

## The impact of computer-assisted language learning on Iranian EFL students' vocabulary learning

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### Abstract

This study aimed to explore the impact of computer-assisted language learning on Iranian EFL students' vocabulary learning. Participants of the study were 76 students – 29 males and 47 females – learning English as a foreign language in *Parto, Sadr, Poyesh* and *Andishe* Institutes in Ahvaz who were selected after taking the *Nelson English Language Test* as a proficiency test. They were randomly divided into two groups. One group was taken as control and the other as experimental group. Both groups participated in the teacher-made test of vocabulary, Vocabulary Levels Test (VLT), and Word-Associates Test (WAT) as pre-test. During class sessions the control group was taught the vocabulary, in the conventional way, through the printed textbook while the experimental group taught by the software version of the same book. Three ANCOVAs were run to compare the performance of experimental and control groups after the treatment period. The results of the ANCOVAs revealed that using vocabulary learning software was more effective than using printed book on vocabulary learning, vocabulary breadth, and vocabulary depth of the participants. The results of the present study could help EFL course book designers, foreign language institutes, educational planners, material developers, teachers, and learners to provide a better context for EFL learning.

Keywords: computer-assisted instruction, computer-assisted language learning, information communication technology, vocabulary breadth, vocabulary teaching software.

## 1. Introduction

Experienced teachers of English as a Foreign/Second Language know about the importance of vocabulary learning as probably the biggest component of any language course. According to McCarthy and O'Dell (1995), English vocabulary has a remarkable range, flexibility and adaptability. Teachers know that students must learn thousands of words that native speakers and writers of English use. The vital role of vocabulary knowledge in English as a foreign language (EFL) learning has been increasingly detected and the significance of vocabulary in language learning has been reported by many researchers (Harris, 1969; Evans, 1978; Pouwells, 1992; Bismonte, Foley, & Petty, 1994; Pellow, 1995; Watts & Bucknam, 1996; Laufer, 1996, all as cited in Inheanachu, 1997).

According to Kilickaya and Krajka (2010), vocabulary teaching is "generally restricted to presenting new items as they appear in any activity without preparing the learners through activation of prior knowledge or helping them regularly revise the previously learned vocabulary items until they are thoroughly learnt" (p. 55). Therefore, teachers and students have started to use computers and internet in the foreign language instruction to overcome this limitation. Lu(2010) stated that current developments in information technologies had resulted in rapid advances in the application of instructional and educational technology. One pedagogical method that has gained interest and attention of many researchers is introducing new words with computer vocabulary teaching programs or softwares.

Inheanachu (1997) believes that from the time of the application of computers in education, the research scope has extended to the use of computer in the form of computer-assisted instruction (CAI). Within CAI, many researchers and educators have been interested in computer-assisted language learning (CALL)" The range of the used technologies in language learning is broad including courseware, online activities, and computer-mediated communication (CMC) technologies. The emergence of CALL seems to provide a new outlook for language teaching and learning as well as vocabulary acquisition. Numerous CALL programs and online materials have flooded the field of language teaching and learning with the progress of computer and network, and they are becoming more popular. These programs provide various activities for learners. Some examples of CALL systems for vocabulary learning are computer-assisted vocabulary acquisition, and Power Words. Incorporating technology into the learning process and also wide internet access accompany students on their ways of improving English. New developments in technology provide new tools for language learners. The present study attempts to focus on how technological programs can trigger improved vocabulary acquisition.

## 2. Review of Literature

Nowadays, there are numerous materials for foreign language learning in addition to the traditional grammar books and dictionaries such as workbooks, charts, posters, newspapers, picture cards, and so on. Computers, multimedia, and the internet can also be used as supplementary tools. It seems that the language laboratories which were founded in late 1970s under the influence of the audio-lingual method have given room to computer-assisted language learning work stations (Gunduz, 2005). Crystal (1987) has stated that "micro computers used as a word processor complement the audio facilities, enabling the interactive teaching of all four language skills of reading, listening, speaking, and writing" (p. 194). Rahimi and Sahragard (2008) are of the opinion that vocabulary learning is far from boring and cumbersome. Crystal has added that nowadays, a huge amount of foreign language teaching (FLT) exercises such as sentence restructuring, spelling checking, checking of translations, tasks of dictation, and cloze tests could be controlled by computers when using texts displayed on the screen.

## 3. Method

### 3.1 Research Questions and Hypotheses

Based on the purpose of the study the following research questions were proposed:

1. Does computer-assisted language learning affect the vocabulary learning of Iranian EFL university students?
2. Does computer-assisted language learning affect Iranian EFL university students' breadth and depth of vocabulary knowledge?

Based on the above-mentioned research questions, the following null hypotheses were formulated:

1. Computer-assisted language learning does not affect the vocabulary learning of Iranian EFL university students.
2. Computer-assisted language learning does not affect Iranian EFL university students' breadth and depth of vocabulary knowledge.

### 3.2 Participants

The sample of the present study was drawn from among 120 students learning English as a foreign language in Andishe, Parto, Poyesh and Sadr Institutes of Ahvaz including 46 males and 74 females at the intermediate level taken from four intact classes at the institutes. So, the sampling design of the study was *convenience non-probability* design. For the purpose of homogeneity, prior to research a Nelson English Language Test, as a proficiency test, was given to the initial 120 students and 76 students – 29 males and 47 females – whose scores were between one standard deviation below and above the mean took part in the study. Final participants then were randomly assigned to control and experimental groups and each group included 38 students. All participants were in the age range of 14 to 17.

### 3.3 Instrumentation

The following instruments were used to collect the research data:

1. *Nelson English Language Test*: was used as a tool for homogenizing participants of the study. The Nelson English Language Test is a battery including 40 separate tests for ten levels of language proficiency which range from beginner to the advanced. The levels are numbered from 050, 100, ..., to 500. Each test consists of 50 items. In the present study a test in intermediate level –250A – was used.
2. *504: Absolutely Essential Words Book*: is a book divided to forty-two lessons, each containing twelve new words. The words are first presented to the students in three sample sentences. Next, the new words appear in a brief article. The last part of each lesson is a set of exercises that give the student practice using the new words.
3. *504 Absolutely Essential Words Software*: is the software version of the book containing same words, sentences, and articles.
4. *Vocabulary Tests*: two teacher-made tests of vocabulary, each one including 40 items, were used to measure students vocabulary knowledge as pre-test and post-test in order to investigate the first research hypothesis.
5. *Vocabulary Levels Test (VLT)*: is a test of receptive knowledge of English vocabulary used to measure the size of learners' vocabulary knowledge. It was originally developed by Nation (1983) and updated and validated by Schmitt, Schmitt, and Clapham (2001). In this study, first and second versions of this test were used as pre-test and post-test to measure the participants' vocabulary breadth before and after the study. This test is composed of five parts that represent five levels of vocabulary size, that is, the 2,000-word-familiarity level, the 3,000-word-familiarity level, the 5,000-word-familiarity level, the Academic Word List level, and the 10,000-word-familiarity level. The reliability indices (Cronbach's alpha) for all five sections were high (i.e., 0.92, 0.92, 0.92, 0.95, and 0.91, respectively) as reported by Schmitt et al. (2001). Each level has 10 test items, each consisting of six words on the left and three definitions on the right. Candidates are required to match the three definitions with three of the six words on the left. In scoring, each word correctly chosen is worth one

point. The maximum possible score is 150 for the five levels, each of which consists of 10 items – 30 word choices.

6. *Word-Associates Test (WAT)*: is a test developed by Read (1993) for measuring learners' depth of vocabulary knowledge in English. This test consists of 50 items, each comprising a target word followed by a list of eight words, four of which are related to the target word whereas the other four are not. The test-taker is required to identify the four words related to the target word, so each item has four correct choices. So, WAT is designed to measure two aspects of the depth of vocabulary knowledge: meaning and collocation. In scoring, one point was awarded for each correctly chosen word. The maximum possible score was 200 as there were 50 items with four correct responses for each.

### 3.4 Procedure

The present study was done through several steps as follows:

At the first stage, Nelson English Language Test as a proficiency test was administered to the students and based on the results of this test those students whose scores were between one standard deviation below and above the mean were selected to participate in the study. The subjects involved in this study were randomly divided into two groups. One of these two groups was taken as control group and the other as experimental group randomly.

At the first session of the treatment period, a teacher-made test of vocabulary was given to the participants as the pre-test. This test included 40 multiple-choice items. Each item bore a sentence drawn from the *504 Absolutely Essential Words* book with a blank space for a word selected from among new words of the books. Students were supposed to select the choice which could best complete the meaning of the sentence. Then, the first version of the VLT and WAT were administered to the participants in order to measure the breadth and depth of their vocabulary knowledge. From the next session, both control and experimental groups were going to take the same courses of *504 Absolutely Essential Words*. The same activities were conducted in giving the instruction to the control and experimental groups. The only difference was the media of instruction. Students in the control group were taught the vocabulary in the conventional way through the printed textbook. It means that students read each word, its pronunciation – presented in phonetic alphabet – and the provided meaning by the help of the teacher. Next, they read three example sentences which contained the introduced new words. Then, they were supposed to read the brief article involving the new words of each session. Students in the experimental group read each word presented in the software screen and simultaneously heard the pronunciation of the words. Next, they went to the next page of the software in which each example sentence was presented to them. Afterwards, they moved to the brief article containing the new words presented in the lesson. It was possible for students to move back and forth between pages and also listen to the pronunciation of words more than once by pressing the speaker icon provided in the top of the page.

The treatment period for both groups was 14 sessions. First and last sessions were devoted to the administration of the pre- and post-tests and in each of the remaining 12 sessions a lesson of the book including 12 new words were covered. After finishing the treatment, the post-test, parallel to the pre-test, was given to the students in two groups and its results were compared to the results of the pre-test to investigate the effect of computer-assisted language learning on the vocabulary learning of the participants. The second version of the VLT and WAT were administered to the participants in order to measure the breadth and depth of their vocabulary knowledge after treatment and to compare their results with the pre-tests of breadth and depth.

### 3.5 Design

The present study was a quantitative analysis of students' vocabulary learning through book-based and software-based treatments. It included pre-test, post-test, control group, and experimental group. Therefore, the design of this study was 'pre-test – post-test and control-group design'. This study was also a *quasi-experimental* research as the participants were not randomly selected out of the population. In this study, the type of teaching was the independent variable (with

two levels of textbook-based and computer-assisted) whose effect on the vocabulary learning of the students as the dependent variable was investigated.

#### 4. Results

To select the participants, all initial 120 students took part in Nelson English Language Test and students whose score was between one standard deviation minus and plus the mean participated in the main study. Table 4.1 shows the descriptive statistics of the participants' Nelson scores.

Table 1. Descriptive Statistics of the Participants' Nelson English Language Test Scores

	N	Minimum	Maximum	Mean	Std. Deviation
Nelson	120	22	49	34.58	7.937
Valid N (listwise)	120				

As the table shows, overall mean and standard deviation of the initial participants' Nelson English Language Test scores were 34.58 and 7.937, respectively. From these initial participants, 76 students whose score were between 27 and 42 were chosen.

##### 4.1 The Results of the First Research Hypothesis

Table 2. reflects the descriptive statistics of the participants' vocabulary tests in the control and experimental groups.

Table 2. The Results of the Participants' Vocabulary Pre-Test and Post-Test Scores in Both Group

	N	Minimum	Maximum	Mean	Std. Deviation
Vocabulary Pre Ctrl	38	20	38	28.76	4.994
Vocabulary Pre Exp	38	24	39	30.47	4.683
Vocabulary Post Ctrl	38	28	40	33.29	3.993
Vocabulary Post Exp	38	27	40	33.34	4.326
Valid N (listwise)	38				

From the table it can be clearly seen that participants' pre-test mean score in control group was 28.76 with the standard deviation of 4.994. Concerning the post-test, participants' mean score was 33.29 with the standard deviation of 3.993. It also has been found that students' pre-test mean score in the experimental group was 30.47 with the standard deviation of 4.683 whereas in the post-test, experimental group revealed a mean score of 33.34 with the standard deviation of 4.326. In order to make sure about the normal distribution of the scores in both groups, the researchers ran a One-Sample Kolmogorov- Smirnov Test on four sets of scores. Table 4.3 presents the results of this test.

##### 4.2 The Results of the Second Research Hypothesis

Table 3 presents the descriptive statistics of the participants' vocabulary tests in the control and experimental groups.

Table 3. The Results of the Participants' Vocabulary Breadth Pre-Test and Post-Test Scores in Both Group

	N	Minimum	Maximum	Mean	Std. Deviation
VLT Pre Ctrl	38	60	145	90.92	21.290
VLT Pre Exp	38	58	136	90.66	22.239
VLT Post Ctrl	38	65	148	110.11	23.428
VLT Post Exp	38	78	149	129.66	18.104
Valid N (listwise)	38				

As it can be seen in Table 3, the participants' vocabulary breadth pre-test mean score in control group was 90.92 with the standard deviation of 21.290. Regarding the post-test, participants' mean score was 110.11 with the standard deviation of 23.428. It also was revealed that students' vocabulary breadth pre-test mean score in the experimental group was 90.66 with the standard deviation of 22.239 whereas in the post-test, experimental group indicated a mean score of 129.66 with the standard deviation of 18.104.

#### 4.3 The Results of the Third Research Hypothesis

Table 4. displays the descriptive statistics of the participants' vocabulary depth tests in the control and experimental groups.

Table 4. The Results of the Participants' Vocabulary Depth Pre-Test and Post-Test Scores in Both Group

	N	Minimum	Maximum	Mean	Std. Deviation
WAT Pre Ctrl	38	68	188	120.21	33.892
WAT Pre Exp	38	60	195	120.16	45.847
WAT Post Ctrl	38	93	199	150.03	30.753
WAT Post Exp	38	120	200	180.26	17.528
Valid N (listwise)	38				

It is observable in Table 4.12 that the participants' vocabulary depth pre-test mean score in control group was 120.21 with the standard deviation of 33.892. Concerning the post-test, participants' mean score was 150.03 with the standard deviation of 30.753. It also was indicated that students' vocabulary depth pre-test mean score in the experimental group was 120.16 with the standard deviation of 45.847 whereas in the post-test, experimental group showed a mean score of 180.26 with the standard deviation of 17.528.

## 5. Discussion

This study examined the effectiveness of using software version of a vocabulary book on the vocabulary learning, breadth of vocabulary knowledge, and depth of vocabulary knowledge of Iranian EFL learners in Andisheh, Parto, Poyesh and Safir Institutes of Ahvaz. The findings of this study revealed that firstly, there were significant differences between the post-test scores of the experimental and control groups, and secondly, using vocabulary teaching software was more effective than using the textbook "504 Absolutely Essential Words" when teaching vocabulary to Iranian EFL learners. In other words, having the same content and covering the same vocabulary, the software version of the "504 Absolutely Essential Words" appeared to be more efficient in increasing the vocabulary breadth and depth of the learners. Therefore, the findings of the present study can be considered in language classrooms by the teachers in order that their students attain the higher levels of proficiency.

Among the factors that could be argued as effective in helping the CALL group participants gain higher vocabulary test scores, vocabulary breadth scores, and vocabulary depth scores might be the quality of the word activities presented on the computer and their greater availability on the computer, which is more encouraging for the learners to practice more on them and achieve higher vocabulary scores. Superiority of the software over the traditional vocabulary teaching might be attributed to the several exercises which existed in the software to practice and recall the vocabulary items which were taught.

The findings of the present study are compatible with the results achieved by Naraghizadeh and Barimani (2013). The results obtained throughout his study indicated that there was a significant difference between CALL users and nonusers in favor of the experimental group ( $p < 0.05$ ).

The results of this study are also in line with the findings of Naraghizadeh and Barimani (2013). The statistical analysis of the pre-test and post-test of both groups of their study revealed that there was a significant difference between experimental and control group regarding their vocabulary knowledge. It was found that the mean score of the experimental group was higher than that of the control group.

The results of the present study partly differ from the study by Aryadoust and Lashkary (2009), in which the efficiency of teaching aids on Iranian learners' vocabulary achievement was explored. In such study, any significant difference between the post-test scores of the participants in two groups was not found. The difference in the results emerging from this study and those obtained by Aryadoust and Lashkary can be ascribed to a number of issues. First, it could be that in Aryadoust and Lashkary's study, the effect of teaching aids on Iranian learners' vocabulary acquisition was investigated whereas in the current study, the effects of vocabulary teaching software and the traditional vocabulary teaching were investigated. Second, it might be said that in Aryadoust and Lashkary's study, the teaching aids which they used were not as efficient as the teacher-based vocabulary teaching. As a result, they did not have any superiority over each other. But, in the current study, the vocabulary teaching software was superior to traditional vocabulary teaching.

## 6. Conclusion and Implications

In our modern technological world, CALL is a new realm towards learning a language in general, and learning L2 vocabulary in particular. The question that needs to be answered is: Does computer-assisted language learning affect the vocabulary learning and breadth and depth of vocabulary knowledge of Iranian EFL students? Based on the results, it was observed that in the present study those who had learned the words through CALL had better values of mean in the post-test in comparison with those who had learned the words through traditional vocabulary teaching. It indicates that in using CALL program, learners have an intensive mental processing which results in better acquisition of words.

By considering the fact that users of CALL had better performance in all types of the post-tests in this study, the researchers came to the conclusion that CALL produced better results in vocabulary learning both in breadth and depth of vocabulary knowledge than ordinary traditional textbook-based vocabulary teaching method. Although it may imply that CALL is a better way of expanding lexical knowledge in short period of time.

The present study supports the findings of the previous research works regarding vocabulary learning software. The most important contribution of this study is that it provides learners and L2 educators with a clear explanation of how using vocabulary learning software affects the learners' vocabulary learning in both breadth and depth of their vocabulary knowledge.

The current study has implications for both pedagogy and research. In terms of pedagogical practice, the findings of this study suggest that using vocabulary learning software can promote an optimal balance of attention compared with traditional text book-based vocabulary teaching. Some implications from this study may benefit language teachers and material preparation experts. Teachers may benefit from their using technological aids such as vocabulary teaching software in their teaching programs as they can provide their students with lessons that combine their language learning with the use of technology. This combination enables learners to deal with language learning in a more innovative and novel manner. Based on the results of this study, vocabulary teaching software is suggested as a superior methodological option in comparison with the traditional textbook-based vocabulary teaching.

## References

- Aryadoust, S. V., & Lashkary, H. (2009). " Teaching Aids: Effective in Iranian Students' Lexical Acquisition?. *The Asian EFL Journal Quarterly September 2009 Volume 11, Issue 3*, 329.
- Bismonte, A. R., Foley, C. L., & Petty, J. A. (1994). Effectiveness of the possible sentences vocabulary strategy with middle school students in Guam. *Reading Improvement*, 31(4), 194-199.
- Crystal, D. (1987). *The cambridge encyclopedia of language*. New York: Cambridge University Press.
- Evans, B. (1978). *The power of words in language awareness* (2nd ed.). New York: St. Martin's Inc.

Mouri, S. & Rahimi, A. (2016). The impact of computer-assisted language learning on Iranian EFL students' vocabulary learning. *Global Journal of Foreign Language Teaching*, 6(4), 210-217.

Gunduz, N. (2005). Computer assisted language learning. *Journal of Language and Linguistic Studies*, 1(2), 193-214.

Harris, D.P. (1969). *Testing English as a second language*. New York: McGraw-Hill Book Company.

Iheanachu, C.C. (1997). Effects of two multimedia computer-assisted language learning programs on vocabulary acquisition of intermediate level ESL students. Retrieved from; <http://scholar.lib.vt.edu/theses/available/etd-11397-193839/>

Kilickaya, F., &Krajka, J. (2010). Comparative usefulness of online and traditional vocabulary learning. *The Turkish Online Journal of Educational Technology*, 9(2), 55-63.

Lu, F.L. (2010). English learners' incidental vocabulary acquisition in the video-based CALL program. *Asian EFL Journal*, 12(4), 51-66.

McCarthy, M., & O'Dell, F. (1995). *Vocabulary in use*. Cambridge: Cambridge University Press.

Naraghizadeh, M., & Barimani, S. (2013). The effect of CALL on the vocabulary learning of Iranian EFL learners. *Journal of Academic and Applied Studies*, 3(8), 1-12.

Nation, J.L. (1983). A new method using hexamethyldisilazane for preparation of soft insect tissues for scanning electron microscopy. *Stain technology*, 58(6), 347-351.

Nelson, B. (1998). Web-based vocabulary activities: pedagogy and practice. *Computer-Assisted Language Learning*, 11(4), 427-435.

Pellow, R.A. (1995). Thematic teaching of vocabulary and reading comprehension through description of TV movies. *Reading Improvement*, 23(3), 130-134.

Pouwels, J. B. (1992). The effectiveness of vocabulary visual aids for auditory and visual foreign language students. *Foreign Language Annals*, 25(5), 391-401.

Rahimi, A., & Sahragard, R. (2008). Vocabulary learning can be fun. *California Linguistic Notes*, 33(2), 1-33.

Read, J., (2000). The development of a new measure of L2 vocabulary knowledge. *Language Testing*, 10(3), 355-371.

Schmitt, N., Schmitt, D., & Clapham, C. (2001). Developing and exploring the behavior of two new versions of the Vocabulary Levels Test. *Language Testing*, 18(1), 55-88.

Watts, S.M., & Bucknam, J. (1996). Using vocabulary studies to teach contextual analysis in grade four. *Reading Horizons*, 37(2), 170-180.