EFFECTIVENESS OF VOCABULARY LEARNING VIA SHORT MESSAGE SERVICE - SMS - ON EFL STUDENTS OF BANDARE_E_ABBAAS, IRAN

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ABSTRACT

With encompassing power of cell phones and potentials of mobile learning for language teaching/learning, employing cell phones in language learning seems indispensable. Mobile phones as new addition to information and communication technologies have created new ways to help learners in the process of foreign language learning. Given the importance of vocabulary, especially the academic ones for institute students, this study tried to investigate the effectiveness of short message service (SMS) on Iranian institute students' vocabulary learning and retention in Bandar_E_Abbaas. To this end, 28 institute students, aged 16-23, were chosen to take part in the experiment. After administering a pre-test and during 10 weeks of experiments, they were taught almost all words of Academic Word List via SMS. At the end of the experiment, they were given a vocabulary test, to see the effect of mobile technology on their vocabulary learning and retention. Then, their pre and post test scores were compared using a dependent T-test. The result of t-test for vocabulary test (t=10.63, p<0.05) showed that their vocabulary knowledge had improved significantly in post test compared to pre test. Also they were administered a delayed post test the result of which showed that besides having a positive effect on vocabulary knowledge, SMS affects students vocabulary retention positively. The result of this study can

have pedagogical implication for language teachers, in that they can use SMS as a useful way of teaching large numbers of vocabularies.

Keywords: M-Learning , Short Message Service, Vocabulary Learning , Vocabulary Retention, Academic Word List

INTRODUCTION

English as a foreign language learners (EFL) in Iran face the challenge of lacking exposure to English. For the majority of them, the English class is the only time to use English. Yet there are only 4-6 h per week for the English class in institutes. Because of the class time constraint, vocabulary reinforcement and study is frequently the responsibility of the student outside the classroom. There is an urgent need for English teachers in Iran to find an effective self-study approach for EFL students to enlarge their vocabulary size.

An abundance of evidence from research suggests that m-learning (learning assisted by mobile technologies) has great potential in providing EFL learners with large exposure to the target content as learners can do self-learning anytime, anywhere with the assistance provided by mobile technology **(e.g., Norbrook and Scott 2003; Thornton and Houser 2003, 2004, 2005; McNicol,2004; Naismith *et al.,* 2005; Roschelle, *et al.,* 2005; Chinnery,2006)**.

Among the mobile devices, the mobile phone is the most popular in Iran. Text messaging via the short message service (SMS) is one of the major capacities to voice communication. To understand the use of SMS text messaging in the English institute in Bandar_E_Abbaas where the present study would be conducted, two classes (each class has 28 and 17 graders) were distributed. All the 45 students reported that they owned at least one mobile phone with them every day.

The most frequently used capacities included voice communication, text messaging through SMS and playing games. The students reported that they read their messages literally anytime, everywhere - in commuting, between classes or even before going to bed. When asked to choose the preferred medium for learning English between the mobile phone and the PC, all of the surveyed students chose the mobile phone. They responded that mobile phones were available to them, and that PCs were not as convenient as mobile phones because they had to spend more time logging on it. These responses indicate that the mobile phone can be a potential learning medium for EFL Iranian institute students in Bnadar_E_Abbaas.

Indeed, mobile phones are particularly useful computers that fit in a student's pocket, are always with students , and are nearly always on [27].

The portability and immediacy allow students to learn in their preferred time and place. Another appeal to the busy students is the bite-sized lessons provided by most mobile-phone learning programs such as Study Cell [21]. Learners feel that the chunks of those lessons are more manageable than the lengthy and usually too detailed lessons on paper. Last but not least, the 'pushing messages' [31] to individual learners' mobile phones offer cumulative lessons which maximize the exposure to the contents [22].

Over time, this efficient exposure enhances the information processing activities, makes the activation and recognition automatic, and leads to greater retention. By contrast, the traditional paper material, which usually includes lengthy presentation of vocabulary lessons, has no such advantages. The paper material is unable to deliver pushing messages like mobile phones can. Its lengthy presentation is unmanageable and, hence, unappealing to students. The benefit of its probability and immediacy may not be generated.

Statement of the Problem

To conceptualize the source of the effectiveness of SMS technology as a learning support, this study adopted the belief that a good learning support tool should have the proper affordance [25] that supports the cognitive needs in the designated learning task. Norman defined affordance as ``the fundamental properties that determine just how things could possibly be used``. But what are the fundamental properties of SMS technology ?

SMS was originally not designed as a learning content delivery medium, but a reminder service. In the case of using SMS to learn foreign language vocabulary, SMS messages can prompt students to check if they have finished learning the scheduled words. It can also be hypothesized that SMS reminders provide self-regulation support and performance support for students, preventing students from forgetting to learn the scheduled words.

This study indicated whether using SMS study reminders will have an effect on the learning achievement for the self-regulated study.

Aims of the Study

The purpose of this study was conducted to explore the difference between long term and short term retention of words learnt via SMS for English learners aged 16-23 in one of the

English Language Institutes of Bandar_E_Abbaas. In addition, it assessed difference between the short and long term retention of vocabularies learnt via SMS and those learnt by using dictionary.

Research Questions

Research questions include:

1. What is the effect of SMS on EFL students' vocabulary learning?

2. What is the effect of SMS on EFL students' vocabulary retention?

Significance of the Study

As far as the importance aspect of technology on learning a language, the SMS learning should be a perfect way to learn vocabularies, because nowadays most of the learners are interested in using cell phones, specially SMS for communication. Therefore, the importance of this study is to explore the development of vocabulary learning via SMS and its retention in the learners` mind.

Literature Review

Thornton and Houser have explored the effectiveness of learning via mobile phone on Japanese college students' vocabulary gains **[34]**. In their 2005 study, participants who learned vocabulary through Internet e-mails via mobile phone (n=13) had significantly more vocabulary gains than those who learned through the Web via PC (n=13). The results of the second experiment showed that another mobile phone group (n=25) gained significantly more vocabulary than the group using paper materials (n=43). Thornton and Houser concluded that the regular messages sent by mobile phone could generate the spacing effect **[9]**, which facilitated vocabulary retrieval. To examine the extent of the spacing effect, a follow-up experiment using vocabulary lessons of differentlengths was conducted. No significant difference in vocabulary gains was found between learning from the longer and shorter lessons. Thornton and Houser posited that mobile phones enhanced regular study, which in turn, led to more exposure to the target words and more vocabulary gains than did the detailed presentation of the lessons.

Their finding is in accordance with the empirical evidence in the cognitive psychological research that constant and distributed practice has a more beneficial effect on memory and learning than massed practice. Words are memorized significantly better when they are presented temporally apart than when they are presented together at one time **[9]**. The positive effect caused by the spaced distribution of presentations is referred to as the 'spacing effect'.

SUBJECTS AND METHODS

The purpose of this chapter is to explain the research design and explain the details of the

research procedures that have been implemented for the study. With the specific number of the students and their level of proficiency and age, two groups were created: controlled and experimental. The experimental group students were given new vocabulary via SMS three times a week. In addition, the pre-test and post-test were given to them. During the semester the instructor asked the vocabularies to check the students' knowledge about them and the retention of them in their minds.

Design of the Study

The study implemented one type of study reminder schedule: three times a week, the new vocabularies were sent to the learners who were in the experimental group-there was one experimental group.

Participants

The participants of this study were 45 pre-intermediate level L2 learners in one of the English Language Institutes of Bandar_E_Abbaas, Iran. One group was assigned as the experimental group (N=28) and the other as control group (N=17). They were both male and female aged 16-23.

They attended Top Notch English course three times a week during their semester.

Instruments

One of the instruments which were used in this study was Academic Word List, AWL

[7]. This list is comprised of 10 sub lists based on decreasing level of frequency. It totally contains 3000 academic words. The sent words via SMS were chosen from the head words of different sub lists. One of the reasons for choosing this list is that it highlights the words that institute students may encounter in an academic text, and it accounts for 10% of tokens in the academic cuprous [7].

Another reason is the coverage of academic words in participants, text book: Active Skills for reading 4. Academic vocabularies are one of the four categories of words identified by Nation (2001). These words have communicative purposes and are essential for students. According to [11], AWL accounts for 1.3%-6.54% of the total words in a GE textbook and it accounts for 4.63% of the total words in the participants text book. While according to Hsu (2009) it should have 10% coverage for students to have a successful academic achievement. Hence, the AWL was chosen to be used in this study to compensate for the low coverage of academic words in the textbooks of participants in the experimental and control group in order to help to improve their academic word knowledge.

Another instrument used in this study was a vocabulary test. It was composed of 40 multiple choice item which was taken from

Focus on Vocabulary 2: Mastering the Academic Word List [32]. It was used as pre-test before the beginning of the experiment. Due to the interval between the pre-test and post-test, the same test was used as immediate post-test at the end of the semester. Also it was used as delayed post-test one week after the experiment. The reliability of the test was calculated by Cronbach's Alpha which was 0.89.

Data Collection Procedures

Before the start of the experiment and in order to assess participants, vocabulary knowledge, they were administered a vocabulary test. During the experiment which lasted for 10 weeks (a complete semester), the participants in the experimental group received 320 vocabularies from the head words of academic wordlist [7], their definitions (both Persian and English) as well as example sentences on a regular basis three times a week via SMS. Almost all the words of the AWL (3000 words) were covered in this study. In addition, they were assessed each session by the instructor in class, to see how they learned the vocabularies. The participants of the control group were provided with the same academic vocabularies and were asked to learn them with dictionary by themselves. In addition, like the experimental group they were

assessed by the instructor in class. Like the pre and post test, class assessment for both groups was based on the words of the Academic Word List.

In order to see the effects of instruction and assessment, both groups were administered a vocabulary test (immediate post-test) at the end of the experiment. Moreover, they took a delayed post-test one week after the experiment to see the long term effect of mobile vocabulary learning on their vocabulary retention.

Data Analysis

All the statistic analysis of this study were performed using SPSS 19. MANOVA analysis was conducted for SMS message access frequency and the recognition score.

RESULTS

To answer the first research question on the effect of SMS on students' vocabulary learning, first the mean scores and standard deviation of the experimental group in the pre and post vocabulary test were calculated and then their pre-test and post-test scores were compared using a dependent T-test.

As shown in **Table 1**, the participants mean scores were higher in post-test (M=25.17) compared to pre-test (M=14.92). This means that the experimental group performed better in post-test compared to pre-test.

In addition, the result of T-test **(Table 2)** shows that the SMS had a significant effect on their vocabulary learning; that is, there was a significant difference between their pre and post test scores (t= 10.67, p=0 .000).

In order to assess the effect of SMS on participants' vocabulary retention (second research question) and compare its short and long term effect, first the mean and standard deviation of the post-test and delayed post-test scores of the experimental group were computed and then their scores were compared employing a dependent T-test. As seen in **Table 3**, the experimental group had higher mean scores in delayed post-test (26.78) compared to post-test (25.17).

Table 4, shows the t-test result of the post-test and delayed post-test of the experimental group. As shown in the table, the experimental group performed significantly better in the delayed post test than the post test (t= -2.42, p= 0.02).

In order to investigate the difference between the short term retention of the words learnt via SMS and that of the control group who learnt by using dictionary, after computing the mean scores and standard deviation of the post test of the two groups, their scores were compared using an independent T-test. **Table 5** shows the descriptive statistics of the post test scores of the experimental and control groups.

Table 6, shows the result of the independent t-test of the post-test scores of the two groups. The T-test result (t=1.48, p=0.42) and mean scores show that there was not any significant difference between the experimental and control group in the post-test. Although there is not a significant difference between the two groups, the effect of text messaging on students vocabulary retention cannot be overlooked. It should be mentioned that before the experiment the control group had more vocabulary knowledge (M=16.16) than the experimental group (M=14.92). And after the experiment, it was the experimental group that outperformed the control group, and they had improved more significantly compared to control group.

Finally, to explore the difference between the long term retention of vocabularies learnt via SMS and those learnt by using dictionary, first the mean and standard deviation of the delayed post-test of the experimental and control groups were computed and then an independent T-test was run to compare the scores of two groups in the delayed post-test. **Table 7**, shows the mean scores and standard deviation of two groups in the delayed post-test. As the result shows, both groups have gained higher mean score in delayed post-test

compared to post-test and the experimental group (M=26.78) outperformed the control group (M = 23.09) in the delayed post-test.

Moreover, the results of the t-test **(Table 8)** shows that there was a significant difference between the two groups, means scores in the delayed post test (T= -2.109, p= 0.05).

The findings of this study confirmed the usefulness of SMS on students' vocabulary learning and retention. The results of the present study showed that in the short term, there was not any significant difference between learning vocabulary via SMS and learning it by using dictionary, however, learning vocabulary via SMS helped the participants in the experimental group to enhance their vocabulary knowledge in the post-test. But in the long term, vocabulary learning via SMS helped students to retain more vocabulary compared to using dictionary.

This implies that using SMS helps to transfer vocabularies into students' long term memory. Since students are used to spending a lot of time using their mobiles, so having words on their mobiles might have encouraged them to review the vocabularies on a more regular basis. This can be proved by the fact that in the delayed post-test participants of the experimental group improved significantly and outperformed the participants of the control group.

Despite gaining more score in the post-test, it appears that using dictionary did not help the participants in the control group to transfer the learnt vocabularies into their long term memory. Because after two weeks of the experiment and not being assessed by the instructor any more, they did not improve a lot in the delayed post-test. It can be due to the fact that learning via dictionary did not lead them to review the vocabularies a lot.

It can be concluded that in order for students to put much effort and time to study new vocabularies they should be responsible for their learning. Moreover, the method of teaching should be so that encourages them to review and study the taught words on a more regular basis and take advantage of students object of interest (in this case mobile phone). Since as it was shown in this study, while both the experimental and control group were responsible for their learning, the experimental group retained more vocabulary in the delayed post-test than the control group.

Table 1: Mean and standard deviation of the pre-test and post-test scores of the experiment group

Experimental Group	N	Mean	Std. Deviation
Pre Test	28	14.92	4.74
Post Test	28	25.17	5.74

Table 2: Paired sample t-test result for the pre-test and post-test scores of 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	-10.25	5.08	0.96	-12.22	-8.27	-10.67	27	0.000

Table 3: Mean and standard deviation of the post and delayed post-test scores of th experimental group

Experimental group	N	Mean	Std. deviation
Post test	28	25.1786	5.74168
Delayed post -test	28	26.7857	5.43212

Table 4: Paired sample t-test result for the post-test and delayed post-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	-1.60	3.51	0.66	-2.96	-0.246	-2.42	27	0.02

Table 5: Mean and standard deviation of the post-test scores of the experimental and control groups

Experimental group	N	Mean	Std. Deviation	Std. Error Mean
Post test	28	25.1786	5.74168	1.08508
Delayed post -test	23	22.6471	5.18340	1.25716

Table 6: Independent sample t-test result for the post-test scores of experimental and control group

	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
Equal variances assumed	0.65	0.42	1.48	48	0.14	2.53	1.70	-0.90	5.96
Equal variances not assumed			1.52	38.96	0.13	2.53	1.66	-0.83	5.89

Table 7: Mean and standard deviation of the delayed post-test scores of the experimental and control groups

Group	N	Mean	Std. Deviation	Std. Error Mean
Experimental group	28	26.78	6.96	1.48
Control group	23	23.09	5.43	1.02

Table 8: Independent t-test result for the delayed post-test scores of the experimental and control groups

	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
Equal variances assumed	1.56	0.21	-2.10	48	0.040	-3.69	1.75	-7.21	-0.17
Equal variances not assumed			-2.04	38.96	0.047	-3.69	1.80	-7.34	-0.044

DISCUSSIOND AND CONCLUSION

Vocabulary has a central role in language learning, and Language learners should know a large number of words to be successful in their learning or to have a successful communication in it. It also has a vital role in the 4 skills (speaking, reading, writing and listening). Hence, this study aimed to investigate the effect of SMS on institute students' vocabulary learning and retention. The findings approved the usefulness of SMS in this regard. The participants in the experimental group improved significantly in the immediate post-test and outperformed the control group in the delayed post test.

Although being successful in confirming the effect of mobile vocabulary learning on vocabulary retention, this study had some limitations. The first limitation had to do with the number of characters allowed in an SMS. Due to this limitation, only a limited number of words could be sent in each attempt. Also the example sentences were chosen based on this limitation .

Another limitation of the present study was related to the number of participants in the experimental and control group. As was mentioned the experimental group had more participants than the control group. This unequal number might have had an effect on the validity of the results obtained .

Despite these limitations, this study has some implication for incorporation of mobile learning into language courses. The findings can be useful for language teachers and language institutes. It offers them a readily available tool to help improving students' vocabulary knowledge. Since the students are used to using their mobiles and sending and receiving SMS, they can use it as a complementary device to face to face instruction and assessment. In this way they can move toward a leaner-centred classroom and make students responsible for their own learning.

This study used mobile learning in a nonreciprocal way, but language teachers can use mobile learning in a reciprocal way. For instance, they can send some tests to students and ask them to send them the answers via SMS.

Like teachers, students can also take advantage of mobile learning. It can help them to learn and retain the large number of the foreign language they are learning. Because the result of the present study confirmed the positive effect on SMS on short and long term retention of vocabulary.

Although this study confirmed the usefulness of mobile learning on vocabulary retention, it did not show its relation to use vocabularies leant via SMS in extended discourse; more

research is needed to explore that whether learning academic words via SMS can help learners to employ those words in extended discourse.

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