The Impact of Cooperative Learning and Mobile Learning through Bluetooth Device on Vocabulary Learning of Iranian EFL Learners

Sahar Gholamalizadeh, Bahador Sadeghi
Islamic Azad University, Takestan Branch

Abstract

Cooperative learning has been found to affect different aspects of language learning by many researchers (e.g., Kagan, 1995; Kagan, 1999; Kessler, 1992; McGroarty, 1993). Likewise, mobile assisted language learning (MALL) has revealed significant impacts on the improvement of different language skills and components (e.g., Comas-Quinn et al. 2009; Divitini & Chabert, 2009; Motallebzadeh & Ganjali, 2011; Zhang, Vibranovski, Krinsky, & Long., 2011). To the same end, the present experiment sought to investigate the effect of cooperative learning and mobile learning through Bluetooth on the vocabulary learning performance of female Iranian pre-intermediate learners. Initially, 90 students took part in an Oxford Placement Test (OPT) for the purposes of ensuring their homogeneity in terms of language proficiency and vocabulary. Those students whose scores on this test were beyond +1 and -1 standard deviation were excluded, leading to the selection of 60 students as subjects of this study. These subjects were divided into two groups namely, cooperative learning group and mobile learning through Bluetooth group. After the treatment, the post test of vocabulary was administered. The results of the statistical analysis indicated that both cooperative and MALL led to the improvement of the participants' vocabulary learning performance. However, no significant difference was revealed between the effects of cooperative and mobile learning on the vocabulary learning performance.

Keywords: Cooperative Learning, CALL, MALL, Vocabulary

Introduction

Research has indicated the positive effect of cooperation learning on learning second language in face to face settings. In recent years, the contributions technologies can make to increased collaboration among the learners and hence the quality of learning has caught the attention of researchers. One of the most frequently cited technology which can be used in the context of learning is mobile. However, as this is a newly marked area of research, there needs to be more studies to shed light on the effect of such a technology on the effectiveness of language learning.

Raising the same point, Warschauer (1996) states that although technology has been the subject of an increasing number of studies during recent decades, the role that technology can play in the enhancement of collaborative language learning has received less attention by researchers. On the other hand, word learning is considered as one of the most important constituents in both L1 and L2 learning and instruction so that lexical items can be viewed as the building blocks upon which an L2 learning is founded.

Given the fact that on many occasions we need to express our ideas in another language, vocabulary acquisition plays an enormously important role as it becomes an inseparable part of this performance. Today, in the context of L2 learning, students go to many lengths to acquire new vocabulary. They are aware of the importance of various exercises one can do to learn vocabulary. Some of these exercises are reading of various texts, repeating the new words, contextualizing the words, taking part in conversations and, most certainly, translations. The role of various instruction methods and activities in learning new words has been the focus of many

recent studies. For example, a study conducted by Lee and Muncie (2006) revealed that a post-reading composition task improved learners' appropriate use of higher-level target words. In his study, Newton (1995) concluded that learners acquired more words when they took part in those communicative tasks that required interactions compared to the time when they negotiated word meanings explicitly.

Literature Review

Cooperative Learning

Cooperative Learning is defined as an instructional method whereby learners collaborate in small teams to achieve common learning objectives. (Johnson et al., 1998, as cited in Grundman, 2002, p.7) define cooperative learning as an effective instructional strategy that one can apply to enhance the social development of L2 learners in a school setting. Students participate in small groups and cooperate with each other to fulfill individual and shared goals. While the cooperation is ongoing, learners look for outcomes that bring benefits both to themselves and to all other group members. A contrast can be drawn between cooperative learning and competitive learning. The latter involves the learners working against each other to fulfill an academic goal that is beneficial to only one or a few learners.

A review of literature indicate that this type of learning results in better effects with respect to a large number of outcomes compared to traditional learning methods (Johnson & Johnson, 1991; Slavin, 1995). Scholars have argued that participation in pair or group work enhances practice opportunities considerably. This usually results in reinforcement of oral skills, and creates diverse activities in the classroom (McGroarty, 1993). Cooperative language learning gives the learners a chance to be exposed to more comprehensible input and output and hence they are more likely to engage in negotiation of meaning. Jia (2003) argues that useful language learning hinges on engaging in social interaction so that the communication needs in target language are met more quickly. This is because the leaners who are divided into teams and subgroups get many times as many opportunities to talk and negotiate meaning compared to traditional methods.

Some studies have been conducted to study the impact of cooperative learning on second language proficiency. A study conducted by Sharan, Bejarano, Kussell, and Peleg (1984) made a comparison between cooperative learning methods and the whole-class method. The findings showed that cooperative learning lead to better result on an overall measure of English proficiency as well as on the scores of listening comprehension. The researchers concluded that students had been provided with chance to speak more frequently and to apply more diverse language structures in the small-group context. Bejarano (1987) reported on a study involving junior high school students learning English as a foreign language. Students in classes using cooperative learning methods were found to make significant improvements in an overall English proficiency test and in a listening comprehension subtest as opposed to students in classes using whole-class methods.

The importance of vocabulary in ELT

The acquisition of new words plays an essential role in both first and second language so that words are considered as the building blocks upon which the L2 learning is founded. According to Meara, (1980) from the history's perspective, in the early 80s, vocabulary acquisition was

marginalized and it was considered as a neglected component of L2 learning. However, in the 80s there was an increasing attention to vocabulary learning and instruction amongst Second Language Acquisition (SLA) researchers. In the same vein, until recently L2 classes had turned a blind eye to the role of vocabulary in the classroom. According to Maiguashca (1993) instructing or learning grammar follow a set of rules with a coherent structure thereby learners can remember them. In contrast, vocabulary learning and instruction lack such a structures and rules.

Furthermore, According to Mervis (1983) the previous studies conducted on lexical acquisition showed that learning of lexical items is beginning step of L2 acquisition which goes on throughout the lifespan. While the acquisition of other linguistic constituents such as grammatical rules and rhetoric emerge at a later stage around puberty time. (Chomsky, 1965). However, despite the importance of vocabulary, there has been less attention to instruction of vocabulary compared to syntactic acquisition in both foreign and second language classes (Erten&Tekin, 2008; Bruton, 2007; Yates and Kenkel, 2002). In the same vein, Schmitt, (2008) believes that despite the fact that study base within the literature on word learning is considerably widening, most results of them have not found their way into mainstream pedagogy yet.

Mobile Learning

Daily use of mobile phones and the increasing access to other portable and wireless devices have brought huge changes to the context of technology supported education. According to Kukulska-Hulme (2007), it seems that application of these technologies is in keeping with strategic educational goals including the enhancement of learner's retention ability and achievement, advocating the demarcation of learning needs, and providing services to those learners who would not otherwise have the opportunity to take part in education.

Scholars have devoted much time and research work to unveiling how modern technologies, in particular, mobile can be made relatable to both traditional and innovative methods of teaching and learning, showing the usability of mobile learning across a wide range of activities (Kukulska-Hulme & Traxler, 2007) as well as focusing on the most important emerging issues (Sharples, 2006).

Together with formal education, chance to have daily access to learning materials and learning on mobile devices has increased. On making an online booking for a flight to another country, you are probably given a phrasebook to download to your desktop or mobile phone. While seeking to further the knowledge of a language, many downloadable resources and websites can be found that can be accessed on a click. Obviously, educational outcomes are not determinedly only by technology. Neither is technology such as mobile and computer a determining factor in everyday informal learning. Yet, knowing the social and cultural role and contribution of technology can shed light on the wider context of implications for technology-supported education.

Raising the same point, Beetham and Sharpe (2007, p. 6) argue that in practice, there are issues of cost and referring to the same point, Beetham and Sharpe (2007) assert that actually such a self-initiated mobile learning is often challenged by some serious issues including cost and usability. Educational outcomes and rehearsal are not predicted by technology. On the other hand, technology is not a determining factor in informal routine learning, either. Yet, if we view technology as a social and cultural phenomenon, undoubtedly it can influence how individuals learn, and hence the effective pedagogy.

A number of attempts have been made to make use of particular functions of cell phones within the context of language teaching and learning. For instance, Gromik (2008) had Japanese students use the video recording function of their mobile phones for purpose of writing short English monologues. The results showed that the learners could make increasingly lengthier videos by the passage of the time.

A study conducted by Sandberg, Maris, and de Geus (2011) let young Dutch learners have access to cell phones equipped with GPS options. The aim was to help these students to acquire English words. The learners had a walk around a zoo and finished a number of games based on the different kinds of animals at the zoo. The results showed that such tasks were effective in learning the targeted vocabulary items.

Applying another function of mobile phones, Rivers (2009) had Japanese learners of English to scan some codes that were posted around the university to do some information exchange tasks. These codes were graphics that enabled the phones to automatically link to online information.

In two studies carried out by Kennedy and Levy (2008), some Italian words, idioms, and example sentences were texted to learners through mobile phones as SMS messages. The results of both studies showed that the use of mobile SMS in language learning is a successful technique. Moreover, almost all of leaners expressed positive attitudes towards receiving text messages.

Shao (2010) examined the applicability of blogging trough cell phone for Chinese learners who had just arrived in UK. The findings showed that the mobile group blog helped the learners get familiar with the authentic target culture and language use. In addition, the mobile blogs could act as a practical tool even for the prospective students in China to prepare themselves for target language use and increasing their confidence in getting familiar with the target culture.

Research Questions

The present study sought to find answers to the following questions:

Q1: Does cooperative learning have any significant effect on vocabulary learning of Iranian pre-intermediate female EFL learners?

Q2: Does mobile learning through Bluetooth have any significant effect on vocabulary learning of Iranian pre-intermediate female EFL learners?

Q3: Is there any significant difference between the effect of cooperative learning and the effect of mobile learning through Bluetooth on vocabulary learning of Iranian pre-intermediate female EFL learners?

Research Hypotheses

H01: Cooperative learning does not have any significant effect on vocabulary learning of Iranian pre-intermediate female EFL learners.

H02: Mobile learning through Bluetooth doesn't have any significant effect on vocabulary learning of Iranian pre-intermediate female EFL learners.

H03: There is no significant difference between the effect of cooperative learning and the effect of mobile learning through Bluetooth on vocabulary learning of Iranian pre-intermediate female EFL learners.

Participants

Four classes comprising a total number of 90pre-intermediate female English students at Kish Language Institute were selected. Firstly learners needed to be homogenized in terms of language proficiency. To assure their homogeneity they were required to take an Oxford Placement test which was used to select 60 students whose score fell between +1 and -1 SD for this study. That is to say, only the participants whose scores fell under the normal curve were chosen for the purposes of the study.

Procedure

Initially, 90 students took part in an OPT for purposes of ensuring their homogeneity in terms of language proficiency and vocabulary. Those students whose scores on this test were beyond +1 and -1 standard deviation were excluded, leading to the selection of 60 students as subjects of this study. These subjects were divided into two groups namely, cooperative learning group and mobile learning through Bluetooth group. The learners in these classes learned English as a foreign language.

The procedure was implemented as follows:

A 100-item vocabulary list devised by the researcher - chosen from pre - intermediate vocabulary in use book- was given to both groups to identify the words used for instruction. To this end, vocabulary knowledge Scale (VKS) proposed by Paribakht, and Wesche (1993) was used. Based on the results of this test, 40 words were identified to be taught in both groups. These 40 vocabulary items were those words which the students rated 1 or 2, meaning, "I do not remember having seen this word before" and "I have seen this word before, but I do not know what it means", respectively. A vocabulary test was then devised on the basis of these 40 vocabulary items and administered to both groups to assure their homogeneity in terms of vocabulary knowledge prior to the main study. Afterwards, the treatment was carried out.

Eight sessions were determined for teaching these 40 words to each class. Both groups were taught these vocabularies using 5 short passages. The cooperative learning group was divided into 5 six-member groups. These students discussed on the use of newly taught words and shared with each other the example sentences in which new words had been used. In this group the selected structures (adapted from Kagan, 1990, 1999) were used for implementing cooperative learning in the classroom. They included Think-Pair-Share, Team Word-Webbing, Roundtable, Jigsaw, Partners. The students in this group received the definitions of unknown words as well as some example sentences in which these words had been used. These new words were practiced through the medium of the mentioned cooperative learning activities.

As for another group, (MALL group) the following procedure was conducted to include mobile in the classroom: Initially, the researcher made sure that all students had access to mobile with Bluetooth capability. In the first session, the learners were introduced to how Bluetooth can be used in the classroom for purpose of vocabulary learning. Then, all learners were instructed to install Babylon dictionary on their mobile. The teacher devoted the last 30 minutes in each session to reviewing and practicing the new words taught in the session. To this end, the teacher used a mobile which had high-speed internet connection (3G). She surfed the web and downloaded the definitions of the same words from other dictionaries as well as the illustrations and the pictorial representations of the words. She also downloaded short passages in which the

new words had been used. Then, she sent these materials through Bluetooth to the students who practiced them.

Then, students were divided into three 10-member groups and one learner in each group was selected as the leader whose mobile had access to internet connection. The leader downloaded the materials related to the newly taught words and sent them through Bluetooth to other teammates. The participants in this group were also required to make sentences with the words and make five example sentences for each word and then sent these sentences via Bluetooth to other learners in the group. They were also asked to discuss the sentences they had made and choose the ones which they thought were free of errors. The learners in this group also had to use the words taught in each session to talk about their personal experiences.

Having finished 8 sessions, the researcher gave both groups a vocabulary test which had been prepared based on the forty initial vocabulary items at the outset of the study. This vocabulary test served both as pre and posttest.

Instrumentation

Oxford Quick Placement Test (OPT, V 1)

As a proficiency test, OPT contains 60 items which test the English learners' proficiency. The participants' performance is measured through their scores which show their level of language proficiency from beginners to high advanced as follows: 1-17 (Beginner), 18-27 (Elementary), 28-36 (Lower - intermediate), 37-47 (Upper intermediate), 48-55 (Advanced) 56-60 (high advanced).

Vocabulary knowledge scale (VKS)

Paribakht, and Wesche (1993) propose five levels or stages in the acquisition of individual words in their vocabulary knowledge scale (VKS). The VKS scale rating varies from total unfamiliarity through the recognition of the word and some idea of its meaning to the ability to use the word with grammatical and semantic accuracy in a sentence.

These five levels include (Paribakht, &Wesche, 1993, p.4):

I. I do not remember having seen this word before.
II. I have seen this word before, but I do not know what it means.
III. I have seen this word before, and I think it means _____. (Synonym or antonym).
IV. I know this word. It means _____. (Synonym or antonym)
V. I can use this word in a sentence: _____.

Vocabulary Test

Moreover, to test the subjects' vocabulary knowledge before and after the treatment, a 40- item vocabulary test was designed and administered. The validity and reliability of the test were established based on Brown's (2007) "differential group experiment" and Test-retest procedures, respectively.

Mobile devices

All students in mobile learning group had access to mobile sets with Bluetooth capability.

Results

To address the objectives of this study, first it deemed necessary to assure that the participants were homogeneous in terms of overall language proficiency and vocabulary knowledge.

Assuring homogeneity of the participants in terms of overall language proficiency

To assure homogeneity of the participants regarding overall language proficiency, an Oxford placement test was given to ninety participants. Based on the gained results, 60 participants were selected. Table 1 and Figure 1 display the descriptive statistics of Oxford placement test and the histogram with the normal curve, respectively.

Table 1
Descriptive Statistics of the Oxford Placement Test Scores of the Initial Ninety Subjects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	28.00	5	5.6	5.6	5.6
	30.00	2	2.2	2.2	7.8
	32.00	9	10.0	10.0	17.8
	34.00	7	7.8	7.8	25.6
	36.00	7	7.8	7.8	33.3
	38.00	11	12.2	12.2	45.6
	40.00	17	18.9	18.9	64.4
	42.00	15	16.7	16.7	81.1
	44.00	8	8.9	8.9	90.0
	46.00	1	1.1	1.1	91.1
	48.00	5	5.6	5.6	96.7
	50.00	3	3.3	3.3	100.0
	Total	90	100.0	100.0	

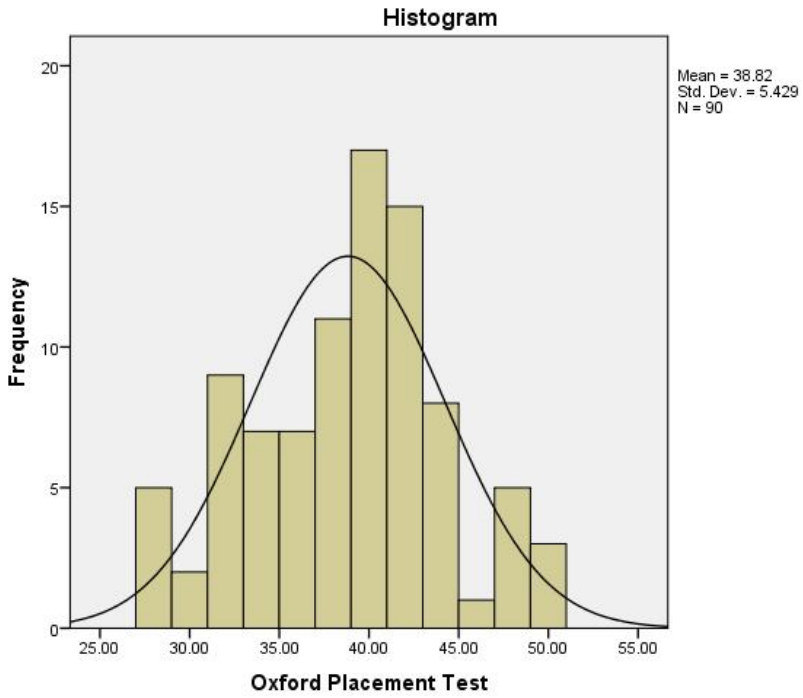

Figure 1 Histogram of the Oxford placement scores with the normal curve

The subjects scoring below and above the range of 33.40 to 44.24 were excluded from the subject pool. The selected subjects were assigned to two 30-member groups. In other words, 30 participants who scored very high or very low were eliminated from the initial subject pool. Concerning descriptive statistics, it should be pointed out that the mean of the participants who took part in Oxford placement test turned out to be 38.82. The standard deviation of the participants' scores was 5.429. As a result, according to the information gained from the participants, 60 of them were chosen, the ones whose scores fell between one standard deviation below and above the mean i.e. the scores within the range of 33.40 and 44.24 as the legitimate participants of the study. Following that, these subjects were assigned to two groups.

It was also necessary to assure homogeneity of the participants in terms of overall vocabulary knowledge prior to the main study. To this end, first a vocabulary test was constructed and its reliability and validity were established adopting the following procedures:

Establishing the Validity of the Vocabulary Test

The validity of the vocabulary test was established through the employment of a "differential experiment" procedure proposed by Brown (2007). According to this procedure in order to show the construct validity of a measurement instrument, the instrument could be employed to assess the ability it claims on two different groups whose ability sounds obviously different in this regard. If the difference between the performances of the two groups proves to be statistically different, it could be concluded that the measurement instrument is assessing what it is supposed to measure and hence it is valid. Based on the aforesaid procedure the test was administered to two different groups of learners; that is intermediate students and advanced students. The scores obtained by the groups were analyzed using an independent samples T-test. The analysis

indicated that there was a statistically significant difference between the results with the advanced students outperforming the intermediate students hence the test proved to be valid. To this end, 30 intermediate learners and 30 advanced learners were chosen randomly from the same institute and the devised vocabulary test was administered to them. Tables 2 and 3 illustrate the descriptive statistics concerning the vocabulary knowledge scores of the intermediate and advanced learners on the vocabulary knowledge test, respectively.

Table 2

Descriptive Statistics of the Vocabulary Knowledge Test-Intermediate level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12.00	6	6.7	20.0	20.0
	13.00	1	1.1	3.3	23.3
	14.00	10	11.1	33.3	56.7
	15.00	4	4.4	13.3	70.0
	16.00	1	1.1	3.3	73.3
	17.00	4	4.4	13.3	86.7
	18.00	1	1.1	3.3	90.0
	19.00	1	1.1	3.3	93.3
	21.00	1	1.1	3.3	96.7
	22.00	1	1.1	3.3	100.0
	Total	30	33.3	100.0	
Missing	System	60	66.7		
Total		90	100.0		

Table 3

Descriptive Statistics of the Vocabulary Knowledge Test- Advanced Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	26.00	1	1.1	3.3	3.3
	27.00	2	2.2	6.7	10.0
	28.00	4	4.4	13.3	23.3
	29.00	2	2.2	6.7	30.0
	30.00	2	2.2	6.7	36.7
	31.00	1	1.1	3.3	40.0
	32.00	7	7.8	23.3	63.3
	34.00	2	2.2	6.7	70.0
	35.00	5	5.6	16.7	86.7
	36.00	3	3.3	10.0	96.7
	38.00	1	1.1	3.3	100.0
	Total	30	33.3	100.0	
Missing	System	60	66.7		
Total		90	100.0		

In order to find out any significant difference between the intermediate and advanced learners' scores for validation purposes, based on Brown (2007), an independent sample T-test was run on the obtained scores of the two groups. Table 4 shows the respective results.

Table 4

Inferential Statistics for Comparing Intermediate and Advanced Learners' Scores on Vocabulary Test

	Group	Mean	S. D.	T	Sig.
Overall vocabulary scores(Validation)	Intermediate	14.9667	2.59287	1.386	0.003
	Advanced	31.8000	3.28424		

As it can be noticed in Table 4 the mean of the intermediate participants' scores is 14.96, while the mean of the advanced learners on the test is 31.8. Given the significant level which is 0.003 and thus lower than 0.05, it could be concluded that there is a statistically significant difference between the performances of the two groups and based on Brown (2007) the validity of the test is established.

Establishing the Reliability of the Vocabulary Test

Test-retest procedures were employed to assure the reliability of the test. To this end, the test was run twice on the same advanced participants with a time interval of 15 days and Pearson correlation coefficient was used, the results of which showed an acceptable reliability index. Tables 5 and 6 show the respective descriptive statistics of the advanced learners' scores on the first and second administration of the vocabulary test, respectively.

Table 5

Descriptive Statistics of Advanced Learners' Scores on the First Administration of the Vocabulary Test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	26.00	1	1.1	3.3	3.3
	27.00	2	2.2	6.7	10.0
	28.00	4	4.4	13.3	23.3
	29.00	2	2.2	6.7	30.0
	30.00	2	2.2	6.7	36.7
	31.00	1	1.1	3.3	40.0
	32.00	7	7.8	23.3	63.3
	34.00	2	2.2	6.7	70.0
	35.00	5	5.6	16.7	86.7
	36.00	3	3.3	10.0	96.7
	38.00	1	1.1	3.3	100.0
	Total	30	33.3	100.0	
Missing	System	60	66.7		
Total		90	100.0		

Table 6
Descriptive Statistics of Advanced Learners' Scores on the Second Administration of the Vocabulary Test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	26.00	1	1.1	3.3	3.3
	28.00	4	4.4	13.3	16.7
	29.00	3	3.3	10.0	26.7
	30.00	1	1.1	3.3	30.0
	31.00	3	3.3	10.0	40.0
	32.00	4	4.4	13.3	53.3
	33.00	3	3.3	10.0	63.3
	34.00	1	1.1	3.3	66.7
	35.00	2	2.2	6.7	73.3
	36.00	5	5.6	16.7	90.0
	37.00	2	2.2	6.7	96.7
	39.00	1	1.1	3.3	100.0
	Total	30	33.3	100.0	
Missing	System	60	66.7		
Total		90	100.0		

To establish the required reliability index, Pearson correlation coefficient formula was utilized. Table 7 illustrates the results of the test.

Table 7
Correlation Coefficient between the Scores of the Advanced Learners on the First and Second Administration of the Vocabulary Test

		First Administration of Vocabulary test
Second Administration of Vocabulary Test	Pearson Correlation	.961**
	Sig. (2-tailed)	.000
	N	30

As it can be seen, the Pearson correlation coefficient is 0.961 which according to Brown (2007) is an acceptable level of reliability.

Assuring homogeneity of the participants in terms of overall vocabulary Performance

Having established the validity and reliability of the vocabulary test, the test was administered to the two groups to assure their homogeneity in terms of overall vocabulary performance for the purpose of the study. Table 8 displays descriptive statistics of the vocabulary knowledge test used for pre-test purposes.

Table 8
Descriptive Statistics of the Vocabulary Pre-Test Scores of the Two Groups Prior to the Main Study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	7.00	3	4.8	5.0	5.0
	8.00	1	1.6	1.7	6.7
	9.00	2	3.2	3.3	10.0
	10.00	6	9.5	10.0	20.0
	12.00	7	11.1	11.7	31.7
	13.00	3	4.8	5.0	36.7
	14.00	8	12.7	13.3	50.0
	15.00	7	11.1	11.7	61.7
	16.00	14	22.2	23.3	85.0
	17.00	4	6.3	6.7	91.7
	18.00	3	4.8	5.0	96.7
	20.00	2	3.2	3.3	100.0
	Total	60	95.2	100.0	
Missing	System	3	4.8		
Total		63	100.0		

To compare the pre-treatment scores of two groups with respect to vocabulary performance, an independent sample T-Test was run. Table 9 indicates the inferential statistics and the results of the two groups with respect to vocabulary knowledge before the treatment.

Table 9
Inferential Statistics for Comparing Pre-Treatment Scores Regarding Vocabulary Performance

	Group	Mean	S. D.	T	Sig.
vocabulary scores (pre-test)	Cooperative Learning	16.02	1.83	1.386	0.174
	Mobile Learning	15.28	1.69		

As Table 9 shows, the means of two groups on the pre-test of vocabulary are 16.2 and 15.28 and the significant level is 0.174 which is higher than the confidence level of 0.05, therefore it can be inferred that there is no significant difference between the performance of the two groups in terms of vocabulary knowledge prior to the main study.

Subsequent to assuring the homogeneity of the participants of the two groups regarding overall vocabulary knowledge the treatment was administered. Upon finishing the treatment sessions, the researcher administered the same pre-test of vocabulary as post-test to the participants of both groups the results of which will be used to investigate the null hypotheses formed for the purposes of this study.

Investigating the first null hypothesis

To explore the first null hypothesis of this study a paired samples t-test was run between the pre-test and post-test vocabulary scores of the group which had learned the vocabulary items through cooperative learning. Tables 10 and 11 demonstrate the descriptive and paired t-test results of this group, respectively.

Table 10

Descriptive Statistics of Cooperative Learning Group Participants' Scores on Pre-Test and Post-Test of Vocabulary

Cooperative Group Pre-test and Post-test Scores	N	Mean	Std. Deviation	Std. Error Mean
Pre-test	30	16.02	2.79527	.56087
Post-test	30	18.22	3.01573	.48933

Table 11

Results of Paired Samples T-Test for Comparing Cooperative Learning Group Participants' Scores on Pre-Test and Post-Test of Vocabulary

Paired Differences					t	df	Sig. (2-tailed)
	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
	2.23449	.28847	-1.99390	-.83944	-4.911	29	.009

As Table 11 illustrates the significance level is 0.009 which is lower than the confidence level of 0.05. Therefore, it could be concluded that the means of the pre-test and post-test scores of vocabulary for the cooperative learning group are significantly different. Consulting Table 10, it can be seen that the mean of the post-test vocabulary scores is higher than the mean of pre-test. Therefore, the first null hypothesis of the study is rejected and it can be concluded that cooperative learning has a significant effect on vocabulary learning of Iranian pre-intermediate female EFL learners.

Investigating the second null hypothesis

To examine the second null hypothesis of this study a paired samples t-test was run between the pre-test and post-test vocabulary scores of the group which had learned the vocabulary items through mobile learning. Tables 12 and 13 display the descriptive and paired t-test results of this group, respectively.

Table 12
Descriptive Statistics of Mobile Learning Group Participants' Scores on Pre-Test and Post-Test of Vocabulary

Mobile Group Pre-test and Post-test Scores	N	Mean	Std. Deviation	Std. Error Mean
Pre-test	30	15.28	1.95652	.44525
Post-test	30	17.85	2.91573	.58254

Table 13
Results of Paired Samples T-Test for Comparing Mobile Learning Group Participants' Scores on Pre-Test and Post-Test of Vocabulary

Paired Differences					t	df	Sig. (2-tailed)
	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
	1.85869	.32514	-1.82586	-.76986	-3.857	29	.03

As it can be seen in Table 13 the significance level is 0.03 which is lower than the confidence level of 0.05. Therefore, it could be concluded that the means of the pre-test and post-test scores of vocabulary for the mobile learning group are significantly different. Consulting Table 12, it can be notice that the mean of the post-test vocabulary scores is higher than the mean of pre-test. Therefore, the first null hypothesis of the study is rejected and it can be concluded that mobile learning has a significant effect on vocabulary learning of Iranian pre-intermediate female EFL learners.

Investigating the third null hypothesis

To examine the third null hypothesis as there is no significant difference between the effect of cooperative learning and the effect of mobile learning through Bluetooth on vocabulary learning of Iranian pre-intermediate female EFL learners, an independent samples t-test was run on the post-test scores of the two groups. Tables 14 and 15 illustrate the descriptive and independent samples test results of this analysis, respectively.

Table 14
Descriptive Statistics of Mobile and Cooperative Learning Groups' Scores on Post-Test of Vocabulary

Mobile and Cooperative group Post-test	N	Mean	Std. Deviation	Std. Error Mean
Cooperative	30	18.22	3.01573	.48933
Mobile	30	17.85	2.91573	.58254

Table 15
Inferential Statistics for Comparing Post-Treatment Scores of the Two Groups Regarding Vocabulary Performance

	Group	Mean	S. D.	T	Sig.
vocabulary scores (pre-test)	Cooperative Learning	18.22	3.01	2.386	0.214
	Mobile Learning	17.85	2.91		

As Table 14 shows, the means of two groups on the post-test of vocabulary are 18.82 and 17.58 and the significant level is 0.214 according to Table 15 which is higher than the confidence level of 0.05, therefore it can be inferred that there is no significant difference between the performances of the two groups in terms of vocabulary knowledge on the post-test. Thus, the third null hypothesis of the study fails to be rejected.

Discussion

This study examined the effect cooperative learning and mobile learning through Bluetooth may have on Iranian pre-intermediate EFL's learning of vocabulary. The findings showed that both teaching methods had significant impact regarding the participants' performance on vocabulary learning. Yet, no significant difference was observed between the impacts of these two methods on the vocabulary learning.

Vocabulary has a crucial role in in ESL/EFL instruction and learning. Clearly, L2 learners should have knowledge of a repertoire of lexical items if they want to be successful in learning the L2 or communication with people. The results of this study affirmed the effectiveness of MALL in L2 learning. Based on the findings of this study, the use of Mobile Assisted Language Learning (MALL) can result in various benefits to the learners. Learning lexical items with the application of Bluetooth provided the experimental group a chance to enhance their knowledge of vocabulary in the post test.

Studies probing the sues of mobile technology in the multiple aspects ofL2 learning has confirmed conclusion that mobile technology plays a role in enhancing students' EFL and ESL acquisition. Students' perception of technologies, their purpose for technology use, and the various practical applications of mobile technology used in their language learning have been the subject of some studies (e.g., Gromik, 2008, Sandberg, Maris, and de Geus, 2011, Rivers, 2009,

Kennedy and Levy, 2008).This study confirms the findings of a study carried out by Derakhshan and Kavianpanah (2011) to examine the effect of SMS on academic learners' vocabulary learning. The findings of that study indicated that learners who had applied SMS outperformed than the control group in terms of vocabulary learning and retention group.

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