

The Use of Mobile Applications in Mandarin Script Writing Assignments Among Students of Higher Learning Institutions

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ABSTRACT

The performance of students in language learning is increasingly being given special attention, especially Mandarin, which has become very popular and is strongly emphasized as a third language in Higher Learning Institutions in Malaysia. Previous studies examined mobile learning, more commonly known as m-learning, from the aspect of reading and listening skills but they rarely focused on writing skills. The purpose of this research is to study the effectiveness of using translation based mobile applications on the performance of undergraduates in Mandarin script writing assignments through students' self-efficacy. This research used a quasi-experimental design with quantitative and qualitative data collection methods. The subjects of this research were students studying Mandarin at a higher institution in Malaysia. The findings of this research showed that there was a statistically significant difference between the performance level for students in the experimental group and the control group based on the comparison of pre- and post-test results. Even though there was no significant difference between the relationships of self-efficacy between the two groups, the students in the experimental group showed a clear increase in their self-efficacy.

Keywords: m-learning; performance level; self-efficacy; translation; quasi-experiment

INTRODUCTION

Several studies have pointed to the benefits of using educational technology for teaching and learning processes at all educational stages, particularly in higher education. Specifically, learning with the support of mobile devices or mobile learning is a relatively new phenomenon that has grown widely in the last few years. Traxler and Kukulska-Hulme (2005) and Siraj and Ghani (2017) examined the acceptance of m-learning among lecturers of Malaysian Teacher Education Institutions found that learning with the support of mobile devices is a new concept implemented in the learning process. Hamdan and Rosseni Din (2013) did a literature analysis to enhance the understanding of m-learning especially in the use of educational applications among students.

Arguments by researchers such as Kukulska (2007) assert that there is possible influence of mobile use and the impact on long-term learning is still unclear and undergoing changes in the learning process. Mat (2010) notes the existence of technological facilities to be explored by students, with guidance given by the language instructors, to increase their motivation in learning a foreign language by encouraging students to use the language learned. Technological tools, such as smart phone, have since become a common learning tool A Rahim (2013), Bidin et.al (2013), Pham et.al (2018), Hari (2015) and Acarli et. al

(2015) explored the m-learning system in the process of learning Mandarin and found that though using technological tools to teach is becoming more popular but instructors born before the digital age were not able to adopt them equally as indicated by the difficulty felt by the users in using the device Information technology is still relatively high.

Hari and Hermawan (2015), suggest that the development of electronic media at present is very prominent in the learning process, including the learning of Mandarin, where proper use of media is one way to improve the quality of Mandarin language learning in terms of spoken language and written language such as the “hanzi” character in Mandarin.

STATEMENT OF THE PROBLEM

Using the mobile applications in language learning, studies found students’ performance enhanced (Ng et.al, 2017; Doman & Noriyani, 2017; Ardiyan Handayani, 2017; Putra et.al., 2017; Ng et. al. 2020). In line with this, Ch'ng et.al, (2019); Weerasawainon et.al, (2019); Hie-Ling et.al, (2020) in their studies on learning Mandarin found that although there is only a slight difference in achievement among students in the experimental group and the control in mobile learning, mobile applications have proven to deliver better results compared to traditional learning methods.

Previous studies on language learning and translation have focused more on reading and listening (Kim & Hea-suk, 2013; Chee et.al, 2017; Iliyas et.al, 2019). Barakati (2013) in his research opined that smart phones are one of the tools that make available numerous applications to enable undergraduates to develop their knowledge in any field, including their ability to speak English, if they maximize the function of the application in the smart phone. Researchers like Vidhayasai et.al (2015) and Specia et.al (2017)) assert that users who use mobile applications to translate during Mandarin writing classes found many language translation errors in terms of lexicon and morphology. As a result students were unable to make satisfactory translation of the sentences in Mandarin. Godwin-Jones (2011) and Kim dan Kwon (2012) found that popular application for Mandarin learning was initially published as a free application and any demand in usage with better quality in terms of handwriting and character recognition, users are encouraged to use paid application. Paying for a better application is a burden for students.

Barrs (2011) opined in his study about the importance of detailed explanations regarding the beneficial use of smart phones during lecture if they wanted to create meaningful learning since students usually use the smart phone application based on their own understanding without supervision of the teaching staff. Along the same vein, Putra et al. (2017) in their study found that the difficulties faced by undergraduates in understanding the learning materials at school due to several factors and among them was the traditional lecturing method used by teachers that resulted in undergraduates becoming indolent and lacking in motivation when carrying out learning activities. Hence, it could be summarized that motivation is the determinant of intensive effort to learn for undergraduates that played a crucial role and the teaching staff as the driving force that ensures effective implementation of learning to achieve the desired goal.

In conclusion, there have been various perspectives in previous literature reviews on the use of mobile devices and mobile applications in learning. Based on the reviews, it is paramount to determine the efficiency of mobile applications in language learning particularly in students’ performance in language translation writing task where previous studies focused were mainly on reading and listening.

LITERATURE REVIEW

Many previous studies have been conducted to examine the importance of information technology facilities in the teaching and learning process in school. Most of the previous studies focused on the aspects of skills, perception and teacher readiness in utilizing ICT facilities in school. A study by Agustawan and Vidayana (2011) found that teachers' role in supporting the effective use of electronic materials is also crucial because teachers provide students with an understanding of the importance of using electronic devices in the teaching and learning process to improve student performance.

In addition, the study by Mat (2010) also emphasized the convenience of technology that could be explored by the students based on guidance provided by the language teachers. Previous studies have also supported and encouraged students to use the facilities of technological tools to perform assigned tasks.

There are studies similar to that of Mat (2010) that demonstrated effective translation methods for the purpose of writing skills and preparation for tests in the third language. In addition, according to Daud and Pisal (2014), translation methods are not suitable for oral skills but are best used in writing skill as students can think before delivering a message in a written sentence. Similarly, the research by A. Rahim (2013) suggested that language learning with the aid of technology such as mobile applications is said to be increasingly prevalent today.

Recent studies, such as Ardiyan Handayani (2017) and Putra et al. (2017), have used quasi-experimental designs to derive their findings by exploring learning methods through mobile applications on students' achievement. Their studies have shown that there is a significant difference in learning achievement between students in the experimental group and control group as indicated by T-test analysis.

According to Rahman (2006), there is a significant positive relationship between motivation variables, which are self-efficacy and learning goals, with student learning achievement. Examples of previous studies with similar outcome such as Ghufroon and Sumita (2013) have shown that despite the difficulties and failures, especially related to solving Mathematics problem, students with high self-efficacy are more effective and persistent in achieving better results and learning outcomes.

Furthermore, the research by Hamdan and Rosseni Din (2013) related to the use of m-learning among undergraduates also indicates benefits of using m-learning facilities to improve students' confidence to perform well. Confidence is also one of the factors that determines self-efficacy. An example is the research conducted by Salimin et al. (2015) related to self-efficacy, that demonstrated the students' capability to self-evaluate their potential in the undertaking of task, overcoming barriers, or social desire.

However, details of the problems and difficulties encountered by students in the use of mobile devices in language learning have not been clearly stated in previous studies. In an analysis related to language learning with the aid of mobile applications carried out by Godwin-Jones (2011), there was a popular Chinese language app that was earlier introduced as a free app, but its more useful features were paid additions such as language dictionaries, better Chinese handwriting recognition and Chinese character recognition. As such, the cost of mobile application purchases is also a problem and a burden in language learning, which in the study of Kim and Kwon (2012) has also stated there are three times more paid apps than free, mobile app pricing range varies depending on the amount of data capacity and features of the application. A study by Chuah (2013) also stated that social media applications provide a context and facility for language learning despite the constraints in their use, social media applications have been shown to increase students' interest in language learning and improve

achievement. According to David and Pisal (2014), translation methods are not suitable for oral skills but are better used in writing skills because students can think before delivering a message in a sentence. In addition, the study by Agustiawan and Vidayana (2011) also emphasized the importance of the teacher's role in supporting successful use of electronic materials as teachers can provide students with an understanding of the importance of using electronic devices in the teaching and learning process to improve student performance.

There have been various views in previous studies on the use of mobile devices and mobile applications in learning, so this researcher opines that the present study will make an important contribution to our understanding of the use of mobile applications in language learning. This will be especially important in terms of student achievement in language writing translation assignments in which the researcher found most of the previous studies focused more on reading, listening only and the researcher also found previous studies focused more on second language such as English. Hence, third language learning such as Mandarin and Arabic in Malaysia should be given due attention. Moreover, there is also the possibility that this study will help to address the problems encountered in previous studies to facilitate the teaching and learning in the field of third language learning with mobile applications in the future.

HYPOTHESES

This research is guided by the following hypotheses:

1. There is a significant difference between the post-test mean score and the pre-test mean score in script writing for the students in the experimental group.
2. There is no significant difference between the post-test mean score and the pre-test mean score in script writing for the control group.
3. There is a significant difference between the mean score of post-test for script writing for students in the experimental group and the control group.
4. There is a significant difference between the post test mean score and the pre-test mean score for student self-efficacy in the experimental group.
5. There is no significant difference between the post test mean score and the pre-test mean score for student self-efficacy in the control group.
6. There is a significant difference between the mean score for student self-efficacy in the experimental group and the control group after the post-test.

RESEARCH OBJECTIVES

This research aims to:

1. Determine whether the use of mobile application based on language translation improve the performance of students in an experimental group when compared to students in a control group.
2. Compare the self-efficacy mean score of the experimental group to those of the control group in script writing through their performance in pre-test, intervention, post-test model.

METHODOLOGY

A. Research Design

A pre-test/post-test (final examination scores), two-group, quasiexperimental design was used in this study. A representation of the design is presented in Table 1.

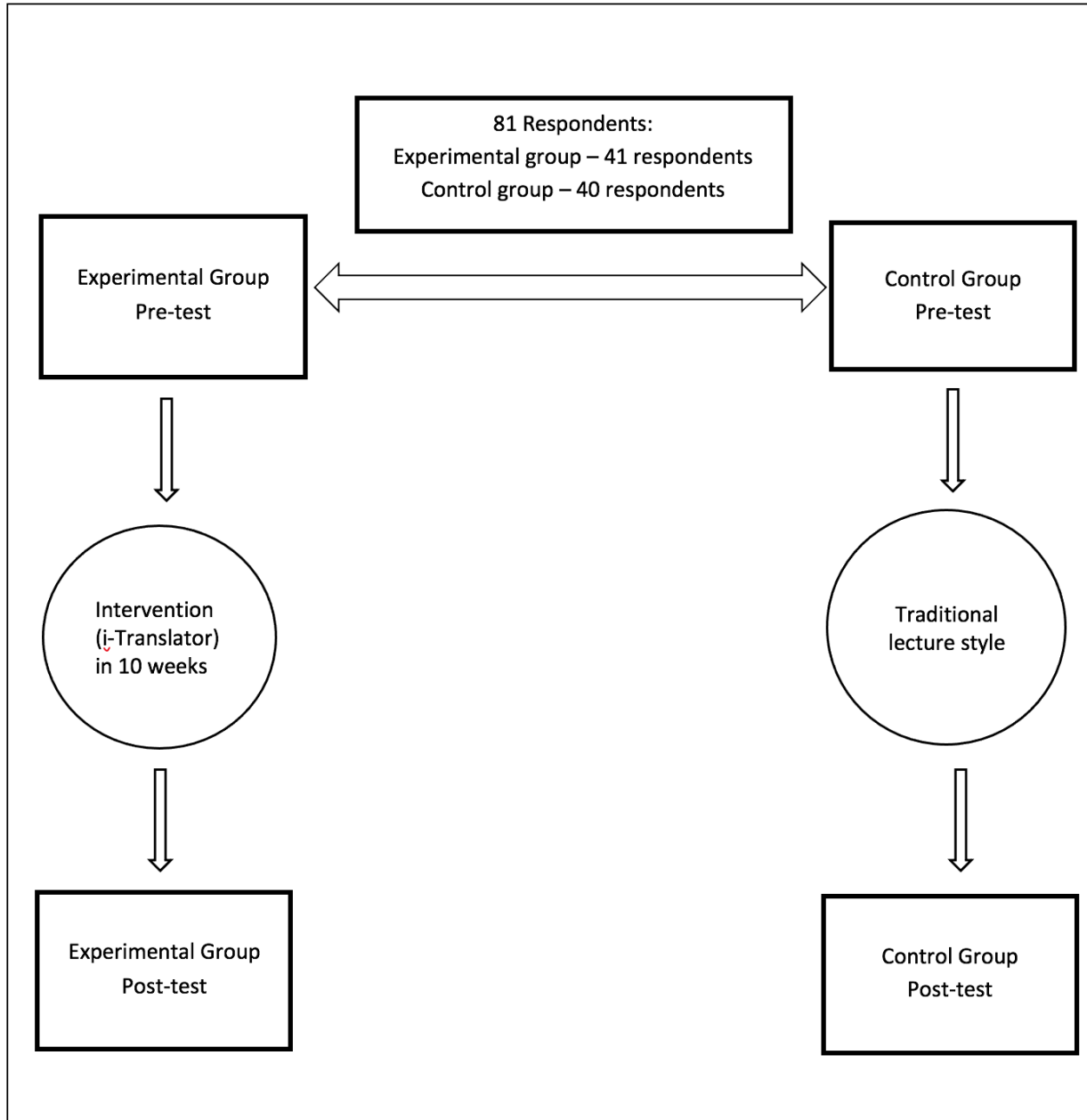


Figure 1.
 Quasi-experimental research design with pre- and post-tests

B. Population and sampling

Based on Figure 1, this research used a quasi-experimental design with pre- and post-tests. The researcher only took samples from the existing classes without randomly selecting respondents because it was not possible to change the gender, race, achievement, and placement of students in the class. According to Konting (2000) study, when most research subjects have already appeared in certain situations, then this quasi-experimental study form is suitable to be used to study the field of language learning of students. Chuah (2011) also emphasizes quasi-experiments is unlike real experiments that conduct random selection. Therefore, the researcher chose this form of study because the random selection procedure could not be done completely and the researcher only used the existing respondents from some limited class samples without randomly selecting the respondents.

This research involved two groups of respondents, and experimental and control group. Research subjects were drawn from three classes that were structured by administrator with male and female students. Two classes were used as the experimental group and one class as the control group. The students were four different fields of study but all have taken the Mandarin subject at level 1 and II previously. The topics covered in this module were translation of conversation in Mandarin using two types of approaches: language translation based on mobile application and traditional lecture. The total number of participants invited for this study was 81 with 40 participants in the control group and 41 in the experimental group. The population for this research was limited to undergraduates for the bachelor's degree taking Mandarin as a third language at the UiTM branch in Kelantan.

C. Instrumentation

Four research instruments were used in this study including mobile applications, pre-post tests and a set of questionnaire. Mobile application "iTranslate" was suggested and students were free to use other mobile applications after discussion with their instructor. A recent study by Yudhiantara and Nasir (2017) revealed that generally students have supportive tools such as the use of offline dictionary applications available on their mobile phones to support classroom activities.

The research required students in the experimental group to fill in the learning log twice; once before and another time after the teaching approach using mobile application has been carried out.

Table 1. A representation of the design of the study

Group	Pre-test	Treatment	Post-test
Group 1 (experimental group)	1. Entry Test Script writing 2. Pre Self Efficacy Test	Mobile Apps (i-Translator)	1. Final Test Script writing 2. Post Self Efficacy Test
Group 2 (Control group)	1. Entry Test Script writing 2. Pre Self Efficacy Test	Traditional lecture style	1. Final Test Script writing 2. Post Self Efficacy Test

Figure 1 shows the conceptual framework of the study that has been developed based on Bandura's (1999) Social Cognitive Theory and social-self interaction, and achievement
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behaviour theory presented in Schunk (1999). A number of recent studies, such as Manafe et al. (2016) and Devi (2019) examining the use of smart phone media and online games on improving motivation and learning performance have been referred to. The researcher however, chose only one element, namely, self-efficacy of learning motivation in accordance to the Social Cognitive Theory. The theory of social-self interaction and achievement behaviour is also summarized in the research by studying only the relationship between student self-efficacy and student achievement.

D. Data collection

The data were collected during the 10-week treatment period. Two instructors teaching the Mandarin were involved in collecting data for this quasi-experimental research. Instructors A had two experimental classes and instructor B had one control class. The Mandarin class consists of 120 min of lecture and 60 min of tutorial each week. In the experimental group, during the Mandarin class lessons, the instructors utilized the Mobile Apps for language learning such as “iTranslate”. While in the control group, the lessons were given using traditional classroom methods, chalk and talk. Both the control and experimental groups had to go through the pre- and post-tests, in which the pre-test result is the grade of the previous semester’s final examination and the post-test result is the grade of the current semester’s final examination that was taken after the intervention. Both the control and experimental groups pre- and post-tests results were compared.

E. Data Analysis

Data analysis was based on quantitative research approaches. In this research, quantitative data analysis involving quantitative data collected through a questionnaire was analyzed using a SPSS version 20.0 statistical program. Analysis of learning logs related to students’ problems and perceptions when using mobile applications were analyzed through qualitative descriptive analysis.

RESEARCH FINDINGS

Table 1. Analysis of paired t-test for pre-post test of experimental group

Experimental Group	<i>M</i>	<i>SD</i>	<i>SEM</i>	<i>t</i>	<i>df</i>	<i>P (Sig.)</i>
Pre-post tests	-0.634	0.488	0.076	-8.327	40	0.000

Based on Table 1 above, the analysis of paired t-test for pre-post tests of experimental group recorded a mean of $M = -0.634$ and the standard deviation of $SD=0.488$. As the value sig. (2-tailed) $p=0.000$ is < 0.05 , there is significant difference in students’ achievement level between the pre-and post-tests for the experimental group.

Table 2. Analysis of paired t-test for pre-post tests of control group

Control Group	<i>M</i>	<i>SD</i>	<i>SEM</i>	<i>t</i>	<i>df</i>	<i>P (Sig.)</i>
Pre-post tests	-0.100	0.304	0.048	-2.082	39	0.044

Based on Table 2 above, the analysis of paired t-test for pre-post tests for the control group recorded a mean of $M = -0.100$ and the standard deviation of $SD=0.304$. As the value sig. (2-

tailed) $p=0.044$ is < 0.05 , there is significant difference in the achievement level between the pre- and post- test for the control group.

Table 3. Analysis of independent t-test for post-test of experimental-control groups

	Group	N	M	SD	SEM	t	df	P (Sig.)
Post test	Experimental	41	4.73	0.449	0.070	8.644	79	0.000
	Control	40	4.05	0.221	0.035			

Based on Table 3, the analysis of independent t-test between experimental and control after post- test recorded a difference in mean of 0.68. As the value of Sig. (2-tailed) $p=0.000$ is < 0.05 , hence there is a significant difference in the achievement level between the experimental group and control group after the post tests.

Table 4. Analysis of paired t-test for pre-post tests for the improvement, generalization and strength (self-efficacy) of experimental group

Experimental Group	M	SD	SEM	t	df	P (Sig.)
Improvement	-9.390	8.885	1.388	-6.767	40	0.000
Generalization	-10.854	7.841	1.225	-8.864	40	0.000
Strength	-11.439	8.198	1.280	-8.935	40	0.000

Based on Table 4 above, the analysis of paired t-tests recorded a value of Sig. (2-tailed) $p = 0.000$ which is < 0.05 for self-efficacy related to improvement, generalization and strength, so there is a significant difference between the value of self-efficacy in the pre-test and post-test for the experimental group.

Table 5. Analysis of paired t-test for pre-post tests for the improvement, generalization and strength (self-efficacy) of control group

Control Group	M	SD	SEM	t	df	P (Sig.)
Improvement	-3.825	8.193	1.295	-2.953	39	0.005
Generalization	-4.725	7.602	1.202	-3.931	39	0.000
Pre-post Test	-4.050	8.130	1.285	-3.151	39	0.003

Based on Table 5, as the value of Sig. (2-tailed) $p=0.005$ is < 0.05 for improvement; the value of sig. (2-tailed) $p=0.000$ is < 0.05 for generalization and the value of Sig. (2-tailed) $p=0.003$ is < 0.05 for strength, it shows that there is significant difference between the value of self-efficacy in the pre-test and post test for the control group.

Table 6. Analysis of independent t-test for self-efficacy between experimental and control group after post test

Self-efficacy value	Group	N	M	SD	SEM	t	df	P (Sig.)
Improvement	Experimental	41	39.27	6.309	0.985	1.552	79	0.125
	Control	40	37.13	6.119	0.968			
Generalization	Experimental	41	38.71	6.092	0.951	1.285	79	0.203
	Control	40	37.05	5.491	0.868			
Strength	Experimental	41	38.73	5.723	0.894	1.811	79	0.074
	Control	40	36.40	5.865	0.927			

Based on Table 6 above, the analysis of independent t-test for self-efficacy between experimental and control groups after post-test was based on the 3 dimensions consisting of improvement, generalization and strength. The value for improvement shows a difference in mean of 2.14, the value for generalization shows a difference in mean of 1,66, the value of strength shows a difference in mean of 2.33. Since the value of Sig. (2-tailed) $P=0.125$ is > 0.05 for self-efficacy based on improvement, the value Sig. (2-tailed) $P=0.203$ is > 0.05 for self-efficacy based on generalization and the value of sig. (2-tailed) $P=0.074$ is > 0.05 for self-efficacy based on strength, it shows that there is no significant difference between the student self-efficacy of the experimental group and control group after the post test.

DISCUSSION OF RESEARCH FINDINGS

The first objective of this study is to determine whether the use of mobile application based on language translation can improve the performance of students in an experimental group when compared to students in a control group. Based on this objective, three hypotheses were derived. The analysis of paired t-test for pre-post test of the experimental group showed positive significant different in the mean achievement score after the intervention and thus the first hypothesis of this study is accepted. The use of mobile applications in language translation indeed enhanced the performance of students not only in the experimental group but the control as well. The control group showed significant different after the analysis of paired t-test for pre-post, thus the second hypothesis which stated that there is no significant difference between the post-test mean score and the pre-test mean score in script writing for the control group is therefore not supported. This showed that the mobile application was effective in improving students' achievement, especially in the language translation assignment. The control group showed improvement in their performance too as they were free to use any knowledge and information pertaining to translation including apps application and internet resources to help them to complete their tasks. According to Walter (2012) translation tasks assisted by internet resources and apps application would increased the performance of students as long as they have accessed into them. Though both experimental and control groups displayed significant difference in the pre post mean score in the script writing, the experimental group demonstrated better performance when both groups were being compared. Thus, the third hypothesis was supported as the results exhibit a significant difference in the mean achievement score of the experimental group and the control group in the post-test.

The findings of this research are consistent with the result of past research such as the study conducted by Shahbaz and Khan (2017) on the effectiveness of mobile applications in learning French using a quasi-experimental research design. In their research, they found that the students in the experimental group, who learned French phrases through the use of mobile applications, performed better in the post-test compared to the students in the control group who took part in conventional activities. In addition, other researchers, using quasi-experimental design, such as Elfeky & Masedah (2016); Hwang et al. (2014); Rezaei et al. (2014) also found that the use of mobile-learning has a positive and significant effect on academic achievement in language learning.

The second research objective of this study was to compare the self-efficacy mean score of the experimental group to those of the control group in script writing. The result showed that there was no significant difference between the self-efficacy mean scores of students in the experimental group and the control group after the post-test, thus the third hypothesis of this study was not supported. However, the fourth research hypothesis was supported as the results showed a significant difference between the post test mean score

and the pre-test mean score for student self-efficacy in the experimental group. Conversely, the fifth research hypothesis was not supported as the results showed a significant difference between the post test mean score and the pre-test mean score for student self-efficacy in the control group. The sixth research hypothesis was also not supported as the results showed no significant difference between the mean score for student self-efficacy in the experimental group and the control group after the post-test.

The results showed that students' self efficacy in both the experimental and control groups recorded a significant difference for the mean score in the pre-test and post-test. The findings of this study are consistent with those of Grace (1998) and Shahbaz & Khan (2017) that cited mobile-learning among the students in the control group might not be difficult as there was no time limit or liability for students as to where and when they could use the mobile devices. Mobile applications in vocabulary learning have many benefits and provide users the opportunity to use them anywhere as long as they have the mobile devices. As the result of constant engagement, students' confidence and self-efficacy increase. This is supported by Kenny et al. (2012) and Sha et al. (2012) who studied the use of mobile devices for learning and teaching purposes. Their study found that the mobile self-efficacy of students and teachers were related to their confident in using of mobile technologies and their engagement in learning. In this study, though the experimental group were guided to use mobile applications in their translation during class, this does not mean the control group has no opportunity to use the mobile applications for their translation work. The students' self efficacy exhibited significant difference for the mean score in the pre-test and post-test for both groups signified that any usage of mobile technologies in learning indeed impact their self-efficacy.

Furthermore, in another quasi-experimental research on the classroom approach for Mathematics and English learning, the study found improvement in student self-efficacy in both the experimental group and the control group. However, the experimental group showed greater improvement compared to the control group (Anyadubalu, 2010; Lai & Hwang, 2016). The findings were similar to the findings of current research.

SUGGESTIONS FOR FURTHER RESEARCH

Students who were involved in the intervention during the research had shown significant relationship differences compared to the control group, hence guidance and the role of the instructors is very important and essential in mobile learning, students can put forth problems encountered to the instructors and discuss appropriate use of mobile applications in learning. Students need to strengthen their confidence and self-efficacy in a variety of aspects through courses, training, workshop and group activities to foster a sense of cooperation between students and others.

It is proposed that the instructors conduct surveillance studies among undergraduates regarding mobile application learning based on language translation to determine their level of confidence in the use of this method in education. Nowadays, most young people are interested in mobile applications because they are easy to use, the instructors should be aware of the variety of mobile technologies contributing to the effectiveness of student learning during lectures and try to change students' negative beliefs by providing what is right for them. Instructors need to gain experience and be aware of the latest mobile applications that are ideal for the process of teaching and learning.

Further research is also proposed to examine more effectively student self-efficacy enhancement through the use of mobile applications, more extensive studies utilizing true experimental designs can be used to clearly see the effectiveness of student self-efficacy

with the use of mobile applications as this study only uses a quasi-experimental design. Mobile applications that fit the scope of language learning for local students should also be studied especially for language translation applications since accuracy in translation is crucial.

RESEARCH SUMMARY

In conclusion, the field of mobile technology research is expanding and it is interesting to carry out continuous research in future. Its development can also be said to be in line with the development of foreign language learning. Therefore, this study can meet the current needs. From the findings of this study it can be concluded that the intervention in this study with mobile applications showed a significant relationship between interventions determined by researchers and student achievement in third language learning. Although the moderator variable, namely student self-efficacy, showed no significant relationship between the experimental and control group, they still showed a significant relationship in the pre-test and post-test of the experimental group.

Nevertheless, the findings of this study are still in line with the study by Lin et al. (2016) and Lys (2013) who suggested the integration of smartphone application use in Malaysia in the teaching and learning process to promote students' confidence, motivation and performance. Moreover, the effectiveness of mobile application usage is clearly achieved and this can be extended for future studies, especially in the field of foreign language learning.

It is hoped that the results of this research will help in the teaching and learning of languages especially foreign languages. The researcher also hope that this study can serve as a reference for students and lecturers involved in Mandarin as a second or third language in Malaysian Higher Learning Institutions, especially when dealing with foreign language classes involving Malay students. However, mobile application users must be able to choose the applications appropriate to their learning syllabus. This challenge also encourages the instructors not only to become a user, but also to try to develop their own mobile applications that are relevant to their teaching and learning.

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ABBREVIATION

UiTM:	Universiti Teknologi MARA
SMA:	Sekolah Menengah Agama
ICT:	<i>Information and Communication Technology</i>
SCT:	Social Cognitive Theory
SPSS:	<i>Statistical Package for The social Science</i>

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