



THE EFFECTS OF CALL PROGRAM ON EXPANDING LEXICAL KNOWLEDGE OF EFL IRANIAN INTERMEDIATE LEARNERS

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Abstract

Foreign language learning is a challenging task, involving mastering a new sound system, phonological and syntactical forms, vocabulary, and sometimes a new writing system. For the adult second language learner, one of the most frustrating aspects is having an inadequate vocabulary for expressing complex ideas that are so easy to relate in one's native tongue. The acquiring of new vocabulary becomes one of the most important tasks as one strives for fluency in the second language. This research provides brief overview of how computers have been used and are being used for language learning. The present research also explores the effects of CALL¹ on vocabulary learning. It discusses the use of the computer for lexical skill development in relating CALL to vocabulary acquisition via an experimental method and searching for effective ways to use CALL in vocabulary instruction. The results indicate that in using CALL program, learners have an intensive mental processing which results in long term recall of words. CALL also produced better results in contextualized vocabulary learning, plus better pronunciation. However, the results show that in the first experiment the scores on the immediate test were considerably higher for the control group, but the scores on the delayed tests were significantly lower for the control one.

Introduction

Some researchers (Harley, 1996; Yoshii, and Flaitz, 2002) point to vocabulary learning as a vital part of each student's life, while other researchers though accept the importance of vocabulary acquisition in language proficiency and academic achievement, their ideas about how vocabulary should be learned have varied widely. Researchers in the field recognize the need for vocabulary acquisition especially at the intermediate level (Prince, 1996; Siribodhi, 1995). One of the major concerns is the need for developing effective pedagogical methods for the teaching of second language vocabulary. Traditional pedagogical methods for vocabulary acquisition include word-lists, dictionary use, workbooks, teacher-made materials, and group discussion. Yet developing effective pedagogical methods for vocabulary acquisition continues to demand attention and exploration.

The prominent role of vocabulary knowledge in EFL learning has been increasingly detected. The words to be learned may be presented in isolation or in context. Presentation in

¹ Computer Assisted Language Learning

bilingual word lists seems an attractive shortcut because it takes less time than contextual presentation and causes excellent short term results. "It is ... necessary that a large number of words be learned in a short period of time at the intermediate and advanced stages of language acquisition" (Groot, 2000, p.61). In connection with word learning, a distinction is commonly drawn between incidental and intentional learning. Singleton (1999) believes that "Unless one narrowly defines incidental learning as excluding any conscious attention to the words being learned, the two learning modes are not always easy to differentiate and show a considerable overlap..." (p.247). In this research, intentional learning is to be used, because any learning activity the learner performs is with the intention of gaining new knowledge.

One pedagogy which interests many researchers is computer-assisted language learning (CALL). CALL has been actively applied to second language (L2) and foreign language (FL) reading with courseware which provides a range of on-screen activities (Son, 2001, p.28). Related to research on reading skill development, considerable attention has been given to vocabulary learning in CALL (Conrad, 1996; Ellis, 1995; Goodfellow, 1995).

The present research sets out to operationalize post-modern theoretical thinking about vocabulary learning and to create an environment which is maximally conducive to learning new words by striking a balance between lacking enough time for exposure to new words and a sort of exposure which doesn't fail to establish enough association with other words for storage and retrieval. The questions concerned in this research are: Does CALL program have any effect on the long term retention in vocabulary learning? and also does CALL program have a better influence on contextualized vocabulary learning than ordinary method of learning vocabulary in isolation through bilingual list? Much research has been done in this area of language, thus based on the present evidences we used these hypotheses that CALL has a significant effect on long term retention and CALL has a better influence in contextualized lexical learning.

The significance of this study is that it focuses on Iranian EFL learners, a case which has not been already dealt with. So it is of great importance to know how different learners with different L1 use the same program to expand their L2 lexical knowledge.

This research provides a brief overview of how computers have been used and are being used for language learning. The present research also explores the effects of CALL on Iranian intermediate level students learning vocabulary. It discusses the use of the computer for lexical skill development in relating CALL to vocabulary acquisition via an experimental method and searching for effective ways to use CALL in vocabulary instruction towards long term retention.

History of CALL

Computers have been used for language teaching ever since the 1960's. "This 40-year period can be divided into three main stages: behaviorist CALL, communicative CALL, and integrative CALL. Each stage corresponds to a certain level of technology and certain pedagogical theories"(Lee, 2000: np). Now lets take an overview of what CALL is and how it turned into existence and originated.

The term **Computer Assisted Language Instruction (CALI)** originated in the USA in 1960s and was in common use until the early 1980s, when CALL became the dominant term. Throughout the 1980s CALL widened its scope, embracing the communicative approach and a range of new technologies, especially multimedia and communications technology. An

alternative term to CALL emerged in the early 1990s, namely **Technology Enhanced Language Learning (TELL)**, which was felt to provide a more accurate description of the activities which fall broadly within the range of CALL. The term TELL has not, however, gained as wide acceptance as CALL.

Typical CALL programs present a stimulus to which the learner must respond. The stimulus may be presented in any combination of text, still images, sound, and motion video. The computer offers feedback, indicating whether the learner's response is right or wrong and, in the more sophisticated CALL programs, attempting to analyse the learner's response and to pinpoint errors.

Typical software of the first generations of CALL included Wida's "Matchmaster" (where students have to match two sentence halves or anything else that belongs together); "Choicemaster" (the classic multiple-choice test format); "Gapmaster" (for gapped texts); "Textmixer" (which jumbles lines within a poem or sentences within a paragraph); "Wordstore" (a learner's own private vocabulary database, complete with a definition and an example sentence in which the word to be learned is used in a context); and "Storyboard" (where a short text is blotted out completely and has to be restored from scratch). Current CALL software has embraced CD-ROM and DVD technology, and there is growing interest in Web-based CALL.

Method

Participants

There are 56 participants. All the subjects were those who had been given the placement test of an institute in Mashad, and were decided to attend at the intermediate-level class. The fact which should be clarified here is that subjects were placed at intermediate level of a conversation class. Since the subjects were determined to prepare for the TOEFL, a vocabulary class was planned to help them in expanding their lexical knowledge. From the subjects, almost one half who had access to personal computer at home, were voluntarily selected. This group makes our experimental group called group A, and the others make our control group called group B. All participants are male with the age between 19 – 25 years old.

Material

The materials used in the research for data collection include tests, oral interview and also direct observation. The course material to be taught was a book called *Essential Words for TOEFL*. Moreover subjects in the experimental group were required to work with computer and some CDs while the control group used desktop dictionary and bilingual word lists.

Design and Procedures

Prior to the learning session, a pre-test was administered to check the level of proficiency. The test consisted of sixty words picked out carefully from the course. The scores obtained indicated that the great majority of subjects were homogeneous. Three students scored much higher than the others, these three students were excluded from the participants. Two other students performed worse than what was expected. They were excluded as well.

To maximize the validity of the study some other variable including: light, temperature, noise, environment and time of day are also controlled. The class for both groups are the same;

two sessions a week. Teacher's instructional approach and the material are the same for both groups at the class. But group A uses technological apparatus and computerized facilities at home to find meaning and definition of newly taught words and to use them. However group B follows the ordinary method for finding the meaning of new words. This group uses desktop dictionaries and students can make a bilingual list of new words to memorize them. Every session, 30 new words are taught by teacher. He gives both groups their definition, pronunciation, and also some synonyms and antonyms.

Two CDs are distributed to group A to work with, on their personal computers. One of them is Oxford Talking Dictionary (OTD) which provides students with English definition of words, in addition, some synonyms, antonyms, contextualized examples, visual and pictorial presentation of words and, in some cases, a few quotations are shown on the screen of the computer. The second CD is Oxford Genie Dictionary (OGD). This one provides students with phonetic form of pronunciation of words and an audible pronunciation by a native speaker in both British and American accents. So that students can listen and repeat the pronunciation to learn it.

The point which should be indicated is that, A receives no translation. The subjects in A are asked to work just with these CDs to learn new vocabularies and expand their lexical knowledge. This program has four stages: in the stage one, subjects are required to insert OTD in the compute. They type new word and press the Enter key, then the information related to this word is shown on the screen. First, students read contextualized examples and try to guess the meaning of the new word. Then they can press the picture button on the screen to access its visual presentation and to try more in guessing the meaning, if they didn't succeed to get it before. Furthermore, visual presentation can also result in better learning and an easier retention. At the second stage, subjects can read the definition of the word, and in some cases, how it originated. In this stage subjects can also obtain some synonyms and antonyms, shown on the monitor. There are also a few quotations for some words, which can be useful for learner to consolidate the meaning. The subjects are required to eject OTD and insert OGD in the CD-Rom. They should type the word again. The third stage starts from here. In this section participants should work on the pronunciation. The phonetic form of the pronunciation is screened in front of the word. Moreover, subjects can hear the pronunciation in both British and American accent, by a native speaker. They may repeat whichever one they like to improve their pronunciation. Finally the last stage is to read some idioms and expressions in which the related word is used. This section would be beneficial for students not only to consolidate extensively the word, but also to expand their general knowledge of learning new idioms. An additional influence of this section of the program is to increase learners' motivation for learning words.

But group B is asked to work just with the desktop dictionary. In this situation, they are provided just with written phonetic form of pronunciation and have no access to any sort of idiom, synonym or antonym. They just read the translation or definition of new words and can make a bilingual word list to memorize and learn them in isolation.

Every session, groups come to class teacher asks orally some questions from previous chapters. They are also orally interviewed. In the fourth session, participants in both groups are given a test without being already informed about it. The test is a multiple choice consisting of 25 items. Every item is a sentence missing a word as a blank to be filled. The Persian equivalent of the intended word is given as a clue and subjects are asked to find its English from among the

alternatives. Some weeks later, in the seventh session, subjects deal with a similar test having the same content from those chapters but with different questions. This homogeneous test is used to assess students' long term retention. Next week, in the tenth session, students in both groups are given a supplementation cloze test with 25 items from the last three chapters. According to Farhady, Jafarpour, Birjandi(1994:284-287) a more holistic and one of the best ways of testing lexical knowledge is via cloze passage test, that's why we use cloze testing this section. Finally in the last week, fifteenth session, another homogeneous test with the same content as the previous one but different questions, is given to both groups to assess the retrieval through a different instrument.

It should be asserted that all the exams are given without any previous declaration to inform the subjects.

Data Analysis

In all experiments the effect of the two methods was measured twice: immediately after the learning session and three to five sessions later, to determine the long-term retention effect. Subjects had not been told about the delayed tests to prevent them from paying more than usual attention to the words after the learning session, which might invalidate the results. In addition to written exams, every session before starting the new chapter, teacher asked students orally some of the previously taught words and wanted them to tell the definition, some synonyms and antonyms or even Persian equivalence of a particular word.

The mean and standard deviation of each individual test was first calculated. Then, at one level, it was compared within that group with their other performances to check whether learning has happened in their long term memory and how well each group has done. At an the other level, it was compared with it's counterpart test of the other group to find which method has a better influence on learning new words. These comparisons are done for each test one by one in relation to each other. At the next level the overall performances of two groups are compared to see which method results in a more fruitful and longer retention of words.

Results

From the scores obtained and according to mean and standard deviation of tests the following results were found. The following abbreviations are used in the tables of results:

C	Control Method
X	Experimental Method
T1	Immediate Multiple choice Test
T2	Delayed Multiple choice Test
1-2	Decrease in scores on immediate and delayed tests
T3	Immediate cloze Test
T4	Delayed cloze Test
3-4	Decrease in scores on immediate and delayed tests(cloze)
mean	Mean Score

SD	Standard Deviation
ss.	Number of Subjects
max.	Maximum Score

Table 1. Information related to first and second tests

	C test 1	C test 2	C 1-2	X test 1	X test 2	X 1-2
Mean	16.76	14.72	2.04	15.38	14.28	1.1
<i>SD</i>	4.512	8.548		9.226	10.186	
ss.	25	25		26	26	
Max.	20	20		20	20	

In the first immediate test called T1 group B had a higher mean and lower standard deviation in comparison with A1. This indicates that in this test, group B is more homogeneous and did better than group A, but in the delayed test called T2 there is significant decrease in the mean of B and also an increase in its SD, in other words, B has become more heterogeneous in T2. But group A had a lower mean and higher SD; nevertheless, it had little decrease in its mean. As contrasted with A1, it was expected to have lower SD in A2, this means that, although in T2 group A has become a little heterogeneous, the increase of SD in A2 is so much less than that of B2. The point which should be stipulated here is that, the reduction of mean from A1 to A2 is much less than that of B1 to B2. This fact implies that the retention in A is extremely better than retention in B. In other words, it was found that learning via typical system has better short term results, but learning via computerized facilities is more beneficial in long term situation; and the rate of forgetting is much lower in technological vocabulary learning.

To find more valid results, a cloze passage test was used instead of multiple choice test with Persian clues. The cloze was used to have students retrieve the appropriate word which fits to the text according to its meaning through using the contextualized situation and also to remember its spelling. The test consisted of 25 blanks with no translation or clue.

Table 2. Information related to third and fourth tests

	C test 3	C test 4	C 3-4	X test 3	X test 4	X 3-4
Mean	14.61	12.65	1.96	17.52	16.84	0.68
<i>SD</i>	5.048	7.161		2.682	2.591	
ss.	25	25		26	26	
Max.	20	19		20	20	

According to results obtained from the two immediate and delayed cloze tests, it is found that, in the immediate one called T3, A had a mean higher and SD lower than that of B. The

results in the delayed cloze test called T4 show analogous findings as in T2. Decrease in A's mean is much less than decrease in B's mean. In other words, compared with T3, A4 has become more homogeneous, as we had in T2. Despite we had decrease in means for both A4 and B4, the amount of the deduction between T3 and T4 for A is so much less than what was found for B. In a clearer statement, participants in A had less forgetting and more retention than participants in B.

Based on our observations during the term, as a by-product it was found that, the majority of subjects who were working through CALL program had a better pronunciation than those working through ordinary vocabulary learning program. This means that, in contextual situation students who use CALL have a better learning than those who use desktop dictionaries. So, we can conclude that in contextualized situations, CALL is a better tool for learning lexicon. Furthermore, it has a long term influence which is much valuable in learning a new language.

Discussion

The results show consistently a certain pattern. Firstly, in the first experiment the scores on the immediate test were considerably higher for the control condition. Recall of the fresh association between the words and their translation, as established by the bilingual word list, was sufficient for such a high score. Secondly, the scores on the delayed tests were considerably lower for both conditions. Retention loss as manifested in the decrease in scores on the delayed test was larger for the bilingual word list method than for the CALL condition. Finally, in the last two tests, where the effect of both methods was measured with cloze tests, as in the first two tests, the decrease in the scores on the delayed tests was larger for the bilingual word list condition than for the CALL condition.

The experiments were carried out to determine which of the two methods of learning new words is more efficient in terms of creating the best long term retention results. The crucial question is then "When has a word been learned?" or, in other words, "What does it mean to know a word?" Knowing a word may be seen as a continuum ranging from vague recognition of its spelling to (semantically, syntactically, stylistically) correct and contextually appropriate productive use. According to Groot (2000) :

“Retrieval of a word from the mental lexicon for productive use requires a higher degree of accessibility or, in other words, a more solid integration in various networks than is needed for receptive use. For measuring this higher level of mastery, a test which asks testees to simply recognize a word and give its meaning is unsuitable; a test using the cloze technique, which measures testees' ability to produce the word themselves, is much more valid for that purpose.”(p.76).

The immediate tests measured superficial recognition of the words that had been presented in the bilingual list. It automatically triggered fresh associations between the L2 and the L1 words. This enabled the subjects to achieve extremely high scores on the immediate tests. The associations, however, are not firmly established and two weeks later most of them are not easily recalled. The higher scores on the delayed cloze tests and the smaller loss of retention for the experimental condition in all four tests may be regarded as confirmatory evidence for the theory that there is a strong relationship between retention rates and depth of processing. They appear to indicate that intensive processing of new words leads to a more solid embedding and better long

term retention which is needed for active use of the words, than does superficial processing of the words out of context with the translation given, as in bilingual lists.

Conclusion

In our modern technological world, CALL is a new realm towards learning a language in general, and learning L2 vocabulary in particular. Two questions which were to be answered are: Whether CALL program can result in a better retrieval in vocabulary learning; and if CALL has a better influence on contextualized vocabulary learning than classic method. Based on our experiments, it was observed that in both sorts of assessment those who had learned the words through CALL had less reduction of mean in delayed tests. It indicates that in using CALL program, learners have an intensive mental processing which results in long term recall of words. By attending to the fact that in the cloze test users of call had better performance in both immediate and delayed tests, we can come to the conclusion that CALL also produced better results in contextualized vocabulary learning than ordinary desktop dictionary method.

Another important finding is that CALL users in comparison with classic method users, had much better pronunciation which was result of audible pronunciation articulated by native speaker. Though it may implies that CALL is a better way of expanding lexical knowledge in short period of time, the purpose of learning new vocabulary should also be considered.

Another ground for comparing the two methods is that the CALL method represents a way of learning new words which is very unlike what most students are used to. It takes more time per word than a bilingual list, students are not given translation but have to work out the meaning for themselves, and all of the context material is in the L2. In short, it is a much more difficult method than the familiar paired associates learning methods that they are used to.

Some other areas of language such as four skills are left to see whether CALL can be used in improving them, as was in vocabulary learning. And also finding how we can use CALL programs in learning the grammar of second language, are some unanswered questions left for further research in future.

References

- Conrad, K. B. (1996). CALL-Non-English L2 instruction. *Annual Review of Applied Linguistics*, 16, 158-181.
- Ellis, N. C. (1995). The psychology of foreign language vocabulary acquisition: Implications for CALL. *Computer Assisted Language Learning*, 8, 103-128.
- Farhady, H., Jafarpour, A., Birjandi, P. (1994). *Testing Language Skills: From Theory to Practice*. Tehran: SAMT.
- Goodfellow, R. (1994). Design principles for computer-aided vocabulary learning. *Computers & Education*, 23, 53-62.
- Goodfellow, R. (1995). A review of the types of CALL programs for vocabulary instruction. *Computer Assisted Language Learning*, 8, 205-226.
- Groot, P. J. M. (2000, May). Computer assisted second language vocabulary acquisition. *Language Learning and Technology*, 4(1) [Online]. Available: <http://www.llt.msu.edu/vol4num1/groot/default.html>
- Harley, B. (1996). Introduction: Vocabulary learning and teaching in a second language. *The Canadian Modern Language Review*, 53(1), 3-11.
- Hill, M. & Laufer, B. (2003). Type of task, time-on-task and electronic dictionaries in incidental vocabulary acquisition. *International Journal of Applied Linguistics in Language Teaching*, 41(2), 87-106.
- Kim, Y. (2006) (Rev). *Teaching and Learning Vocabulary: Bringing Research to Practice*. (2005). Elfrieda H. Hiebert & Michael L. Kamil (Eds.). Mahwah, New Jersey: Lawrence Erlbaum Associates [Online]. Available: <http://www.erlbaum.com>.
- Lee, K.W. (2000). English Teachers' Barriers to the Use of Computer-assisted Language Learning. *The Internet TESL Journal*, 4(12) [Online]. Available: <http://www.iteslj.org/Articles/Lee-CALLbarriers.html>.
- Prince, P. (1996). Second language vocabulary learning: The role of context versus translations as a function of proficiency. *The Modern Language Journal*, 80(4), 478-491.
- Rieber, L. (1990). Animation in computer-based instruction. *Educational Technology Research & Development*, 39(1), 77-86.
- Singleton, D. (1999). *Exploring the Second Language Mental Lexicon*. Cambridge: Cambridge University Press.
- Siribodhi, T. (1995). Effects of three interactive multimedia computer assisted language learning programs on the vocabulary acquisition of elementary level EFL students. *Unpublished doctoral dissertation*, The University of Kansas.
- Son, J.B. (2001). CALL and vocabulary learning: A review. *English Linguistic Science*, 7, 27-35 [Online]. Available: <http://www.usq.edu.au/users/sonjb/papers/elsak01.htm>.
- Yoshii, M. & Flaitz, J. (2002). Second language incidental vocabulary retention: the effect of text and picture annotation types. *CALICO Journal*, 20(1), 33-58.

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