

# A Study on ICT Based Vocabulary Learning

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**Abstract** In recent years, there has been an upsurge of interest in the nature of vocabulary and lexical knowledge, as well as how it might be used in language instruction. Despite the fact that many instructors are aware of the value of technology and computers, few utilize them to teach vocabulary in Turkey. As a result, the present research sought to examine the impact of Information and Communication Technology (henceforth ICT) on Turkish EFL students' lexical knowledge. Fifty intermediate EFL students from a Turkish state university were randomly selected for this research. For this activity, they were divided into two groups of 25 participants each. It was decided upon the researchers that the experimental group would get ICT aided language learning for teaching vocabulary. The control group received no special software, and vocabulary was taught using the traditional methods. Both groups received a vocabulary pre-test based on the standard questions. The aim of this test was to make sure that the learners were not familiar with the words in advance. By comparing pre- and post-test results, the researchers discovered that learners exposed to ICT applications scored better than the control group. The study's results may assist both high- and low-stakes holders.

**Keywords** ICT, EFL, Information and Communication Technology, Vocabulary Learning

## 1. Introduction

The concept "Information and Communication Technology" (ICT) refers to the "search for and study of

computer applications in language teaching and learning" [1] (p.1). The primary goal of ICT is to enhance the learning capabilities of people who are taught a language through electronic methods [2]. Since ICT focuses on language learning rather than language teaching, its usage forces a re-evaluation of conventional stakeholder roles: learners, instructors, and researchers have all had to adapt to the opportunities and demands presented by a set of new tools.

The core of language is vocabulary. Unless the right words are used to communicate the desired message, no messages can be effectively sent. The process of mastering a foreign language necessitates the constant learning of new words and their corresponding grammatical structures. The acquisition of new vocabulary is a common way for language learners to gauge their progress in learning a foreign language. It takes extensive lexical knowledge before one can speak a foreign language fluently. In this skill, one must be able to recognize and adjust lexical elements in light of the circumstance and context in which they are being used. This fundamental abstract lexical unit, referred to by some as a lexeme, may take on several grammatical forms, such as "write" in "writes," "wrote," and "written," for example [3] (P.273).

The process of lexical development is ongoing, since increasing language skill results in the collection and organization of increasing amounts of information on the qualities of words. According to Burtorn and Humphries [4], "the larger the vocabulary, the better the language performance, as a large lexical resource allows to express ideas precisely, vividly and without repeating yourself in composition, a good personal stock of words coupled with the ability to use them effectively gives confidence and commands respect" (p. 58).

The results of Gholinia's [5] study demonstrated the value of the applied software in facilitating vocabulary learning, memory, and motivation to learn the English language, as well as demonstrating that the use of multimedia ICT software resulted in a long-term increase in the learners' ability to recall English vocabularies.

The researchers in this study set out to examine the explicit effect of ICT programs on the lexical knowledge of EFL learners in Turkey in order to determine whether or not it makes a difference for learners to associate software and the internet with vocabulary instruction, and whether or not the application of these programs increases the learner's lexical knowledge.

The textbook vocabulary has always been tedious due to its memorizing restrictions. Utilizing a computer in a vocabulary lesson may relieve the instructor of the tough task of drilling and repetition. Simultaneously, the use of graphic images and animated examples to teach vocabulary in class has the potential to transform the tedious task of vocabulary acquisition into an engaging curriculum [6].

The researchers attempted to address the topic of 'how effective the researchers were at teaching vocabulary when they used ICT applications in a pedagogical environment such as Turkey in this study. Despite this, the researchers conducted a comparative study of vocabulary teaching by examining the effects of ICT and conventional methods on educational and teaching programming on the one side, and the learning process on the other side.

Thus, this research was noteworthy in a number of ways. While the majority of instructors are aware of the value of technology and computers, just a few attempt to incorporate them into their lessons in Turkey. This is precisely what the researchers of this study accomplished with their investigation. The majority of research on ICT-based language teaching and learning has been done in ESL settings in foreign nations. This research is targeted at Turkish EFL students. It is intended that the outcomes of this research would assist both EFL instructors and students in developing a better grasp of technology use and expanding their repertoire of language learning approaches. Additionally, the results of this research may give guidance to material producers on how to effectively equip receivers with technology-enhanced materials. Thus, the lack of research in this area demands the researcher to carry out the present study to investigate different aspects of the current situation of ICT integration in the English as a Foreign Language (EFL) teaching vocabulary programs at public universities in Turkey.

The important pedagogical purpose of ICT by the teachers is to provide their students with a great deal of language support and a variety of valuable language experiences to enhance the vocabulary learning processes. In this regard, ICT is used as a supplementary tool in language teaching. This research is an attempt to describe the context of the current situation of ICT use in EFL as well as to figure out the majority of the obstacles the teachers and students face when they attempt to integrate or

use ICT in the process of vocabulary English language teaching and learning. The study also comes out with practical and useful suggestions to solve these problems and improve the current situation.

## 2. Literature Review

By the end of the 20th century, Information Communications Technology (ICT) rapidly proliferated in every aspect of human beings' life, affecting the ways people work, communicate, and socialize. Today, using and understanding ICT has turned into an exceptionally important topic in educational settings. In the 21st century, this new version of education, which has been considered to be a good one for the last 60 years, is no longer capable of meeting the educational needs of our times. The rapid changes and increased complexity of the 21st-century globalization era challenges the structure and content of teaching and learning activities of the traditional version of education. The challenges are not small, and it is the responsibility of our educational system to stand out from the inevitable changes and prepare our students to respond to the unique demands of today's life. Addressing these issues and finding solutions for them requires the whole educational system including learners, teachers, decision makers, teacher education programs, curricular materials, discipline, and pedagogy to live between the functions of continuity and change or dynamic and reform. Teachers and learners are the main players in the educational system, and their role is very important. In order to teach the 4Cs (critical thinking, creativity, collaboration, and communication) super skills and achieve educational shifts, both teachers and students need other interventions to be brought into the teaching/learning environment. In the case of education, the other intervention is information communication technology (ICT).

Our viewpoint on the use of ICTs in learning/teaching situations is heavily influenced by the constructivist ideology, according to which students are seen as the creators of their own knowledge via active participation in the learning process. In the past ten years, the lexical approach has dominated English instruction [7],[8]. Thus, the majority of educators have included lexis into their lessons, making learners aware of the significance of studying language. Implementing ELT with lexical content in a more systematic manner is now a priority. There is a common belief that the use of ICT in education contributes to a more constructivist learning and an increase in the activity and responsibility of students. This means that the role of the teacher in supporting, advising, and coaching students becomes less important than the transmission of knowledge. This technological advancement and innovations in educational transactions have visible effects on academic development, administration, and tradition [9], [10].

### 3. Research Question and Null Hypothesis

To clarify the focus issue, these following questions are to be answered:

RQ. *Does the application of ICT have any effect on EFL learner's lexical knowledge?*

H0: *The application of ICT does not have any effect on EFL learner's lexical knowledge.*

### 4. Methodology

This study used a quasi-experimental method to determine if ICT-based learning influences students' vocabulary knowledge. A quasi-experiment involves two groups: an experimental group where the treatment was administered and a control group that served as a comparison. In both groups, a pre-test and a post-test are administered. The experiment required semester-long sessions.

It is considered that learners at this level acquire new and fundamental vocabulary. Therefore, we can determine the impact of ICT more effectively than in higher grades. Additionally, two classes are selected as a representative sample of the population. These two classes have the same level of English proficiency and were picked based on the suggestions of their teachers owing to their time schedule.

Eighty EFL Turkish EFL learners between the ages of 18 and 25 were given a proficiency exam to ensure they met the homogeneity condition. Fifty individuals fulfilled the eligibility criteria for the second round. Following that, the learners were divided into two groups. Twenty-five individuals were allocated to the control group, which received instruction through conventional methods, and twenty-five subjects were assigned to the experimental group, which received instruction via ICT application as treatment. Both groups had a pre-treatment examination.

The pretest questions were selected from a pool of standard and validated IELTS questions, and the test consisted of 30 vocabulary questions that were administered to both groups (experimental and control) one day before treatment to assess the learners' vocabulary level. The students got the same pre- and post-tests at the end of the research, and potential differences between the control and experimental groups were examined.

The exam was piloted on a group of ten similar EFL learners prior to the treatment, and its reliability was determined using the KR-21 technique, yielding a value of 0.88. Additionally, four EFL specialists were consulted on the test's validity. They all attested to the suitability and content validity of the document.

### 5. Results

After collecting output data such as pre-test and post-test, SPSS 20 for Windows was used to analyze the data. The output data were analyzed using an independent t-test to determine whether or not there is a significant difference between the mean of the individuals before and after the treatment. To determine the differences between the two mean scores of the two classes, the t-test is employed since the scores are normally distributed [11].

SPSS 20's independent t-test method is used to reveal significant differences between the means of the control and experimental classes in the pre-test. In addition, to reject the null hypothesis that there is no significant difference between the two classes, it is necessary to compare  $t_{obt}$  with  $t_{crit}$  at a significance level of 0.05 and a sample size of 48. (2.021). In addition, if the null hypothesis is rejected, this indicates that there is a difference between the means of the two classes ( $t_{obt} > t_{crit}$ ). According to the t-test, the experimental class and the control class have different means. The null hypothesis is thus accepted (H0). It emphasizes that the pre-test between the two classes ( $t_{obt} < t_{crit}$ ) reveals no significant difference in the means of the control and experimental groups.

Respectively, the result of this study is in line with the results [12], [13], [14] reported that there was statistically significant difference in language learners' vocabulary development. Their findings showed that students in the experimental group have surpassed the control group. Therefore, they believed that ICT is an encouraging authentic resource to help EFL students to elevate their vocabulary knowledge.

The Nelson test was used to homogenize individuals' overall English language skill. The following Table 1 summarizes the descriptive data for the Nelson test:

**Table 1.** The descriptive statics of Nelson test score

N	Valid	80
	Missing	0
Mean		48.57
Median		49.10
Mode		58.00
Std. Deviation		8.822
Variance		67.503
Sum		3681.00

Fifty individuals were considered homogeneous based on one standard deviation above or below the mean (+/- SD).

Prior to comparing the posttest mean scores between the two groups, a comparison within each group was done by taking into account the pretest and posttest for each participant. A table of descriptive statistics is shown in Table 2 below.

**Table 2.** Descriptive statistics of the two groups considering pretest and posttest

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Control Pre-test	15.16	25	1.63	.34
	Control Post-test	15.95	25	1.83	.38
Pair 2	Experimental Pre-test	15.24	25	1.34	.26
	Experimental Post-test	18.44	25	1.44	.28

A paired-samples t-test was used to see whether there was a statistically significant difference between the pre- and post-test results for each group. It's all shown in Table 3.

**Table 3.** Result of the paired-samples t-test for both groups

		SD of Mean	SD	T	t	Sig (2-tailed)
Pair 1	Cont Pretest - Cont Posttest	.62	2.84	2.11	20	1.000
Pair 2	Exp Pretest - Exp Posttest	.37	1.72	-7.69	20	.000

There was a statistically significant difference between the experimental and control groups in terms of vocabulary, as shown in Table 3, but this difference was not apparent in the data from the independent sample t-test. There was a statistically significant difference between the control and experimental groups ( $t(19) = 2.11, p 0.05$ ). It signifies that the experimental group outperformed the pre-test on the post-test statistically (within the group).

In order to compare the mean scores of the two groups, an independent t-test or a Mann-Whitney U test should be used to discover an answer to the research question. Table 4 shows the descriptive statistics for the vocabulary posttests of both groups. Each group's average is 18.37, whereas the average for the control group is 15.24.

**Table 4.** Group statistics of the posttest of vocabulary between the two groups

		Mean	N	Std. Deviation	Std. Error Mean
	Control Post-test	15.24	25	1.81	.39
	Experimental Post-test	18.38	25	1.33	.29

To conduct the appropriate test, the researchers needed to satisfy at least one assumption, namely that the data distribution is normal. The following table summarizes the outcome:

**Table 5.** Normality test for the posttest of the two groups

	Kolmogorov smirnov			Shapiro-Wilk		
	Statistic	t	Sig.	Statistic	t	Sig.
Control	.179	21	.078	.91	21	.074
Experimental	.321	21	.000	.82	21	.002

As shown in Table 5, the experimental group's Sig value for the Shapiro-Wilk Test is less than 0.05, indicating that the data are not normally distributed. As a result, a non-parametric test comparable to the independent t-test, the Mann-Whitney U test, should be utilized. The ranks table for the Mann-Whitney U test is shown in Table 6 below:

**Table 6.** Ranks table of the Mann-Whitney U test

Con/Exp	N	Mean Rank	Sum of Ranks
control	25	12.79	268.50
experimental	25	30.21	634.50
Total	50		

The following table contains the results of the actual Mann-Whitney U test.

**Table 7.** Result of the Mann-Whitney U test

Test Statistics	
	Con/Exp Post-test
Mann-Whitney U	37.40
Wilcoxon W	268.50
Z	-4.67
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Con/Exp

## 6. Discussion and Conclusion

In the current study, the plan for the data analysis carefully followed this strategy in order to discover meaningful connections, relationships and develop meaningful conclusions in line with the research questions of the study. According to the results statistical significance was obtained ( $U = 37.40, p = .000$ ). The findings indicate that there was a statistically significant difference in the mean vocabulary scores of the two groups on the posttest. The experimental group outperformed the control group on the vocabulary post-test. Thus, the null hypothesis "The use of ICT to teach vocabulary has no effect on the learner's lexical knowledge" was rejected, highlighting the superiority of ICT strategies in developing vocabulary competence.

The current study's findings may be viewed in light of previous researches. For example, some professionals [15], [16] assert that computer technology, software, and language learning programs may enable second language learners to be more self-sufficient outside of the classroom.

To put it another way, this research provides insight on the impacts of using ICT to teach vocabulary. As a result of this study, Turkish EFL learners' lexemes and vocabularies could be improved because this is one of the first attempts to measure the effects of ICT application in teaching vocabularies to the learners; therefore, this study can be seen as giving some advice to EFL vocabulary learners in Turkey. EFL methodologists, textbook writers, curriculum designers, language instructors, and language test producers may all benefit from the results of this research. Even more importantly, the study's results provide insight on why Turkish EFL learners' lexical knowledge improves when they use information and technology-aided language learning methods. Using multimedia presentations, Naraghizade and Barimani [17] found that curriculum designers, program developers, and instructors may have a better knowledge of the factors that contribute to students' success in learning a target language's vocabulary.

According to Ghanchi and Anbarestani's [18] study on the influence of ICT programs on lexical knowledge expansion, it was found that when students use ICT programs, they engage in significant mental processing, resulting in long term memory of words.

Last, but certainly not least, the purpose of this research was to determine the effect of ICT application on learners' lexical knowledge at the university level and to develop a more effective item type for teaching vocabularies to Turkish EFL students at the university level. Although there has been much research on assessing ICT through various modes (CAI, CALI, CMC, MALL, TELL, CALL), the current study provides further evidence for improving vocabulary problems and lexical knowledge enhancement via ICT application.

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