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The Effectiveness of Using WordUp in Enhancing EFL Learners' Vocabulary Learning: A Corpus-Based Mobile App

Reza Vaseghi[1*], Mohammad Vahedi[2], & Bahareh Babaei Bigham Lahiji[3]

* Correspondence:
r.vaseghi@umz.ac.ir

1. Faculty of Persian Literature and Foreign Languages, University of Mazandaran, Iran
2. Department of English, Islamic Azad University, Qaemshahr Branch, Qaemshahr, Iran
3. Department of English Translation, Islamic Azad University, Lahijan Branch, Lahijan, Iran

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Abstract

The present study was an attempt to investigate the possible effect of using WordUp Software on Iranian EFL learners' vocabulary learning. The participants were 60 upper-intermediate EFL learners who were selected out of 72 based on the Oxford Proficiency Test. Then, the participants were randomly divided into two groups of study namely experimental and control. The participants in the experimental group underwent an eight-session treatment including learning vocabulary based on using WordUp Software. In the control group, however, the participants gained new vocabulary by conventional methods. The quantitative approach employed a quasi-experimental method to obtain pre-test and post-test results from learners in both the experimental and control groups. The results of the study revealed that using WordUp Software caused a considerable improvement in learning the vocabulary among the learners in the experimental group. The findings of this study could benefit language learners, language teachers, and curriculum developers by providing valuable insights into vocabulary acquisition through WordUp for EFL learners.

Keywords: vocabulary learning, mobile assisted language learning (MALL), WordUp software, EFL learners

1. Introduction

The ubiquity of web technology in the latter part of the 20th century, coupled with the subsequent introduction and expansion of mobile technology (Caudill, 2007), specifically smartphones in the early 21st century, has rendered the utilization of mobile devices in the daily lives of individuals as an obligatory affair, rather than a matter of personal preference. Smartphones are now an indispensable part of life for a large portion of the population. The utilization of mobile technology has a beneficial and enhancing impact on the teaching and learning of various aspects of language, including the potential benefits (Lin & Lin, 2019; Tai & Ting, 2020; Wang, 2017). According to Kukulska-Hulme and Traxler (2005) and Kukulska-Hulme and Shield (2008), the utilization of technology as everyware can enhance the acquisition of the English language as a global means of communication.

Klímová (2018) conducted an extensive investigation; consequently, it has been determined that the utilization of mobile devices, smartphones, and related applications has had a promising and positive influence on the acquisition of English as a foreign language, particularly in terms of motivation and vocabulary learning; the author further suggested that additional longitudinal controlled studies are necessary to explore this matter. He further underscored the increasing substitution of conventional technologies like workstations and desktops with ubiquitous mobile technologies like cell phones. Moreover, Quan (2019) argued that the utilization of mobile affordances enhances the practicality and accessibility of Data-driven Learning, a self-directed process for discovering how words are used in a real-life context, to the learners. The aforementioned attributes underscore the extent to which mobile technology has permeated human life and its considerable impact on the learning and teaching processes.

Vocabulary is the foundation of language learning. Many researchers in the field emphasized the impact of learning vocabulary on second language pedagogy and research (e.g., Cahyono & Widiati, 2015; Webb & Nation 2017). They highlighted the vital influence of vocabulary on language use and communication. Webb and Nation (2017) examined the distinction between incidental learning in L1 and deliberate learning during L2 acquisition, highlighting the significance of vocabulary acquisition as a crucial aspect. It is worth noting that the importance of vocabulary in foreign language education has become increasingly recognized with the rise of Communicative Language Teaching, also known as the Communicative Approach.

There is a continuous discussion among leading linguists and language educators about the best instructional approaches, strategies, or methods for effective vocabulary acquisition. A significant development in applied linguistics recently has been the use of Computer-Assisted Corpus Analysis (CACA) (Singh, 2014). This method provides an empirical basis for identifying word characteristics, moving away from solely relying on intuition (Schmitt, 2010). Computer-Assisted Corpus Analysis is celebrated as a revolutionary approach to vocabulary instruction, playing a crucial role in the development of modern dictionaries based on corpus data. CACA enables researchers to measure the frequency of lexical units in both spoken and written language. This helps us understand common word combinations (phrases and collocations). Native speakers naturally pick up these patterns, but language learners often focus on learning single words (Schmitt, 2010).

However, learning these word combinations is crucial for sounding fluent and natural in a foreign language (Hyland, 2012). Corpus are the primary source of language data. They are massive collections of texts stored digitally (Sinclair, 2005). We use corpus because it's impossible to study all the English spoken worldwide. Instead, we examine a representative selection of English texts using computer programs. Essentially, corpus provide a window into the living language, offering invaluable insights into how words, phrases, and grammatical constructions are employed in authentic contexts. In language learning, the usefulness of a word is often linked to how frequently it appears (Schmitt, 2010). Therefore, vocabulary lists are organized according to word frequency to match the teaching and certification requirements set by different levels of the Common European Framework of Reference for Languages (CEFR) (Common European Framework).

The rapid growth of the technology has led to the evolution of Computer-Assisted Language Learning (CALL) into forms such as E-learning, Distance Learning, and Mobile Learning (Quan, 2019). CALL now requires students to have digital skills. Special attention should be given to mobile learning because children receive mobile phones at an early age, and the younger generation increasingly engages with digital content (Gajić & Maenza, 2022; Tai & Ting, 2020). The Millennial generation, having grown up with digital devices, finds mobile learning particularly suited to their cognitive styles and working habits. One of the key advantages of mobile learning is its easy accessibility, allowing learners to carry their study materials with them. Mobile apps designed for learning foreign languages are a crucial component of this approach.

Word Up is an innovative mobile app designed to enhance English vocabulary by introducing new words and improving language skills. Unlike other language learning apps, Word Up aims to blend cutting-edge ideas with the latest digital technology to address the common language challenges faced by people worldwide. The creators of the app have a philanthropic vision, striving to help anyone who wishes to improve their English vocabulary—both productive and receptive—without any cost, using modern and inventive methods (https://www.wordupapp.co). Notably, the Word Up app categorizes English words based on their usefulness through Computer-Assisted Corpus Analysis, ensuring that users maximize their learning by concentrating on the most important words.

Research has shown that traditional vocabulary activities, such as looking up words and memorizing definitions, are not very effective for vocabulary learning. However, technological advancements have offered numerous opportunities for L2 teachers and learners to significantly enhance vocabulary knowledge (Lin & Lin, 2019). Despite the widespread use of mobile applications for language learning, there is limited empirical evidence regarding the effectiveness of specific apps like WordUp in enhancing vocabulary acquisition among EFL learners (Gajić & Maenza 2022; Maenza & Gajić, 2024). Gajić and Maenza (2022) Compared three prominent mobile applications—Duolingo, HelloTalk, and WordUp.

This study is particularly focused on the perceptions and experiences of students at Singidunum University in Serbia. The authors suggested that these apps support learner autonomy, a crucial aspect of modern language education. The use of authentic materials in WordUp, for example, aligns with Communicative Language Teaching principles, which advocate for real-life language use in learning. More recently, Maenza and Gajić (2024) carried out a research to explore the efficacy of the WordUp mobile application in facilitating English vocabulary acquisition. The study assessed students' perspectives on the app with focus group sessions and online surveys at Singidunum University. Students found WordUp dependable, effective, and user-friendly, especially appreciating the context-based learning and visual aids.

While WordUp employs corpus-based methods to provide contextually rich examples of vocabulary usage, its impact on EFL learners' vocabulary retention and application remains underexplored (Maenza & Gajić, 2024). Thus, it is essential to use different tools for accelerating the learning process. Using different software programs such as WordUp may be effective in vocabulary learning. This research aimed to address the gap by evaluating how effectively WordUp app improves vocabulary learning compared to traditional methods. Understanding this effectiveness can provide insights into the potential benefits and limitations of corpus-based mobile apps in the EFL context, guiding educators and learners in selecting effective tools for vocabulary development. However, to date, no study has been conducted on using this software and its effectiveness in vocabulary learning in the Iranian EFL context. The present study was an attempt to answer the following research question:

Does using WordUp Software have any significant effects on Iranian upper-intermediate EFL learners' vocabulary learning?

2. Literature Review

2.1 Vocabulary

Vocabulary is regarded as an important component of a language, mainly when learning a new foreign language, as the more vocabulary one learns, the greater one's ability to express words, clauses, and sentences. If the learners don't have enough vocabulary, they will face difficulty in communication in the English language. Hornby (2000) defined vocabulary as a whole number of words that form the language along with the laws for merging them. Reinforcing the significance of vocabulary acquisition, Yang and Dai (2012) highlight the inherent complexity of language learning. They emphasize the dynamic nature of lexis, where word meaning can fluctuate due to contextual variations. This aligns with the established view (Pan & Xu, 2011) that vocabulary, alongside phonetics, pronunciation, and grammar, constitutes a fundamental pillar of foreign language acquisition. Hiebert and Kamil (2005) have another description for vocabulary which they state that it is the information that the students have about the meaning of the words. They said that words have two kinds: verbal and written and knowledge has at least two kinds: receptive (comprehend or acknowledge) and productive (write and speak). Verbal vocabulary refers to a collection of words for which students realize the meaning as speaking or reading verbally. When students write or read quietly, the print vocabulary is made up of terms for which they realize the meanings.

2.2 The Importance of Developing Vocabulary Knowledge

While both vocabulary and grammar are undeniably crucial for successful language learning, recent research suggests a potential shift in emphasis. Studies by Allen (1983) highlight the primacy of vocabulary acquisition in effective language classrooms. Allen emphasizes the initial focus on vocabulary, while Flower posits words as the core element of language instruction. This aligns with Lewis' (1993) proposition that language is fundamentally "grammaticalized lexis" – meaning infused with vocabulary – rather than "lexicalized grammar." In this view, grammar serves as a framework for an underlying foundation of vocabulary. To put it another way, these experts note that vocabulary comes before grammar. This affirms what we already know from personal skill, one might not know what the others say even if they mispronounce words or make grammatical errors, even without the mediation of words, and any effective interaction is nearly not suitable. To be more specific, vocabulary appears to be the key to language learning and it is therefore regarded as more significant than grammar.

Very little can be expressed without grammar, but without vocabulary nothing can be expressed (Wilkins, 1972). This is in line with Ellis (1994), who claims that lexical mistakes hinder understanding, rather than grammatical mistakes. Furthermore, Harmer (1991) claims that in some cases carefully selecting words is more significant than selecting grammatical structures, since language learners can't properly use a framework if they lack sufficient vocabulary information. It means that vocabulary is more significant in comparison to grammar, and it is essential for language understanding in any case.

Therefore, vocabulary should receive more considerable attention in education since it is critical not only for empowering learners' speaking ability, but also for increasing their ability to comprehend and learn from the reading text, in using their ideas in writing coherently and convincingly, and finally to foster language learners' critical thinking (McKeown et al., 2017).

There is a consensus among scholars and different partners involved in learning vocabulary, including learners, teachers, and materials developers, that vocabulary learning is a fundamental facet of second language mastery. This claim could be empirically buttressed by several pieces of evidence pinpointing the significance of learning vocabulary (Graves, 2016; Schmitt et al., 2017; Schmitt & Schmitt, 2020).

One strand of evidence regarding the contribution of vocabulary knowledge to overall language success could be found in the findings reported by Laufer and Goldstein (2004 as cited in Schmitt, 2010), who mentioned that "knowledge of the form-meaning link of words accounted for 42.6% of the total variance in participants' class grades according to regression analysis." Based on the fact that learners' class grades reflected the participants' performance in different areas, including listening, speaking, reading, writing, and sociolinguistic performance, the findings mentioned above support the significant role of vocabulary knowledge in learners' general language success (Schmitt, 2010).

The centrality of vocabulary learning and its fundamental importance for language learners is emphasized in the literature; Alqahtani (2015) emphasizes the detrimental impact of limited vocabulary on communication success. Furthering this notion, Nation (2013) proposes a complementary relationship between vocabulary knowledge and language use. He argues for a bidirectional influence, where vocabulary acquisition facilitates effective communication, and conversely, active language use fosters vocabulary growth.

Vocabulary is an essential pillar of language use and communication; Sari et al. (2020) mentioned the pivotal role of language vocabulary for language usage and socio-cultural adjustment among ethnic, and social strata. Both syntax and vocabulary are two essential components of communication. However, vocabulary is the fundamental cornerstone that makes mutual communication possible; "Without grammar, very little can be conveyed, without vocabulary, nothing can be conveyed" (Wilkins, 1972, as cited in Schmit, 2010).

2.3 Mobile-assisted Language Learning

Mobile-assisted language learning (MALL) has emerged as a prominent area of exploration within the field of second language acquisition (L2) learning (Nurazizah et al., 2019). As a foundational concept, Kukulska-Hulme and Shield (2008) define mobile learning as the utilization of mobile phones for educational purposes, encompassing both teaching and learning processes. The concept of mobile learning was first raised by Callan (1994), a pioneering researcher. Subsequently, numerous other researchers have endeavored to examine the effectiveness of such a device in English as a Second Language (ESL)/English as a Foreign Language (EFL) contexts (Hsu, 2013; Stanley, 2006; Tømte et al., 2019).

Building upon computer-assisted language learning (CALL), mobile-assisted language learning (MALL) has emerged as a significant force in L2 learning. Its effectiveness in promoting vocabulary acquisition and fostering novel learning experiences beyond the classroom has been well-documented (Kukulska-Hulme, 2016). This rise of MALL coincides with the increasing prevalence of mobile phones, rapid advancements in communication technology, and the recent global pandemic, all of which have fueled the trend toward technology-driven learning (Cardenas-Robledo & Pena-Ayala, 2018). The convenience and flexibility offered by mobile learning, coupled with the proliferation of educational applications, have positioned MALL as an increasingly attractive and preferred method for English language acquisition (Felisoni & Godoi, 2018).

Chen and Kessler (2013) argue that the increasing prevalence of mobile devices as a means of communication in social interactions suggests that they hold great potential as tools for language learning. The proliferation of mobile devices has ushered in a transformative era for language education, fundamentally altering teaching and learning paradigms (Rosell-Aguilar, 2018). As Chang and Hsu (2011) emphasize, mobile devices offer a multitude of benefits, promoting the development of various language skills. Research by Rosell-Aguilar (2018) further suggests that mobile learning fosters language acquisition by enhancing retention, efficiency, and learner motivation.

2.5 Previous Studies on Using MALL/Technology in Vocabulary Learning

Various studies have been conducted to examine the effectiveness of mobile applications in the realm of language learning. According to Yang (2013), the advancement of technology, specifically mobile apps, has brought about a significant transformation in the process of learning and teaching. The integration of MALL techniques with traditional teaching methods presents a unique advantage. Past studies indicate that incorporating technology into vocabulary learning significantly enhances vocabulary skills more effectively than traditional paper-based learning environments (Lin & Lin, 2019; Mahdi, 2018; Yang et al., 2021).

In a meta-analysis conducted by Mahdi (2018), 16 different types of research were reviewed, all focusing on mobile-assisted vocabulary learning. This meta-analysis yielded moderate effect sizes, suggesting a positive impact of mobile learning on L2 vocabulary acquisition. The results further indicated that adult learners tend to be more proficient users of mobile phones for vocabulary learning compared to young learners, thus benefiting more from this approach. The potential of MALL for vocabulary acquisition has garnered significant research attention.

Lin and Lin (2019) conducted a systematic review and meta-analysis of mobile-assisted ESL/EFL vocabulary learning, examining whether the use of mobile technologies enhances L2 word retention. This study covers experimental and quasi-experimental studies published between 2005 and 2018. The analysis of 33 eligible primary studies revealed a significant positive impact of mobile-assisted L2 word learning interventions. Moreover, the SMS/MMS mode was found to be more effective for L2 word retention than the mobile application mode.

Similarly, Yang et al. (2021) conducted a systematic review to investigate research on the use of technology for L2 vocabulary learning among PreK-12 learners between 2011 and 2020. Through systematic review procedures, 80 articles were identified for analysis. The results indicated that information/cognitive theories were the most frequently and explicitly referenced, followed by social learning theories. Similar to previous research syntheses on CALL and MALL, many studies did not clearly articulate the theoretical framework used. These findings suggest that research on technology-mediated vocabulary learning for PreK-12 L2 learners should incorporate more diverse and explicit theoretical perspectives. Hashemifardnia et al. (2018) investigated the use of WhatsApp as a vocabulary learning tool for Iranian EFL learners. Their findings demonstrated statistically significant improvement in vocabulary knowledge among participants in the WhatsApp group compared to the control group.

Ajisoko (2020) examined the effectiveness of using Duolingo Apps to enhance English vocabulary learning. This research involved a sample of 10 students who practiced using the Duolingo app with a “regular” intensity (20 XP per day) for 30 days. The research instruments included tests and a questionnaire to address the research questions. The results showed a significant improvement in students' scores before and after extensive use of Duolingo. The questionnaire revealed positive responses from learners, who reported increased motivation, enhanced skills due to greater interest in learning, ease in understanding the material, equal opportunity for practice, reduced boredom, encouragement of new ideas, and better retention and application of the material in daily life.

Further research by Poláková et al. (2021) investigated the effectiveness of smart mobile applications in English language learning, specifically focusing on vocabulary acquisition. The study revealed significant differences between

the experimental group, which used mobile devices, and the control group, which relied on traditional vocabulary learning methods and received vocabulary summaries via an electronic notice board.

Poláková and Klímová (2022) examined the effectiveness of a vocabulary mobile learning application in blended English learning. They used both quantitative and qualitative research approaches to address the complex research problem comprehensively. The case study focused on a mobile application called Angličtina Today, which was tailored to the language needs of the target student group. The quantitative approach involved a quasi-experiment to compare pre-test and post-test results between experimental and control groups. The findings indicated that students engaged in blended learning, which included the mobile application, outperformed those in traditional face-to-face education. Additionally, the results showed high overall satisfaction with the application, attributed to improved vocabulary knowledge, ease of use, and increased motivation.

Another recent study carried out by Li and Hafner (2022) explored English vocabulary learning using mobile-based word cards and paper word cards in a Chinese university classroom. The study involved 85 undergraduate students divided into two groups: a mobile learning group and a paper-based learning group. They were tested on two aspects of word knowledge: receptive knowledge of the form-meaning connection and productive knowledge of collocations. Both digital and non-digital word cards improved L2 vocabulary learning, but the results indicated that the mobile application led to greater gains than the physical word cards.

Gajić and Maenza (2022) compared three popular mobile applications—Duolingo, HelloTalk, and WordUp—focusing on the perceptions and experiences of students at Singidunum University in Serbia. They suggested that these apps enhance learner autonomy, an essential aspect of modern language education. For instance, WordUp's use of authentic materials aligns with Communicative Language Teaching principles, which emphasize real-life language use in learning. More recently, Maenza and Gajić (2024) researched the effectiveness of the WordUp mobile application in facilitating English vocabulary acquisition. This study, conducted through focus group sessions and online surveys at Singidunum University, found that students considered WordUp reliable, effective, and user-friendly, particularly valuing its context-based learning and visual aids. Although WordUp uses corpus-based methods to provide contextually rich examples of vocabulary usage, its impact on EFL learners' vocabulary retention and application is still not fully explored (Maenza & Gajić, 2024).

Recent research in L2 learning highlights the positive impact of integrating mobile technology for diverse language skills (Klímová, 2018; Tai & Ting, 2020; Wang, 2017). This suggests the potential application of mobile phones for vocabulary instruction, a notion supported by studies exploring mobile learning's effectiveness on EFL vocabulary acquisition (Lin & Lin, 2019; Mahdi, 2018; Yang et al., 2021; Gajić & Maenza, 2022). However, existing research often overlooks the specific characteristics of Iranian EFL learners when using mobile vocabulary learning apps like WordUp. To address this gap, the present study proposes integrating the WordUp application within the curriculum, specifically investigating its effectiveness in enhancing vocabulary learning among Iranian EFL learners.

3. Methodology

3.1 Design of the Study

This study employed a quasi-experimental methodology, utilizing a pre-test-post-test design to examine the effects of vocabulary learning facilitated by the WordUp. Two groups of students were involved: an experimental group, which received vocabulary instruction via the WordUp App, and a control group, which received conventional instruction methods. The independent variable under investigation was the utilization of the WordUp App, while the dependent variable was the participants' vocabulary learning outcomes.

3.2 Participants

A sample of 60 EFL learners was recruited from Private English Language Institute in Amol city, Mazandran province. The population was chosen from Iranian EFL learners who are both male and female (Male= 34, Female=26) their range of age was 14-18 years of private language institute whose mother tongue was Persian. The learners had at least three years' experience in language learning in the private institute. The participants had the same linguistic and cultural background. They were upper-intermediate learners who were studying the American English file series. Convenience sampling was used since the participants were chosen according to certain criteria like geographical proximity, availability, and accessibility.

3.3 Instrumentation

3.3.1 Oxford Placement Test

To assess participant language proficiency, this study employed the Oxford Quick Placement Test (Syndicate, 2001). This test evaluated three key areas: reading, vocabulary, and grammar. It consisted of sixty items divided into two parts. Part one comprised forty multiple-choice questions further segmented into four sub-sections. The first sub-section (questions one to five) specifically focused on grammatical knowledge related to prepositions. Questions six to twenty are in the cloze passage format and the learners selected one option out of three ones. Questions twenty-one to forty assessed the grammatical knowledge of the learners. There are two sub-sections in the second part of the test. For questions forty-one to sixty, measure the vocabulary knowledge of the learners. The learners were given thirty minutes to respond to the questions. The results of the test were classified according to the rubric rank of OPT.

3.3.2 Researcher Made Vocabulary Pre- and Post-tests

For each of the vocabulary pre-, and post-tests, twenty recognition and production items were administered to the participants. The pre-and the posttests were the same, but the order of items was different to prevent effect. The pre-test was used before giving treatments**,** the post-test was applied after giving treatments. To suit the purpose of the study, the test had to meet two criteria, (1) they had to be appropriate for the students' level; (2) those words should be learned in the classroom in both groups. The two tests had the same difficulty level, as they were administered to upper-intermediate English language learners. These teacher-made tests included vocabulary selected from an American English file book, which was specifically used to assess vocabulary acquisition. Two experienced English language teachers validated the tests. The reliability of the pre- and post-tests was established during the piloting stage, where 20 EFL learners participated in the pilot study. The reliability coefficients were .81 for the pre-test and .84 for the post-test. The time allotted for each test was 30 minutes, as determined in the pilot phase. Additionally, to ensure the reliability of the items and choices, the item discrimination, item facility, and choice distribution were carefully analyzed, and revisions were made where necessary.

3.3.3 WordUp Software

WordUp is a vocabulary-building application developed by Geeks Ltd, a subsidiary of the Geek Foundation based in London. The official website for the app is located at https://www.wordupapp.co/ to avoid any confusion with other applications that share the same name. The application, as reported by Maenza and Gajić (2020), has received numerous accolades and employs a distinct methodology for instructing vocabulary in authentic, situational contexts. This is achieved through the utilization of short video clips from films, television programs, and excerpts from social media content, among others. The focus of the app centers on the presentation of the '20,000 most frequently used words' in a hierarchical order based on their significance and occurrence frequency (Maenza & Gajić, 2020). The main Characteristics of the software:

Word Level Assessment: The WordUp mobile application targets vocabulary development through a personalized approach. It identifies knowledge gaps by assessing users' existing vocabulary. Based on this assessment, the app presents a curated set of words to learn, prioritizing those with high importance and frequent use in the target language.

Teaching Methodology: WordUp employs a structured approach to vocabulary acquisition. It presents words individually, accompanied by various definitions, and sample sentences with corresponding images for clarity. Beyond definitions, the app provides contextual understanding by showcasing real-world examples like social media posts, news articles, short video clips, and audio excerpts where the target word is used. This exposure to diverse contexts helps learners grasp the word's nuances and different meanings. Furthermore, the application leverages the Spaced Repetition technique, intelligently repeating words at optimized intervals to enhance long-term retention. Learned words are gradually removed from the review list as the algorithm determines their mastery. WordUp also functions as a comprehensive dictionary, allowing users to search for specific word definitions through its built-in search feature. Additionally, the app goes beyond basic vocabulary acquisition by incorporating features that promote conscious learning, including contextual learning, visual learning, and even incidental grammar learning through exposure to real-world usage. Furthermore, it provides a system of notifications to help users establish habits and stay on track with their daily lessons (Maenza & Gajić, 2020). The details of the software are available at https://www.wordupapp.co/.

3.4 Data Collection Procedures

The main goal of the current study was to investigate the possible effects of using WordUp app on Iranian EFL learners' vocabulary learning. Seventy-two learners participated in the study, after which 60 were selected based on their performance in the OPT proficiency test. The participants were divided into two groups. Before dividing the students, the researcher-made pretest was given to students to find out their actual knowledge of their vocabulary. After the application of the pretest, the students are randomly divided into two groups of study namely, experimental and control. In the experimental group, WordUp software was applied. The teacher determined a group of words based on the selected book. The learners used this software to memorize the words through pictures digitally and video clips, check the word's pronunciation, and use these words in different sentences in actual examples. However, for the control group, the teacher uses the conventional method of using Persian equivalents for vocabulary learning. More specifically, lists of synonyms and antonym equivalents are given to the learners by the teacher. During each 30-minute session (eight sessions total), the teacher guided students to either utilize dictionaries or infer word meaning from context.

3.5 Data Analysis

To answer the research question of the present study, descriptive statistics (means and standard deviations) were used. The data were analyzed using SPSS statistical software version 21. An Independent Sample T-Test was run to see if the application of WordUp Software has any significant effects on Iranian EFL learners' vocabulary learning.

4. Results

4.1 Descriptive Statistics

The participants of the study were EFL learners at a private language institute, in Amol city, Mazandaran Province. Also, to show the scores of the proficiency test, the independent Sample T-test of the OPT test is revealed in Tables 1 and Table 2.

Table 1 Descriptive statistics of OPT

	group	N	Mean	Std. Deviation	Std. Error Mean
opt	experimental	30	53.94	7.67	1.72
	control	30	55.70	6.51	1.38

Table 2 The Independent sample T-test of OPT

	Levene's Test for Equality of Variances								
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval Lower	Upper
OPT	1.956	.132	-.762	58	.293	1.40702	1.07099	-4.77451	2.58855

As shown in Table 1, the mean score of the experimental group was 53.94, and that of the control group was 55.70. According to Table 2, the Sig 2-tailed difference was upper than .05. Therefore, there is no significant difference among the groups. To find out whether the gathered data was normal for application in the research, the K-S test was used as shown in Table 3.

Table 3. Test of normality of data

	Groups	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Pretest	Experimental	.276	60	.173	.882	60	.067
	Control	.262	60	.189	.920	60	.123
Posttest	Experimental	.298	60	.163	.943	60	.697
	Control	.283	60	.189	.927	60	.589

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

As shown in Table 3, the Sig. and the Shapiro-Wilk Sig. are more than .05 so the gathered data was normal in all the tests. The data for both groups in the pre-test at the sig.=.067; .123 and post-test at the sig.=.697; .589 are normal as the p values are greater than .05.

4.2 The Impact of Applying WordUp Software in Enhancing Iranian EFL Learners' Vocabulary Learning

Concerning the research question formulated for this study, (*Does using Word Up Software have any significant effects on Iranian intermediate EFL learners' vocabulary learning?*). To answer this question, an Independent Sample T-test was applied in both groups of study. The mean scores of the pre-test correlated in Tables 4 and 5.

Table 4. Descriptive statistics of pre-test

	group	N	Mean	Std. Deviation	Std. Error Mean
pretest	experimental	30	13.70	.621	. 137
	control	30	13.06	.528	. 144

Table 5. Independent sample T-test of pre-tests

		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
pretest	Equal variances assumed	28.413	.212	656682518801587.600	58	.212	.54000	.13623	.54000	.54000
	Equal variances not assumed			656682518801587.600	40.535	.212	.54000	.14362	.54000	.54000

As shown in Table 4, the mean of the Experimental group was 13.7 and the mean score of the Control group was 13.06. In Table 5 the data show that the difference of Sig. 2 tailed of the pre-test and post-test was bigger than .05, so, there is no significant difference among the groups in the pre-test. For the post-test of the Control group and

Experimental group, the analysis of the post-test data by the descriptive statistics in Table 6, and for the independent sample T-test, Table 7 showed the analysis.

Table 6. The descriptive statistics of post-tests

	group	N	Mean	Std. Deviation	Std. Error Mean
posttest	experimental	30	15.62	.127	. 632
	control	30	13.73	.118	. 579

The results of the post-test (Table 6) revealed a difference in mean scores between the experimental group (M = 15.62) and the control group (M = 13.73). To determine if this difference was statistically significant, an independent-sample t-test was conducted (Table 7).

Table 7. Independent sample T-test of post-tests

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
posttest	Equal variances assumed	.	.029	14276569 46164418 .200	58	.029	1.7600 0	.01320	1.760 00	1.76000
	Equal variances not assumed			14276569 46164418 .200	34.1 87	.029	1.7600 0	.0154	1.760 00	1.76000

In Table 7, the Sig 2 tailed difference of post-test of the control and experimental was .029, so it is lower than .05, that is to say in favor of the experimental group there is a positive significant effect between groups. The results revealed that the participants in the experimental group gained a significant difference from the effect of WordUp Software in their vocabulary learning. In contrast to the experimental group, the control group did not gain enough difference from the traditional procedure of vocabulary learning. Therefore, based on the obtained results, it can be concluded that WordUp Software has a positive and significant effect on participants' vocabulary learning. Therefore, the results fail to accept the null hypothesis.

5. Discussion

The purpose of this research was to examine the possible effects of using WordUp on Iranian EFL learners' vocabulary learning. To examine the impact of the WordUp application on the learners' vocabulary learning in the treatment program, this application trained the experimental group whereas the control group continued with the traditional method of vocabulary teaching. The results indicated that there was a statistically meaningful difference between the performances of the experimental and control groups in vocabulary learning after they were given instruction and the experimental group outperformed the control group. In other words, Results indicated that the treatment was statistically more effective than the placebo, i.e., using WordUp increased EFL learners' knowledge of vocabulary recognition and recall meaningfully. The results of the present study were consistent with the previous studies (Gajić & Maenza 2022; Maenza & Gajić, 2024). Furthermore, the results of this study is in line with the findings of the

present study regarding the provoking and elevating impact of using a mobile app on vocabulary learning (Ajisoko, 2020; Lin & Lin, 2019; Mahdi, 2018; Poláková & Klímová, 2022; Yang et al., 2021)

Moreover, based on the obtained results, various features of WordUp, including personalization, dictionary definitions, authentic example sentences, recall, contextual learning, visual learning, and incidental learning through real-world usage exposure, were beneficial and effective for the learners. The results of the present study are consistent with the recent studies (Gajić & Maenza 2022; Maenza & Gajić, 2024) which indicated that authentic example sentences accelerate the process of vocabulary learning. One of WordUp's most notable features is its provision of authentic language examples. After a dictionary entry, users can access a wide range of quotations, excerpts from TV shows, movies, news programs, and. According to the app developers, they utilize a mix of reputable sources, such as Oxford, to compile this list (WordUp Team, personal communication, September 7, 2021). This rich array of authentic examples engages learners in vocabulary acquisition and make the learning process enjoyable through various media. Research confirms that exposure to authentic language input is highly beneficial for language learners. Additionally, the app's use of online corpora can help learners develop independence in their studies (Maenza & Gajić, 2024). Additionally, Communicative Language Teaching emphasizes the importance of authentic materials in language education (Chambers, 1997). The engaging examples of newly learned words in video clips, songs, TV shows, and other media can make vocabulary learning both entertaining and enjoyable. Thus, the original content offered by WordUp can effectively support vocabulary acquisition.

In addition, another significant advantage of WordUp is employing a repeated exposure mechanism, where the frequency of repetition is based on how often users correctly answer questions about previously learned words. According to Nation (2013), this repetitive review process significantly aids in the retention and memorization of vocabulary. Spaced repetition, a key feature of WordUp, is a scientifically proven technique for enhancing memory retention. By strategically scheduling review sessions, this method helps learners solidify new information over time. Research, like Nakata's (2015) study on Japanese EFL learners, confirms that spaced repetition boosts both short-term and long-term vocabulary acquisition. This approach, as highlighted by Kang (2016), spaced repetition is fundamental to mobile apps' effectiveness in fostering lasting word knowledge. For ESL/EFL learners, it is an ideal tool for building vocabulary, as its motivating effect encourages students to continue their language learning journey.

Furthermore, results during intervention showed that WordUp has the potential to significantly enhance students' vocabulary learning by offering an engaging and captivating approach to expanding their vocabulary without relying on teachers or traditional classrooms. Consequently, it can be concluded that WordUp is effective in promoting learner autonomy. Learner autonomy is a cornerstone of technology-mediated education, enabling individuals to progress at their own pace (Laurillard, 2013). The ubiquitous nature of mobile devices facilitates flexible learning, allowing users to engage with materials anytime and anywhere at a self-determined rate (Kukulska-Hulme, 2012; Park, 2011). Such autonomy is further enhanced by the ability to repeatedly practice tasks until desired proficiency levels are attained. The effectiveness of this approach is contingent upon the user-friendliness of the interface and its alignment with learner expectations.

In sum, empirical research consistently validates the efficacy of mobile applications, particularly WordUp, in facilitating vocabulary acquisition and retention among EFL learners. The app's integration of online corpora, authentic examples, spaced repetition, personalization, multimedia, contextual learning, and visual learning components collectively contribute to its effectiveness. As such, incorporating WordUp into vocabulary instruction offers a robust, evidence-based approach to enhancing both immediate and long-term lexical competence.

6. Conclusion and Pedagogical Implications

The present study was an attempt to examine the possible effectiveness of using WordUp software on Iranian EFL learners' vocabulary learning. The results of the present study indicated that there was no significant difference in scores of the experimental and the control groups' pretests. The magnitude of the differences in the means was very small. However, there was a significant difference in scores of the experimental and the control groups posttests. The magnitude of the differences in the means was very large. Based on the results obtained from the data analysis, it can be concluded that using WordUp software to teach the English language and its components brings about a positive and significantly meaningful impact.

In general, the findings of the present study showed that *WordUp* software is promising for learning vocabulary so that it allows English language learners to boost their vocabulary knowledge and learning. English language instructors can associate the process of recycling with improving vocabulary learning through using WordUp software. According

to Schmitt (2010), language instructors and material developers believe that the learning of vocabulary should be in longitudinal duration and recycle new lexical items in a well-ordered way as well. Therefore, language instructors should know the potential of this software and encourage their students to use form these types of software to improve their vocabulary learning.

The most essential contribution of this study is that the findings of this study may contribute to the field of applied linguistics on the grounds of using electronic apps in teaching methods which should be considered as an important factor. The results of the current study may be useful for language learners, language teachers, and curriculum developers since they are instructive about vocabulary learning using WordUp by EFL learners. Therefore, the emphasis would be more on the attention to a variety of blended learning and electronic apps for vocabulary learning by English instructors in classrooms. As noted by Nation (2001) "giving elaborate attention to a word, going beyond the immediate demands of a particular context of occurrence" (p.95). Therefore, a teacher should be skillful and also have good and ample knowledge in the use of technology in general and vocabulary learning in particular to come up with their students' needs.

Most educators do not adequately prioritize vocabulary acquisition and express frustration over the limited class time available to cover all aspects of language instruction. Furthermore, teachers pay little attention to teaching vocabulary and simply ignore it. Certain implications appear to be relevant to the classroom. Instructors must pay more attention to the learning of vocabulary compared to other language skills. Teachers primarily focus on grammar and assume that students will develop their vocabulary through other activities. Both teachers and students need to remember that vocabulary learning does not happen unless students can apply their knowledge of words in a different context from where they learned them. Students may acquire a large number of words through translation, but they may not be adequately prepared to use them in a different context.

Vocabulary specialists may consider developing bespoke mobile apps to enhance and facilitate vocabulary learning/teaching. Teachers may delve into improving their technology savviness and expertise to function as teacher-programmers, since they may save time and money by developing their custom-made apps based on the unique needs of the learners in their classes.

Furthermore, application developers and educators can use the results of the current research to apply effective tools to boost learners' vocabulary learning. Educators may also discover implications, in the present study, regarding the implementation of their theories, through MALL, based on the unique needs and requirements of their educational contexts. Finally, the utilization of software can be beneficial for individuals who have an interest in enhancing *Word Up* their vocabulary learning and recall abilities, whether it be for academic purposes or personal objectives.

References

Ajisoko, P. (2020). The use of Duolingo apps to improve English vocabulary learning. *International Journal of Emerging Technologies in Learning (iJET)*, *15*(7), 149-155. https://www.learntechlib.org/p/217084/

Allen, V. F. (1983). *Techniques in Teaching Vocabulary*. Oxford University Press, 200 Madison Ave., New York.

Alqahtani, M. (2015). The importance of vocabulary in language learning and how to be taught. *International Journal of Teaching and Education, 3*(3), 21-34. https://doi.org/10.20472/TE.2015.3.3.002

Biber, D., Conrad, S., & Reppen, R. (1998). *Corpus linguistics: Investigating language structure and use*. Cambridge University Press.

Cahyono, B. Y., & Widiati, U. (2015). The teaching of EFL vocabulary in the Indonesian context: the state of the art. *TEFLIN Journal, 19*(1), 1-17. https://doi.org/10.15639/teflinjournal.v19i1/1-17

Callan, S. (1994). *Can the use of hand-held personal computers assist transition students to produce written work of excellent quality.* Wentworth County Board of Education, Ontario, Canada.

Cárdenas-Robledo, L. A., & Peña-Ayala, A. (2018). Ubiquitous learning: A systematic review. *Telematics and Informatics, 35*(5), 1097-1132. https://doi.org/10.1016/j.tele.2018.01.009

Caudill, J. G. (2007). The growth of m-learning and the growth of mobile computing: Parallel developments. *International Review of Research in Open and Distributed Learning*, *8*(2), 1-13. https://doi.org/10.19173/irrodl.v8i2.348

Chang, C. K., & Hsu, C. K. (2011). A mobile-assisted synchronously collaborative translation–annotation system for English as a foreign language (EFL) reading comprehension. *Computer Assisted Language Learning*, *24*(2), 155-180. https://doi.org/10.1080/09588221.2010.536952

Chen, X. B., & Kessler, G. (2013). Tablets for informal language learning: student usage and attitudes. *Language Learning and Technology*, *17*(1), 20-36. http://llt.msu.edu/issues/february2013/chenxb.pdf

Ellis, R. (1994). *Second language acquisition*. Oxford: Oxford University Press.

Felisoni, D. D., & Godoi, A. S. (2018). Cell phone usage and academic performance: An experiment. *Computers & Education*, *117*, 175-187. https://doi.org/10.1016/j.compedu.2017.10.006

Gajić, T. D., & Maenza, N. M. (2022). Attitudes and perceptions towards popular language learning apps: Comparison and analysis. *Uzdanica [Hope]*, *19*(2), 229-244. https://doi.org/10.46793/Uzdanica19.2.229G

Graves, M. F. (2016). *The vocabulary book: Learning and instruction*. Teachers College Press.

Harmer, J. (1991). *The practice of English language teaching*. Second Edition. London: Longman.

Hashemifardnia, A., Namaziandost, E., & Rahimi Esfahani, F. (2018). The effect of using WhatsApp on Iranian EFL learners' vocabulary learning. *Journal of Applied Linguistics and Language Research*, *5*(3), 256-267.

Hiebert, E. H., & Kamil, M. L. (2005). *Teaching and learning vocabulary: Bringing research to practice.* Routledge.

Hornby, A.S. (2000). *Oxford advanced learner's dictionary.* The 6 Edition. New York: Oxford University Press.

Hsu, L. (2013). English as a foreign language learners' perception of mobile assisted language learning: a cross-national study. *Computer Assisted Language Learning,* *26*(3), 197-213. https://doi.org/10.1080/09588221.2011.649485

Hyland, K. (2012). Bundles in academic discourse. *Annual Review of Applied Linguistics*, *32*, 150-169. https://doi.org/10.1017/S0267190512000037

Kang, S. H. (2016). Spaced repetition promotes efficient and effective learning: Policy implications for instruction. *Policy Insights from the Behavioral and Brain Sciences*, *3*(1), 12-19. https://doi.org/10.1177/2372732215624708

Klímová, B. (2018). Mobile phones and/or smartphones and their apps for teaching English as a foreign language. *Educ. Inf. Technol*. *23,* 1091–1099. doi: 10.1007/s10639-017-9655-5

Kukulska-Hulme, A. (2012). Chapter One: Language learning defined by time and place: A framework for next generation designs. In *Left to my own devices: Learner autonomy and mobile-assisted language learning* (pp. 1-20). Brill. https://doi.org/10.1163/9781780526478_002

Kukulska-Hulme, A. (2016). Mobile assistance in language learning: A critical appraisal. In: Palalas, Agnieszka and Ally, Mohamed eds. *The International Handbook of Mobile-Assisted Language Learning.* Beijing: China Central Radio & TV University Press Co., Ltd., pp. 138–160.

Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL*, *20*(3), 271-289. https://doi.org/10.1017/S0958344008000335

Kukulska-Hulme, A., & Traxler, J. (Eds.). (2005). *Mobile learning: A handbook for educators and trainers*. Psychology Press.

Laurillard, D. (2013). *Rethinking university teaching: A conversational framework for the effective use of learning technologies*: Routledge. https://doi.org/10.4324/9781315012940

Lewis, M. (1993). *The lexical approach* (Vol. 1, p. 993). Hove: Language teaching publications.

Li, Y., & Hafner, C. A. (2022). Mobile-assisted vocabulary learning: Investigating receptive and productive vocabulary knowledge of Chinese EFL learners. *ReCALL*, *34*(1), 66-80. doi:10.1017/S0958344021000161

Lin, J. J., & Lin, H. (2019). Mobile-assisted ESL/EFL vocabulary learning: A systematic review and meta-analysis. *Computer Assisted Language Learning*, *32*(8), 878-919.

Mahdi, H. S. (2018). Effectiveness of mobile devices on vocabulary learning: A meta-analysis. *Journal of Educational Computing Research, 56*(1), 134-154. https://doi.org/10.1177/0735633117698826

Maenza, N., & Gajić, T. (2020). WordUp mobile application – an entertaining form of perfecting your English vocabulary. In M. Stanišić (Ed.), *International Scientific Conference Sinteza 2020* (pp. 105–110). Singidunum University.

Maenza, N. M., & Gajić, T. (2024). Exploring student perceptions about enhancing English vocabulary with the wordup mobile app. *Research in Pedagogy*, *14*(1), 16-27. https://doi.org/10.5937/IstrPed2401016M

McKeown, M. G., Deane, P. D., & Lawless, R. R. (2017). *Vocabulary assessment to support instruction: Building rich word-learning experiences*. Guilford Publications.

Nakata, T. (2015). Effects of feedback timing on second language vocabulary learning: Does delaying feedback increase learning? *Language Teaching Research, 19,* 416-434. doi:10.1177/1362168814541721

Nation, I. (2001). *Learning vocabulary in another language.* Cambridge University Press.

Nation, I. (2013). *Learning vocabulary in another language.* Cambridge University Press.

Nurazizah, H., Friatin, L. Y., & Sugiarto, B. R. (2019). WhatsApp voice note in speaking class. *Journal of English Education and Teaching*, *3*(3), 343-360. https://doi.org/10.33369/jeet.3.3.343-360

Pan, Q., & Xu, R. (2011). Vocabulary teaching in English language teaching. *Theory & Practice in Language Studies (TPLS)*, *1*(11). https://doi.org/10.4304/tpls.1.11.1586-1589

Park, Y. (2011). A pedagogical framework for mobile learning: Categorizing educational applications of mobile technologies into four types. *The International Review of Research in Open and Distributed Learning, 12*(2), 78–102. https://doi.org/10.19173/irrodl.v12i2.791

Poláková, P., & Klímová, B. (2022). Vocabulary mobile learning application in blended English language learning. *Frontiers in Psychology*, *13*, 869055. https://doi.org/10.3389/fpsyg.2022.869055

Poláková, P., Klímová, B., & Pražák, P. (2021). Vocabulary improvement by using Smart Mobile Application—A pilot study. In: Al-Emran, M., Shaalan, K., Hassanien, A. (eds) *Recent Advances in Intelligent Systems and Smart Applications*. Studies in Systems, Decision and Control, vol 295. Springer, Cham.

Quan, Z. (2019). *The potential of mobile-based and pattern-oriented concordancing for assisting upper-intermediate ESL students in their academic writing* (Doctoral dissertation, Auckland University of Technology).

Rosell-Aguilar, F. (2018). Autonomous language learning through a mobile application: a user evaluation of the busuu app. *Computer Assisted Language Learning*, *31*(8), 854-881. https://doi.org/10.1080/09588221.2018.1456465

Sari, B. T., Chasiotis, A., van de Vijver, F. J., & Bender, M. (2020). The importance of language vocabulary and language usage for sociocultural adjustment among Indonesian adolescents from three bilingual ethnic groups. *Journal of Multilingual and Multicultural Development*, *41*(6), 531-546. https://doi.org/10.1080/01434632.2019.1630417

Schmitt, N. (2010). *Researching vocabulary: A vocabulary research manual*. Springer. https://doi.org/10.1057/9780230293977

Schmitt, N., Cobb, T., Horst, M., & Schmitt, D. (2017). How much vocabulary is needed to use English? Replication of van Zeeland & Schmitt (2012), Nation (2006) and Cobb (2007). *Language Teaching*, *50*(2), 212-226. https://doi.org/10.1017/S0261444815000075

Schmitt, N., & Schmitt, D. (2020). *Vocabulary in language teaching*. Cambridge University Press.

Sinclair, J. (2005). *Corpus and text-basic principles. Developing linguistic corpora: A guide to good practice.* Oxbow Books, Oxford.

Singh, M. K. S. (2014). *A corpus-based genre analysis of quality, health, safety and environment work procedures in Malaysian petroleum industry*. [Doctoral dissertation, Universiti Teknologi Malaysia].

Stanley, G. (2006). Podcasting: Audio on the Internet comes of age. *TESL-EJ*, *9*(4), 1-7. http://www.tesl-ej.org/ej36/int.pdf.

Syndicate, U. C. L. E. (2001). *Quick placement test.* Oxford University Press and University of Cambridge Local Examinations Syndicate.

Tai, Y., & Ting, Y. L. (2020). English-learning mobile app designing for engineering students' cross-disciplinary learning and collaboration. *Australasian Journal of Educational Technology*, *36*(2), 120-136. https://doi.org/10.14742/ajet.4999

Tømte, C. E., Fossland, T., Aamodt, P. O., & Degn, L. (2019). Digitalisation in higher education: mapping institutional approaches for teaching and learning. *Quality in Higher Education*, *25*(1), 98–114. https://doi.org/10.1080/13538322.2019.1603611

Wang, B. T. (2017). Designing mobile apps for English vocabulary learning. *International Journal of Information and Education Technology*, *7*(4), 279. https://doi.org/10.18178/ijiet.2017.7.4.881

Webb, S., & Nation, P. (2017). *How vocabulary is learned*. Oxford University Press.

Wilkins, David A. (1972). *Linguistics and language teaching*. London: Edward Arnold.

Yang, J. (2013). Mobile assisted language learning: review of the recent applications of emerging mobile technologies. *English Language Teaching*, *6*(7), 19-25. doi:10.5539/elt.v6n7p19

Yang, W. D., & Dai, W. P. (2012). Vocabulary memorizing strategies by Chinese university students. *International Education Studies*, *5*(1), 208-214. doi:10.5539/ies.v5n1p208

Yang, X., Kuo, L. J., Eslami, Z. R., & Moody, S. M. (2021). Theoretical trends of research on technology and L2 vocabulary learning: A systematic review. *Journal of Computers in Education*, *8*(4), 465-483. https://doi.org/10.1007/s40692-021-00187-8