

# SMS Vocabulary Learning: A Tool to Promote Reading Comprehension in L2

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Received: August 30, 2012 Accepted: September 13, 2012 Published: December 1, 2012

doi:10.5296/ijl.v4i4.2318 URL: <http://dx.doi.org/10.5296/ijl.v4i4.2318>

## Abstract

Reading comprehension and vocabulary knowledge have critical roles in success in a foreign language. They have also intricate relationships so that the increase in one leads to increase of the other. The aim of the present study was to investigate the effect of learning vocabulary via SMS – as an optimal way of teaching words- on university students' reading comprehension. To this end, 45 freshmen students took part in this study. They were assigned as experimental and control group. Before the beginning of the experiment both groups took a vocabulary test and a reading comprehension test. During 16 weeks of experiment the participants of the experimental group were taught 320 headwords of the Academic Word List (Coxhead, 2000) via SMS. The control group learned them by using a dictionary. Both groups were assessed each session by the instructor in the class. At the end, both groups were administered a reading comprehension test as a post-test. The result of the post-test showed that although there was not any difference between the two groups in the pre-test, the experimental group outperformed the control group in reading comprehension test ( $t = 2.31$ ,  $P = .02$ ). However, both groups had improved in the post-test regardless of the medium of learning. In addition, the participants of the experimental group filled out a questionnaire

regarding their attitudes towards SMS vocabulary learning. It was found that they had positive attitudes towards this approach of vocabulary learning. Based on this result, language teachers need to seek every opportunity to teach words to students to improve their reading comprehension. However, because of the superiority of SMS on other means of learning vocabulary, it is recommended that this approach of vocabulary learning be used to help students in the reading process.

**Keywords:** SMS, Vocabulary learning, L2 reading comprehension

## 1. Introduction

Reading is the most important skill that any foreign language learner has to know. It is among the four important dimensions of language learning process identified by Chen and Hsu (2008); that is, listening, reading, speaking and writing skills. Language learners need to read different text from their academic textbooks, stories and newspaper. It can be seen that reading can act as a source of getting information and pleasure and also a means of enhancing one's knowledge of the target language (Keshavarz & Ashtarian, 2008).

At any level of language proficiency, language learners have problems in reading comprehension tests. Hence, language teachers need to pay special attention to this skill and to find a way to help students in the reading process and to improve their reading skill and as a result their knowledge of the target language. One of the ways that can help to improve learners' reading skill is focusing on and teaching vocabulary.

Huckin et al. (1993) conceived reading comprehension and vocabulary knowledge as the two most important elements of a foreign language and the key to have a successful performance in it and stated that there is a mutual relationship between them. To put it another way, vocabulary knowledge will lead to enhancing reading comprehension and reading can contribute to improving language learners' vocabulary knowledge.

Students cannot learn all the words necessary to promote their reading comprehension during the class time. Moreover, teaching vocabulary to improve reading comprehension requires a labor and time intensive method (McKeown, Beck, Omanson, & Pople, 1985). Teachers need to find a complement or alternative to classroom teaching of vocabulary. One such method which is a new approach to vocabulary teaching is Mobile Assisted Language Learning (MALL) which takes advantage of mobile technology.

Mobile phones have different features such as short message service that can be used for pedagogical purposes. Short message is one of the features of mobile phones that have the capacity to contribute to enhancing language learners' vocabulary knowledge. It is a burgeoning area in communication (Thornton & Houser, 2005; Chinnery, 2006; Lu, 2008) that can offer several of the optimal conditions for vocabulary learning provided by Nation (2001).

This study aimed to examine the effect of learning vocabulary via SMS on EFL learners' reading comprehension. In addition, learners' attitudes towards mobile vocabulary learning were also explored.

## 2. Literature Review

Vocabulary has a critical role in having a successful performance in a foreign language. It has been estimated that foreign language learners have to know 5000 words to understand non-technical texts (Laufer, 1998; Nation, 1990). Therefore, there are a lot of benefits for language learners to have large vocabulary knowledge (Nagy, 2005).

One of the most valuable benefits of having large vocabulary knowledge is its contribution to reading comprehension. Hence one of the main objectives of teaching vocabulary should be

helping students to improve their comprehension skill (McKeown, Beck, Omanson & Pople, 1985). There exist various methods of vocabulary instruction that can contribute to promoting reading comprehension, especially when they are based on multiple exposures to a word and interactive approaches.

There are some casual relationships between reading comprehension and vocabulary knowledge that should be taken into account when teaching vocabulary in order to enhance reading comprehension. Researchers have proposed several models for this relationship. The first model is instrumentalist hypothesis (Anderson & Freebody, 1981). According to this model, there is a casual link between vocabulary size and one's ability to comprehend a text. In other words, knowing more vocabularies could help one to become a good reader. Hence, in order to improve reading comprehension, vocabulary needs to be taught. The problem posed against this model is that it is not complete.

Consequently, the authors proposed another model to account for the relationship between vocabulary knowledge and reading comprehension called knowledge hypothesis. This model emphasizes the role of readers' background knowledge in reading comprehension. That is; knowing the meaning of words does not lead to text comprehension, rather knowing word meaning indicates readers' knowledge of the topic or concept. All in all, word knowledge is just a small part of the knowledge base contributing to reading comprehension, and word knowledge combined with world knowledge can help to comprehension improvement.

Another model offered to account for this relationship is the aptitude hypothesis which suggests that a third factor affects both vocabulary knowledge and reading comprehension. Vocabulary knowledge may contribute to some abilities which indirectly affect reading comprehension. According to this model, vocabulary instruction should aim at helping students to improve their word consciousness.

Another model accounting for the vocabulary–reading relationship is access hypothesis. According to this model, in order to be effective for reading comprehension, the words that learners are taught should become so well known that they can be accessed quickly and easily. To put it simply, comprehension depends on both depth and breadth of vocabulary knowledge.

The complex relation between reading comprehension and vocabulary knowledge will become more complicated by the fact that these models are dependent on the combination of text, reader and purpose of reading. Yet another complexity to the relation between vocabulary and reading comprehension is the reciprocal as well as indirect links between the two.

There is evidence that the casual relationship between these two aspects of language learning is reciprocal. Knowing a large number of words can help one to be a good reader, and since good readers tend to read a lot, being a good reader also contributes to increasing the vocabulary knowledge of the reader.

Another complexity in vocabulary-reading comprehension is the indirect casual relation between them. Vocabulary knowledge can contribute to abilities which can indirectly affect

reading comprehension. For instance, there exists some evidence that vocabulary knowledge may contribute to metalinguistic awareness which in turn contributes to word recognition and consequently helps to improve reading comprehension.

Despite the importance of vocabulary knowledge in reading comprehension, many language learners lack the necessary vocabulary knowledge that can help them in the reading process (Charles N. Fehr, Mark L. Davison, Michael F. Graves, Gregory C. Sales, Ben Seipel & Sarah Sekhran-Sharma, 2011). Therefore, teachers need to pay special attention to vocabulary instruction. In order for a vocabulary instruction to promote vocabulary acquisition, it should provide learners with definitional and contextual definitions of the words. Besides, learners should have the opportunity to use the words creatively and associate them to their preexisting knowledge.

Teaching individual words is the first way that comes into every language teacher's mind (Nagy, 2005). This kind of instruction can only cover a few of the words that students need to have a successful reading experience and is not sufficient for promoting long term vocabulary growth which is necessary for academic success. One of the problems of the classroom instruction of words is that only a few words can be taught at a time (Nation, 2005). So it is reasonable that teachers look for alternative ways of teaching vocabulary.

One of the alternative ways to classroom instruction is Mobile Assisted Language Learning (MALL). Mobile learning can be defined as using mobile devices such as mobile phones, iPods and other similar devices for pedagogical purposes (Lomine & Buckingham, 2009). One of the devices that are mostly used for pedagogical purposes is mobile phones. They have several features that can help language learning process especially vocabulary learning. One of the features of mobile phones is Short Message Service (SMS) that has been used abundantly to help learners in vocabulary learning process. According to Lomine and Buckingham (2009), employing SMS for pedagogical purposes have several advantages. It is quick, discrete, to the point, and inexpensive. It can improve students' motivation and retention and involves them more actively in the learning process. Besides, it does not require offering instructional sessions to teach students how to use mobile phones.

The usefulness of SMS on promoting language learners' vocabulary knowledge has been confirmed in several studies (Lu, 2008; Derakhshan & Kaivanpanah, 2011; Thornton & Houser, 2005). However, in spite of the logical vocabulary-reading comprehension relation, very little research has been conducted to show this relationship. In addition, most of the studies that have investigated the effect of vocabulary instruction on reading comprehension have taught a rather small number of words (Charles N. Fehr, et al., 2011).

In an effort to assess the effect of SMS vocabulary learning on vocabulary retention and reading comprehension, Motallebzadeh and Ganjali (2011) conducted a study with 40 university students. The participants were randomly divided into two experimental and control groups. During 5 weeks of experiments they sent 16 short messages to participants of the experimental group, each containing 3 or 4 words as well as example sentences. Participants of the control group were provided with the same number of words through paper and were taught in the class. Both groups were administered a vocabulary and a reading

comprehension test as a pre-test as well as post-test. The result of the pre-test showed that both experimental and control groups were unfamiliar with the words used in the vocabulary and reading comprehension test. But the result of the post-test showed that the experimental group outperformed the control group in both vocabulary and reading comprehension test. It was concluded that learning vocabulary via SMS can help to improve EFL learners' reading comprehension.

Academic words have crucial role in academic success of university students. But very few studies investigated the effect of teaching academic vocabularies to improve reading comprehension. Hence, the aim of this study was to teach academic vocabularies to university students to see how it affects their reading comprehension. Moreover, SMS was chosen to deliver words to participants, because it is an optimal medium to vocabulary instruction and its usefulness has been confirmed in a large number of studies.

### **3. Purpose of the Study**

The present study aims to investigate the effect of teaching vocabulary via SMS on EFL learners' reading comprehension. To this end, the following research questions were addressed in this study:

- 1- Does the vocabularies learnt via SMS have an effect on EFL learners' reading comprehension?
- 2- Do the vocabularies learnt via SMS and the ones learnt by using a dictionary affect EFL learners' reading comprehension differently?
- 3- What is the attitude of EFL learners towards SMS vocabulary learning?

### **4. Methodology**

#### *4.1 Participants*

The participants of this study were 45 freshmen students who were aged between 18-21. They were non-English major students and participated in a General English course two times a week. They attended two different classes and were instructed by the same instructor. One of the classes was randomly assigned as the experimental group (N= 28) and the other as the control group (N =17). As far as their English proficiency is concerned, they were at upper intermediate level of language proficiency.

#### *4.2 Instruments*

One of the instruments that were used in the present study was a reading comprehension test that was used as a pre-test and post-test. It was composed of two texts, each containing eight multiple choice items. The first text was taken from *Active skills for reading 4* which was taught to participants of both experimental and control groups. The second one was based on TOFEL IBT book, *Delta*.

Another instrument which was used was the Academic Word List, AWL (Coxhead, 2000). It is comprised of 10 sub-lists. Based on the language proficiency of the participants, the words

to be taught to them were chosen from the last 7 sub-lists of Academic Word List. AWL was chosen because of the importance of academic words for the academic success of university students. It contains the words that university students might encounter in an academic text, and it accounts for 10% of tokens in the academic corpus (Coxhead, 2000).

The other instrument was an attitude questionnaire that was used to see the participants' point of view about learning vocabulary via text message. It was adopted from Chen and Li (2010). The questionnaire was consisted of 15 items which were based on a 5 point Likert scale ranging from strongly agree to strongly disagree.

#### *4.3 Data Collection Procedures*

From the beginning, the participants were administered a reading comprehension test to assess their reading skill. Moreover, they were given a vocabulary test based on the words of the AWL that existed in the reading comprehension test to check their knowledge of those vocabulary items. During the experiment which lasted for 16 weeks, the participants of the experimental group were taught 320 head words from the last 7 sub-list of AWL via SMS. They received the words on a regular basis 2 times a week. Each time they were sent 10 words along with their definitions and example sentences. The participants of the control group were asked to learn the same words by using a dictionary. They were asked to write an example for each word from the dictionary and bring them to the class. Both groups were assessed each session by the instructor in class. In addition, after the experimental group received the last SMS, both groups were administered a post-test to see the effect of mobile vocabulary learning on their reading comprehension. In the end, the participants of the experimental group completed an attitude questionnaire to explore their opinions about learning vocabulary via SMS.

### **5. Results and Discussion**

At the outset of the study, in order to assess the participants' knowledge of the academic words in the vocabulary comprehension test, they were administered a vocabulary test. To compare the two groups' performance, first their mean score and standard deviation in the pre-test were calculated.

Table 1. Results of the Pre-vocabulary test Scores of the Experimental and Control Groups

Group	N	Mean	Std. Deviation	Std. Error Mean
Experimental group	28	14.92	4.74	.89
Control group	17	16.16	5.42	1.10

Table 1 shows descriptive statistics of the two groups in the vocabulary pre-test. The result shows that the control group had more mean score (16.16) than the experimental group (14.92). To check the significance of the mean differences, an independent t-test was run.

Table 2. Independent Sample t-test Result for the pre-vocabulary test Scores of the Experimental and Control groups

	Leven'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
Equal variances assumed	.53	.81	-.87	43	.38	-1.23	1.41	-4.07	1.59

Table 2 shows the independent t-test result of both groups in the pre-test. As can be seen, there was not any significant difference between the two groups' mean scores in the pre-test of vocabulary ( $t = -.87$ ;  $P = .38$ ).

Next, to compare the reading comprehension of the two groups, their mean score and standard deviation in the reading comprehension test were calculated using descriptive statistics.

Table 3. Results of the Pre-reading test Scores of the Experimental and Control Groups

Group	N	Mean	Std. Deviation	Std. Error Mean
Experimental	28	6.82	2.84	.53
Control	17	6.33	2.49	.50

Table 3 shows the descriptive statistics of the two groups in the pre-reading comprehension test. As shown in the table, the experimental group had higher mean score (2.84) than the control group (2.49). An independent t-test was also employed to compare their mean scores in the pre-test of reading.



Table 4. Independent Sample t-test Result for the Pre-reading test Scores of the Experimental and Control groups

	Leven'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
Equal variances assumed	.44	.51	.65	43	.51	.48	.74	-1.10	1.99

Table 4 shows the results of the independent t-test. According to the table, there was not any significant difference between the two groups before the experiment ( $t = .65$ ,  $P = .5$ ). To put it another way, they were at the same level of reading proficiency.

In order to answer the first research question on the effect of SMS vocabulary learning on learners' reading comprehension, the mean and standard deviation of the pre-test and post-test scores of the experimental group were computed and were compared running a dependent t-test.

Table 5. Results of the Pre-reading and post-reading test Scores of the Experimental group

	N	Mean	Std. Deviation	Std. Error Mean
Post-test	28	6.82	2.84	.53
Pre-test	28	12.03	2.33	.44

Table 5 illustrates descriptive statistics of the experimental group in the pre and post-test. As it is shown, they gained more mean scores in the post-test ( $M = 12.03$ ) compared to the pre-test ( $M = 6.82$ ).

Table 6. Paired sample t-test Result for the Pre-reading test and Post-reading test Scores of the Experimental group

Experimental group	Paired differences					t	df	Sig.(2-tailed)
	Mean	Std.Deviation	Std.Error Mean	95% confidence interval of the difference				
				Lower	Upper			
Pre-test Post-test	-5.21	2.64	.49	-6.23	-4.18	-10.43	27	.000

Table 6 shows the t-test result of the pre-reading and post-reading test scores of the experimental group. It is shown that they performed significantly better in the post-test compared to the pre-test ( $t = -10.43$ ;  $p = .000$ ).

To answer the second research question dealing with the difference between the effects of vocabularies learnt via SMS and those learnt by using a dictionary on reading comprehension, the two groups' mean scores on the post-reading test were compared employing an independent t-test.

Table 7. Results of the Post-reading test Scores of the Experimental and Control Groups

	N	Mean	Std. Deviation	Std. Error Mean
Experimental group	28	12.03	2.33	.44
Control group	17	10.47	1.94	.47

Table 7 shows the mean score and standard deviation of the two groups in the post-test. As can be seen both groups performed better in the post-test compared to pre-test, but the experimental group ( $M = 12.03$ ) gained more than the control group ( $M = 10.47$ ) in the post-test.

Table 8. Independent t-test Result for the Post-reading test Scores of the Experimental and Control Groups

	Leven'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
Equal variances assumed	1.03	.31	2.31	43	.02	1.56	.67	.20	2.92

Table 8 shows the result of the independent t-test of the post-test scores of the experimental and control groups. As the table shows, there was a significant difference between the two groups' performance in the post-test ( $t= 2.31$ ;  $P= .02$ ).

As for the third research question regarding the experimental group's attitudes towards learning vocabulary via SMS, their responses to attitude questionnaire showed that generally they had positive attitudes towards this method of vocabulary learning. With a mean of 4.71 on a five point Likert scale, more than 90% of participants agreed that the system was a good and convenient tool for learning that enabled them to learn English at any time and any place. On the same scale and with a mean of 4.0 more than 80% of the participants stated that the system promoted their learning interests and caused their learning time to be increased. As far as their vocabulary ability was concerned, more than 90% of participants noted that using mobile system had effectively enhanced their vocabulary abilities.

There were also two open ended questions asking students' opinions about advantages and disadvantages of the system of vocabulary learning. Most of the students agreed that the system was so handy and enabled them to study the words at any time and any place. They noted that because they had words on their mobile phones, they could review and memorize the words more easily and they had gone to their long term memory. Also in this way they used their free time more usefully.

The disadvantages that the students experienced were mostly related to the problems with network that sometimes caused the messages not to be delivered completely. Interestingly, some students did not mention any disadvantage of the system and stated that they did not experience any difficulty and it was very useful for them.

The finding of the present study is in line with the result of the study done by Motallebzadeh and Ganjali (2011) in which the experimental group outperformed the control group in the post-test. It was concluded that learning vocabulary with the aid of mobile technology can help to enhance learners' reading comprehension.

This study like many other studies confirmed the usefulness of SMS for pedagogical purposes. Many studies had investigated the effect of SMS on language learning and concluded that it can help learners in this process (e.g. Lu, 2008; Charles N. Fehr, et al., 2011).

## **6. Conclusion and Implication**

Vocabulary knowledge and reading comprehension are two important interconnected components of a foreign language. Increasing each can lead to increase in the other. SMS is one of the means that has the potential to be used in vocabulary instruction. Many studies proved the usefulness of SMS in teaching general vocabulary. But few studies have investigated the effect of SMS on learning academic vocabularies. Therefore, the present study was an endeavor to teach academic words to EFL learners to see its effect on their reading comprehension.

The results of the present study showed that learning words via mobile technology can help to improve learners' reading comprehension. The participants of the experimental group significantly outperformed the control group in the post-test.

SMS vocabulary learning has a positive effect on learners' vocabulary knowledge which in turn can contribute to improving their reading comprehension. Moreover, the present study revealed that students have positive attitudes toward this way of vocabulary learning. Therefore, it can be employed in pedagogical milieus to help learners in both vocabulary learning and reading process.

Based on the findings, regardless of the medium of learning both groups performed better in the post-test compared to the pre-test. This has an implication to language teachers. They need to pay special attention to vocabulary instruction in the classroom. They should take advantage of every opportunity and medium to attend to each individual word to help learners in the reading process. However, the result of this study revealed that learning vocabulary via SMS can be superior to other methods and can be more useful in promoting reading comprehension of EFL learners.

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