

Effects of SMS Text Messaging on Vocabulary Learning*

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This study aims to investigate the effectiveness of using SMS (Short Message Service) technology in vocabulary learning in an EFL university context. Data were collected through vocabulary tests and survey including in-depth interview from 62 students in three English classes. The students in the control group had a lesson only in class while the students in the two experimental groups received SMS text messages. The difference between the experimental group 1 and 2 was interactivity. The analysis of the data revealed that students who learned vocabulary through SMS improved their vocabulary knowledge more than those who did not. In regard to the interactivity effect within the SMS groups, the results showed that the students with interactivity learned significantly more words than those without. Based on the results of the survey and interview, the students in the experimental groups showed positive feedback toward using SMS in vocabulary learning. The results of the study lead to instructional implications for teachers and students to use m-learning appropriately for effective vocabulary learning. The study also discusses limitations and suggestions for the future research to apply SMS into vocabulary learning in the Korean EFL settings.

I. INTRODUCTION

With the limitless potential of technology, it has affected language learning and teaching environments. Employing technology in a language classroom further improves

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learners' interests and motivation when it is combined with the active participation of students and authentic activities (Garner & Gillingham, 1998; Kim, 2008). The current technology emphasizing on language learning communication and educational tools such as computers, the Internet, and even mobile phones provides a way for foreign language learners to focus on the authenticity of language use. Developing multimedia assisted-learning tools has been a critical issue in the English-language education field. With the accelerated growth in technology, mobile learning using mobile devices such as PDAs, mobile phones, and smart phones has gradually become considered effective due to the convenience and mobility, which overcomes limitations of learning time and space that constrain traditional language classes.

Mobile assisted language learning is a new learning tool in which students use mobile technology that has great potential to support learning anytime and anywhere as a tool for L2 classes. Moreover, the availability of mobile phones in Korea has been rapidly spreaded to all generations so that information technology can expand opportunities for enhancing learners' English skills regardless of age, in general.

Vocabulary learning is a principal issue for English learning because vocabulary comprises the basic component of English skills. Therefore, many studies have attempted to improve efficiency and performance when learning English vocabulary. In many cases (Grabe, 1991; Nation, 1990; Rott, 1999; Tozcu & Coady, 2004), learning English involves memorization and practice of a large number of vocabulary words. Vocabulary learning which is always involved in reading has been proven to be a significant aspect of students' success in second language learning, particularly L2 reading and academic success (Grabe, 1991; Grabe & Stoller, 2001; Nation, 1990; Tozcu & Coady, 2004).

Considering vocabulary learning in a technical environment, most research has focused on the positive effects of electronic glossing on vocabulary learning (Hulstijn, 1992; Watanabe, 1997). Other research studied incidental vocabulary learning, and the relationship between look-up behavior and vocabulary test performance (Davis & Lyman-Hager, 1997; Hulstijn, 1993; Knight, 1994) as well as the relations between look-up behavior and retention of the looked-up words (Laufer & Hill, 2000). Hulstijn (1993) and Knight (1994) found that students who looked up more annotations achieved greater vocabulary learning than those who did less.

The look-up behavior in the traditional sense can be enhanced with mobile learning, which can help students look up the meaning of the target words more frequently. In the study of Fischer (2000), students were provided with SMS text messages to learn new words. The conclusion was drawn from the study that students enjoyed learning new

words with the aid of their mobile phones, and looked up words more often than in the conventional vocabulary learning. Some studies have researched the effects of mobile language learning and they showed positive impact on vocabulary learning (Kiernan & Aizawa, 2004; Levy & Kennedy, 2005; Thornton & Houser, 2005).

However, contrary to the fact that mobile technology can be efficient in foreign language learning, few studies have been researched in the Korean context. This study, therefore, examines whether extending the role of the classroom environment through the means of text messaging will effectively enhance students' vocabulary learning with qualitative and quantitative analysis.

The purpose of the present study is threefold. The first purpose is to examine the effects of mobile on students' vocabulary learning. The second aim is to examine the effects of different modes between the students with interactivity and those with non-interactivity through SMS text messaging. The third one is to investigate students' perception towards SMS text messaging for English vocabulary learning.

II. LITERATURE REVIEW

1. Vocabulary Learning in Technology

In an EFL situation, lexical competence can be considered core to better comprehension in L2 learning and it can hardly be denied that the extent of students' vocabulary knowledge relates strongly to their reading comprehension and overall academic success (Nation, 1990). Over the past decades, researchers have dealt with the question about the kind of vocabulary instruction that is most effective for helping students learn new words as well as comprehend what they read (Carrell & Eisterhold, 1983; Grabe & Stoller, 2001; Hulstijn, 1992; Rott, 1999). Based on the analysis of this research, it can be concluded that no one single instructional method is sufficient for all students as an optimal vocabulary learning. That is, effective instruction must use a variety of methods to help students acquire new words and increase reading comprehension. Effective instruction includes opportunities for both explicit and implicit word learning.

Explicit vocabulary learning means giving attention directly on the words while incidental learning does not necessarily focus on the new word. Whether there is a different approach to learn vocabulary, all levels of learners can benefit from reading. In the EFL situation, however, students are likely to have limited chances to be exposed to various words. Furthermore, they appear to have difficulty retaining the meaning of new

words by merely reading the text. To learn new words, teachers should give instructions of vocabulary learning to students (Carrell & Eisterhold, 1983; Grabe & Stoller, 2001). Teachers need to allocate instruction time to improve students' lexical knowledge. Rott (1999) investigated the role of reading in language learners' vocabulary development with 95 learners. The test results showed that the more new words are exposed to the learners, the greater the possibility to retain the meaning and to expand their vocabulary knowledge. The study concluded that reading can have a favorable long-term effect on adult L2 vocabulary growth, given that the texts are sufficiently rich to allow the reader to assign meaning to unfamiliar words.

In this respect, direct vocabulary teaching could be vital in EFL reading classes. The introduction of new vocabulary can be carried out through the use of pictures, explanation, translation, and example sentences. Translation to learn new words is widely used, as its efficacy has been acknowledged by researchers (Harmer, 1991; Schmitt & McCarthy, 1997; Ur, 1996). Harmer (1991) noted that the use of translation can be an easy and quick way of presenting vocabulary. Schmitt and McCarthy (1997) mentioned that learners use L1 as one of the most important factors in learning L2 vocabulary. Therefore, the study presents target words to students in direct vocabulary instruction using SMS text messaging on mobile phones.

2. Mobile Technology in Language Learning

As technology continues to develop, learning in such a context needs to be adapted. Technology has made an impact on the learning environment, with the growth in the learners' interests and the more frequent use of language more frequently with the Internet than the traditional ways (Kim, 2008). Technology including computer, multimedia, MP3 players, and mobile phones has been facilitated for language learning. Such portable media as smart phones or iPads are now social staples. Using mobile technology has allowed educators to develop new approaches characterized by just-in-time learning (Anaraki, 2008). Information and Communications Technology (ICT) is one way to learn English, likewise, Short Messaging Services (SMS) technology has the great potential to be an effective method for such a purpose. Mobile technology enables people to learn whenever and wherever students are so that the SMS technology has particularly been taken into consideration in foreign language education. Studies have shown the potential of learning new technical English language words using SMS (Brown, 2001; Fischer, 2000; Norbrook & Scott, 2003; Thornton & Houser, 2005).

Brown (2001) developed a program utilizing both voice and email with mobile phones

to learn Spanish. The program included vocabulary practice, quizzes, and word and phrase translations. It was concluded that mobile phones were effective for quiz delivery, and voice vocabulary lessons and quizzes had great benefits using technology. Norbrook and Scott (2003) emphasized that portability and immediacy are the essential factors to motivate students in mobile language learning. Thornton and Houser (2002, 2005) mentioned that mobile devices could be effective for delivering foreign language learning materials. It is not only fast and convenient for the teacher to send but also for the students to receive and review. On the other hand, mobile-based lessons should be provided in bite-sized format, and be delivered several times a week or even daily, including translations and context-based contents (McNicol, 2004).

Kiernan and Aizawa (2004) studied whether mobile phones were useful to learn language and to explore their use in task-based learning. The students were divided into three groups: PC email users, mobile phone email users, and mobile phone speaking users. They took pre- and post-tests, conducting three narrative tasks and three invitation tasks. The students in the group of mobile phone speaking completed these tasks in the time provided while those who were PC email users and mobile phone email users completed them any time they wanted to do. The mobile face-to-face speaking users had significantly faster performances than other two groups. Interestingly, and the mobile phone email users were the slowest in performing the task due to the speed of typing on mobile phones.

Thornton and Houser (2005) studied about using mobile phones to teach English at a Japanese university. They studied the effects of SMS with three groups: paper, Web and SMS. Students in the SMS group had short mini-lessons through email, with five words per week, recycled previous vocabulary, and used the words in various contexts. All students were tested twice a week and compared to other groups. The results showed that the students in the SMS group learned more target words than the students in other groups. Moreover, the students in the SMS group improved their vocabulary scores by nearly twice as much as the students of paper-based group. In terms of students' attitudes toward the SMS instruction, the majority of the students preferred this type of instruction, and they stated the SMS lesson was a valuable learning tool. The study concluded that using SMS was effective to learn vocabulary due to the aspects of mobile phones, which promoted frequent exposure, and easily reviewed vocabulary.

According to a study from Chapelle (1998), students receive instant feedback as computers provide input to learners and have an interaction with them. Likewise, mobile-assisted language learning gives instant feedback with the touch of a button.

Students can develop high interactivity by sending and receiving texts, and even touching on pictures and texts on smartphones or iPads. Therefore, a high interactivity between learners and mobile phones may occur. One of the good features in mobile learning is that it provides an interactive process in learning.

A lot of students nowadays address the role of texting on their mobile phones as a social-communicative resource in their daily lives. Most of them send and receive text messages every day, so they consider it a way to communicate with each other. Most college students in Korea use SMS mainly for communication purposes. Therefore, the use of mobile phones has great potential for learners in expanding students' opportunities for learning due to its great mobility and accessibility to learn and socialize. The use of SMS in foreign language learning can be more of a practical instructional tool than computers and the Internet which are limited in places. Therefore, it is necessary for educators to tap into this learning model as a medium of English instruction, make students create their knowledge self-consciously from a variety of resources (Warschauer, 2000).

As yet, there has been no comprehensive research conducted on the uses of SMS for language learning in Korea. More rigorous studies to determine the efficacy and feasibility of actually delivering educational content through SMS are still lacking. Thus, there is a need to undertake this study.

III. METHODOLOGY

1. Participants

The participants in the study were 62 university students divided into three different classrooms, and all of them were female taking a selective English course in the spring semester of 2010 that focused on reading and listening skills. A total of 15 students majored in liberal arts (24.2%), 25 students natural sciences (40.3%), 17 students in business administration (27.4%), and 5 students in arts (8.1%). The respondents included 1 freshmen, 32 sophomores, 15 juniors, and 14 seniors. Participants ranged in age from 19 to 24. All of them had mobile phones and used text messages every day.

All classes were taught by the researcher. Before the experiment, a TOEIC score was submitted to examine any significant differences among the three groups (see Table 1).

The control group scored 591.67 out of 990 (SD= 63.17) while the experimental group 1 who got text messages of English words gained 603.50 (SD= 69.23) and the experimental group 2 who received and sent text messages of them scored 616.19 (SD= 43.18).

[Table 1] Descriptive Statistics of Pre-Test Results

Group	N	M	SD
Control	21	591.67	63.17
Experimental 1	20	603.50	69.23
Experimental 2	21	616.19	43.18

As shown in Table 2, the result of one-way ANOVA did not reveal any statistically significant difference among three groups ($F= .90$, $p= .41$). With this result, it was assumed that the three groups were comparable in terms of their English proficiency.

[Table 2] Results of One-way ANOVA with Pretest

	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>Sig.</i>
Between Group	6317.37	2	3158.69	.90	.41
Within Group	208166.91	59	3528.25		
Total	214484.27	61			

n = 62

2. Measurement

1) Vocabulary Test

Regarding the vocabulary lists the students receive, it is important to choose the appropriate materials in order to effectively learn new words. Therefore, all the vocabulary and example sentences on the pre- and post-tests and in SMS text messaging were selected from the course book. Students got SMS text messages with 15 words two times a week for five weeks. The pre- and post-test was a translation test of an English text (Nurweni & Read, 1999, cited in Nation, 2001) which required translating the underlined words into Korean.

Example) Call center workers are trained to address customer requests and complains in accordance with company procedure and policy.

Pre- and post-test were the same questions. The example sentences in the tests were

chosen from the textbook. Students took the vocabulary test which consisted of sixty questions before and after the study. The students were given 20 minutes to answer by providing the definition of each word in Korean.

2) Questionnaire

The data gathering instrument for this study included a survey consisting of closed-ended and open-ended questions. The survey and interview were used to decide whether the mobile text-messages were effective for English vocabulary learning. Students were asked to report on the questions below: (a) a general information questionnaire on mobile usage, and (b) open-ended questions about feedback and perspectives towards mobile vocabulary learning (Table 3). The first section was used to gather the participants' general information including mobile phones and SMS use. The second section included open-ended question that students were asked to answer in terms of the benefits, drawbacks, and suggestions about using SMS text messages.

The questionnaires were distributed in the class right after the experiment. Participants completed the questionnaire. The questions are given below in Table 3.

[Table 3] Open-ended Questions of SMS Vocabulary Learning

Item	Questions
1	What are the benefits of using SMS text messages for vocabulary learning?
2	What are the drawbacks of using SMS text messages for vocabulary learning?
3	What are your suggestions for using SMS text messages for vocabulary learning?

3) In-depth Interview

An in-depth interview was conveyed after the study with two students from the experimental group 1 and two students from the experimental group 2. In this study, the semi-structured interview was adapted wherein the interviewer asked all respondents the series of pre-established questions based on the response of the questionnaire they completed. Each student was interviewed for about 30 minutes to get more detailed information on the participants' perception towards mobile language learning.

Four questions for the in-depth interview were prepared by the instructor. The first question was about the good or bad aspects of using mobile in English vocabulary learning. The second question involved the students' perspectives on mobile learning. The third was concerned about whether the students thought the new approach was effective

for language learning. The last item was related to suggestions and areas to consider.

3. Procedure

The study was conducted in spring of 2010. The students in the study were taught two hours each week. The experiment was held for six weeks. The course focused on two skills, reading and listening. Each class lasted for fifty-minutes and met two times every week. The students in the control group had a lesson only in class while the students in the two experimental groups received two SMS text messages related to target words every week after class.

Moreover, the difference between the experimental group 1 and 2, was related to interactivity. The students in the experimental group 1 only received and did not send any text messages back while the students in the experimental group 2 received and sent texts to answer quizzes (Figure 1). That is, the experimental group 2 interacted with the teacher receiving the word lists and sending the answer to the vocabulary quiz by SMS text messages. The experimental group 2 was asked to write the definition of the target words in Korean through SMS.



[Figure 1] Screen Shot of SMS

All participants were provided with a pre-test at the beginning of the experiment and post-test after six weeks. Before the experiment, they took a vocabulary test in the first

week of the study. Every week the participants received instruction and practiced vocabulary learning in class and out of the classroom. In week 6, they took the post-test, which includes the same questions as the pre-test.

4. Data Analysis

All the data including vocabulary tests and survey were gathered and analyzed after the study. Descriptive statistics including the means and standard deviations, were computed for pre and post vocabulary tests among three groups and the survey for the two experimental groups.

For analysis, the quantitative data were computed with SPSS 13.0 for statistical analysis. Descriptive statistics were conducted to answer the research questions. Furthermore, the qualitative data from the open-ended survey and interview were used in the study to illustrate and support the quantitative results.

To examine the effects of vocabulary learning through SMS text messaging, one-way ANOVA was conducted. In order to investigate the effects of the independent variable in mobile language learning by interactive SMS text-messages, independent *t*-test was conducted to compare the mean scores of vocabulary learning between the two experimental groups.

The open-ended questions and interview were employed to determine students' perceptions and ideas about SMS learning in depth. The results were analyzed to determine the advantages and disadvantages, and suggestions about SMS learning to improve learners' English vocabulary in the Korean EFL situation are provided.

IV. RESULTS AND DISCUSSION

To investigate the effect of SMS text messages on vocabulary learning, vocabulary test scores were analyzed in the pre- and post-stages. The descriptive statistics of vocabulary tests for the three groups are shown in Table 4.

According to the results of the means and standard deviation for vocabulary tests, shown in Table 4, the pretest score was 20.57 (SD= 9.92) out of 60 in the control group, 20.90 (SD= 9.83) in the experimental group 1, and 22.76 (SD= 11.03) in the experimental group 2.

[Table 4] Descriptive Statistics of Pretest of Vocabulary

Group	N	M	SD
Control	21	20.57	9.92
Experimental 1	20	20.90	9.83
Experimental 2	21	22.76	11.03

1. Effects of SMS Text Messages on Vocabulary Learning

One-way analysis of variance (ANOVA) was conducted to investigate the difference among the three groups. As seen in Table 5, no statistically significant difference was found in the mean scores of pre-test at .05 level ($F = .28$, $p = .76$). It was assumed that the students had similar abilities in vocabulary knowledge. Scores in the post-test were therefore compared, directly among the different conditions.

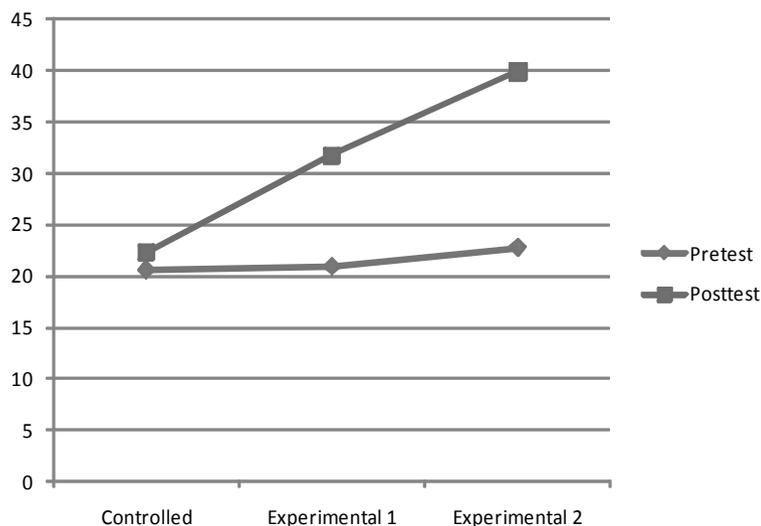
[Table 5] Results of One-way ANOVA with Pretest

	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>Sig.</i>
Between Group	58.344	2	29.172	.28	.76
Within Group	6236.752	59	105.708		
Total	6295.097	61			

As suggested in Table 6, The students in the control group obtained 22.29 (SD= 11.27), whereas those students in the experimental group 1 scored 31.70 (SD= 10.95) and those in the experimental group 2 scored 39.86 (SD= 14.56), respectively. The total means of the pre- and post-tests for each group are depicted in Figure 2, presenting the improvement of vocabulary learning.

[Table 6] Descriptive Statistics of Posttest Results

Group	N	M	SD
Control	21	22.29	11.27
Experimental 1	20	31.70	10.95
Experimental 2	21	39.86	14.56



[Figure 2] Pre- and Post-test Results among Three Groups

To investigate the effects of SMS on vocabulary learning, the scores of the post test were analyzed in one-way ANOVA. Table 7 describes the results of the ANOVA of the student performance on the post vocabulary test.

[Table 7] Results of One-way ANOVA with Posttest

	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>Sig.</i>
Between Group	3247.282	2	1623.641	10.570	.00**
Within Group	9063.057	59	153.611		
Total	12310.339	61			

** $p < .01$, $n = 62$

These results indicate that there was a statistically significant difference on the vocabulary learning among the three groups. In other words, the two experimental groups showed greater improvement in vocabulary learning than the control group. The mean performance of the experimental group 1 increased from 20.90 (SD= 9.83) on the pre-test to 31.70 (SD= 10.95) on the post-test, and the scores of the experimental group 2 rose from 22.75 (SD= 11.03) to 39.86 (SD= 14.56). It should be noted that the two groups with mobile language learning showed higher scores than the group without it.

As shown in Table 7, there was statistically significant difference among three groups in vocabulary learning ($F = 10.57$, $p = .00$). This result indicates that SMS text messages as

a learning tool can be a variable to expand vocabulary knowledge. These results suggest that mobile language learning would be beneficial for vocabulary learning in an EFL situation, supporting the previous studies that mobile phones are effective for vocabulary lessons (Brown, 2001; Thornton & Houser 2002, 2005).

The results lead to the conclusion that facilitating mobile language learning helps learners to extend their vocabulary learning any time any where. Based on the results, it can be concluded that English vocabulary learning may be extended to the mobile-assisted learning possibly due to the characteristics and features of mobile phones which are portability and immediacy (Norbrook & Scott, 2003).

2. Effects of Interactivity in SMS Text Messages

To investigate whether there is difference in vocabulary learning with or without interactivity on SMS text messages, the participants' vocabulary test scores were analyzed using an independent *t*-test.

Independent *t*-tests were administered to investigate statistically significant improvement differences in vocabulary learning by the two experimental groups as demonstrated in Table 8. The analysis confirmed that there was statistically significant difference between the two groups on the post-test ($p = .05$), while there was no such difference on the pre-test ($p = .57$).

[Table 8] Results of Independent t-test between Two Groups: Pre- and Post-tests

Tests	Groups	N	Mean	SD	<i>t</i>	<i>p</i>
Pretest	Experimental 1	20	20.90	9.83	-.57	.57
	Experimental 2	21	22.76	11.03		
Posttest	Experimental 1	20	31.70	10.95	-2.02	.05*
	Experimental 2	21	39.86	14.56		

* $p < .05$

Participants in the two experimental groups showed different score means on the post-test. The students in the experimental group 1 got the mean score of 31.70 (SD= 10.95) whereas those in the experimental group 2 scored as 39.86 (SD= 14.56). For the overall result of the test scores, the students in the experimental group 2 received significantly higher mean scores on the post-test than those in the experimental group 1 ($t = -2.02$, $p = .05$). The purpose of this analysis was to examine the interaction effects on SMS text messages to learning English vocabulary. The results, thus, showed that the

students who interacted with mobile phones and the instructor expanded to learn more vocabulary.

While the students in both experimental groups showed significant improvement on the post-vocabulary test, the students with interactivity showed more improvement than those without. These results can prove the potential of SMS interactivity in vocabulary learning and that it can be more effective when students interact with teachers through mobile phones.

In sum, the most improvement in vocabulary learning among the three groups after the study was the group who sent and received SMS text messages based on the post-vocabulary test scores. These results correspond with the previous studies (Fischer, 2000; Norbrook & Scott, 2003; Thornton & Houser, 2002, 2005) in which using SMS has benefits in language learning.

Overall, the effect of SMS instruction was significantly positive for vocabulary learning. It can also be more beneficial when students have interactions with teachers when acquiring English vocabulary. The results of previous research (Fischer, 2000; Norbrook & Scott, 2003; Thornton & Houser, 2002, 2005) showed that using SMS was effective to learn vocabulary due to the aspects of mobile phones: frequent exposure and recycled vocabulary. SMS instruction can bring students' interests and motivation into learning new words due to portability and immediacy of mobile learning (Norbrook & Scott, 2003).

3. Students' Perception on SMS Vocabulary Learning

Students in the experimental groups were asked to answer the open-ended questions in the survey. As the researcher attempted to investigate the impact of SMS learning more closely, the students were asked to respond to three open-ended questions. The researcher analyzed the statements categorizing the students' responses. In addition, four students, two from the experimental group 1 (G1) and two from the experimental group 2 (G2), were interviewed to find out their thoughts and ideas in depth.

1) Benefits of Vocabulary Learning through SMS

With respect to the first question, most of the students responded positively regarding the benefits of using SMS in vocabulary learning.

The responses are shown in Table 9. The students mentioned 'repetition' as their favorite aspect (22.2%) in SMS vocabulary learning, and 'easiness' that they could bring

the vocabulary list to study new words (18.5%) as the second most favorite part and ‘accessibility immediately’ as the third most favorite part (17.3%). Moreover, some students responded that they could learn the new words effectively (14.8%), in their spare time (7.4%) and without effort (7.4%).

[Table 9] Benefits of Vocabulary Learning through SMS

Rank	Responses	G1	G2	Tot	%
1	I can see the words repeatedly.	10	8	18	22.2
2	I need not to bring vocabulary lists to learn new words.	7	8	15	18.5
3	I can check it immediately.	6	8	14	17.3
4	It is helpful and effective to learn vocabulary through SMS.	5	7	12	14.8
5	I can learn words in my spare time.	3	3	6	7.4
6	It is convenient to learn words anywhere and anytime.	3	3	6	7.4
7	I can learn vocabulary without effort.	2	3	5	6.2
8	Uncategorized responses	3	2	5	6.2
Total		39	42	81	100

* G1: the group without interactivity, G2: the group with interactivity, Tot: Total, % = Percentage

Informant A (G1): It was convenient and easy to check vocabulary through my mobile phones. I saved the text messages whenever I got it. I checked and memorized them whenever I had spare time. I think it was really effective to learn new words through SMS.

Informant C (G2): If I had an assignment of vocabulary in handouts, I would check them right before testing. However, it was really helpful to memorize them every day since I was able to check the texts in my free time. Since I studied the vocabulary every day, it was much easier to recall them on the midterm. It was a lot better to remember the words compared to without the text messages.

Informant D (G2): I usually spend a lot of time to memorize English vocabulary, but it took one or two minutes to look at the words and memorize them without much efforts.

Based on the answers to the questions and interview, the students showed positive feedback on learning English words through SMS. As for the benefits of SMS learning, the participants of the study stated that they assessed messages immediately and checked

them wherever they were, and whenever they had spare time. Moreover, the students enjoyed vocabulary learning through SMS text messages (Fischer, 2000). That is, a lot of positive aspects of SMS features such as mobility and accessibility are the key factors to motivate students in involving learning English words (Kiernan & Aizawa, 2004; Levy & Kennedy, 2005; Norbrook & Scott, 2003; Thornton & Houser, 2005).

2) Drawbacks of Vocabulary Learning through SMS

Concerning drawbacks in SMS vocabulary learning are reported in Table 10. A variety of responses to this question were elicited. The responses of weaknesses were 'not reading text messages in busy hours' (48.9%), 'many text messages at a time' (11.6%), and 'short saving capacity of mobile phone' (11.6%). Meanwhile, they answered that they did not see any demerits of using mobile phone on their learning (11.6%).

[Table 10] Drawbacks of Vocabulary Learning through SMS

Rank	Responses	G1	G2	Tot	%
1	I tend not to look at the text when I am busy.	15	6	21	48.9
2	I cannot check if there were lots of SMS coming at a time.	3	2	5	11.6
3	It is inconvenient with the small screen and capacity of the mobile phone.	2	3	5	11.6
4	I do not find anything in weaknesses of using SMS.	2	3	5	11.6
5	It is not good to have the SMS with the words that I remembered.	1	3	4	9.3
6	I delete the SMS by mistake so that I cannot check it again.	2	1	3	7.0
Total		25	18	43	100

* G1: the group without interactivity, G2: the group with interactivity, Tot: Total, % = Percentage

Informant B (G1): Since I did not check the texts in my busy hours, I thought I needed to be checked by the teacher to increase the efficiency of using this method.

Informant C (G2): I wanted to have some English expressions through SMS. I did not see any drawbacks in SMS learning.

Informant D (G2): It was inconvenient to see the texts within the small screen. I needed to delete some of the texts due to the saving capacity of my mobile phone.

Regarding the results, many students mentioned that they did not check the text messages when they were busy. Interestingly, the students in the group with interactivity

seemed to check the texts more immediately than those without interactivity. It was because the students needed to receive and send the texts to answer the quiz. Thus, students showed more preference and proved more benefits to learn new words by interacting with teachers through SMS.

3) Suggestions for Using SMS

After this experiment, the students shared their ideas to learn English vocabulary through SMS. Table 11 describes the students' suggestions for using SMS for English learning. Ten students (27.8%) commented that they wanted to learn grammar using this method. Some of the students suggested that they wanted to have the text at regular time (11.1%), reduce the amount of words given (11.1%), and have more text messages (11.1%). Some of them from the experimental group 1 reported that they wanted to have

[Table 11] Suggestions for Using SMS

Rank	Responses	G1	G2	Tot	%
1	I want to learn grammar lesson through SMS.	4	6	10	27.8
2	I do not have any suggestions.	3	4	7	19.4
3	I want to have text messages at regular time.	2	2	4	11.1
4	I want to reduce the amount of words given in SMS.	1	3	4	11.1
5	I want to have text messages more than twice a week.	2	2	4	11.1
6	I need to respond to text messages.	3	0	3	8.3
7	I want to take a vocabulary test every week.	2	0	2	5.6
8	I want to have difficult words through SMS.	1	1	2	5.6
Total		18	18	36	100

* G1: the group without interactivity, G2: the group with interactivity, Tot: Total, % = Percentage

feedback after receiving text messages (8.3%) and the rest of them mentioned testing and adjusting level of vocabulary based on each student's proficiency (5.6%).

Informant A (G1): It could be better if I received the words with example sentences each time.

Informant B (G1): If I had a quiz every time after I got the texts of vocabulary, it would have been good to learn and memorize them. I thought I needed to be checked, like a pop quiz or a vocabulary test.

Informant D (G2): It would be good if I had SMS messages to learn English grammar.

In sum, the majority of the students reported that they found it enjoyable and effective to use SMS in English vocabulary while few students mentioned that they did not. According to the open-ended questions, the students' perception generally showed very positive attitudes towards SMS text messaging as a new learning tool. The results of students' responses can be interpreted in such ways that students construct their own learning and have interests and motivation in learning on their mobile phones out of the classroom. The results of this study supports previous studies (Levy & Kennedy, 2005; Kiernan & Aizawa, 2004; Thornton & Houser, 2005), which show positive impact on L2 vocabulary learning.

V. CONCLUSION

The primary purpose of the present study was to investigate the effects of SMS in English vocabulary learning in the Korean university context. First, regarding the effects of SMS when learning new words, students who used SMS showed significantly better improvement than those who did not. To investigate whether there was a statistically significant difference in vocabulary learning through SMS between the groups using the SMS and the one without, the participants' vocabulary test scores were analyzed. The scores were analyzed within ANOVAs to examine the effects of SMS text messages on vocabulary learning. The groups were divided into three groups: the control group, the SMS group without interactivity, and the SMS group with interactivity. The results of the two SMS groups showed that the use of SMS technology was more effective when learning English vocabulary. That is, the students using SMS technology were forced to learn and acquire target words through text messages. The positive effects of text messages through SMS on expanding vocabulary knowledge support previous studies (Fischer, 2000; Thornton & Houser, 2002, 2005).

To investigate the interaction effects between the students with interactivity and without, vocabulary test scores were analyzed in an independent t-test. In regard to the interactivity effect within the SMS text messaging groups, the students with interactivity significantly learned more vocabulary than those without one. In other words, the students who received the texts of target words and sent the answers to the quizzes could be the variable which they expanded more of the target words. It can be concluded that

interactivity under SMS learning environment might be an important factor affecting vocabulary learning.

Finally, the study was aimed to examine students' perceptions toward SMS in learning English words. The experiment showed most of the students who experienced SMS learning mentioned positive feedback: Using SMS was a helpful and effective tool to learn new words repeatedly and frequently due to the aspects of mobile phones, and it gave an opportunity for active participation and students interests, supporting previous studies (Anaraki, 2008; Fischer, 2000; Garner & Gillingham, 1998; Thornton & Houser, 2005) of the potential of new methods to learn English through mobile technology.

This study examined whether mobile-based vocabulary learning offer great potential to bridge traditional learning with the active participation in English learning. Mobile technology enables students to learn regardless of when and where they are, and support their English vocabulary practice (Fischer, 2000; McNicol, 2004; Thornton & Houser, 2005). Integrating mobiles into an EFL class can help Korean learners to be exposed to vocabulary repeatedly and frequently (Thornton & Houser, 2005), which may even result in a greater amount of vocabulary learning than the traditional paper-based method. Thus, innovative ways to integrate mobile technology into English vocabulary teaching should be adopted to increase efficiency of learning. Since accessibility and conveniency are characterized by mobile learning, students can be exposed to foreign languages more frequently, taking more active roles in learning. In the age of technology, EFL instructors, thus, should provide students with opportunities to come in contact with a wide variety of interesting methods in order to create favorable conditions for their own students.

The research to investigate the effects of SMS text messages in EFL settings is still in its beginning phase. The vast potentials of the mobile technology and contribution to English education are great. Unlike technical problems of using computers, mobile-based language learning can be widely used in the generation who has already been empowered to make use of mobile phone technology. It is hoped that taking this path will empower not only students but also teachers in a significant and productive manner.

Despite the findings of the current study that SMS instruction has been proven to affect L2 vocabulary learning, limitations were found. With a small sample of upper-middle English proficiency level students at one university, the results of this study may not be generalized. Observation of individual learners would be meaningful for discovering how and when they checked text messages for vocabulary learning with their mobile phones.

The aforementioned limitations should be seen as useful suggestions for future study

with regards to vocabulary learning with SMS instruction and in the research design. Since there is almost no research on an individual variable under mobile technology, future research should examine how each learner processes and completes mobile learning differently. In addition, other individual factors such as different age groups and different proficiency levels need to be examined to how they affect results.

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Free download latest text messaging vocabulary Files at Software Informer. Use this software as the best solution to send short messages to multiple Gmail recipients. This powerful tool will open up a new avenue for communicating marketing statements and group messages.Â send short messages to multiple and group messages. It has makes mass text-messaging easier that. SMS language, textspeak or texting language is the abbreviated language and slang commonly used with mobile phone text messaging, or other Internet-based communication such as email and instant messaging. Features of early mobile phone messaging encouraged users to use abbreviations. Text entry was difficult, requiring multiple key presses on a small keypad to generate each letter, and messages were generally limited to 160 characters. Additionally, SMS language made text messages quicker to compose. Short Message Service (SMS) is a text messaging service component of phone, web, or mobile communication systems. It uses standardized communications protocols to allow fixed line or mobile phone devices to exchange short text messages. [6]. SMS is the most widely used data application, with an estimated 3.5 billion active users, or about 80% of all mobile phone subscribers at the end of 2012.Â In 2012, 6.1 trillion SMS text messages were sent. This translates into an average of 193000 SMS per second. SMS has become a massive commercial industry, earning \$114.6 billion globally in 2012. The global average price for an SMS message is \$0.11, while mobile networks charge each other interconnect fees of at least \$0.04 when connecting between different phone networks.