word puzzles as computer tutorial interactive programme.

A tutorial is a method that seek to teach by example and supply the information to complete a certain task. A tutorial can take one of many forms, ranging from a set of instructions to complete a task to an interactive problem-solving session usually in academic. Another form of tutorial is the internet computer tutorials, which can take the form of a screen recording (screencast), a written document (either online or downloadable), interactive tutorial, or an audio file, where a person will give step by step instruction on how to do something. In computer based education, a tutorial is a computer programme whose purpose it is to assist users in learning how to use parts of a software product such as an office suite or any other application, operating system interface, programming tool, or video game. There are three kinds of software tutorials: video tutorial; is that which the user views, interactive tutorials where the user follows on-screen instructions whereupon he/she does the tutorial exercises and receive feedback depending on his/her action; and webinars where users participate in real-time lectures, online tutoring or workshops remotely using web conferencing software.

Nwoji (2002) describes tutorial as a system that presents initial learning task to the pupils. The characteristics of the tutorial program are text presentation in small step; actual learners participation in the learning process, frequent feedback and reinforcement. The tutorial mode is used in teaching school subjects, like language words and spelling; mathematics, social studies, primary science and French. A tutorial provides pupils with series of lessons. The lessons are designed to help the pupils learn how to use specific program. The pupils can select a lesson from a "menu". The menu is displayed on a monitor. The lesson guides the pupil through series of "displays" or "screens". Also, closely related to tutorial is drill and practice as reinforcement of material learnt followed by feedback.

Drill and practice is an educational strategy that promotes the acquisition of knowledge skill through repetitive practice. It refers to small task such as the memorization of spelling or vocabulary words or practice of Arithmetic facts and may also be found in more sophisticated learning task. Drill and practice involves the use of specific skills such as addition and subtraction or spelling. Its' main purpose is to help learners master materials at their own pace. Drills are used as reinforcement tool and is mainly for the beginning learner or for students who are experiencing learning problems. Drill and practice software packages provides feedback to students, explain how to get correct answer and contain a management system to keep track of student progress. Drill and practice exercises with the appropriate software can enhance the daily classroom experience.

The procedure for using CAI tutorial, drill and practice in instructional delivery is the same, for instance, in teaching letters A-J, only one letter at a time is treated. If a child gets an option or answer correct after the teaching, 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 all the letters A-J. However, the major difference between the two modes is that in drill and practice, there is practice and repetition while tutorial software present concepts or skills and then give students' opportunity to practice to enhance achievement and retention of material learnt.

Wushishi, Danjuma and Usman (2013) stated that retention involves the ability to recall the content that has been given within a specific period of time. The authors explained further that it is the ability to demonstrate what the learner has learnt and being able to demonstrate his/her cognitive skills in the subject. However, pupils' ability to reproduce the learnt material could be through the use of an appropriate instructional material like computer assisted instructional packages 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. CAI packages could also reduce the perceived stereotyped status of pupils' in the learning of English language in the sense that every pupils in the study will have access to the packages and also learn them at his or her convenient time and pace.

Studies on the influence of gender on achievement have not produced conclusive results. Some findings indicated that significant differences existed between the performance of male and female students while other findings showed that gender factor had no influence on students' performance (Yusuf, 2004). This contractive evidence in academic achievement due to gender had resulted in the need to verify how computer assisted instructional packages can influence pupils' retention in English language word-formation.

Statement of the Research Problem

The performance of pupils in English language has not been encouraging despite its importance to national development. The researcher observed that pupils have serious difficulties in comprehension of English language (word-formation) because of non-utilization of instructional materials, poor knowledge of the subject and expression by the teachers, lack of relevant textbooks that contains word-formation activities such as cross word puzzles and jigsaws. This has contributed to poor performance of pupils at the primary school level. Furthermore, the poor retention in English language word-formation could also be attributed to the teacher's teaching methods and non-usage of modern instructional facilities like computer and other internet connectivity. It is against this background that the study investigated the effects of computer assisted tutorial, drill and practice instructional packages on retention of pupils' in English language word-formation in Niger State using alphabets A-J.

Objectives of the Study

The objective of this study was to find out the effects of computer assisted instructional packages on Pupils' Retention in English Language Word-formation Niger State. Specifically, the study determine the effect of:

1. The CAI tutorial, CAI drill and practice packages on the mean retention scores of pupils' taught English Language Word-formation.
2. The CAI tutorial package on the mean retention scores of male and female pupils taught English Language Word-formation.
3. The CAI drill and practice on the mean retention scores of male and female pupils taught English Language Word-formation.

Research Questions

The following research questions guided this study.

1. What are the mean retention scores of pupils taught English Language Word- formation with CAI Tutorial, CAI Drill and Practice and lecture method?
2. What are the mean retention scores of male and female pupils taught English language Word-formation with CAI tutorial package?
3. What are the mean retention scores of male and female pupils taught English language Word-formation with CAI drill and practice?

Research Hypotheses

The following null hypotheses were formulated and tested in this study.

Ho₁: There is no significant difference in the mean retention scores of pupils taught English Language Word-formation with CAI Tutorial, CAI Drill and Practice and lecture method.

Ho₂ There is no significant difference in the mean retention scores of male and female pupils taught English language Word-formation with CAI tutorial package.

Ho₃: 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.

Methodology

The study adopted quasi- experimental design. Specifically, a pretest posttest non- equivalent control group design was used.

Table 1:Research design layout

Groups	Pretest	Treatment	Retention test
Experimental Group 1	01	(CAI Tutorial)X1	02
Experimental Group 2	01	(CAI Drill and Practice)X2	02
Control Group	01	(CLM) X3	02

01 -represents pretest observation on English Language word-formationof experimental group 1, 2 and control group.

02 - represents posttest observation on English Language Word-formation of the experimental group 1, 2 and control group.

X1 - represents treatment for experimental group.1
X2 - represents treatment for experimental group 2
X3 - represents control group without treatment.

The study was carried out in Niger State because the state is one of the states that primary school pupils have been identified with the problem of poor performance in English language and that no serious effort made to address the situation. The state has seven educational zones.

The population of the study comprises all the public primary 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 pupils in these schools is 135, 245.

Multistage sampling technique was employed, purposive random sampling technique was adopted to obtain the six selected public primary schools in the three senatorial zones comprising of seven educational zones in Niger State. The six selected public primary schools were randomly assigned to the two experimental and control group. Two schools were each assigned to experimental and control group. One intact class was assigned to each experimental and control group school. The experimental groups comprised of 53 males and 67 female making a total of 120 pupils while the control group comprised of 34 males and 26 females. The instrument that was used in collecting data for 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.

Four Educational Technology experts from Federal University of Technology Minna validated the packages in terms of the appropriateness of the packages for the chosen topics, clarity and simplicity as well as its suitability for the level of the pupils. The experts comment, suggestions and recommendations were used to improve on the packages. The English language content of the packages were also validated by four experts, two English experts from school of General Studies, Federal University of Technology,

Minna and the other two from the Department of English language, College of Education Minna. The experts assessed the face and content validity of the instrument in relation to primary two pupils' curriculum. The experts examined the instruments in terms of clarity of words formed at the pupils level of understanding and agreement of words formed with the test blue print.

The reliability of the instrument was obtained using a sample size of 30 primary two pupils' who constitute part of the population but were not used in the main study. This 30 pupils were subjected to a test-retest method of reliability at an interval of two weeks. Hence, two set of scores were obtained and subjected to Pearson Product Moment Correlation Co-efficient formula (PPMC). A correlation coefficient of $r = 0.74$ was obtained from the analysis.

The instrument that was used for data collection in this study was (ELAT) administered to the pupils as experimental treatment. The scores obtained from both the experimental and control group served as post test scores in the study, the scores was used to determine the academic retention of both groups. The scores of the experimental and control group on the post test were computed, recorded and use for data analyses. The research questions were answered using Mean and Standard Deviation. The hypotheses 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 levels. The result was presented in line with the 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 Tutorial, CAI Drill and Practice and Lecture method using alphabet A-J?

Table 2: Mean Retention Scores of Pupils taught English Language Word-Formation with CAI Tutorial, CAI Drill and Practice and Lecture Method using alphabet A-J.

Group	N	Post-test Achievement		Retention		Mean Difference
		Mean	SD	Mean	SD	
Expt.1 (CAI Tutorial)	60	31.73	5.84	31.13	4.49	0.60
Expt. 2 (CAI Drill and Practice)	60	35.00	2.51	34.73	3.64	0.27
Control (Lecture Method)	60	25.80	8.94	28.67	6.47	-7.13

Table 2 shows word formation mean retention scores of Experimental 1 (CAI Tutorial) Mean 31.13, SD 4.49 and a mean difference of 0.60.Experimental 2(CAI Drill and Practice) Mean 34.73, SD 6.47 with a mean difference of 0.27 and Control (Lecture Method) Mean 28.67, SD 6.47 has a mean difference of -7.13respectively.

Ho₁: There is no significant difference in the mean retention scores of pupils taught English Language Word-Formation with CAI Tutorial, CAI Drill and Practice and lecture method using alphabet A-J.

Table 3: Summary of ANCOVA for Retention Scores of Pupils taught English Language Word-Formation with CAI Tutorial, CAI Drill and Practice and Lecture Method using alphabet A-J.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Decision
Corrected Model	1268.741	3	422.914	17.357	.000	
Intercept	5225.552	1	5225.552	214.470	.000	
PosttestCovariate	151.763	1	151.763	6.229	.013	
Method	527.899	2	263.950	10.833	.000	S
Error	4288.237	176	24.365			
Total	184288.000	180				
Corrected Total	5556.978	179				

Significant (p < 0.05)

Table 3 shows F value (10.833) with df (2, 176) and P-value of 0.000. Since, P-value is less than 0.05. Therefore, there was significant difference in the mean retention scores of pupils taught English Language word formation with CAI Tutorial, CAI Drill and Practice and lecture method using alphabet A-J.The null hypothesis was therefore rejected.

Research Question 2: What are the mean retention scores of male and female pupils taught English language Word Formation using alphabet A-J with CAI tutorial package?

Table 4: Mean Retention Scores of Male and Female Pupils taught English Language Word Formation using alphabet A-J with CAI Tutorial Package.

Expt. 2 (CAI Tutorial Package) Gender		Posttest		Retention		Mean Gain
	N	Mean	SD	Mean	SD	
Male	25	32.23	4.85	28.80	4.16	-3.43
Female	35	31.47	5.63	32.80	3.98	1.33
Total	60	30.40	6.53	31.13	4.49	-1.05

Table 4 shows the mean retention scores of male and female pupils taught English language word formation using alphabet A-J with CAI tutorial package. Male mean score28.80, SD 4.16 and Female mean score of 32.80, SD 3.98 with mean difference of -3.43 for males and 1.33 for females.

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 tutorial package.

Table 5: Summary of ANCOVA for Retention Scores of Male and Female pupils taught English Language Word Formation using alphabet A-J with CAI Tutorial Package.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Decision
Corrected Model	233.572	2	116.786	6.982	.002	
Intercept	1412.305	1	1412.305	84.440	.000	
Posttest	.239	1	.239	.014	.905	
Gender	172.726	1	172.726	10.327	.002	S
Error	953.361	57	16.726			
Total	59344.000	60				
Corrected Total	1186.933	59				

Significant (p < 0.05)

Table 5 shows that there is a significant difference in the mean retention scores of male and female pupils taught English language Word Formation using alphabet A-J with CAI tutorial package .Since, the F value (10.327) with df (1,57) is significant at probability level of 0.002 which is less than 0.05.

Research Question 3: What are the mean retention scores of male and female pupils taught English language Word Formation using alphabet A-J with CAI drill and practice?

Table 6: Mean Retention Scores of Male and Female Pupils taught English Language Word Formation using alphabet A-J with CAI Drill and Practice.

Expt. 2 (CAI Drill and Practice) Gender		Posttest		Retention		Mean Gain
	N	Mean	SD	Mean	SD	
Male	28	34.86	2.85	34.14	4.81	-0.72
Female	32	35.13	2.64	35.25	2.14	0.12
Total	60	35.00	2.72	34.73	3.64	-0.3

Table 6 shows the mean retention scores of male and female pupils taught English language word formation using alphabet A-J with CAI drill and practice. Male mean score34.14, SD 4.81 and Female mean score 35.25, SD 2.14 respectively with mean gains of -0.72for males and 0.12 for females.

Ho$_3$: 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.

Table 7: 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.

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	73168.000	60				
Corrected Total	783.733	59				

Not Significant (p > 0.05)

Table 7 shows that there was 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. Hence, the F value (1.522) is not significant at probability level of 0.222 which is greater than 0.05. Therefore, the null hypothesis was upheld or accepted.

Discussion of Findings

Table 2 shows that Experimental 1 (CAI Tutorial)recorded higher mean retention scores in word formation followed by Experimental 2 (CAI Drill and practice), followed by the control group. Table 3 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. She further stated that CAI increases motivation in children while she remarked that children using computers are highly motivated to complete assignments and demonstrate high level of curiosity, retention and personal ownership of project.

Table 4 shows that female pupils have higher retention level when taught English language word-formation using alphabet A-J with CAI tutorial package than their male counterpart. Table 5the result also agrees with Ogbonna (2007) whose result indicated that female pupils' retained more than their male counterpart in word-formation. Ogbonna's result also agreed with this result as the result established a significant difference between method and gender retention. The differential effect of this teaching technique on gender was also determined and female subjects retained significantly better in word-formation content than their male counterparts while Aniah (2015) also attest to the view that a great number of female pupils demonstrate a high degree of understanding of English language than the male students.

Table 6 revealed that female pupils have higher retention level when taught English language word formation using alphabet A-J with CAI drill and practice than their male counterpart.

Table 7 result is in support of James (2000) who examined the effects of Drill and practice on learners' performance while Fred (2006) investigated the effects of simulation/Drill and practice on learners' performance. Both studies favoured each of the strategies as a means to promote higher academic retention to those of conventional teaching methods. The review showed that gender difference did not affect their academic performance. This indicates that drill and practice package is not gender biased in enhancing retention of male and female pupils' English language word-formation.

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 tutorial, CAI drill and practice packages enhanced pupils' retention in English language word-formation more than the use of lecture method.

Secondly, pupils' taught English language word-formation with the use of CAI packages (experimental groups) retained better than their counterpart taught the same English Language word-formation using lecture method. Female pupils' performed slightly higher than male pupils' using CAI tutorial, CAI drill and practice packages.

Recommendations

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

1. Since the use of CAI packages enhances retention of pupils' in English language word-formation, the English language primary school teachers should use it as one of the strategies to be employed in classroom teaching and learning.
2. Workshops / Seminars should be organized by the Government for primary schools English language teachers to enable them learn how to develop software packages and also learn how to use computer in teaching English language concepts especially word-formation and other topics in English language.
3. Primary school teachers should be encouraged to be computer literate. This will enable them to appreciate and use CAI packages to promote effective teaching and learning among others.

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