

Effects of Cooperative and Computer Assisted Learning Methods on Senior Secondary School Students' Academic Achievement in English Language in Yenagoa

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ABSTRACT

The study investigated the Effects of Cooperative and Computer Assisted Learning Methods on Senior Secondary School Students' Academic Achievement in English language. The study was limited to students' academic achievement in English vocabulary. The objective of this study is to determine the academic achievement of students taught English Vocabulary through the Cooperative, Computer Assisted Learning and the Traditional Method. Two research questions guided the study. The quasi-experimental pretest-posttest design was adopted. 178 sampled students were used. The instructional procedure, objective test questions adopted from the Intensive English for Senior Secondary school and one-on-one interaction with students were the main instruments used in gathering data for this research work. The findings of the study reveal that Cooperative Learning and the Computer Assisted Learning methods increased students' academic achievement in English Vocabulary. It was recommended that public schools are provided with computers facilities and also the Cooperative and Computer assisted learning methods should be incorporated as methods used in the teaching of English Language as a whole.

Key Words: Cooperative and Computer Assisted Learning, Methods of Teaching English Language in Senior Secondary Schools, Students Academic Achievement Test in English Language in Yenagoa.

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1 Introduction

The most crucial heritage left behind in Nigeria by the British colonial masters is the English language. It is the language used by the government, for business transactions, education, media, literature as well as internal and

international communication. It is what is being used for instruction in schools, minutes taking; it is the language used by the legislature and also for court discourses, to mention but a few. The English language is a compulsory subject in schools, from primary to tertiary level. The English language is used as an official language

in Nigeria. (Spencer, 1971; Banjo, 1996). The English language is a necessary requirement for admission into institutions of higher learning and acquisition of white collar jobs.

It is however important to note that for a student to succeed in English language vocabulary, students ought to pay attention to reading. For one to be able to function in today's society, reading skill is required. There are many adults who cannot even understand instructions on a medicine bottles, road signs and warnings. Reading is a vital skill in getting a good job. In specific terms, Gleen, (2014) states that, reading opens one up to a knowledge base that in turn brings awareness. If one is able to read, then the tendency of writing is guaranteed. Reading is a key skill in finding a desirable job because documents such as emails, bulletins, memos, reports ought to be read and responded to thus without good reading and comprehension skills one may find him or herself in a shamble. Reading is required for the understanding of comprehension passages, least of all are examination questions. One's inability to read an examination question is an open check to failure already (Effiong, Ekpo and Udoh, 2016; Udosen and Ekpo, 2016).

Reading helps one to understand what another person is communicating. Evidence from research suggests that children who read for pleasure on a daily bases do significantly well in reading tests than those who do not read and also expand their vocabulary base with increased general knowledge and a better understanding of other cultures. Pretorius, (2014) rightly pointed out that research findings have over the years shown a direct relationship between reading

proficiency and academic achievement at all ages, from the primary school right through to university level: students who read often with understanding always have better grades in school. similarly, The Ontario Government, (2003) cited in Ask.com, (2014) also believes that reading is the pillar for success and those children who find it difficult to read during their early stage in education struggle to succeed in academics, compared to children who do not have such difficulty.

In addition, according to Pekka, (2014), vocabulary is regarded as the crux of communication. Folsie, (2004) says no meaning can be conveyed without vocabulary. This goes a long way to show how important vocabulary is to communication. The relevance of vocabulary learning cannot be over-emphasized; Nation, (2004) opines that the acquisition of a good vocabulary enables the development and improvement of other skills. Accordingly, improving ones vocabulary has a positive relationship in building language proficiency as a whole in an individual. Furthermore, vocabulary is not an end in itself rather a rich vocabulary enhances listening, speaking, and writing. He finally puts it that instead of putting vocabulary side by side with the other language skills, it would be more useful to consider it as the crux of language proficiency (Etim, Upula and Ekpo, 2016; Effiong, and Ekpo, 2016; Akpabio and Ogiriki, 2017).

English vocabulary as defined by the Oxford Learners Dictionary (2015), is a body of words an individual have knowledge and can make use of in a particular language. It refers to all the possible words that can be used by a

speaker or learner of English. One can also refer to it as the word stock of the language. A person's vocabulary usually develops with age. English vocabulary can be learned through synonyms, antonyms, Idioms or subject matter category such as a field of study like medicine, building, transportation, religion etc. Every word that falls into any of the aforementioned category or field of study is its vocabulary.

To conclude this, it is crucial to note that due to the key role vocabulary plays in communication, it is not just any method can pass for its teaching and learning. Teaching methods are the means by which a teacher puts the subject matter to the students in class, based on already established instructional objectives in order to promote learning in students (Efebo, 2001). Mehta, (2009) quoting Frisby, (1957) commented that language teachers should be resourceful and proficient in choosing methods that have to do with the teaching of vocabulary items in a classroom situation this is because teaching methods have direct relationship with academic outcomes. Unfortunately, the major methods used in the teaching of vocabulary in secondary schools today are mainly based on the traditional method. This however is grossly inadequate. In fact, Kinsella, Stump and Feldman, (2015) emphatically said "that a number of traditional teaching methods deserve to be left in the "instructional dustbin" because it is characterized by limited and rote interaction with students' vocabulary items which makes it less effective".

The aim of this study is to examine the effects of collaborative learning (CL) method and Computer Assisted Learning (CAL) method

on students' academic achievement in English language vocabulary. In specific terms, this study seeks to:

1. Determine the difference between the mean scores of students taught English vocabulary through the cooperative method and those taught through the traditional method.
2. Determine the difference between the mean scores of students taught English vocabulary through computer assisted learning method and those taught through the traditional method.

2 Review of Related Literature

Distributed Cognition Theory (DCoG)

This is a theory that states that knowledge is not only resident in one individual but knowledge is spread across people and also the physical environment one lives in. in this type of learning, it is argued that knowledge has to do with a system of thinking that interacts with other individual and external body. Distributed cognition deals with the interaction of an individual with other individuals as well as with technological tools in order to be able to represent, save and make provision for access to digital resources. Dcog involves (3) basic components:

1. Information is embedded in interaction.
2. Embodied agents coordinates enaction.
3. Has ecological contributions to a cognitive ecosystem. (Rogers and Ellis, 1994).

A person's mental content is not limited to only what the individual knows in isolation but it is a combination of individual knowledge, plus the knowledge and understanding gained from people in one's environment and from mere observation of the environment where such information is made available (Heylighten, Heath, and Overwalle, 2003). Dcog, is a system of structured processes in which knowledge is represented both internally and externally, across people or group of individuals within a given geographical area in a particular time. The internal representation involves the knowledge that resides within the individual and the external involves knowledge that exists in the environment (Zhang and Patel, 2006, Zhang, 1997b, Zhang and Norman, 1994).

The Concept of English Vocabulary

English Vocabulary refers to the word stock of the English language. Any useable English word is termed as vocabulary. It can be words that fall into such categories as animals, colours, computers, day and dates, numbers, seasons, shapes, buildings, time, weather etc. A definition put forward by Merriam Webster dictionary, (2015) says that "*English Vocabulary refers to a list of English words and their meanings*". Furthermore, English words used by people or individuals in relation to a subject matter are referred to as vocabulary. Similarly, the Cambridge Advance Learner's Dictionary, (2015) sees vocabulary as all the words that are familiar and used by any individual as well as the words that exist in the English language or any of is subject matter.

Types of Vocabulary

There are various types of vocabulary; these types of vocabulary are categorized according to their form, meaning, function and derivation. Some of these types of vocabulary that fall into this category include: Synonym, Antonym, Register, Clipping, Neologism, Acronyms.

Synonym: synonyms are words with similar meanings and thus have the same conceptual meaning and can be used in the same context. They can be used as alternatives to the words they are similar to without altering the meaning for example, everybody/ everyone, frequently/ often, etc. (Chukueggu, 2004.) Synonyms are words used most time to avoid monotonous repetition of the same word over and over again and used as substitutes for words leaving their meanings intact.

Antonyms: Antonyms are words whose meanings oppose or contrast. They could be hierarchical; two extreme opposite, etc. antonyms do not have same contextual meaning and cannot be used interchangeably. The presence of one is the absence of the other. For example, a cup of coffee can either be hot, cold or look warm. One is either short or tall etc.

Registers: Register is a category or group of words belonging to a particular field of study. This field of study could be sports, commerce, medicine, wildlife, academics. For example, words belonging to the field of education include: students, classroom, textbook, school, etc.

Coinage: These are new words formed to name objects that just came into existence due to contact from different cultures. They are words merely coined out and subsequently gain recognition with passage of time and become words used for day to day conversation within a given geographical area or speech community. For instance, according to Ndimele, (2008), the words xerox and kleenex are words that are recently added to the English vocabulary. Ndimele, (2008), went further to say that xerox was a name used to refer to a company that produces a type of photocopying machine but over time has become a referent to the act of photocopying itself.

The Concept of Cooperative Learning (CL)

Collaborative learning has been defined by the Wikipedia Atom feed, (2015) as one which allows students to participate in the learning process in such a way that they are involved in the activities of the group and tend to communicate and relate to one another's points of view. Collaboration creates a bond between students and the topic of study and it helps students to be open minded in their thinking. In a similar vein, Vikko, (2013) defines collaborative learning as one which creates a situation for students to work in small groups to aid learning. These groups have different sizes, however, a standard group will have about four students. Vikko citing Slavin, (1995) further said that research has found out that cooperative learning is an effective way of improving students' performance especially when every participant is

meant to be responsible for the group and then rewards are given.

In addition, Ellis, Klahr and Siegler, (1994), cited in Vikko, (2013) opines that cooperative learning makes students to rely and bond with other students and teaching one's peers. Students learn and then teach that part to the group; this aids them to learn it more deeply. Collaborative Learning is a method that brings learners of mixed background, cultures and different levels of ability to work together to achieve group success rather than personal success. Zarei and Galani, (2013) reported Dillenbourg, (1999) who defines "collaborative learning as a situation in which two or more people come together to learn and solve a problem or mutually engage in group effort to solve a problem".

Concept of Computer Assisted Learning (CAL)

There are a lot of educational programs readily available online, in stores and bookshops. They facilitate teacher instruction in diverse ways. (The Access Center, 2014). Vikko, (2015) defines computer assisted instruction as a type of instruction with the help of a computer as a machine. Bhatt and Sharma, (1992) in Vikko, (2013) define CAL as a medium in which a student interacts with the computer, controls, displays and responds to it through an entry device for the purpose of achieving instructional objectives. In contrast to the above, Vikko, (2013) mentioned that this definition is lacking in respect of giving the basic essentials about the nature and characteristics of the learning provided by CAL. He said such weakness can be

overcome if it can be modified in the following way: Computer-Assisted Learning is a learning strategy in which a learner and the computer device interacts to attain desired learning outcomes having the software as a useful instructional material with learner having control of his learning and at this pace. Farlex and Partners, (2009) define CAL as a term most often refers to lessons, or simulation exercises used as single instruction or as supplementary materials. Similarly, Elsevier, (2009) refers to CAL as a process that uses a computer to present instructional materials, so that student can interact with it. Finally, Saunders and Elsevier, (2003) sees CAL as instructional activities that use a computer as the primary vehicle for teaching content or processes rather than one-to-one interaction with a student.

Computer Assisted Learning involves current real-time communication tools allowing students to exchange ideas in a manner that more closely approximates the face-to-face and also allows students to learn cooperatively.

Teaching English Vocabulary using the Computer Assisted Learning Method

This method is one that has come to stay in the in language learning classrooms. It provides more interaction and makes student to learn effectively. It is the evolution of computer-mediated communications and World Wide Web more than anything else that has change for good the uses of computers for language learning. Studies have researched on the use of computer assisted learning devices as a method of facilitating vocabulary learning. The following methods are useful in the teaching of English

vocabulary they are: the use of multimedia gadgets and the World Wide Web.

The Multimedia Method: this is a method that uses computer devices or technological aids such as: slide projections, film-strip, video and tape recorders, ear and microphones, computer programs such as Microsoft Word and Power Point software in mediating English Vocabulary instructions. These devices are used to appeal to both audio and visual senses. English words can be pronounced and listened to through the microphones and earphones respectively. These same words can visually appear in spelling associated by pictures and clips in a Power Point slide for representation to make the meaning of words clearer and more interesting. This is a very effective method in language learning and the teaching of Vocabulary.

The World Wide Web: This has to do with online real-time communication that can be achieved through the internet and various chat media like the Yahoo messenger, whatsApp, and other web chat programs. This method allows students to sit on an individual computer using internet programs to engage in group discussions and also work cooperatively even in an online classroom. When a chat group is created, every member of the group has access to the threads of everyone's input. Through the internet, Meaning of words can also be looked up through search engines such as Wikipedia, Google etc. This method is very effective in teaching English Vocabulary.

Cooperative Learning and students' academic achievement

Studies have been carried out on the concept of collaborative learning and students' academic achievement. Review relevant to this study is one of Bilesanmi-Awoderu and Oludipe, (2014) investigated the effectiveness of cooperative learning strategies on Nigerian Junior Secondary students' academic achievement. The quasi-experimental pretest-posttest delayed posttest control group design was used with ANCOVA as the data analysis tool. The result of the study reveals that students in the cooperative learning strategy group had higher immediate academic achievement than students in the conventional learning method.

In addition, Davison and Kroll, (1991) in Carmelita, (2008) found out in their study that students in cooperative environments performed better in mathematics than students in traditional environments. Johnson and Johnson, (1986) also in Carmelita, (2008) advocate that cooperative learning not only showed positive effects on student performance but also positive effect on motivation, classroom socialization, students' confidence in learning and attitude towards the subject being learned.

3 METHODOLOGY

Research Design

This study adopted the quasi-experimental design. Three groups were used for this study: one control group and two experimental groups. The control group was taught using the traditional lecture method, while the experimental groups were taught with the Collaborative Learning (CL) strategy and the

Computer Assisted Learning strategy respectively. This design is illustrated below:

Experimental Group 1: Collaborative Learning Method

Experimental Group 2: Computer Assisted Learning Method.

Control Group: Traditional Method.

Sample and Sampling Technique

The sample of this study consisted of 178 students (of intact classes) drawn from two (2) schools. The purposive sampling technique was adopted in selecting students from only those private schools with computer facilities. This technique is adopted because purposive sampling involves the use of those specific cases which possess the specific character to be studied. (Nwankwo, 2013).

Research Instrument

Three (3) instruments were used for this study. They comprise of:

- a. The instructional Procedure developed by the researcher.
- b. The Test-Pretest and post-test Instrument adopted from page 45 of the Intensive English for Senior Secondary 2 consisting of ten (10) objective test questions titled "Vocabulary Achievement Test (VAT)" by the researcher based on the content to be taught will form the major instruments of data collection.
- c. One-on-one interaction with students.

The same instructional objectives will be the bases of assessment for all the three groups.

Students were sensitized with the help of the school teachers that the exercise forms part of

their Continuous Assessment (CA) in order to make students to be serious with the exercise. The researcher prepared three instructional procedures for the three groups for effective implementation conditions. A minimum of 3 English language teachers were trained on the instructional procedure of the 3 methods to be used in teaching the students. The Instructional Procedure will be delivered with the help of the 3 trained teachers to the three (3) groups: the control group (through the Traditional method), the experimental group 1 (through the Collaborative Learning Method) and the experimental group 2 (through the Computer Assisted learning Method) respectively under strict supervision of the researcher. Teachers were not allowed to see the test question prior to the exercise to avoid bias.

Data collected for this study were analyzed using both descriptive and inferential statistics. Research questions were analyzed using mean while T-test and the Analysis of Covariance (ANCOVA) were used to test the

Hypotheses. The hypotheses were tested at 0.05 significant levels. The results of data analyses for each of the research questions are presented and interpreted here one after the other. The data collected were analyzed using the computer software IBM Statistical Package for the Social Sciences (SPSS) Version 20.

4 Results and Discussion

Data Analysis and presentation of Results

Research Question One

What is the difference between the mean scores of students taught English vocabulary through the collaborative method and those taught through the Traditional method?

The mean and standard deviation of the pretest and posttest scores as well as the mean gain scores of the two groups of students were used in answering the research question. The results of data analysis are shown in Table 4.1.

TABLE 4.1: Mean, Standard Deviation and Gain Scores of Students Taught English Vocabulary with Cooperative Learning and Traditional Methods

Teaching Methods	N	Pretest		posttest		Gain
		Mean	Std. deviation	Mean	Std. deviation	
Cooperative learning	58	4.293	1.414	7.931	1.566	3.638
Traditional Method	60	4.033	1.149	5.617	1.627	1.574

As shown in Table 4.1, the mean pretest and posttest scores for students taught with cooperative learning method are respectively higher than that of those taught with conventional lecture method. Indeed, the gain

score for the collaborative learning group (3.638) is more than twice the gain score for the conventional lecture method group. Apparently,

the collaborative learning method results in better understanding of English vocabulary than the Traditional method.

Research Question Two

What is the difference between the mean scores of students taught English vocabulary through

computer assisted learning strategy and those taught using the traditional method?

The mean and standard deviation of the pretest and posttest scores as well as the mean gain scores of the two groups of students were used in answering the research question. The results of data analysis are shown in Table 4.2.

TABLE 4.2: Mean, Standard Deviation and Gain Scores of Students Taught English Vocabulary with Computer-Assisted Learning and Traditional Methods.

Teaching Method	N	Pretest		posttest		Mean Gain
		Mean	Std. deviation	Mean	Std. deviation	
Computer-assisted learning	60	3.450	1.307	6.667	1.623	3.217
Traditional method	60	4.033	1.149	5.617	1.627	1.574

The results in the table shows that though the mean pretest score for conventional lecture method group (4.033) is higher than that of the computer-assisted learning group (3.450), the mean posttest scores for the computer-assisted learning group (6.667) is higher than that of the conventional lecture method group. The mean gain score for the computer-assisted learning group (3.217) is more than twice higher than that of the conventional lecture method group. This means that computer-assisted learning produces greater understanding of English vocabulary than the traditional method.

5 Discussion of Findings

Collaborative Method and Traditional Method on Students' Academic achievement in English Vocabulary.

The findings of the study reveal that students taught with cooperative learning method

have higher scores than that of those taught with the Traditional Method. Apparently, the cooperative learning method results in better understanding of English vocabulary than the conventional lecture method. The findings of this study relates to the findings of Bilesanmi-Awoderu and Oludipe, (2014) who investigated the effectiveness of cooperative learning strategies on Nigerian Junior Secondary students' academic achievement. The result of the study indicated that students in the cooperative learning strategy group had higher immediate academic achievement than students in the Traditional method.

Computer Assisted Learning Method and Traditional Method on Students' Academic achievement in English Vocabulary.

The findings of the study reveal that the mean test score of the Computer Assisted Learning Method is more than twice higher than

the Traditional Method. This means that the computer assisted Learning Method This means that computer-assisted learning produces greater understanding of English vocabulary than the Traditional method.

This study is in line with the study of Rodman and Paul, (2009) who investigated the benefits of computer assisted learning (CAL) for middle school students attending remedial reading classes and as a supplement to a strong language based reading curriculum. Students were compared with control students taught by the same teacher but without CAL support. Students in the CAL treatment group showed greater gains than control students. In similar vein, the study of Haluk, (2008) on the influence of computer assisted instruction on students' conceptual understanding of chemical bonding and attitude towards chemistry revealed that a statistically significant difference was found between the groups in favour of CAL group suggesting that chemistry topics related to chemical bonding can be improved by the use of computer-assisted teaching materials. This shows that CAL leads to greater gains.

Conclusion

In lieu of the findings of this study, the researcher concludes that Teaching methods have effects on students' academic achievement. In particular, the Cooperative Learning method and the Computer Assisted Learning have effect on students' academic achievement in English vocabulary. Both the Cooperative group and the Computer Assisted Learning group performed

significantly better than the conventional lecture method group. The cooperative method is found to be most effective method in teaching English vocabulary to females while the Computer assisted learning method is found to be the most effective in teaching English Vocabulary to males. Therefore curriculum planners, educational administrators and teachers should encourage the use of the cooperative learning and the Computer assisted learning method in the teaching of English vocabulary.

Recommendations

Within the limits of the findings of this study, it appears plausible to recommend that:

1. Government should ensure that public schools are provided with computers for the teaching of English vocabulary.
2. Curriculum planners should plan the curriculum in such a way that will allocate special time in teaching English vocabulary through the cooperative and computer assister method.
3. English teachers should ensure that they incorporate collaborative and computer assisted learning method in the teaching of English vocabulary.
4. Teachers to should undergo training and re-training on teaching methodologies suitable for various subject areas.

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