

The Effect of Using Multimedia on Vocabulary Learning of Pre-Intermediate and Intermediate Iranian EFL Learners

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ABSTRACT

In recent years, computer technology has been widely used for educational purposes. In fact, more and more teachers are using computers and the Internet in their classrooms. We've seen an enormous growth in the number of teachers using multimedia applications for foreign language teaching and learning. This study examines the effect of multimedia on vocabulary learning of pre-intermediate and intermediate Iranian EFL learners. To achieve this purpose, 60 students who were enrolled at Iran Language Institute (ILI) in Amol were selected as subjects. These students were given the Oxford Placement Test in order to validate their proficiency levels. These participants were then randomly assigned to the experimental and control groups. The four groups underwent the same procedures except that the control groups did not receive the experimental treatment. Prior to the treatments, all groups sat for pre-tests. Then the students were exposed to the treatments for eight sessions; that is, the word lists which were selected from the students' books were taught to the subjects. These words were taught to the experimental groups using the multimedia software "Vocaboly" while they were taught to the control groups using the Teacher-led Method (TLM). After the treatments, all groups sat for post-tests. Then, the results of mean scores were interpreted by using Independent-Sample T-Test. The results of the research indicated that the CAVI groups performed better on post-tests when compared to the Teacher-led Instruction groups. Therefore, treatment proved to have a significant impact on vocabulary learning of the learners.

KEYWORDS: CALL, CAVI, Vocabulary learning

INTRODUCTION

Words are considered as the building blocks of language since the lack of them will certainly place obstacles in the way of learners to learning other aspects of language. Thus, expanding vocabularies in a productive way has become major concerns for students as well as language teachers, researchers and practitioners. (LIU Jing-hua, 2006). Very often learners tend to forget the meaning of the words owing to the fact that they have not used an effective technique to learn them, or they were not effectively taught by instructors. Traditional chalk and board method, although fruitful in some cases, is no longer considered as the sole means of teaching; and it is no longer welcomed by language learners as a productive method. In other words, dependence on a single vocabulary instruction method will not result in optimal learning (NICHHD, 2000).

In the field of English as a Foreign Language (EFL), numerous efforts have been made to facilitate and enhance the complex process of L2 vocabulary learning (Goodfellow, 1994; Groot, 2000; Boers, Eyckmans, & Stengers, 2004). In recent years, computer technology has made inroads on foreign language learning and educational programs have become available to both accelerate and facilitate the vocabulary learning process. Many researchers strongly believe that educational software can make a significant contribution toward learning languages. (Lam & Pennington, 1995; McEnery, Baker and Wilson, 1995; Warden, 1995; Neu and Scarcella, 1991). The past few decades have seen a huge rise in the number of teachers using computers and the Internet in their classrooms. In fact, the appearance of CALL (Computer Assisted Language Learning) seems to provide a new outlook for language teaching and learning, as well as vocabulary learning. Computer-assisted language learning (CALL) provides learners with easy access to learning environments irrespective of place and time, and increases motivation and effectiveness of learning with multimedia content. Additionally, it can help learners to study language individually at their own pace in a motivated atmosphere with a high level of interactivity (CELLAT, 2008). Computer assisted vocabulary learning (CAVL) has been considered to be one of the most common applications of CALL. As this learning medium has been viewed to be a new tool of vocabulary instruction, it has recently given rise to the interest of language teachers and researchers. As a result, a great deal of empirical research has been applied to determine

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CAVI's effectiveness on vocabulary achievement. However, some research results were inconclusive when it comes to its effectiveness, especially when compared to teacher-led instruction. Therefore, the researchers in this study have decided to investigate the effectiveness of CAVI on the vocabulary learning of pre-intermediate and intermediate Iranian EFL learners using Vocabulary- a learning program for English vocabulary.

Statement of the Problem

One essential factor in learning a second language is the amount of vocabulary one possesses as vocabulary forms the biggest part of the meaning of any language (McCarthy, 1988). Vocabulary is accepted as being the central element of language learning. Many researchers have acknowledged that vocabulary learning is an essential component of second and foreign language proficiency (Coady and Huckin, 1997; Harley, 1996; Nation, 2001). Krashen (1989) states that most of the meaning in language is transpired by words and lack of vocabulary is the greatest obstacle in using target language effectively. Considering this, vocabulary learning is presently gaining attention in second language pedagogy and research. But it is still a controversial issue how learners learn vocabulary effectively and efficiently or how it can best be taught. A traditional teaching method in this regard which is still applied at schools and universities of Iran is having the students memorize the word lists or explicitly providing them with paired translation equivalents of the words. The problem is that not only does this traditional method lack theoretical support since vocabulary learning is more than sheer memorization of the target language word lists, but the whole learning experience could also leave a sour taste in language learners' mouth since learners would view vocabulary learning as a tedious experience of memorizing endless lists of words. Nation (1990) states that knowing a word is defined as knowing its spelling, pronunciation, collocations (i.e. words it co-occurs with), and appropriateness. Therefore, the sheer memorization of the paired translation of the target words, which is widely applied at school and universities of Iran, is not considered an effective method. These ineffective methods eventually led to frozen vocabulary learning courses which are remembered with distaste by Iranian school and university students. Therefore, the researchers have decided to engage students in learning the vocabularies within a lively context via multimedia program in order to empirically study the effectiveness of the proposed educational software in developing vocabularies among pre-intermediate and intermediate Iranian EFL learners.

Research Questions

1. Is Computer Assisted Vocabulary Instruction (CAVI) in comparison to Teacher-led Method more effective on pre-intermediate Iranian EFL learners' vocabulary learning?
2. Is Computer Assisted Vocabulary Instruction (CAVI) in comparison to Teacher-led Method more effective on intermediate Iranian EFL learners' vocabulary learning?

Limitations and delimitations of the Study

This study possesses four limitations. The first limitation is that there are a lot of barriers to the use of CALL in language learning in many different aspects related to CALL. The second limitation is that Language teachers often have some financial barriers to afford the necessary hardware and software for CALL because the university administration does not spare an appropriation for CALL. The third limitation is that computers cannot handle unexpected situations due to technological barriers. The fourth limitation is that both teachers and students need training to learn to use computers.

This study possesses two delimitations. First, the research was conducted on pre-intermediate and intermediate students which mean the findings of the research can only be generalized to this population. However, a wider population could have provided more reliable insights on the effectiveness of CAVI applications. The other delimitation is that students in CAVI groups studied the target words through computer, but they were tested with traditional testing procedure. Tests were given on pen and paper rather than on-screen. In this respect, teacher-led instruction groups may have an advantage over CAVI groups.

Rationale and Purpose of the Study

Most teachers in Iran use traditional methods like 'Chalk and Board' when teaching vocabularies to their students, and they are unaware of the effect of educational software in this regard. This study gives teachers a broader outlook on vocabulary teaching. In short, this study intends to (1) indicate the effect of multimedia in language teaching in general and in teaching vocabulary in particular, (2) emphasize the importance of multimedia,

particularly educational software specially designed for vocabulary learning, and (3) investigate the effect of CAVI in contrast to teacher-led method.

REVIEW OF LITERATURE

Computer Assisted Language Learning (CALL)

CALL is considered to be the most innovative area in the practice of foreign/ second language items (Davies, 2002; Jones, 2001; Levy, 1997). Since the initial introduction of computers into the field of second/foreign language education, many researchers naturally tried to evaluate the effectiveness of this new medium and its applications on language learning. Research on CALL has increased markedly in recent years. Studies have examined the effectiveness of CALL on all language skills for the past 20-30 years. The studies have highlighted different results. Mostly, a positive correlation has been found between CALL and increased performance on posttest exams. They also revealed that CALL programs make the learning process more stimulating and enriching than classroom applications (Brett, 1997; Chapelle, 1998; Chen, 2005; Coniam, 1998; Fu, 2002; Grene, 2000).

Computer Assisted Vocabulary Instruction (CAVI)

Vocabulary learning has always been a popular subject in CALL programs since the early stages of CALL applications (1980s). In the field of foreign language learning, numerous computer assisted vocabulary instruction (CAVI) treatments have been made to facilitate the complex process of L2 vocabulary learning. Some studies only examine the effectiveness of a computer program to test whether it is efficient or not in vocabulary learning (Goodfellow and Laurillard 1994; Siribodhi, 1995). Primarily, in addition to examining the effectiveness of one CAVI program on students' vocabulary acquirement, many studies have compared teacher-led instruction and computer instruction in terms of vocabulary acquisition. Although some research reveal that computer assisted vocabulary instruction is not more effective than teacher instruction (Goodfellow and Laurillard 1994; Jafer, 2003; Liu, 1998), most of them indicated that CAVI promotes greater vocabulary achievement than teacher-led instruction (Al- Seghayer, 2001; Chun and Plass, 1996; Cobb, 1999; Duquette, Renie and Laurier, 1998). The studies on CAVI effectiveness have also remarked salient issues about the applications.

Experiments on Multimedia/CALL

Nilufer Bekleyen and Adnan Yilmaz (2011) focused their study on the use of Jing™– a free computer program that allows users to take a picture of what they see on their computer monitor and also allows users to add texts and highlight the picture – in language classes to teach new vocabulary in an enjoyable and innovative way. The instruments included a vocabulary test used to measure the students' knowledge of the target vocabulary before and after a teaching period. In addition, an interview was conducted to learn the students' opinions about their learning experience. The results indicated a substantial increase in the students' post-test scores. It was also found that the students had a positive attitude towards the use of computers in vocabulary learning.

Olibe (2010) in his study sought to determine if computer-assisted language learning (CALL) would improve students' achievement in English grammar more than Conversational English Language Instruction (CELI). Guided by four research questions, this study was a quasi-experimental study involving four intact classes of junior secondary III students. Two of the classes were randomly assigned to the experimental group while the other two were randomly assigned to the control group. Grammar proficiency tests were used to collect data. The study, which lasted for 8 weeks, utilized the computer for the experimental group and printed texts for the control group. Data was analyzed using mean and standard deviation scores. Findings revealed that CALL had an overall positive effect on students' achievement in English language more than CELI.

Silverman and Hines (2009) investigated the use of multimedia to enhance readalouds and vocabulary instruction for English language learners (ELL) and English speaking students. This study had two interventions: one with multimedia, the other without. In both conditions, the teachers used a scripted lesson on habitats using both narrative and informational texts. The intervention took place over four three-week cycles, one cycle for each habitat studied. Students were introduced to the books in the same order and eight words per book were chosen as the target words. The multimedia condition included four videos, one for each habitat. Students were shown video clips after reading to facilitate their review of all of the words taught. Findings indicated that the use of multimedia provided no statistically significant difference for English speaking students. The use of multimedia for English language learners, however, was significant. Data indicate that the gap between English learning and English speaking students was narrowed not only for the targeted vocabulary words but for general vocabulary knowledge as well.

Vocabulary Learning

To make an interpretation in broad terms, vocabulary is generally defined as a single unit or lexical phrases that convey one single meaning (Read, 2000). Knowing a word is generally considered as comprehending the meaning and its pronunciation. Conversely, Nation (2001) proposes different kinds of knowledge in order to master a word; the meaning of the word, its written form, the spoken form, word parts, collocations and its register. He also indicates that these different types of knowledge for a word cannot be learned at the same time because of the incremental nature of vocabulary learning. Waring’s (2002) definition relates to a word which comprises both the ability to recognize the meaning of the word and the ability in producing it. He also concedes that one can recognize a word in a text or conversation but may not necessarily use it appropriately. This signifies that the vocabulary learning stage of the learner has not fully materialized yet.

Experiments on Vocabulary

Zabih O. Javanbakht (2011) carried out a study to explore the evidence of incidental vocabulary learning through the different tasks undertaken by male elementary EFL learners. To pursue this purpose, the impact of three kinds of tasks, i.e., reading comprehension, reading comprehension with fill-in gaps, and sentence writing, was measured on incidental vocabulary learning. The materials of the experiment were pilot-studied in advance on learners (n = 51) of the same age and proficiency level to assure the unfamiliarity of the target words. Three intact groups of male Iranian elementary EFL learners (n = 88) in two junior high schools participated in the main study. Two unexpected vocabulary tests after the completion of each task were administered to examine short and long-term memory retention. The results of ANOVA showed evidence of the significant impact of task involvement on the incidental learning of vocabulary by male elementary EFL learners.

Christopher Patrick Wharton (2011) examined the evolving mental connections of twenty Japanese college students through the multiple administration of a thirty-item Word Association Test (WAT) over a three-month period. Students were tested at the beginning of the term, after five weeks of direct vocabulary instruction, and then again after a five-week period of no direct instruction, to observe the changing associations students produced to thirty low frequency PWs taken from the Academic Word List. Twenty of the PWs were taught during regular class time, while ten received no attention. Half of the twenty PWs were taught using meaning-based techniques, while the other half were taught through position-based activities. Results indicate that instruction increases the number of responses elicited, and the type of response corresponds with the type of instruction (i.e. meaning-based PWs primarily elicited meaning-based responses). The findings support the general consensus that vocabulary acquisition is a gradual process and learners’ connections change due to time and instruction, as words become better known.

Naser Rashidi and Amir Ganbari Adivi (2010) investigated the amount of incidental vocabulary learning through comprehension-focused reading of short stories and explicit instruction to this goal. Forty male high school students were selected randomly, and divided into two groups of twenty. One group of these students was given five 400-word-level short stories to read with the purpose of comprehension, and the students in the control group were explicitly taught twelve vocabulary items selected from the short stories. Results demonstrated that students in the incidental learning condition did better and gained more vocabulary.

METHOD

Research Design

This study is conducted under the quasi-experimental pretest posttest design since it is not possible to control all variables. The subjects were exposed to the pretests (O₁ and O₂), then the procedures, that is, the experimental treatment (X) and the placebo treatment (C), and finally the posttests (O₁ and O₂). Table 1 displays the research design.

Table 1. Research design

Group	Number of participants	Pretest	Procedure	Posttest
A	15	O ₁	X	O ₁
B	15	O ₁	C	O ₁
C	15	O ₂	X	O ₂
D	15	O ₂	C	O ₂

Participants

As many as 60 students participated in this study. The participants were chosen among pre-intermediate and intermediate level EFL students from the Iran Language Institute (ILI). Iran language Institute is renowned for its

language courses in Iran. It offers language courses at a variety of proficiency levels, ranging from basic to advanced levels to children, young adults, and adults. This study was conducted with the participation of 60 students at one of the branches of ILI in Amol. The researchers conducted the research on 30 pre-intermediate learners and 30 intermediate learners. In order to validate the language proficiency of the students and make up a homogeneous group, students were given the Solutions Placement Test (SPT). Therefore, it can be claimed that there exists equivalence between the experimental groups and the control groups since all groups sat for a placement test. Having administered the placement test, 30 participants who were placed in pre-intermediate level and 30 participants who were placed in intermediate level were selected as the subjects of the study. The 30 pre-intermediate students were then randomly assigned to the control and experimental group, that is, Group A or pre-intermediate experimental group and Group B or pre-intermediate control group. Likewise, the 30 intermediate students were then randomly assigned to the control and experimental group, that is, Group C or intermediate experimental group and Group D or intermediate control group. The participants included 30 female and 30 male students. All students were native speakers of Farsi and they were 15 to 30 years of age. In short, this study was conducted on four groups: Group A or pre-intermediate experimental group, Group B or pre-intermediate control group, Group C or intermediate experimental group, and Group D or intermediate control group. Table 2 displays the experimental and control groups on which the study was conducted.

Table 2. Experimental and control groups

Level	Experimental Groups (or CAVI Groups)	Control Groups (or Teacher-led Groups)
Pre-intermediate	Group A	Group B
Intermediate	Group C	Group D

Instruments

Four types of instrumentations including the Solutions Placement Test, the word lists, the vocabulary tests, and the CAVI software were used in this study.

Solutions Placement Test

In order to validate the level of the participants and form a homogeneous group, participants were given the *Solutions Placement Test*. This placement test is intended to help teachers decide which level of *Solutions*, Elementary, Pre-Intermediate or Intermediate is the most suitable for their students. *Solutions* placement test has been developed by University of Oxford after consultation with teachers and is designed to assess students' knowledge of the key language as well as their receptive and productive skills.

Word Lists

The words were selected from students' books, that is, the books they study at the ILI for pre-intermediate 1 and intermediate 1. These books are published by Iran Language Institute. They are planned, compiled, and revised by the Research and Planning Department of the ILI. Therefore, the words are already pitched at the right level for pre-intermediate and intermediate learners. Eight word lists were prepared for pre-intermediate learners. These words were chosen from the students' pre-intermediate book 1, and similarly eight word lists were selected from the students' intermediate book 1 for intermediate learners. Each word list contained seven words. These word lists were taught to the subjects within eight sessions; that is, every session participants worked on one word list. These words were taught to the experimental groups using the multimedia software "*Vocaboly*" while they were taught to the control groups using "*existing methods*."

Vocabulary Tests

The tests in this study were designed by the researchers. Two vocabulary tests were developed. One test was developed for pre-intermediate learners, and another test was developed for intermediate learners. These vocabulary tests have similar formats. Each test has two parts, and each part has 20 items. Therefore, each test has 40 items. All items were given 1 point each, and there is no penalty for guessing. The 1st section, which has 20 items, is *multiple-choice completion*. In this part a sentence with a missing word is presented; students choose one of four vocabulary items given to complete the sentence. The 2nd section, which has also 20 items, is *multiple-choice paraphrase*. In this part a sentence with one word underlined is given; students choose which of four words is the closest in meaning to the underlined item. This section will test students' knowledge of vocabulary items and use of English. These two vocabulary tests were given twice, first as a pretest and then as a posttest. Students were pretested using these tests in

order for the researchers to capture the initial differences between the groups; then they were exposed to the procedure, i.e. the experimental groups received the special treatments and the control groups received the placebo treatments for eight sessions. In the end, these vocabulary tests were administered to the participants once again in order for the researchers to investigate the effect of the treatments.

Piloting the Vocabulary Tests

In order for the tests to be both valid and reliable, these two tests were piloted on two similar groups other than the experimental groups. This piloting aimed at timing the test and determining item difficulty and item discrimination as well as calculating the reliability of the tests.

Timing the Tests

It was estimated that a period of 30 minutes would provide ample time for the students to take the test. The researchers added the time taken by the fastest student and the time taken by the slowest student together. Then the mean was calculated to get the real time needed by the students to finish the tests. This time was calculated in the following way:

$$\frac{\text{the time taken by the fastest student} + \text{the time taken by the slowest student}}{2}$$

Reliability of the Tests

According to Hatch & Farhady, reliability is “the extent to which a test produces consistent results when administered under similar conditions.” Therefore, “consistency of results is the basic concept of reliability of a test.” To measure the reliability of the two vocabulary tests, they were administered to two pilot groups. The pre-intermediate vocabulary test was piloted on 15 pre-intermediate students similar to experimental and control groups, and likewise the intermediate vocabulary test was piloted on 15 intermediate level students. Kuder-Richardson Reliability Coefficient (KR 21 Formula) was used to measure the reliability of the tests which was 0.74 and 0.70 for pre-intermediate and intermediate vocabulary tests respectively.

Validity of the Tests

Unlike reliability which is a purely statistical parameter, validity is a matter of degree which heavily relies on the peculiarities of the test. (Farhady et al, 1994) According to Christine Coombe et al (2007), “validity refers to the extent to which a test measures what it purports to measure.” The two vocabulary tests were supposed to measure the students’ vocabulary mastery. The tests had two parts. The first part was multiple-choice completion. According to Madsen (1983), multiple-choice completion is “a good vocabulary test type for students who can read in the foreign language. It makes the students depend on context clues and sentence meaning.” One of its advantages is that “it helps students see the full meaning of words by providing natural contexts and it also discourages word-list memorization.” The second section of the test was multiple-choice paraphrase. According to Madsen (1983), “multiple-choice paraphrase tests of vocabulary items offer much of the same advantage that multiple-choice completion tests do.” Since the tests measured what it was supposed to measure, it can be claimed that the tests were valid.

Vocaboly: The CAVI Software

Vocaboly is learning software for English vocabulary, through many learning methods, including test and game, the hard memorization will be much easier and more efficient, especially lots of fun. The experimental groups were taught using this multimedia software. This software has many features and parts. The main features of this software include the *Main Window* which consists of four parts: Middle, Upper, Left and Bottom, *Word Ticker* which displays words atomically, the *Spelling* Section which lets students spell word according to the meaning, the *Multi-Choice* section which lets students select meaning according to word, the *Memory Game* which lets students match the word and meaning, and the *Star War* section which is shoot game.

Procedure for the CAVI Group

Before the instruction, students sat for a pretest in order for the researchers to capture the initial differences between the groups. Students had already been told to bring their laptops. An introductory session was hold, and the researchers provided the students with a brief introduction of the study. Then, the researchers helped the students installing the software. Once the software was installed on the students’ laptops, the researchers explained all the features of the program and answered the participants’ questions regarding the software. Then, CAVI groups practiced the software in order to diminish the effect of students’ unfamiliarity with the software. In this introductory

session, nothing had been taught, and the goal was just to familiarize the participants with the software. Moreover, dates on which the eight sessions were to be held for instruction were set and fixed. Pre-intermediate students were asked to attend the class twice a week. Intermediate students were also asked to attend the class twice a week on different days. Each session required 15 minutes.

One week later, the first formal session was held, and students participated in a CAVI session in the classroom. By then, the researchers had already prepared the words' source files. Eight source files were prepared for pre-intermediate students, and eight source files were prepared for intermediate students. In all eight sessions students were provided with each source file at the beginning of every session. Once the students were given the session's source file, they were asked to load the file. The researchers guided the students whenever they had problems. In the first section, students were asked to click on the main window. In the middle, the word lists were displayed. The page contained ten words; each word consisted of meaning, difficulty level and phonetic symbol. Students could press "F2" to hear the word pronounced, they could also press "Page Up" or "Page Down" to scroll the word list. In the second part, words were displayed and pronounced automatically. Students could adjust the speed and other setting. In the third part, students practiced words' spelling. The definition of the word was displayed automatically, and students wrote the spelling of the words. If students misspelt the words, the software made a sound meaning that the word's spelling was incorrect. Then, the correct spelling and the student's spelling displayed together in the right. The fourth part was Multi-Choice. In this part, students could take a vocabulary test. This test included the session's words only. The test had two modes which enabled the students to either select meaning by word or select word by meaning. Depending on the students' selection, students were to select the correct definition or word. The fifth and the sixth parts were games. In the memory part, there were a few cards which were matched with each other, one card contained the word, another card contained the meaning, if the student clicked one card, the card would display the content what it holds, when the student clicked another card, if these two cards were matched, they would disappear, otherwise, the first one would hide the content. When all cards were disappeared, the student would win the game. The last part was the star war. Once the game began, the words were dropping down in the window; students should hit the words before they crashed. This procedure was followed throughout all sessions.

Once the eight sessions were held and students received the treatment via multimedia software, they sat for the posttests in order for the researchers to investigate the effect of the treatments.

Procedure for Teacher-Led Group

The students in teacher-led groups received ordinary classroom instruction in each session. Before the instruction, students sat for a pretest in order for the researchers to capture the initial differences between the groups. In order to teach the new words the students were asked to close their books and then the following steps were taken:

1. The first step included reading out each word two or three times allowing a short pause so that the students could pick up the correct pronunciation, and recognize the syllable which received the primary stress.
2. The second step included reading out each word two or three times again, and having the students repeat the words. This was done in chorus with individual spot checks. After each spot check, the class was asked to repeat the word one more time.
3. In the third step the students were asked to open their books to the right page and only listen as the words were read out to them two or three times.
4. The last step included going through the vocabulary list and explaining each word by giving examples and writing the synonyms and antonyms on the board.

The above-written steps were followed when teaching the words to both pre-intermediate and intermediate control groups. Once the eight sessions were held and students received the treatment via the teacher-led method, they sat for the posttests in order for the researchers to investigate the effect of the treatments.

Data Analysis Procedure

Since the present study compared CAVI with teacher-led instruction with regard to students' vocabulary achievement, data was collected through vocabulary tests. Besides, two medium of instruction were compared in terms of vocabulary achievement. Therefore, the independent variable of the study was two different medium of instruction. Vocabulary test scores were dependent variables.

As the experimental and control groups were independent from each other, an *Independent-Sample T-Test* was conducted for the analyses in order to compare CAVI groups with Teacher-led Instruction Groups. Before the administration of the treatments, all groups sat for a pre-test. An Independent-Sample T-Test was conducted to compare the means of Group A (Pre-intermediate experimental group) with that of Group B (pre-intermediate

control group). Likewise, an Independent-Sample T-Test was conducted to compare the means of Group C (Intermediate experimental group) with that of Group D (Intermediate control group). Then after the administration of the treatments, all groups sat for a post-test. The very same statistical procedure was applied here as well. An Independent-Sample T-Test was conducted to compare the means of Group A (Pre-intermediate experimental group) with that of Group B (pre-intermediate control group). Likewise, an Independent-Sample T-Test was conducted to compare the means of Group C (Intermediate experimental group) with that of Group D (Intermediate control group). The Statistical Package for Social Sciences' software program (SPSS 20.0) was used to analyze the data.

RESULTS AND DISCUSSION

Research Question 1: Is Computer Assisted Vocabulary Instruction (CAVI) in comparison to Teacher-led Method more effective on pre-intermediate Iranian EFL learners' vocabulary learning?

In order to find out whether CAVI was more effective than Teacher-Led Method, all groups were compared according to their pre- and post-test scores separately. Firstly, students' scores in pre-test were analyzed in order to find out whether the two groups were homogeneous in terms of their vocabulary knowledge. Secondly, the participants' scores in post-test were analyzed in order to study the effect of the treatment. An Independent-Sample T-Test was conducted to compare the means of Group A (Pre-intermediate experimental group) with that of Group B (pre-intermediate control group) both before and after the administration of the treatment. Table 3 displays the descriptive statistics of the pre-test before the administration of the treatment given to pre-intermediate students, and Table 4 also presents the descriptive statistics of the Independent-Sample T-test before the administration of the treatment.

Table 3. Descriptive statistics of the pre-test administered to pre-intermediate students

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Data	A (CAVI Group)	15	2.2667	1.62422	.41937
	B (Teacher-led Group)	15	2.5333	1.50555	.38873

Table 3 describes the statistics of the pre-test given to pre-intermediate level students before the administration of the treatment. A in the first row stands for pre-intermediate experimental group, and B in the second row stands for pre-intermediate control group.

Table 4. Independent-Sample T-Test comparing CAVI and Teacher-led Group

	t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Data	.001	.976	-.466	28	.645	-.26667	.57183

As seen in Table 3, the mean score of the CAVI group (M=2.2667) is almost the same as Teacher-led Group (M= 2.5333). Then a T-Test was conducted to see whether or not the difference was significant. As seen in Table 4, the T-test result (.645) shows that there is no meaningful distinction between the means of the two groups in the pre-test before the administration of the treatment. Therefore, it can be claimed that the two groups had almost the same amount of vocabulary knowledge before the administration of the treatment.

In order to answer the first research question and investigate the effect of the treatment, participants' scores in post-test were analyzed. An Independent-Sample T-Test was conducted to compare the means of Group A (Pre-intermediate experimental group) with that of Group B (pre-intermediate control group) after the administration of the treatment. Table 5 displays the descriptive statistics of the post-test after the administration of the treatment given to pre-intermediate students, and Table 6 also presents the descriptive statistics of the Independent-Sample T-test after the administration of the treatment.

Table 5. Descriptive statistics of the post-test administered to pre-intermediate students

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Data	A (CAVI Group)	15	35.4667	3.13657	.80986
	B (Teacher-led Group)	15	30.0667	3.69298	.95352

Table 5 displays the statistics of the post-test given to pre-intermediate level students after the administration of the treatment. A in the first row stands for pre-intermediate experimental group, and B in the second row stands for pre-intermediate control group.

Table 6. Independent-Sample T-Test comparing CAVI and Teacher-led Group

		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
	Data	1.001	.326	4.316	28	.000	5.40000	1.25103

As seen in Table 5, the mean score of the CAVI group (M=35.4667) is considerably higher than the Teacher-led Group (M= 30.0667). Then a T-Test was conducted to see whether or not the difference was significant. As seen in Table 6, the T-test result (.000) shows that there is meaningful distinction between the means of the two groups in the post-test after the administration of the treatment. This analysis indicates that Computer Assisted Vocabulary Instruction (CAVI) in comparison to Teacher-led Method is more effective on pre-intermediate Iranian EFL learners' vocabulary learning.

Research Question 2: Is Computer Assisted Vocabulary Instruction (CAVI) in comparison to Teacher-led Method more effective on intermediate Iranian EFL learners' vocabulary learning?

In order to answer this research question, participants underwent the same procedure which was applied to pre-intermediate students. In order to find out whether CAVI was more effective than Teacher-Led Method on intermediate Iranian EFL learners' vocabulary learning, both groups were compared according to their pre- and post-test scores separately. Firstly, students' scores in pre-test were analyzed in order to find out whether the two groups were homogeneous in terms of their vocabulary knowledge. Secondly, the participants' scores in post-test were analyzed in order to study the effect of the treatment. An Independent-Sample T-Test was conducted to compare the means of Group C (intermediate experimental group) with that of Group D (intermediate control group) both before and after the administration of the treatment. Table 7 displays the descriptive statistics of the pre-test before the administration of the treatment given to intermediate students, and Table 8 also presents the descriptive statistics of the Independent-Sample T-test before the administration of the treatment.

Table 7. Descriptive statistics of the pre-test administered to intermediate students

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Data	C (CAVI Group)	15	2.6000	1.35225	.34915
	D (Teacher-led Group)	15	2.3333	1.44749	.37374

Table 7 describes the statistics of the pre-test given to intermediate level students before the administration of the treatment. C in the first row stands for intermediate experimental group, and D in the second row stands for intermediate control group.

Table 8. Independent-Sample T-Test comparing CAVI and Teacher-led Group

		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
	Data	.048	.828	.521	28	.606	.26667	.51146

As seen in Table 7, the mean score of the CAVI group (M=2.6000) is almost the same as Teacher-led Group (M= 2.3333). Then a T-Test was conducted to see whether or not the difference was significant. As seen in Table 8, the T-test result (.606) shows that there is no meaningful distinction between the means of the two groups in the pre-test before the administration of the treatment. Therefore, it can be claimed that the two groups had almost the same amount of vocabulary knowledge before the administration of the treatment.

In order to answer the second research question and investigate the effect of the treatment empirically, participants' scores in post-test were analyzed. An Independent-Sample T-Test was conducted to compare the means of Group C (intermediate experimental group) with that of Group D (intermediate control group) after the administration of the treatment. Table 9 displays the descriptive statistics of the post-test after the administration of

the treatment given to intermediate students, and Table 10 also presents the descriptive statistics of the Independent-Sample T-test after the administration of the treatment.

Table 9. Descriptive statistics of the post-test administered to intermediate students

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Data	C (CAVI Group)	15	29.4000	4.35562	1.12462
	D (Teacher-led Group)	15	23.7333	4.26726	1.10180

Table 9 displays the statistics of the post-test given to intermediate level students after the administration of the treatment. C in the first row stands for intermediate experimental group, and D in the second row stands for intermediate control group.

Table 10. Independent-Sample T-Test comparing CAVI and Teacher-led Group

	t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Data	.058	.812	3.599	28	.001	5.66667	1.57440

As seen in Table 9, the mean score of the CAVI group (M=29.4000) is considerably higher than the Teacher-led Group (M= 23.7333). Then a T-Test was conducted to see whether or not the difference was significant. As seen in Table 10, the T-test result (.001) shows that there is meaningful distinction between the means of the two groups in the post-test after the administration of the treatment. This analysis reveals that Computer Assisted Vocabulary Instruction (CAVI) in comparison to Teacher-led Method is more effective on intermediate Iranian EFL learners' vocabulary learning.

DISCUSSION

The present study compared the effect of Computer Assisted Vocabulary Instruction (CAVI) and Teacher-Led Instruction (TLI) on pre-intermediate and intermediate Iranian EFL learners' vocabulary learning. The results of the study revealed that CAVI groups did far better than Teacher-Led groups. This indicates that CAVI groups learned and remembered more vocabulary than teacher-led groups. The success of the CAVI groups in terms of vocabulary achievement might be explained with the following factors.

First, learners had control over their learning process and learned at their own pace during the implementations. This individualized learning might have promoted learners' motivation (Lee, 2000; McGreal, 1988). Thus, students' motivation might have facilitated students' vocabulary learning.

Second, one to one interaction between a student and the computer might have facilitated students' vocabulary achievement. CAVI software (Vocaboly) made the students actively involved in the learning process. For each student, the computer program provided an instant feedback and opportunity to correct a mistake. Students' activities and answers were only seen by them. Hence, students might have had lots of activities without fear of making mistakes. This situation may have contributed to having low affective-filter environment that facilitates language learning (Krashen, 1982).

The other possible reason may be the lively environment and the animation that the program provided the students with. Especially in the Spelling, listening and star war section of the program, there were a lot of lively features which helped the students to build better mental images and create curiosity (Al- Seghayer, 2001; Iheanacho, 1997).

The result of the study also indicated that students were eager to use software program and found it enjoyable and educational because they could both play game and learn words during the CAVI sessions.

Last but not least, the findings of the study point to the facilitating effect of CAVI on vocabulary learning. This result is in line with the findings of previous research that indicate facilitating effect of CAVI on vocabulary (Fu, 2002; Levine, Frenz and Reves, 2000).

CONCLUSION AND IMPLICATIONS

Conclusion

The present study investigated the effect of Computer-Assisted Vocabulary Instruction (CAVI) on pre-intermediate and intermediate Iranian EFL learners' vocabulary learning and compared CAVI with Teacher-led Instruction (TLI) in term of vocabulary achievement. The comparison of both group scores revealed that the students in CAVI groups could learn and retain more vocabulary than teacher-led groups. This shows that multimedia makes excellent teaching tool, especially in teaching vocabularies. Moreover, it offers language learners major advantages. Computer Assisted Language Learning enhances the motivation level of students. They are useful in-group activities as well as in imparting individualized instruction, which is rarely possible in a traditional classroom. There are no limitations with regard to practice-sessions or time. Students can have as many practice-sessions as they wish, repeat the tasks any number of times to acquire mastery and select the material according to their individual requirements. Thus the computer assisted language learning is an efficient learner-centered method. Additionally, CALL software has tutorial modes, which help the students explore the correct answers and learn from the errors they make. CALL programs provide the information requested in a very short time, almost instantaneously. By using CALL method the students will not only learn more number of words, but also the usage of those words as well. The advantage of using CALL method is that they can do the entire study skill activity at their own pace and time using their own learning styles and strategies.

Implications of the study

This study provided an evidence for facilitating effect of CAVI on pre-intermediate and intermediate learners' vocabulary learning. Therefore, language teachers may use such commercially available CAVI programs to enhance learners' vocabulary. Since computer programs present all materials for language items, teachers need not waste time in finding and preparing materials for vocabulary instruction.

In the present study, individualized learning, instant feedbacks and animations of the program might be considered fundamental grounds for CAVI effectiveness on students' vocabulary learning. The individualized learning promotes autonomy as learners can control over their learning process and learn at their pace. Students can also evaluate their own pace and make provision for their language learning pace. Hence, learners have a responsibility of their own language learning in CAVI. For this reason, CAVI can be an integral part of foreign language learning. In addition to using CAVI programs for vocabulary instruction in language classes, such kind of programs can be also used by students in extra class hours. Thus, students take responsibility for their own learning and teachers may allow time for other language units and skills.

CAVI programs can also be used to improve students' pronunciation. In EFL environment, students are rarely exposed to foreign language input out of classroom and their only exposure to the target language's oral form is their teachers' speech in the class. CAVI programs expose students to native pronunciation and this will help to eliminate teacher induced pronunciation errors. From this point of view, CAVI provides a valuable opportunity to EFL learners.

In brief, computers have become so widespread that their uses have expanded dramatically. The results of the study suggest that computer assisted language learning may be one type of supplement to the regular curriculum in teaching English. However, before integrating computers into the curriculum, teachers should be trained on how to use computers efficiently. The teachers should also know the content of the software and confirm its convenience for their learners. In addition, financial barriers, availability of software, technical knowledge and acceptance of technology are most common restrictions to use computer programs for language classes so that the department of education should encourage teachers to use software materials by organizing a training course for CAVI applications. In addition, department of education should provide teachers such commercially available programs for language instruction.

Suggestions for Further Research

This research was conducted on pre-intermediate and intermediate students. A study on different age group and proficiency levels such as upper/high-intermediate or advanced levels can be conducted to see whether CAVI has different effects on them.

In this study, target words consisted of abstract words, future research may examine the effect of CAVI on concrete words. They may obtain different results in different word classes. In this research, gender differences among the participants were not taken into account, but future research may examine CAVI effectiveness in relation to gender differences.

In this research, learners' vocabulary was examined with multiple-choice completion and multiple-choice paraphrase. Further research can also administer listening and speaking tests to examine vocabulary learning.

This study investigated students' vocabulary achievement after they had received eight sessions of instruction. A study that examines students' vocabulary learning in a longer period of time may provide more reasonable results.

Lastly, the present study investigated computerized instruction on vocabulary learning. Future research may examine computerized instruction on different language skills such as reading and writing. Thus, more generalized result may be obtained about computerized instruction on foreign language learning.

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