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Exploring the Effectiveness of LINE for EFL Vocabulary and Reading

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Abstract. The development of mobile technology is rapidly changing the environment and the way of learning in school. In addition to facilitating communication, mobile devices (e.g., smart phones and tablets) have made ubiquitous E-learning more accessible and mobile learning more popular. Multimedia messaging service (MMS), such as WhatsApp and LINE, can deliver richer information, including images, audio and video files, to enhance the interest of English learners. However, whether MMS can help students learn English is of interest. This paper aims to explore the effectiveness of MMS, LINE in particular, in helping English as a foreign language (EFL) students learn English by using 40 college students enrolled in Freshman English Reading course as participants. Data collection consists of pre- and post-test, MMS messages, student writing, and interviews. Based on the comparison of students' pre- and post-test, the findings indicate that the LINE-based learning activities helped students familiarize with English vocabulary and improve English reading comprehension. The study also shows that students who were more engaged in the LINE-based activities tended to have better improvement than those who were less active. In general, most students made improvement and had positive perceptions of the designed activities.

Keywords: mobile-assisted language learning; English as a foreign language; English reading and vocabulary; multimedia messaging service; LINE

Introduction

With the rapid development of information technology, students are used to learning different dimensions of knowledge through various devices such as computers, notebooks, tablets, and smart phones. Much literature has been published on the application of information technology for assisting teaching and learning (i.e., computer-assisted language learning (CALL) and

electronic-learning (E-learning)) (Crook, 1994; Greenfield, 2003; Gonzalez-Lloret, 2003).

The speed of mobile technology is increasing and has made ubiquitous e-learning more accessible and mobile learning more popular. Mobile technology is gaining much attention because of its characteristics such as mobility, reachability, personalization, spontaneity, and ubiquity, and its promises for education (Saran & Seferoglu, 2010). Mobile devices allow a richer learning environment for language learners (Bouhnik & Deshen, 2014; Yousefzadeh, 2012). Several attempts have been made to understand the advantages of mobile learning (M-learning) and mobile-assisted language learning (MALL) (Chen, Hsieh, & Kinshuk, 2008; Kahari, 2013; Kiernan & Aizawa, 2004; Suwantarathip & Orawiwatnakul, 2015; Wu, 2015).

Recently, many smart phone-based applications have been developed such as short messaging service (SMS) and multimedia messaging service (MMS). These devices have also changed the way people learn, especially English. The use of SMS and MMS with mobile devices for facilitating English learning is gaining much attention (Lawrence, 2014; Saran & Seferoglu 2010; Yousefzadeh; 2012). For example, Lawrence (2014) conducted research to investigate students' experiences of using SMS for vocabulary development. Saran and Seferoglu (2010) have explored how to support foreign language vocabulary learning through multimedia messages via mobile phones. Yousefzadeh (2012) found that learning English vocabulary through MMS resulted in better learning outcome than learning through SMS. However, most SMS- or MMS-based studies have focused mainly on the learning of English vocabulary, and very few studies have explored the learning of English through instant and interactive conversation. As mobile learning is gaining in popularity, the viability of MMS for learning English is worthy of investigation.

This paper aims to explore how MMS, LINE in particular, supports English language learning. It examines the learning outcomes of and student perspectives on LINE-based activities. The findings of the study play a crucial role in defining the role MMS (i.e., LINE) plays in supporting English as a foreign language (EFL) students learning English reading and vocabulary.

Literature Review

Mobile-assisted language learning (MALL)

Mobile-assisted language learning (MALL) is different from computer-assisted language learning (CALL) because it emphasizes the "continuity or spontaneity of access and interaction across different contexts of use" (Kukulska-Hulme, 2009, p. 162). Mobile learning (M-learning) is defined as acquisition of knowledge with the aid of any service or facility regardless of time and space (Lehner & Nosekabel, 2002). The utilization of M-learning has gained importance in the field of English language teaching. According to Tayebinik and Puteh (2012), "mobile learning applications in language learning has its advantages and its potential should not be overlooked, for, the future holds great possibilities for this type of technological device for pedagogical use" (p. 60). Norbrook and Scott

(2003) also claimed that mobile language learning motivates and enhances learning because of the portability and immediacy of mobile devices.

In fact, numerous researchers (Collins, 2005; Ogata et al., 2006; Kukulska-Hulme, 2006; Sarica & Cavus, 2009; Guerrero et al., 2010; Kiernan & Aizawa, 2004; Sandberg et al., 2011; Suwantarathip & Orawiwatnakul, 2015; Wu, 2015) have emphasized the benefits of M-learning for teaching English as a foreign or second language. For example, Kiernan and Aizawa (2004) studied the effectiveness of English task-based learning through mobile devices including text messages, emails, and speaking activities in a Japanese university. The results showed that the language learning tasks were satisfactorily achieved; they thus contended that applying mobile phones in EFL classrooms could significantly reinforce second language acquisition.

One of the devices used in mobile learning is the smart phone which has great potential for educational purposes. Common features of a smart phone include short messaging service (SMS), multimedia messaging service (MMS), Internet access, cameras, bluetooth, etc. Chinnery (2006) stated that these features provide access to authentic content, opportunities for communicative language practice, and platforms for interactive task completion. Brown (2001) conducted the very first study on the use of smart phones in language learning in the Stanford Learning Lab. The study explored the possibility of using both voice and email in mobile phones in Spanish study programs. These mobile-assisted programs included vocabulary exercise, word translations, exams, and live talking tutors. The findings of the study revealed that implementing smart phones with automated voice in vocabulary lessons were effective and had great potential for quizzes when delivered in small chunks. Likewise, Levy and Kennedy (2005) developed a program for learners of Italian language in Australia. Learners of the program regularly received words, idioms, definitions, and example sentences through SMS; they were asked to take quizzes and to respond to follow-up questions. The findings showed that the mobile phone-assisted learning significantly improved the students' language proficiency, and that students responded to the program positively.

On the other hand, several scholars argued that smart phones need to be used with caution in the learning environment (Kahari, 2013; Thornton & Houser, 2005). While they are useful for learning, learners tend to abuse them. Kahari (2013) pointed out that features in cell phones such as apps and games are sometimes distracting. Thornton and Houser (2005) also suggested that the tiny screen size of cell phones is only effective for review and practice, not for learning new content.

Mobile messages and language learning

More and more young users in Taiwan are contacting with each other via mobile messaging services like WhatsApp, LINE, Viber, and WeChat. Some scholars have pointed out the prominent roles of mobile messaging services in learning environments. For instance, Sweeny (2010) argued that the technology of instant and text message provides platforms for social networking, information sharing, and communication, which plays a significant role in education. Traxler and

Riordan (2003) also claimed that mobile messaging services can be used to provide motivation, support, bite-sized content, and tips and revision.

Previous studies have examined the application of SMS for language learning on smart phones. For example, one study investigated SMS for learning Italian (Levy & Kennedy, 2005), and another for learning Irish (Cooney & Keogh, 2007). Some researchers looked at the use of SMS as a tool for offering vocabulary exercises and quizzes (Lawrence, 2014; Levy & Kennedy, 2005; Norbrook & Scott, 2003). Thornton and Houser (2005) conducted a similar study in SMS-based English vocabulary learning with Japanese university students. The students received short vocabulary lessons via SMS three times a day and then watched video clips that explained English idioms on smart phones. The results indicated that the students receiving the lessons through SMS on their phones scored twice as high as the students receiving their instruction on paper. The students had positive attitudes toward the SMS-based mobile learning and recognized the approach as highly effective for learning English vocabulary.
While instant and text messaging services facilitate English language learning, such shortcuts might have a negative impact on the development of students' spelling and grammar skills (Rankin, 2010), and might even impede the learning of formal writing skills in mainstream schools (Rabab'ah, Rabab'ah & Suleiman, 2016; Salem, 2013). These scholars pointed out that students in their studies tended to use sentence fragments, emoticons, abbreviations, and incorrect vocabulary in their text messages, which distort Standard English and have an adverse impact on their development of English literacy. Therefore, these drawbacks need to be avoided when designing SMS-based learning activities.

MMS is a progressive form of SMS. In addition to sending text, it can also send graphics, audio, and video clips (Tayebinik & Puteh; 2012). As multimedia instruction offers a more engaging and lively learning environment, designing English courses with the use of MMS seems to be becoming an important issue. Several studies have compared the use of SMS and MMS in English learning and found MMS-based instruction to be more engaging and effective, which is in line with the Dual-Code Theory (Paivio, 1986) and the cognitive theory of multimedia learning (Gilakjani, 2012). For example, Yousefzadeh (2012) examined the effect of using SMS and MMS through smart phones on English vocabulary learning of 50 elementary level learners. Students in the MMS group received English vocabulary with definitions, pictures and examples, while the SMS group received only English vocabulary with definitions. The findings indicated that compared to SMS, MMS had a considerably higher capacity for information-carrying, and the achievement scores in the MMS group were significantly increased. Similarly, as Chen, Hsieh, and Kinshuk (2008) pointed out, learners receiving English words along with both written and pictorial definition via mobile messaging service had better learning outcomes than those receiving only English words without written or pictorial definition. In other words, the use of visual media enhances English vocabulary acquisition.

Furthermore, Bouhnik and Deshen (2014) conducted qualitative interviews with teachers who used *WhatsApp* in their classrooms and argued that such mobile

application provided a pleasant environment and had a positive influence on classroom communication. Likewise, Gutiérrez-Colon et al. (2013) studied the benefits of using *WhatsApp* to improve the English reading skills of Spanish college students. The results of their study demonstrated that almost all participants acknowledged that the application of *WhatsApp* enhanced their motivation to read in English. Saran and Seferoglu (2010) also examined students' opinions on using MMS via mobile phones for learning English vocabulary. They found that the students were motivated in the educational settings and were able to make use of their previously wasted time (on the bus or waiting for something/someone) to learn English vocabulary.

Up to now, however, only a few studies have explored how MMS affects foreign language learning. In addition, students who learned with this teaching method passively received instruction from the researchers or teachers via mobile phones, rather than interacting with their peers. According to one of the suggested principles of multimedia learning, "multimedia learning is more effective when it is interactive and under the control of the learner" (Gilakjani, 2012, p. 59). This means that MMS-based activities would be better received when learning through instant and interactive conversation.

LINE, launched in Japan in 2011, is an application for instant messaging on smart phones, tablet, and PCs, and is more of a social entertainment network, in addition to a messaging app. It provides free voice calls, instant text messages, games, and a built-in camera. Users can exchange photos, music, videos and documents with other users. The function of stickers and emoticons make communication more interesting. A growing number of users prefer to connect with friends through LINE because messaging apps like LINE makes the users feel safe and intimate when sharing a status, picture, or video through a private message. Due to the popularity of LINE, it is hoped that such technology can be leveraged to support EFL vocabulary and reading.

Therefore, this paper aims to explore how the application of LINE supports EFL vocabulary and reading by engaging students in interactive role-playing activities. The following research questions guided the study:

(1) What are the students' learning outcomes after participating in the LINE-based activities?
(2) What are the students' perspectives on the LINE-based activities?

Methodology

The research context and participants

This study was conducted at a university located in a suburban area of northern Taiwan. The participants involved in the study were 40 students who enrolled in the course English Reading. The 18-week course is offered by the Department of Applied English. The course is a compulsory course with four credits for English majors, and has four scheduled class hours per week.

Instructional design

The English Reading course aims to help students comprehend a selection of English reading texts on a variety of topics and to interpret the texts through using reading skills. The instructional design consists of two elements: in-class instruction and after-class LINE-based activities.

(1) **In-class instruction:** Each week the course focused on one theme, such as tourism, animal studies, political science, etc. In-class instruction introduced vocabulary, main ideas, supporting ideas, and reading skills. Some reading and writing exercises were included for practices.

(2) **After-class LINE-based activities:** The LINE-based learning activities were designed to engage students in contextualized, content-related scenarios in which the students speak, write and interact with each other. Toward the end of each class, the students received role cards that explained their roles and tasks. They then formed groups of two, three, or four, according to the scenario. They decided which role they would like to take on according to the role cards. They followed the tasks on the role cards to prepare the information, materials, etc. needed for their conversation. Figure 1 shows an example of a role card for the theme *Tourism*.

Role A and Role B: Karen and Paul Anderson Task: Tell your best friends about your honeymoon trip. Make sure to introduce the location, describe the place and your schedule. Talk about what you did on the trip and how you felt about it.
Role C and Role D: Best friends of Karen and Paul (create your own names and identities) Task: Ask your best friends, Karen and Paul, about their honeymoon. Make sure to ask about the location, schedule, and other details. You also want to know how they felt about the trip. Comment on their responses if needed.

Figure 1: Role card: Chapter 1—Ice Hotel

After each class, the students participated in the role-playing activities using LINE. They were instructed to use what they had learned in class to communicate with their group members. They were also encouraged to include photos, video clips, links, or any information that would facilitate their communication. Figure 2 demonstrates an example of a LINE conversation.

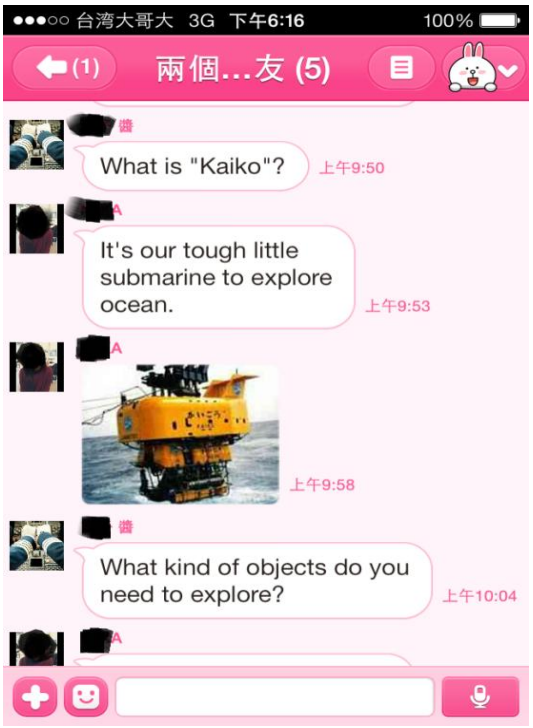

Figure 2 An example of mobile LINE conversation

Implementation

The implementation included three elements: the pre-test and post-test, the LINE-based activity, and the student questionnaire and interviews.

(1) The research utilized the pre-test/post-test design to examine students' English reading proficiency before and after the experiment. At the beginning of the semester (first week), the participants were asked to take a test of English reading (pre-test) to determine their English proficiency level. At the end of the semester (17th week), the participants took the same test of English reading (post-test) to assess their improvements during the experiment.

(2) Throughout the semester (2nd-16th weeks), the students were asked to participate in weekly role-playing activities after class using the vocabulary and language expressions introduced in class.

(3) At the end of the semester (17th-18th weeks), student group interviews were conducted. The students were invited to participate in group interviews to allow the researchers to further understand their experiences and reflections on the LINE-supported English learning.

Data collection

Data collection consisted of three sources: pre- and post-test, LINE messages, and group interviews with students.

A pre-test was prepared to test the participants' proficiency level of English reading. The test consisted of fifty items, including multiple choice (20 items), cloze (15 items), and reading comprehension (15 items) questions. With the order

of the items changed, the identical test was re-executed as a post-test.

All of the messages delivered via LINE during the weekly English reading activity were gathered. When the students participated in the LINE-based activity, they were asked to include the researcher's account in their conversation so that all the LINE messages could be recorded.

All of the students were invited to participate in the group interviews at the end of the course. The semi-structured interviews addressed four main questions: prior experiences with mobile- and LINE-based learning, current learning experiences, individual effort and group interaction, and overall reflection. A total of 12 group interviews were conducted. Each interview lasted about 30 minutes. All the interviews were digitally recorded.

Various sources of data were used for triangulation to increase the credibility and validity of the study.

Data analysis

The quantitative data were processed with the statistical software, Statistical Package for Social Science (SPSS), including *t*-tests, descriptive statistics, and correlation. The students' pre-and post-test scores were analyzed employing *t*-tests. Specifically, the results obtained in the pre- and post-tests were compared in order to determine the effects on the learning outcomes of English reading.

Word count was used to analyze the LINE messages to assess student learning performance. First, The LINE messages were tallied and categorized by student. Next, the vocabulary and phrases used in the in-class instruction were identified. Then, the number of vocabulary and phrases used in each student's LINE messages during the role-playing activities were counted. The more identified words appearing in the students' messages, the better their learning performance.

In addition, content analysis was utilized to analyze the qualitative data. Students' interview transcripts were analyzed using category construction (Erlandson et al., 1993) to code the data into emergent categories.

Results

A number of interesting findings emerged from this process. This study focuses on two themes concerning the effectiveness of LINE for learning English vocabulary and reading: (a) students learning outcomes after participating in the LINE-based activities and (b) the students' perspectives on the LINE-based activities.

The first research question investigated the students' learning outcomes after participating in the LINE-based activities. A paired t-test was conducted to compare students' learning outcomes before and after participating in the LINE-based activities. The *t*-test statistics in Table 1 indicate a significant difference in the students' scores for the pre-test (M=42.86, SD=21.59) and

post-tests (M=63.10, SD=20.40); t=7.0888, p=0.000. Based on the comparison of the students' pre- and post-tests, their scores on the post-test were significantly improved after participating in the LINE-based activities.

Table 1. Results of the descriptive data and paired t-tests on the pre-test and post-test (N=40)

	Mean (SD)	t	P
Pre-test	42.86 (21.59)	7.0888***	.000
Post-test	63.10 (20.40)		

***p<.001

Furthermore, correlational analyses were used to investigate the relationship among the students' gained scores, focus vocabulary used and frequency involved in the LINE-based activities. As shown in Table 2, results demonstrate a positive relationship between the students' number of vocabulary used and their frequency engaged in the LINE-based activities, r(40)=.50, p<.05. It is also found that the students' gained scores had decisive relationship with the number of vocabulary used, r(40)=.5, p<.01, as well as their frequency of participating in the designed activities, r(40)=.57, p<.01. In other words, students who engaged in conversation more frequently used more focus vocabulary in the role-playing activity and subsequently had better improvement in the test.

Table 2. Correlations among the students' gain scores, vocabulary and frequency

	Gain scores	Vocabulary	Frequency
Gain scores			
Vocabulary	.59**		
Frequency	.57**	.50*	

*p<.05，**p<.01

The second research question examined the students' perspectives on the LINE-based activities. The findings reflect a highly positive attitude toward the design. According to the student interviews, they felt that the LINE-based activities had a significant effect on their familiarity with the English vocabulary. As Students 11 and 18 stated in the interview:

> *[The LINE-based activities] provide opportunities to practice using vocabulary, which enhances the impression of the vocabulary and course content. (Student 11)*

> *The activity is very helpful for remembering English vocabulary because it allows me to practice applying the vocabulary learned in class in my daily conversation. (Student 18)*

Moreover, most students enjoyed the LINE-based activity because of its nature of instantaneity, novelty and sociability. Many students reported that one of the advantages of using LINE as a learning platform is its immediacy. They could respond and receive responses right away. Many of them also thought that the

LINE-based learning activity was novel and interesting. Furthermore, the sociability of the instructional design enhanced the bond of affection among the students, which reinforced their learning motivation. As Students 13 and 5 stated,

> *The activity brings group members closer through intense interaction in English, which strengthened their relationships with each other. I think this is great. (Student 13)*

> *In addition to understanding the meaning of reading texts, the activity could increase my emotional bonds with my classmates. (Student 5)*

To sum up, the students, overall, had positive perceptions of the LINE role-playing activities; many of them reported that the activities helped them familiarize themselves with the new vocabulary introduced in class. In addition, LINE, as a learning platform, was reportedly convenient and fun to use for interacting with peers.

While most students had positive attitudes toward the LINE-based activity, they also reported several challenges of the instructional design, including (a) collaboration with group members who are not very responsive, (b) availability of teacher feedback, and (c) flexibility of time for instant conversation.

Discussion and Conclusions

In this study, the effects of a LINE-based activity for learning English reading as well as student perceptions of the instructional design are presented. The findings show that there were differences between the pre- and post-test scores in terms of student learning performance. Also, those who were more engaged in the activity tended to improve their English reading performance. Students in the study performed better after participating in the LINE-based activities. Up to this point, these results are consistent with those of Saran and Seferoglu (2010) and Gutiérrez-Colon et al. (2013) who found that WhatsApp-based learning enhanced students' English vocabulary and reading skills.

These results may be explained by considering the sociable nature of LINE. As a social networking application for mobile devices, LINE has gained popularity among Taiwanese students. Functions such as instant messages, stickers and emoticons have made communication easier and more fun. When it comes to language learning via LINE, students in the study reported repeatedly the advantages such as learning with classmates and enhancing bonding with peers. That is, being able to learn and interact with peers in a social-networking environment creates a feeling of joy and informality, which increases students' learning motivation and learning performance.

Several pedagogical implications can be drawn from this study. In the current study, the LINE-based activity was designed as an after-class assignment. It is suggested that groups are given opportunities to share their conversation in class. Class presentation serves as a platform for all groups to learn from each other and to reinforce language skills.

Moreover, students in the learning activities need guidance and instruction. Students' conversation and language output in the learning platform should be carefully monitored to ensure that all students contribute, remain on track, and meet deadlines. Timely feedback should be given to guide students and promote learning outcomes.

In conclusion, the findings suggest the potential of mobile devices and applications for enhancing language learning. Future research is obviously required, but this is an exciting first step.

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