

Article

The Impact of Text-Messaging on EFL Freshmen's Vocabulary Learning

Ali Derakhshan* and Shiva Kaivanpanah**

***English Language and Literature Department, Allameh Tabataba'i University, Tehran (Iran)**

****Faculty of Foreign Languages and Literatures, University of Tehran (Iran)**

* aderakhshan@gmail.com; **shkaivan@ut.ac.ir

Abstract

The present research investigates the effectiveness of text-message vocabulary learning on EFL freshmen. The results of the pretreatment interview with EFL learners showed that many of them have difficulty learning vocabulary through the traditional paper-and-pencil way; therefore, text-message vocabulary learning was hypothesized to be a potential way to help EFL learners consolidate their vocabulary knowledge. To this end, 43 participants from among 85 freshmen studying in Torbat-e-Heydarieh Azad University participated in the study. The participants were divided into two groups of 21 and 22 on the basis of their proficiency. The book *Check Your Vocabulary for Academic English* by David Porter (2001) was taught to both groups, and they were told to make some sentences in the class to become familiar with these words; they were requested to work cooperatively in small groups of 3 or 4 in order to have the opportunity to talk more about these words. Fifteen to 20 words were introduced and taught to these students on each session. Then, the participants in the experimental group sent the researcher one text-message containing an original sentence for each word covered in the class. They were also asked to send a text-message containing a sentence to their three predetermined partners. The participants in the control group wrote one sentence using each covered word, and they were also asked to write one sentence to exchange with their three partners and bring their assignments to the class next session. The results of independent samples t-test for the post-test and the delayed post-test showed that there was no statistically significant difference between the initial vocabulary learning and the retention of the vocabulary between the two groups.

Keywords: MALL, Involvement Load Hypothesis, Spacing Effect

1. Introduction

Vocabulary is an indispensable component of language (Adolphs & Schmitt, 2003; Nation, 2001; Hulstijn & Laufer, 2001; Laufer *et al.* 2004). L2 learners are aware of the extent to which limitations in their vocabulary knowledge restrict their communication skills (Nation, 2001). Consequently, one of the main obstacles that L2 learners encounter in their endeavor for learning vocabulary is the number of words they need to acquire in order to become fluent in their L2 (Nation, 2001). Teachers may well understand this need but may not know how to support their students in this endeavor. Therefore, from a pedagogical perspective, there is a need for research that helps to identify and design learning tasks that provide opportunities for L2 vocabulary learning. To achieve this goal, it is believed that text-messaging can be applied in language teaching and learning not as a method but as a complementary teaching aid since vocabulary gains can be fostered by its portability, immediacy, motivation, and the spacing effect it generates (Thornton & Houser, 2005). Considering the scant amount of class time, it sounds logical to devise a complementary means of learning words to help

learners, teachers, syllabus designers, and materials writers to take technological initiatives in this endeavor. This complementary way could find its way through text-messaging vocabulary learning.

2. Review of the related literature

Laufer (1998) and Nation (1990) postulate that if students of English as a Foreign Language want to understand non-specialized English texts, they need to learn 5000 base words which is deemed just a minimal requirement. This presupposes that learners should purposefully practice or rehearse the words to facilitate long term retention (Hulstijn, 2001). However, in many educational milieus around the world, the amount of class time is limited. In Iranian universities, for instance, a typical class meets once a week for 90 minutes. This problem obliges teachers and researchers to make difficult choices about how to use that limited time to promote language learning. Since EFL students usually have limited opportunities to speak and hear the target language only in the classroom, it makes sense to draw on other kinds of practice and exposure. One such way is through an interaction which allows students to use language and teachers to give feedback via text-message. Vocabulary learning via text-message is one of the burgeoning areas in communication (Thornton & Houser, 2005; 2008; Chinnery, 2006; Lu, 2008). Text-message vocabulary learning is likely to provide several of the optimal psychological conditions for the effectiveness of any vocabulary activity described by Nation (2001). First, cumulative learning is the most effective way of learning vocabulary; learners are more capable of dealing with a limited amount of information at a time, so too much information may confuse or de-motivate them. Second, motivation and interest are particularly important enabling conditions for noticing, which is the first step in learning. Nation (2001) states that the third psychological condition for vocabulary learning is that text-message vocabulary learning offers a novel and portable learning experience as well as a relaxing condition; therefore, learners can study the words almost anytime and anywhere. The researchers, however, postulate that there are occasions where learners are not eager enough to pay money for such a way of learning, nor do the teachers like to spend time being on call. Also, student-initiated use of language supported by teachers can foster vocabulary learning by increasing the 'Cognitive Involvement Load' (Hulstijn & Laufer, 2001, p. 542) through the 'Spacing Effect' (Greene, 1989; Dempster, 1996; Seabrook, Brown, & Solity, 2005). By using the word to make a sentence, sending it at spaced intervals to teachers via text-message, and receiving the feedback learners can build a net of well-connected and well-practiced paths and thus retrieve the target word more easily.

The 'involvement load hypothesis' sheds light on the present study. Hulstijn and Laufer (2001) conceptualized a motivational-cognitive construct of involvement to represent the degree of cognitive processing imposed on an L2 learner by a given task. As they note, the construct of involvement consists of three components, namely, *need*, *search*, and *evaluation*. Each of the three components can be either absent or present when learners are processing a word during tasks.

The *need* component refers to the motivational and non-cognitive dimension of involvement, which is present depending on whether the word is needed and required for completion of the task in question. It is hypothesized that the need component can manifest itself in two degrees of prominence: moderate (1) or strong (2). Need is moderate when it is highly required of the learners (e.g., when the teacher has students complete the sentence requiring a word), and it is strong when it is self-initiated by the learners themselves (e.g., when learners decided to look up a word in a dictionary while doing their assignments to meet their own individualized needs).

Search and *evaluation* constitute the cognitive dimension of involvement where learners are required to pay attention to word form as well as word meaning. Whereas the need component can occur in two degrees of prominence (i.e., either moderate or strong), search is not hypothesized as the relative degree of cognitive processing; instead, it is of an all or nothing nature. The search component is said to happen when the learner

makes an attempt to find the meaning of an unknown L2 word in a dictionary or from other sources, such as teachers and peers. Moreover, the search component is at work when the direction of translation is from the first language (L1) into the L2 or vice versa.

The third component is evaluation which requires learners to make decisions during tasks, such as "a comparison of a given word with other words, a specific meaning of a word with its other meanings, or comparing the word with other words in order to assess whether a word does or does not fit its context" (Laufer & Hulstijn, 2001, p. 14). Evaluation takes place without search providing that the meaning of the target word is explicitly given by the text or a teacher. Hulstijn and Laufer (2001) believe that the presence of evaluation, like the need component, comprises two possible degrees of cognitive processing: moderate (1) or strong (2). Evaluation is moderate when learners are required to recognize differences between words, whereas strong evaluation involves making a decision as to how additional words work in combination with the new word in an original sentence or text.

The spacing effect also sheds light on the present study. Based on research on memory and learning, for an item to be stored in long-term memory, distributed practice is superior to massed practice (Dempster, 1996; Seabrook, Brown, & Solity, 2005). Study conditions in which repetitions of items to be acquired or learned appear in spaced or distributed sequences have been found to lend themselves better to subsequent retention than presentations in which repetitions occur quickly (Braun and Rubin, 1998; Cuddy and Jacoby, 1982; Dempster, 1987; Greene, 1989; Hintzman, 1976; Seabrook, Brown & Solity, 2005). This phenomenon has been known as the spacing effect which further argues that memory for items which are presented and then immediately repeated, i.e., massed practice, is worse than for items which are repeated after some intervening items have appeared, i.e., distributed practice. To provide evidence for the practical and pedagogical aspects of the spacing effect, Traxler (2007, p.8) puts a great emphasis on the fact that "mobile learning allows students to take advantage of small amounts of time and space for learning". We stipulate that the spacing effect can also increase students' vocabulary gains since they are given the opportunity to send and receive text-messages in a distributed fashion, not a massed one, as is the case in traditional paper-and-pencil vocabulary learning.

2.1 Empirical studies on text-message vocabulary learning

Levy and Kennedy (2008) were successful in their study conducted in (2005) with a small group of highly motivated third-year students who had already invested considerable time and energy in their Italian study, so they decided to test the applicability of SMS also in first-year courses for complete beginners. Overall, while 84% said they had enjoyed receiving the messages, most had also found them useful, as they agreed that the messages had helped consolidate their vocabulary (87.3%), extend their vocabulary (82.5%), and develop their interest in Italian vocabulary (80.7%), a smaller majority felt the messages had helped strengthen their knowledge of grammar (78.6%). From a theoretical perspective, they assume that the facilities provided by bulk SMS services, to send messages to groups of recipients, schedule them ahead of time and repeat them at intervals would satisfy the key conditions for vocabulary learning identified by Nation (2001) enumerated earlier.

Alternatively, Lu (2008) highlights that vocabulary learning via SMS merits receiving attention. In the study conducted by Lu, one class of 31 vocational high school students (10th graders) was invited to join the study. In the first week, 15 participants learned the first 14 target words via mobile phone (group M1), while the other 15 learned the same vocabulary using print materials (group P1). In the second week, the two groups switched their media for another 14 target words (group P2 and group M2). That is, group M1 became P2 while group P1 became M2. Both groups of participants were encouraged to read the lessons as often as they could. They were told they would have recognition tests on the target words on the last day of each week. A reward-based

scheme was clearly announced to arouse their interest in studying the vocabulary lessons. In the following two weeks, participants received their vocabulary lessons. On the day when the final SMS lesson was delivered, the immediate post-test, the post-treatment questionnaire, and the interviews were conducted. Three weeks later, participants took the delayed post-test. In a pre-treatment, participants were required to recognize 50 words – 28 target words and 22 non-target words with similar length to the target words – and write down their Chinese translations. Lu (2008) states that the within-group comparison of the pre-treatment test and the immediate post-test scores shows that both groups, regardless of their medium, made significant progress in learning the 28 TWs (two-tailed *t*-test comparing the pre-treatment test scores and the immediate post-test scores of each group; $t(28) = 2.62, P < 0.05$). However, this gain decreased in the delayed post-test. None of the delayed gains in the four groups reached the significant level.

Overall, in the light of the results gained, Lu concluded the mobile phone groups had greater vocabulary gains than their paper-group counterparts in both immediate and delayed post-tests. In the first week, the difference of the immediate gains between the two groups reached the significance level (two-tailed *t*-test comparing the gains; $t(28) = 2.62, P < 0.05$). The benefit of SMS lessons diminishes in the delayed post-tests, yet the first mobile group could remember nearly three words out of the 14 target words which had been previously unknown to them, with little reinforcement during the three weeks.

Although Thornton and Houser (2005) and other researchers (Lu, 2008, Kennedy and Levy, 2008) supported the potential of SMS in vocabulary learning, they did not address the importance of interaction, nor did they take advantage of the Involvement Load Hypothesis. Their studies were all teacher-initiated or unidirectional in the sense that the teacher sent the students some lessons and quizzes to check their vocabulary gains. Moreover, the number of words to be learned was really limited (5 words per week); the amount of experimental time was also limited. However, the present study would be more reciprocal, i.e., the students would send their sample sentences to the teacher, and the teacher would provide them with sufficient feedback. Moreover, for each session of instruction the students should send two SMSs to three partners. So, the present study aims to investigate the effectiveness or impact of text-messaging or SMS on learning academic words of Iranian TEFL freshmen college students from Azad University in Torbat-e-Heydarieh. It is important that empirical evaluation of text-messaging technologies and pedagogical approaches be expanded via sending and receiving word SMSs in order to improve the process of learning academic words or reviewing them since these messages can be easily restored or saved in mobile phones, and students can take advantage of the spacing effect in their vocabulary learning. The following research questions are pursued in the present study:

- Is there any difference between students' initial vocabulary learning via paper-and-pencil and text-messaging?
- Is there any difference between the retention of new vocabulary learned via paper-and-pencil and text-messaging after a two week interval?

3. Method

3.1 Participants

There were approximately 85 freshmen studying at Torbat-e-Heydarieh Azad University of whom 43 registered for this class voluntarily. Twenty five females and eighteen males aged between 18 to 24 participated in this study. Based on the average scores gained from three vocabulary tests, namely, Word Associates Test by Read (1998), Levels Test (Production) by Nation & Laufer (1999), and Academic Vocabulary Test by Schmitt & Clapham (2001), the participants' level of vocabulary knowledge was assessed. The results indicated that there was no significant difference in the participants' knowledge; therefore, 21 of the participants were assigned to the experimental group, 12 females

and 9 males; the control group consisted of the other 22 participants 13 of whom were female, and the rest were male.

3.2 Instruments

The *pre-treatment interview* about students' perspectives towards language learning showed that many students were frustrated at the large amounts of vocabulary they needed to possess in order to deal with their English classes. In this interview, students were asked some general questions about 4 to 5 minutes. The *pre-test* consists of three vocabulary tests; they were administered to find out the participants' level of vocabulary knowledge. The tests were Word Associates Test developed by Read (1998), Levels Test (Production) by Nation & Laufer (1999), and Academic Vocabulary Test by Schmitt & Clapham (2001). After being instructed for twelve sessions, a *post-test* consisting of 8 multiple choice items, 8 sentence completion items, 8 multiple choice questions testing collocations, 8 sentence completion questions testing collocations, and 8 word completion questions was developed. The post-test was developed on the basis of the words taught in these twelve sessions of instruction from a book named *Check Your Vocabulary for Academic English* (Porter 2008). A *priori* content validation was also conducted by 4 English professors from Torbat-e-Heydarieh Azad University and the University of Tehran on the basis of the table of specifications included in the book. A *delayed post-test* was then administered after two weeks, which is a common practice, to explore the retention of vocabulary gains. The same post-test was administered as delayed post-test but the order of the items was changed to reduce the practice effect of the previously held exam.

3.3 Procedure

The English Department of Torbat-e-Heydarieh Azad University advertised this English class, and out of 85 male and female freshmen, 43 enrolled for this class. A pre-treatment interview was conducted with 65 of these freshmen, asking them some questions about the areas in which they experienced difficulties in language learning; almost all of the interviewees were desperate to learn words which are essential in order to get their messages across in their language classes; in addition, they said that the amount of in-class time is limited, and they cannot activate the essential words. Then, the participants were divided into two homogenous groups based on the average scores of three vocabulary tests elaborated earlier; twenty-one of the participants were randomly assigned to the experimental group, 12 females and 9 males; the other 22 participants made the control group, 13 females and 9 males. The treatment lasted for twelve sessions of instruction plus three sessions for the pre-test, post-test, and the delayed post-test. The Levels Test (Production) by Nation & Laufer (1999) was administered because it mainly deals with word production skill which was needed while sending text-messages as well as writing sentences using paper and pencil. The Academic Vocabulary Test by Schmitt & Clapham (2001) was used to gauge students' academic and university recognition words. Word Associates Test by Read (1998) was also used as a placement test since the covered book has a section dealing with word associates and collocations, and this section would also appear in the post-test and delayed post-test. The teaching procedures followed in both groups were similar; both groups attended the class twice a week on Tuesdays and Thursdays from 8 to 12 p.m.; the class lasted for a period of seven weeks; the experimental group came to class from 8 to 10, and the control group came to class from 10 to 12 p.m. The participants in both groups were taught approximately the same; the same book was taught to both groups, and they were told to make some sentences in the class to become familiar with these words; they were also asked to work cooperatively in some small groups of 3 or 4 in order to have a greater opportunity to talk more about these words. 15 to 20 words were introduced and taught to these students in each session. The book had many exercises so that 15 to 20 words would be quite logical to be covered; each unit consisted of six sections including filling in the gaps, choosing the right word, finishing the sentence, word substitution, choosing the best word, and making a collocation.

The spacing effect was at work when the participants received and reviewed the text-messages containing new sentences at some intervals, and they did not need to resort to massed practice. It was spaced in a sense that they sent their SMSs not at once in a massed fashion, but rather they sent their SMSs in the mornings and afternoons. The participants in the control group wrote one sentence for each covered word; they were also asked to write one sentence to exchange with their two partners and bring their assignments to the class in the next session; they thus received feedback on their assignments as it was a normal case in the traditional paper-and-pencil assignment. The students in the text-messaging group received feedback immediately; they were sent the correct sentences or the incorrect part rewritten in the parentheses. Other students in the paper-and-pencil group received feedback when they returned their assignments to the class; the mistaken parts were underlined or given explicitly. The same procedures followed in subsequent sessions. After being taught for 6 weeks (12 sessions), the post-test was administered to find out the results. Finally, a delayed post-test was administered after a two week interval to investigate the retention of vocabulary gains.

4. Results

The following tables and figures contain the descriptive and inferential statistics concerning the gained scores.

Table 1. *Independent samples t-test for the pre-test*

Group	N	Mean	SD	Mean differences	df	t	Sig(2-tailed)
Pre-test Experimental	21	27.52	4.30	1.02	41	.68	.05
Control	22	26.50	5.44				

Table 1 also presents the results of an independent samples t-test to compare the vocabulary gain of the control and the experimental groups in the pre-test. As can be seen, there was no significant difference in the scores of the experimental group and the control group, $t(41) = 0.68$, $p < 0.05$, so they were homogeneous.

4.1 Results and discussion for the first research question

In order to investigate the impact of 'text-messaging' and 'paper-and-pencil' on the initial vocabulary learning of EFL freshmen, the post-test was conducted. It consisted of 5 sections covering 8 multiple choice, 8 sentence completion items, 8 multiple choice questions testing collocations, 8 sentence completion questions testing collocations, and 8 word completion questions. The results of the post-test are represented in Table 2.

Table 2. *Independent samples t-test for the post-test*

Group	N	Mean	SD	Mean Differences	df	t	Sig(2-tailed)
Posttest Experimental	21	25.85	4.83	3.44	41	2.02	.05
Control	22	22.40	6.23				

As Table 2 presents, the mean of the experimental group was higher than that of the control group. This shows that the experimental group outperformed the control group. Also, the standard deviation of the experimental group was lower than the control group. This means that the participants in the experimental group were more homogenous.

Table 2 also indicates that the effect of text-messaging on vocabulary learning is not statistically significant, $t(41) = 2.02$, $p < 0.05$ although the experimental group outperforms the control group in vocabulary gain.

The results gained in the present study are not in line with what Lu (2008) concluded. In the light of the results gained, Lu concluded that the mobile phone groups had greater vocabulary gains than their paper-group counterparts in both immediate and delayed post-tests.

The reasons for the discrepant results gained by Lu (2008) mentioned earlier and the present study can be explicated as follows: (a) the number of words that Lu's participants were required to know was really limited, about 28 words altogether, while in the present study students were required to learn 15 to 20 words per session, about 200 words altogether. When the load of vocabulary is not much, it is easier to commit them into memory which was the case in Lu's study; (b) the limited treatment period in Lu's study could be another potential source of discrepancy. The treatment period in his study was two weeks which is not comparable in this regard with the present study which lasted for 12 sessions of instruction or six weeks plus two weeks interval for the delayed post-test.

4.2 Results and discussion for the second research question

In order to address the second research question on the potentiality of vocabulary retention via text-messaging a delayed post-test was administered. The results of the delayed post-test are presented in Table 3.

Table 3. Independent Samples T-test for the Delayed Post-test

Group	N	Mean	SD	Mean Differences	Df	t	Sig(2-tailed)
Delayed post-test	21	17.95	4.36	2.13	41	1.63	.11
Experimental Control	22	15.81	4.19				

$P < 0.11$

Table 3 shows the descriptive statistics and independent samples t-test for the delayed post-test. As can be seen, the mean of the experimental group was higher than the mean of the control group, so it is concluded that the experimental group outperforms the control group in word retention.

As indicated in Table 3, an independent samples t-test was conducted to compare the vocabulary retention of the control and the experimental groups for the delayed post-test. The effect of text-messaging on vocabulary retention was not statistically significant, $t(41) = 1.63$, $p < 0.1$; it is therefore concluded that there was no difference between the retention of the vocabulary learned by students in the control and the experimental groups after a two week interval.

Interestingly, the results obtained from the delayed post-test of the present study were consistent with that of Lu's which was the only study to date that investigated the retention of vocabulary via text-message. Lu (2008) reported that the vocabulary gain decreased in the delayed post-test and none of the delayed gains in the four groups reached the significant level. Overall, the mobile phone groups had greater vocabulary gains than their paper-group counterparts in both immediate and delayed post-tests. However, the results of the post-test and the delayed-post test in the present study do not point to the superiority of the treatment.

5. Conclusion

This study investigated the impact of text-messaging on EFL freshmen's vocabulary learning. Although the findings did not substantiate that text-message vocabulary learning could be undeniably beneficial, they elucidate that it can be deemed as a complementary approach to enhance their vocabulary repertoire. The success of this trial in demonstrating the acceptability of messaging for language learning purposes, albeit at a lower frequency than was initially envisaged, opens the way for further incorporation of messaging into the course and linking it to assessment. The present study has also highlighted the significance of individual differences in the students' reactions to the messaging. This means that catering for such differences will need to be a priority in further research. These results should also provide useful insights for other educators and researchers interested in applying a similar approach in the teaching of other languages.

6. Pedagogical Implications

Word knowledge plays an essential role in determining the success of EFL and ESL learners. It is determinant in speaking, reading, writing and listening (Adolphs and Schmitt, 2003). Therefore, vocabulary learning has been a great concerns for teachers, learners, syllabus designers, materials developers, as well as test developers.

The results of the present study can be of use in educational centers. This study, according to the results achieved, may bear some hints for English teachers who might certainly pay some attention to teaching vocabulary via text-message or any other of the four major skills; listening, speaking, reading and writing, because learning through MALL devices cannot be limited to any skills or subjects in isolation. The suggested point for teachers in language centers and institutes is that they can modify the way they assess and instruct the students and move toward a more learner-oriented method or approach. In like manner, students can take advantage of the findings of this study. They should know that they can use their mobiles to strengthen their vocabulary knowledge and command by sending and receiving learning units to each other.

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