

Using Computer-Assisted Language Learning (CALL) to Improve Elementary EFL Learners' Vocabulary Learning: A Case Study of Iranian EFL Students in Roudan

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Abstract

In recent years, the utilization of Computer-Assisted Language Learning (CALL) in education has significantly risen, primarily attributed to advancements in language software. Nevertheless, CALL is not widely employed for foreign language learning in Iran. That is, while many teachers recognize the significance of technology, such as computers, they seldom utilize it for teaching vocabulary [1]. Consequently, this study seeks to investigate the effect of CALL on the vocabulary acquisition of Iranian English as a Foreign Language (EFL) learners at an institute in Roudan. To this end, learners were divided into a control group and an experimental one. A pre-test using vocabulary assessments from the teacher's guide was administered to both groups to ensure students were unfamiliar with the words beforehand. Subsequently, by comparing the post-tests and analyzing data via an SPSS package version 27, the researcher determined that learners exposed to the CALL approach outperformed those in the non-CALL approach group. On the other words, according to this study, CALL has a significant effect on vocabulary learning among elementary learners. The result of this study can be beneficial for EFL instructors and teachers by providing them with insights on utilizing the CALL approach to teach vocabulary.

Keywords: Computer-Assisted Language Learning (CALL), vocabulary learning, elementary learners.

1. Introduction

By the early 20th century, language teaching became a focal point of educational discussions and advancements. While language teaching has a rich history, the basis for modern teaching methods originated in the early 1900s. Applied linguists and other professionals began formulating principles and techniques for designing teaching methods and materials by integrating insights from linguistics and psychology [2].

Relatedly, in the field of language teaching, trends and influential figures have emerged and faded, mirroring the shifts typical of youth culture [3]. Moreover, teaching and learning are inseparable. According to Zulvia Khalid [4], teaching and learning are inherently interconnected. Teaching entails guiding and facilitating the acquisition of knowledge by creating conducive learning environments for students.

Furthermore, it is crucial for individuals to have a strong command of vocabulary in order to effectively engage in communication with others. Without a solid understanding of vocabulary, individuals may struggle to comprehend the meanings of words or phrases and how to properly utilize them in everyday situations. Therefore, acquiring a comprehensive vocabulary is essential for improving one's communication skills and achieving success in interactions with others [5].

Historically, vocabulary instruction was not a primary focus in second language programs, but there is now a growing interest in understanding the significance of vocabulary in the learning and teaching process. While teachers recognize the value of technology, such as computers, they infrequently utilize it for vocabulary instruction [1].

Given the extensive vocabulary learners need to acquire within the limited time frame of EFL classes, CALL is seen as an appealing method for learning. An advantage of utilizing CALL for vocabulary instruction is its ability to offer systematic repetition of words, thus helping to prevent forgetting words that have been learned [6].

Earlier research has investigated how vocabulary acquisition is influenced by CALL in language learning environments. For example, a study by Enayati and Gilakjani [7] explored the impact of CALL on vocabulary learning in Iranian intermediate learners using Tell Me More (TEM) software. The results indicated that the experimental group performed better than the control group and had favorable views on CALL. Another study on Indonesian EFL learners concluded that CALL can positively affect vocabulary acquisition, speaking skills, and reduce foreign language speaking anxiety [8].

Additionally, other studies have demonstrated that utilizing CALL tools, such as software programs and drills, enhances vocabulary retention and development among learners, leading to improved language proficiency [9], [10], [11], [12]. Also, CALL programs with built-in repetition schedules have been found to outperform traditional vocabulary teaching methods, resulting in enhanced vocabulary acquisition [13].

Despite these positive findings, there are some gaps and limitations in existing research that this study aims to address. Firstly, the majority of studies concentrate on older or advanced learners rather than elementary students. This study specifically targets elementary EFL learners to expand our understanding of how young learners can benefit from CALL interventions. Secondly, although some studies demonstrate the positive impact of technology on vocabulary acquisition, others indicate mixed results or minimal improvements. References [14], [15], [16] and [17] are several studies which found no advantage for the CALL group over the non-CALL groups. Hence, it is essential to examine if CALL can enhance vocabulary acquisition for young EFL students.

1.1 ELT

English Language Teaching (ELT) involves instructing non-native speakers in the English language, encompassing various methodologies and strategies to enhance learners' language skills. ELT strives to enhance English language skills in listening, speaking, reading, and writing using proven teaching methods [18]. Relatedly, ELT underscores the significance of vocabulary acquisition as a key element in language learning. A strong vocabulary is essential for improving language proficiency, allowing learners to understand and communicate effectively in different situations. ELT practitioners employ a range of strategies and techniques to facilitate vocabulary learning, such as explicit instruction, context-based activities, and the use of technology-enhanced resources [19]. Moreover, utilizing a blend of traditional classroom instruction and innovative technology, ELT instructors strive to create dynamic and communicative language learning environments tailored to students' needs and preferences [20].

1.2 Vocabulary

Nunan [21] states that vocabulary is the collection of words that an individual knows. Vocabulary plays a crucial role in the process of acquiring a second language. Without words that label objects, actions, and concepts, a speaker cannot express intended meanings [22]. Vocabulary is essential for language proficiency as it significantly influences learners' speaking, listening, reading, and writing skills. Without a robust vocabulary and effective strategies for learning new words, learners may not reach their full potential and might miss out on language learning opportunities like listening to the radio, engaging with native speakers, using the language in various settings, reading, or watching television [23]. Folse [24] argues that a sizable portion of vocabulary enables language learners to comprehend what they read or hear. In fact, vocabulary is one of the most important components in language learning and language curricula must reflect this notion.

1.3 CALL

CALL is an approach to teaching and learning language that involves using computers to assist in presenting, reinforcing, and assessing learning materials. It typically includes a significant interactive component [25]. CALL is described by Hubbard [26] as any approach in which a student utilizes a computer to develop his or her language skills. According to Khoshnoud and Karbalaee [12], CALL involves using computers to teach and learn a second or foreign language. An advantage of CALL vocabulary instruction, as highlighted by Miles and Kwon [27], is its ability to provide systematic repetition of words to prevent forgetting. CALL is thought to offer a fresh perspective on language instruction, learning, and vocabulary acquisition [28].

1.3.1 Benefits of CALL

Some benefits of CALL for vocabulary acquisition are listed below:

- Increased Exposure: CALL activities provide learners with repeated encounters with new words through interactive exercises, games, and multimedia presentations [29].
- Enhanced Engagement: Technology can make vocabulary learning more interactive and stimulating, fostering motivation and active participation [30]. This is particularly beneficial for kinesthetic and auditory learners [31].
- Meaningful Context: CALL activities can present vocabulary within authentic contexts, such as videos, simulations, and interactive stories [32]. This helps learners understand how words are used in real-world situations [33].
- Personalized Learning: CALL platforms can adapt to individual learning styles and pace [34]. Learners can focus on specific vocabulary areas and receive feedback tailored to their needs [35].

1.3.2 Techniques of CALL

There are some techniques used in CALL approach:

1. Multimedia-based instruction: Using multimedia components such as audio, video, images, and animations to enhance language learning [31, 36].
2. Online resources and tools: Providing access to online dictionaries, language learning websites, digital textbooks, and language exchange platforms to support language learning [37, 38].
3. Gamification: Incorporating game-like elements such as points, badges, leaderboards, and challenges to motivate learners and enhance engagement in language learning [39, 40].
4. Virtual reality and simulations: Using virtual reality and simulation technologies to create immersive language learning environments and real-life communication scenarios [41, 42].
5. Online communication and collaboration tools: Facilitating communication with native speakers, language tutors, and other learners through chat, video conferencing, discussion forums, and social media platforms [43, 44].
6. Mobile language learning apps: Utilizing mobile applications to deliver language lessons, practice exercises, and vocabulary drills on mobile devices [45, 46].

2. Statement of problem

Given that English is a global language used widely in various spheres, it is crucial to explore diverse methods to enhance the learning of English as a second language. It is evident that students in EFL environments, like those in Iran, face challenges in language proficiency due to limited exposure to English.

Additionally, elementary EFL learners often struggle to expand their vocabulary due to limited exposure to authentic language input and difficulties in retaining new words. Traditional vocabulary instruction methods may not always be interesting engaging or effective in supporting young learners' vocabulary development [47]. Relatedly, teachers may encounter obstacles in providing individualized instruction and targeted vocabulary support to a diverse group of students with varying learning needs and preferences.

Thus, the present research seeks to investigate the impact of integrating CALL into vocabulary instruction for elementary EFL learners and evaluate its effectiveness in facilitating vocabulary acquisition. By examining the specific needs and learning preferences of elementary EFL students, this research seeks to provide insights into how CALL can be tailored to support their vocabulary learning processes effectively.

3. Research question

The main research question which is the spark of the study can be stated as the following:

Is there any difference between CALL-based vocabulary learning and the none-CALL one?

4. Research hypothesis

CALL does not have much effect on improving vocabulary learning.

5. Methodology

The researcher measures the effects of CALL as a dependent variable on vocabulary learning as an independent variable in this quantitative analysis.

5.1 Participants

The study involved 25 Iranian EFL learners from a private language institute in Roudan who were selected through random sampling. The participant ages ranged from 9 to 13 years old and they had completed two introductory language courses at the institute, with a primary emphasis on developing conversational proficiency. They participated in the language course twice a week.

As a pre-test, Oxford Placement Test was administered to these students to identify students who were at the same level in terms of vocabulary skills. According to the results, only 20 (13 female & 7 male) students in the entire group were found to have similar proficiency levels and were considered homogeneous. Half of the participants were assigned to the control group randomly, while the other half formed the experimental group.

5.2 Instrument

The instruments used in this study were Oxford placement, computers, DVD-ROM, and a vocabulary pre-test and post-test. The software that was used in this study was Super Minds Level 1 Student's DVD-ROM for the CALL software. "The fabulous Student's Book DVD-ROM features animated stories, interactive games and activities, lively songs with karaoke versions, and fun activities focusing on the key vocabulary and grammar of each unit" (Cambridge University Press & Assessment | Young Learners, n.d.).

Oxford placement test was used to homogenize the participants, a vocabulary test including 20-items as the pre-test to indicate that the students are unfamiliar with the new words, and at the end, a 20-items vocabulary test as the post-test by using provided tests from Super Minds Teacher's Book 1 which had a good coverage of the instruction in the course were the instruments and materials used in this study.

5.3 Procedures

All participants were randomly divided into two groups: CALL (experimental group) and non-CALL (control group). The CALL group received instruction in a language laboratory that was equipped with 6 computers. This group utilized an educational software tool after every teacher's presentation and teaching of the new words of the unit of Super Minds 1 Book. This software prompts learners with questions and records their accurate responses in the designated answer area. Each instance a learner does the task, they are awarded a star. If an incorrect answer is given, the individual will be awarded a red star. Participants have the ability to view images of words, spellings of words, and contextual examples. Additionally, computers offer the opportunity to improve pronunciation skills for both songs and words.

The non-CALL group utilized the identical language instructed in the CALL group, albeit without the employment of CALL software. The teacher just used the book to teach vocabulary. During each session, the teacher presented new vocabulary using visual aids from the book, wrote down the word spellings, and reinforced learning through repetitive practice with the participants. Finally, to see the effectiveness of instructions in both groups, the same vocabulary test was administered in both groups after fifteen sessions and teaching two units of the Super Minds 1 Book.

5.4 Data analysis

This quantitative study is based on evaluating the effect of the CALL approach on vocabulary learning. It followed a model as the pre-test, treatment and the post-test design. The data were analyzed via an SPSS package version 27. Descriptive statistics was applied for each test of each group to check the statistics analysis (mean, std. deviation, min and max). Shapiro-Wilk test was used to test normality of data. Furthermore, an independent samples T-test was conducted to compare the vocabulary measures of the two groups on the pre-test, ensuring that the participants in both groups had equivalent vocabulary knowledge before to undergoing the treatment procedures in this study. To assess the hypotheses of the research, the vocabulary scores of the two groups were compared using an independent samples T-test on the post-test.

6. Results

This study examined the impact of CALL on the vocabulary learning of elementary EFL learners. The results indicate that the EFL learners demonstrated enhanced performance on vocabulary post-tests in comparison to their pre-test results.

Descriptive statistics concerning the pre-test are presented in Table 1. As depicted in Table 1, The mean and standard deviation of the pre-test in the control group are 1.5 and 1.2693, respectively. The same parameters were obtained for the experimental group; they are 1.4 and 0.96609. Also, the minimum and maximum scores in the control group are 0 and 4, and in the experimental group, they are 0 and 3. Hence, the results showed that the learners are unfamiliar with the new vocabulary intended to be taught in the course.

As is seen in Table 2, regarding the significance level of Leven's test, which is reported as 0.466 and this value is greater than 0.05, the assumption of equal variance of the control group and experimental group is not confirmed in the pre-test stage, and this assumption is valid. Therefore, we use the first row to continue the analysis. Also, according to the significance level of the independent T-test, which is 0.845 and is more than 0.05, it can be concluded that the mean scores of the control group and the experimental group are equal to each other in the pre-test stage. That is, results revealed that there was no significant difference in vocabulary knowledge between the control and experimental groups on the pre-tests, so the two groups were homogenous at the pre-test.

Table 1-Descriptive statistics regarding the pre-test

Control group	N	Valid	10
		Missing	0
	Mean		1.5000
	Std. Deviation		1.26930
	Std. Error Mean		.40139
	Variance		1.611
	Skewness		.815
	Std. Error of Skewness		.687
	Kurtosis		.254
	Std. Error of Kurtosis		1.334
	Minimum		.00
	Maximum		4.00
Experimental group	N	Valid	10
		Missing	0
	Mean		1.4000
	Std. Deviation		.96609
	Std. Error Mean		.30551
	Variance		.933
	Skewness		-.111
	Std. Error of Skewness		.687
	Kurtosis		-.623
	Std. Error of Kurtosis		1.334
	Minimum		.00
	Maximum		3.00

Table 2-Independent sample T-test between the control and experimental groups regarding the pre-test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
									Lower Upper
Pre-test	Equal variances assumed	.554	.466	.198	18	.845	.10000	.50442	-.95976 1.15976
	Equal variances not assumed			.198	16.807	.845	.10000	.50442	-.96517 1.16517

According to Table 3, which showed that the secondary scores in the control group and the experimental group are significantly different from each other, therefore, according to the results, the mean and standard deviation of the post-test in the control group are 13.50 and 1.08012, respectively. The experimental group's parameters, 18.30 and 1.15950, were also obtained. It turned out that this difference is related to the experimental group, which has a higher mean score.

Table 3-Descriptive statistics regarding the post-test

Control group	N	Valid	10
		Missing	0
	Mean		13.5000
	Std. Deviation		1.08012
	Std. Error Mean		.34157
	Variance		1.167
	Skewness		.000
	Std. Error of Skewness		.687
	Kurtosis		-1.032
	Std. Error of Kurtosis		1.334
	Minimum		12.00
	Maximum		15.00
Experimental group	N	Valid	10
		Missing	0
	Mean		18.3000
	Std. Deviation		1.15950
	Std. Error Mean		.36667
	Variance		1.344
	Skewness		.342
	Std. Error of Skewness		.687
	Kurtosis		-1.227
	Std. Error of Kurtosis		1.334
	Minimum		17.00
	Maximum		20.00

Table 4-Tests of Normality

Shapiro-Wilk			
	Statistic	df	Sig.
Pre-test	.906	20	.053
Post-test	.919	20	.096

a. Lilliefors Significance Correction

As it is shown in Table 4, the researcher conducted a Shapiro-Wilk test to assess the normality of distribution in two groups using pre-test and post-test results. The normality test indicated P values of .053 and .096 for the pre-test and post-test, respectively. Both the control and experimental groups had P values exceeding the chosen significance, i.e., .005 for this study ($P > \alpha$), indicating that the scores were normally distributed.

Table 5-Independent sample T-test between the control and experimental groups regarding the post-test

		Levene's Test for Equality of Variances				t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Post-test	Equal variances assumed	.061	.807	-9.579	18	.000	-4.80000	.50111	-5.85279	-3.74721
	Equal variances not assumed			-9.579	17.910	.000	-4.80000	.50111	-5.85317	-3.74683

To assess the statistical significance of the difference between subjects' means on post-tests, a paired sample T-test was conducted. An analysis of the paired samples T-test and the mean difference between the post-tests of the two groups is presented in Table 5.

The results indicated that there was a statistically significant difference in vocabulary learning between the two groups ($t = -9.579$, $p = .000$, $p < \alpha$). Therefore, the null hypothesis of the study was rejected. This means that CALL improved the vocabulary learning of elementary students.

7. Discussion

The aim of this research was to indicate the extent to which using CALL had any effects on elementary EFL learners' vocabulary learning. The results demonstrated that CALL activities had a positive impact on vocabulary learning. On the other words, the findings suggest that incorporating CALL activities in the classroom can potentially enhance students' vocabulary acquisition and retention. It can enhance vocabulary learning outcomes and offer a valuable tool for educators seeking to optimize pedagogical approaches in the classroom.

The findings align with previous research by Enayati and Gilakjani (2020) who also found that CALL produced better results in vocabulary learning than traditional vocabulary teaching method. The TEM program was utilized as a form of intervention in the research study, allowing learners to escape tedious classroom environments and experience an enjoyable time during the duration of the research course. Furthermore, the findings indicate that teachers have the ability to create student-centered classrooms and foster dynamic teaching environments [7].

The results of this study align with the findings of Naraghizadeh and Barimani (2013) examined the effectiveness of CALL on Iranian EFL learners' vocabulary learning. The study results showed a significant difference in vocabulary knowledge between the experimental and control groups. That is to say, the CALL training improved the vocabulary knowledge of EFL learners. Furthermore, the findings also indicated that the team who received CALL had superior performance in that particular investigation [48].

Likewise, several studies have shown that technology-enhanced language learning can have a positive impact on students' vocabulary development [49, 50]. CALL provides opportunities for interactive and engaging practice, which can increase student motivation and engagement with the learning materials [51]. On the other words, the students get motivated because they can learn easily by using a computer and this computer give them a lot of fun so that they find that learning English is an interesting thing to do [52].

The findings contradict those of Bagheri, Roohani and Ansari (2012) mentioned in terms of vocabulary scores, there was no significant difference observed between the CALL-users and non-CALL users in both short-term and long-term learning, despite the apparent effectiveness of both methods. The study specifically investigated the efficacy of two approaches (CALL-based and non-CALL based) in teaching English vocabulary to Iranian EFL learners with poor proficiency. The results indicated that both CALL and non-CALL users experienced positive effects on their short and long-term English vocabulary learning when utilizing the aforementioned methods. Both methods effectively engaged EFL learners in the process of acquiring English vocabulary. Furthermore, there was no significant difference in the performance of the two groups in terms of vocabulary acquisition, regardless of the duration of the learning period [53].

However, it is important to acknowledge some limitations of this study. Firstly, the sample size may not be large enough to generalize the findings to a wider population. Secondly, the study did not explore the long-term effects of CALL on vocabulary knowledge. Despite these limitations, this study contributes to the growing body of research that supports the use of CALL in EFL vocabulary instruction. Future research could investigate the effectiveness of different CALL activities for vocabulary learning. Additionally, studies could explore how CALL can be integrated most effectively into traditional classroom settings to maximize its benefits for EFL learners.

In summary, the findings of this research underscore the potential benefits of incorporating CALL into vocabulary instruction for elementary EFL learners. As technology continues to advance and play an increasingly pervasive role in education, further research and exploration of innovative approaches to integrating CALL in language learning contexts are essential to address the evolving needs and challenges of today's language education landscape.

8. Conclusions

Acquiring vocabulary in a foreign language can be challenging and time-consuming, so it is important to use an effective method for teaching and learning vocabulary. Relatedly, this study specifically focuses on the integration of CALL in vocabulary learning to determine its effectiveness on EFL learners' vocabulary acquisition.

The results showed that using CALL was beneficial for learners and that a CALL-based approach has the potential to greatly improve English vocabulary proficiency. Two factors contributing to the CALL-based group's superior learning outcomes are:

- Firstly, CALL improves the clarity of learning materials, providing students with a real-life language experience. This exposure allows learners to acquire language skills through practical situations rather than theoretical study.
- Secondly, CALL encourages active participation in the learning process, fostering interactions similar to those between learners and native speakers.

Overall, the research suggests that integrating CALL in language learning, especially in vocabulary acquisition, is beneficial and recommended by many researchers. Based on the present findings, it was concluded that CALL has a significant positive effect on vocabulary learning.

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