The Impact of Mobile-Assisted Language Learning on Chinese Vocabulary of the Third-Year Thai Students at a Private University

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Abstract

The main research objective was to determine the impact of Mobile-Assisted Language Learning (MALL) on the Chinese vocabulary learning of the third-year Thai students of a private university. A quantitative research method was employed to investigate the students using mobile devices to learn Chinese vocabulary. This study was conducted at a private university in Thailand; a simple sampling selection method was utilized to obtain 32 third-year student-volunteers as the samples. In data collection, two sets of instruments were used: 1) a pretest and a posttest to compare the scores; and, 2) five-rating-scale questionnaires to assess the impact on students using MALL in terms of Chinese vocabulary learning. Data were analyzed using a sample t-test for the tests and statistical mean value for the questionnaires. Based on the study's findings, MALL could enhance the academic performance of third-year students in Thailand. The Post-test mean score was 22.88 higher than the mean score of the Pre-test of 19.38. MALL allowed the students to learn Chinese freely and actively; through collaborative learning, each student could apply vocabulary more frequently with good understanding. In the learning process, students could exercise their self-study abilities. The empirical results of the study further presented an educational emphasis of MALL approach, which rendered a highly significant development for modern learning environment. This research can further enable scholars to recognize the concept of MALL and use it to benefit learners, and enable scholars to understand the effects and possibilities of MALL in language learning. Therefore, it is recommended that students and teachers alike should be encouraged to apply technology, so they can experience its support on their learning and teaching purposes.

Keywords: Mobile-Assisted Language Learning, MALL, Chinese language learning, Chinese Vocabulary, Third-Year Thai Students

1.   Introduction

Nowadays, mobile learning is considered a vital factor for engaging the youth in learning as conventional learning methods are not sufficient to achieve the learners' desire for knowledge. MALL offers all learners an unprecedented range of learning possibilities that expand outside the limitations of traditional learning spaces. It is closely associated with the movement between indoor and outdoor, and formal and informal environments.

If the language learners' preferences and requirements are allowed to be related to what they have been learning, then mobile technology can play a significant role in achieving such goal.

Whether it is from the existing relationship between Thailand and China, or their respective economic and national development, learning Chinese has become a necessary trend in Thailand. From the perspective of Chinese teachers and learners alike, mobile-assisted learning can make learning become more comprehensive (Chuang, 2016). As people learn Chinese anytime and anywhere, the said technology has become very necessary.

However, since Mobile-assisted Language Learning (MALL) is still in its development stage, it is still immature in terms of teaching aspects. It seems that technology is a double-edged sword (Qi, 2019). With the constant development of mobile phone functions, mobile phones have become indispensable in students' lives. In part, students rely on the existing features and applications of mobile phones (Domingo & Garganté, 2016).

In conclusion, Thai students spend less time using mobile phones for study, and most of their time is spent on irrelevant things (Suwannahong, 2016). Even though the current technology can directly help students in the process of learning Chinese, students' performance is not as good as expected. From the students' perspective, they haven't learned how to use technology to improve their Chinese.

Research on mobile learning indicates that students perceive mobile devices mainly as communication and entertainment tools. Therefore, a key factor in successful mobile learning implementation is the initial measurement of students' acceptance of those devices into their learning (Botero et al, 2018). Kukulska-Hulme (2018) has proposed in his research that mobile learning is proving its potential to address authentic learner needs at the point at which they arise.

Technology has become an indispensable part of education in many ways. More specifically, students tend to use technological equipment and facilities because they are very helpful for learning. From the scores provided by the Chinese language teachers in the Faculty of Liberal Arts, most of the students' scores are unsatisfactory. In this context, any tool that can increase students' access to language will make a huge contribution to their progress (Cakmak, 2019). As an indispensable part of students' daily life, technology is expected to play a useful function in education. Therefore, it is necessary to integrate these technologies into Chinese learning. In this study, the researcher applied the MALL method in Chinese vocabulary learning. It is more convenient to establish learning groups for students to study by using application software as well as to determine its

impact on students' Chinese vocabulary learning, and to instruct students to use their mobile devices as necessary.

2.   Research Objective

To determine the impact of MALL on the Chinese vocabulary learning of the third-year Thai students of the Faculty of Liberal Arts at a private university

3.   Research Question

What is the impact of MALL on the Chinese vocabulary learning of the third-year Thai students of the Faculty of Liberal Arts at a private university?

4.   Research Hypotheses

H.1: MALL can improve the Chinese vocabulary scores of the third-year Thai students of the Faculty of Liberal Arts at a private university.

H.2: The students generally have positive feedback on MALL.

5.   Literature Review

5.1 Technology in education

Various researchers have conducted a large number of researches on educational technology. Most of them believe that technology has an influence in all aspects of people's lives, particularly amongst educators and the public as more people have reached a consensus the teachers and students will no longer need to be limited to the ability to teach and to learn at a particular place and time. Mobile devices and wireless technologies will become an everyday part of learning, both inside and outside the classroom. Most students are technically and psychologically ready for the use of mobile technologies in education, and new opportunities should be considered for more effective use of the potential of mobile learning (Prokofyeva & Boltunova, 2018; Chen, Chen, Jia & An, 2020; Mavropoulou & Arvanitis, 2020).

The benefits of adopting technology in classrooms are endless. Technology and teaching not only promote students to use technology in classrooms, but also provide them with opportunities to gain critical thinking, problem-solving, collaboration and communication skills (Savitri & Akhiriyah, 2017; Jacobs & Renandya, 2017).

5.2 Mobile-Assisted vocabulary learning

Nowadays, mobile devices are utilized to promote language-based learning of various skills. To learn a language through their mobile phones, learners can learn related vocabulary through comprehensively internalizing listening, speaking, reading and writing skills (Zhang, Song & Burston, 2011). Therefore, with more people using mobile phones for vocabulary learning, mobile phones are becoming more typically used in learning vocabulary. Hence, mobile-assisted vocabulary practice has a significant

influence on students' vocabulary ability (Suwantarathip & Orawiwatnakul, 2015; Bensalem, 2018; Lin, 2014).

The use of mobile technology in vocabulary learning is the most frequently studied aspect of language competence in Mobile-assisted language learning. A number of researches on the use of mobile devices for vocabulary learning have adopted the method of information transfer. According to most research studied on learners using MALL in English vocabulary learning, the results showed that mobile-assisted language learning could help create language immersion, thereby, effectively motivate learners to achieve their learning objectives (Shi, Luo & He, 2017). The students in Australian universities used MALL for a period of 10 weeks in a research study (Jing & Li, 2018). It was found that the use of MALL technology in Chinese vocabulary learning could achieve the effective results, and MALL increased the learner's interest along with satisfaction in learning Chinese at the same time.

Mobile devices serve not only as tools to modulate learning and to transform the environment of learner interactions, but also as means to establish additional intermediary tools in the form of digital products. Specifically, the study and learning of mobile vocabulary depict that the ways that mobile technology serves its purpose are to capture meaningful learning and to express a value-oriented content for future collective reflection and individual learning (Mancilla, 2014). The functions of mobile devices are to assist scholars to participate in and promote their deep learning.

5.3 Mobile-Assisted language learning

MALL refers to the use of mobile devices to assist in or enhance language learning methods. In MALL, learners do not need to sit in classrooms or in front of their computers to obtain learning materials. This method is considered an ideal solution for language learning disorders both with regard to time and place (Nielson, 2017).

MALL is an innovative learning tool that is highly dependent on technology to provide an intermediary that enables interlocutors to interact with each other at a distance. Through mobile phones, learners can benefit from real-time communication, understanding meaning and interacting with others to complete their learning tasks (Ahmadpour & Yousefi, 2016; Morchid, 2020). To conclude, MALL has become a learning trend in the current society, as it plays diverse roles in different groups. Learners can make independent selections depending on their learning needs, enabling them to learn at any time and place.

5.4 HSK4

HSK is the abbreviation of Chinese pinyin Hanyu Shuiping Kaoshi which means the Chinese Proficiency Test. It is an international standardized exam that tests and rates

Chinese language proficiency of non-native Chinese speakers in terms of daily life, academic area and professional careers.

Levels of HSK which include HSK level 1, HSK level 2, HSK level 3, HSK level 4, HSK level 5 and HSK level 6.

According to HSK test syllabus (Hanban, 2010), the different levels of the new HSK are similar to some of the levels in the Chinese Language Proficiency Scales for Speakers of Other Languages (CLPS) and the Common European Framework of Reference (CEFR), details are as follows in Table 1:

Table 1. Levels of HSK

New HSK	Vocabulary	CLPS	CEFR
HSK (Level 6)	Over 5,000	Level V	C2
HSK (Level 5)	2500	Level V	C1
HSK (Level 4)*	1200	Level IV	B2
HSK (Level 3)	600	Level III	B1
HSK (Level 2)	300	Level II	A2
HSK (Level 1)	150	Level I	A1

*HSK Level 4 is used in this study as a vocabulary learning material as well as an instrument.

HSK Level 1: Ability to understand and use some very simple Chinese words and sentences, to meet specific communication needs, with the ability to further study Chinese. The learner's Chinese vocabulary needs to reach 150.

HSK Level 2: Ability to use Chinese on familiar daily topics for simple and direct communication, to achieve the primary Chinese excellent level. The learner's Chinese vocabulary needs to reach 300.

HSK Level 3: Ability to use Chinese to complete life, study, work and other aspects of basic communication tasks, when traveling in China, can deal with most of the communication tasks encountered. The learner's Chinese vocabulary needs to reach 600.

*HSK Level 4: Ability to talk about a wide range of topics in Chinese and communicate with native speakers fluently. The learner's Chinese vocabulary needs to reach 1200.

HSK Level 5: Ability to read Chinese newspapers and magazines, watch Chinese movies and TV programs, and give a complete speech in Chinese. The learner's Chinese vocabulary needs to reach 2500.

HSK Level 6: Ability to easily understand what you hear or read in Chinese, and express yourself fluently in Chinese, both orally and in writing. The learner's Chinese vocabulary needs to exceed 5000.

In conclusion, vocabulary learning is very important for learning a language. Appropriate scientific and technological means can improve vocabulary learning better.

6.   Research Methodology

This section presents the sample, instruments, data collection and data analysis of this study.

6.1 Population

The population of the research encompassed the third-year Thai students of the Faculty of Liberal Arts at a private university. In the 2020 academic year, there were a total of 67 students.

6.2 Sample

The Chinese teaching environment for the Chinese department of the Faculty of Liberal Arts, which was taught by native Chinese Speakers and Thai teachers as well. Some of the junior students' Chinese levels are close to reach HSK-4. In the 2020 academic year, the goal for the junior students was to pass the HSK-4 test. Therefore, the researcher selected junior university students to be the sample of the study. A simple sampling selection method was used to get the 32 voluntary students.

The research sample included 32 mixed-genders and mixed-abilities students from the junior Thai students from the Faculty of Liberal Arts at a private university. All students in this sample were between 20 and 23 years old of age.

6.3 Research design

The study used quantitative research to collect the data on the use of mobile devices on Chinese vocabulary learning.   The purpose is to improve the Chinese vocabulary of third-year Thai university students and explore students' acceptance of Mobile-Assisted Language Learning. The researcher created a group using an app for a Mobile-Assisted Language device. After the experimental group passed eight learning periods of 80 hours in total, the researcher designed pre-tests and post-tests for the sample groups. In this study, students used the vocabulary of HSK-4 as learning materials and compared the learning effect of the sample group by using the pre-test and post-test. Finally, questionnaires research was conducted to investigate the students' learning satisfaction with the use of mobile devices.

6.4 Research instruments

Pretest and Posttest: To determine the influence of MALL on the Chinese vocabulary learning of the sample group, a pretest and a posttest are conducted. The test

consists of 30 multiple-choice questions drawn from the HSK-4 vocabulary. The same questions are utilized in the pretest and posttest, but the posttest questions are rearranged in order to test the performance changes of the sample group before and after the application of MALL.

Questionnaire: To examine the students' satisfaction with learning Chinese vocabulary through MALL, a set of questions framed by using five-point Likert scales was administered. There were ten questions in total, aiming to determine whether the students better internalized Chinese vocabulary learning, and whether the use of MALL could improve their vocabulary level and increase their interest.

6.5 Validity and reliability

Validity: Validity denotes how well an instrument measures what it is intended to measure. In this research, the instruments are validated by three experts, and the index of Item-Objective Congruence (IOC) is applied to evaluate the pretest, the posttest and the questionnaire. The determined IOC value is 1.00. Validity refers to how well an instrument measures what it is intended to measure. In this research, the instruments had been validated by three experts, the index of Item-Objective Congruence (IOC) was used to evaluate pretests, posttests, and questionnaires. The index of Item-Objective Congruence (IOC) evaluation results ranges from -1 to +1.

The scores of the test items in this study were all above 0.75. These items were valid for data collection in this research.

Reliability: Cronbach's alpha is a measurement used to assess the reliability, or internal consistency, of a set of scale or test items. It is the most commonly used for evaluating the reliability of the research instruments in psychological or educational research (Sharma, 2016).

The higher the coefficient of Cronbach's Alpha is, the higher the reliability of the instrument will be. In basic research, reliability must be at least 0.70 to be acceptable, and a range between 0.8 and 0.98 is considered high reliability.

Prior to the actual study, the statements in the questionnaire were evaluated in terms of reliability; consequently, it was found that Cronbach's alpha value in this study was 0.715 thus the statements in the questionnaire were reliable.

6.6 Data collection

In the data collection process of this study, the researchers invited the junior class teacher of the university to assist in data collection to ensure the effectiveness of the data source.

The data collection was completed after the students performed Chinese vocabulary learning tasks through Mobile-Assisted Language Learning. The pre-test score was collected before the course begins, and the post-test score was collected at the end of the course. The students had obtained the test paper and completed it. The questionnaire data were also collected after the test.

In addition, the data collection of this study has followed the process; to confirm the purpose of the investigation and determine the object of the investigation; select the appropriate investigation method, to carry out investigation activities and collect data; in the next final stage is to analyze the data; and draw conclusions based on the data results.

6.7 Ethics awareness and certification

To ensure the effective conduct of the study, the researcher undertook to obtain the consent and approval of each participant before the study; participants needed to understand the nature and purpose of the study. The researcher intended to protect and respect the privacy and dignity of participants. The research data and opinions of the participants will be kept confidential and they will only be used for this study and will not be used for any other purposes. Importantly, the informed consent forms used for the participants' permission were designed by the RSU Ethics Review Board (ERB), after an ethical approval is granted for this research, the certificate of the ERB approval number DEP. NO. RSUERB2020-073 has been issued to the researcher.

7.   Results and Discussion

This section presents the results of the study.

7.1 Pretest and posttest results

The SPSS software is used to conduct a comparative statistical analysis of the pretest and posttest scores. Descriptive analysis and paired-sample t-test are applied based on the mean, standard deviation and significant values to examine the performance of Thai students on Chinese vocabulary learning using MALL. These statistical analyses clarify the research purpose and objective. The full score for the pretest and posttest is 30 points.

Table 2. Comparison of Pretest and Posttest Scores

Sample Group(n)	Mean (S.D.)	Mean Difference	Paired-Sample t-test		
			t value	df	Sig.
Pretest	19.38 (4.28)	3.5	8.5	31	0.00
Posttest	22.88 (3.52)				

*p: < 0.05

Table 2 presents the paired-sample t-test results, comparing the sample t-test of the pretest and posttest scores. The mean score ($\overline{X}$) of the pretest is 19.38 with a standard deviation (S.D.) of 4.28. Meanwhile, the $\overline{X}$ of the posttest is 22.88 with an S.D. of 3.52. Moreover, the mean difference (MD) between the two data is 3.5, and the t-value of the pretest and the posttest is 8.5. From this result comparison, it was evident that there was an increase in the mean of the post-test after the intervention. It was also clear that the mean difference in the group after the intervention was significantly higher than before the intervention. The P-value represents significance, P-value less than 0.05 means significant effect.

Table 3. Number of Students in Each Score Difference

Score	Same	+1	+2	+3	+4	+5	+6	+7	+8	Total
Number of students	2	4	6	8	4	0	2	4	2	32
% of student	6%	13%	19%	24%	13%	0	6%	13%	6%	100%

Table 3 presents the number of students in each score difference. Of the 32 students, two (6%) have the same scores even after intervention; four (13%) have improved their posttest scores by 1 point; six (19%) have their posttest scores increased by 2 points; eight (24%) have their posttest scores increased by 3 points; and, four (13%) have their posttest scores increased by 4 points. The posttest scores of two students (6%) have increased by 6 points, four (13%) have increased by 7 points, and two (6%) have increased by 8 points. The results show that most students who use MALL to learn Chinese vocabulary have a significant improvement in performance.

7.2 Questionnaire results

Questionnaire analysis is performed to determine the satisfaction of Thai students in Chinese vocabulary learning using MALL. This is realized by using SPSS. The satisfaction questionnaire has ten questions in total, with a Likert scale from 5 to 1. The scale interpretation is: 5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree; and, 1 = Strongly Disagree.

Table 4. Questionnaire Results

No.	$\overline{X}$	S.D.	Level
Q1: It makes me more motivated to learn Chinese.	4.47	0.507	High
Q2: Mobile-assisted language learning can increase learning interest.	4.47	0.507	High
Q3: It makes learning Chinese vocabulary more efficient.	4.53	0.507	Very high
Q4: I like this learning atmosphere.	4.59	0.499	Very high

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Q5: It can be very timely to find the problem of vocabulary.	4.75	0.440	Very high
Q6: It makes me understand the meaning of the vocabulary more clearly.	4.69	0.471	Very high
Q7: Mobile-assisted language learning is helpful for Chinese vocabulary learning.	4.53	0.507	Very high
Q8: I improved my teamwork ability through Mobile-assisted language learning.	4.44	0.504	High
Q9: I improved my self-study ability through Mobile-assisted language learning.	4.63	0.492	Very high
Q10: I feel satisfied with the Mobile-assisted language learning process.	4.69	0.471	Very high
Total	4.57	0.491	Very high

Table 4 presents detailed information regarding the test's mean score ($\overline{X}$=4.57), standard deviation (S.D.=0.491) and interpretation (Strongly Agree). According to the Best (1981), the respondents' rating categories are: Very low=1.00-1.49, Low=1.50-2.49, Medium=2.5-3.49, High= 3.50-4.49, Very high=4.50-5.00. Overall, the highest satisfied item was item 5, "It can be very timely to find the problem of vocabulary", the mean score is 4.75, which proves that students believe that comparing with other items, using Mobile-Assisted Language Learning is more helpful in finding vocabulary problems. The lowest satisfaction was item 8 "I improved my teamwork ability through Mobile-Assisted Language Learning", the mean score is 4.44, which proves that students are satisfied with the effect of using Mobile-Assisted Language Learning in improving teamwork ability.

7.3 Discussion

The mean score ($\overline{X}$) of the pretest was 19.38, the standard deviation (S.D.) was 4.28, and the $\overline{X}$ in the posttest was 22.88 and S.D. 3.52. The mean difference (MD) of the two data is 3.5, the mean score of the questionnaire ($\overline{X}$=4.57), the standard deviation (S.D.=0.491), and the satisfaction are all at a relatively high level. The results showed the efficiency on their vocabulary learning by applying MALL. According to Bensalem (2018), the MALL used as a learning tool can significantly increase learners' vocabulary. In addition, using technology can also improve students' comprehension ability, because students can communicate with each other and transfer vocabulary through technology. It makes learning more enriched. It has allowed the students to learn Chinese freely and actively; moreover, through collaborative learning, the students can apply and understand vocabulary more frequently. In the aforementioned learning process, students can likewise exercise their self-study abilities.

The findings of this research are consistent with Lin's study (2014) which indicated that the use of mobile tablets is effective for reading comprehension. The said

research explores how young English learners use mobile tablets for activities in an online (extensive reading) ERP system, as well as their impact on reading ability and user perception. This way of learning enables students to participate in learning more actively and deepen their understanding of the learning curriculum, which also conforms to the conclusion of this study. In the process of interaction, students will need to use new vocabulary. In the learning process of MALL, if students can communicate effectively, their understanding and memory of vocabulary will gradually deepen, and on this basis, vocabulary and vocabulary will be improved. Comprehension.

In addition, according to Leis, Tohei and Cooke (2015) who studied the advantages of Japanese college students using smartphones in English classes, and determined whether the students using smartphones in English classes were more inclined to study independently. The control group was prohibited to use of smartphones in classrooms, while the experimental group was encouraged the use of smartphones in their studies. It was found that students in the experimental group were more likely to study during their free time – manifesting signs of self-learning – and even considered how to improve their study habits and English proficiency. The same improvement found in this study showed that the time for student interaction is greatly increased because of the advantages of MALL. When students find a problem, they can use MALL to solve the problem at any time, and students can discuss with each other, and can solve the problem in the process of discussion and enrich the limitation of knowledge understanding. Therefore, it seems that mobile-assisted language learning correctly can enable students to improve their learning effects through technology, and it also proves that technology has become a powerful learning tool for learners and a significant similarity to the results of this research.

Some researchers believe that many educators utilize technology in order to provide students with high-quality teaching experience (Balcı & Kartal, 2021; Azeez & Bajalani, 2018). They stated that technology alone does not provide teaching quality, while the others also argued that many schools emphasize technology over learning. That is, the emphasis has become more on technology than content, yet students need the same content as they need the technology.

In summary, the adoption of technology should be guided, and the correct use of technology can have a positive impact. The impact of technology can be negative if it is not used appropriately.

8.   Conclusion

This study research used two research instruments to analyze the results of students using Mobile-Assisted Language Learning for Chinese vocabulary learning. Through the analysis of the pre-test and post-test scores, this study investigates students' use of Mobile-Assisted Language Learning effects.

The pre-test and post-test were designed based on the vocabulary of HSK Level 4. They were used to test students' knowledge, understanding and the use of vocabulary. The researcher used a paired sample t-test to compare the pre-test and post-test scores of the sample group. The results found that the mean score of the pre-test was 19.38, the mean score of the post-test was 22.88, and the P value was less than 0.05, indicating a significant difference between the pre-test and the post-test. In addition, through the comparison of the difference of each student's increased score, 94% of students had improved their academic performance on varying degrees. It proves that Mobile-Assisted Language Learning has a positive effect on students' Chinese vocabulary learning and students' Chinese language scores' improvements.

The questionnaire asked 10 questions to investigate students' satisfaction with using Mobile-Assisted Language Learning to learn Chinese vocabulary. The questionnaire was applied to all 32 students participating in the study. The data in the questionnaire were analyzed by the applicable one-sample t-test.

The mean score of the questionnaire is 4.57, the overall average score is greater than 4.5, which is at a very high level, indicating a significant difference. The results indicate that Thai students are more satisfied with using MALL to learn Chinese vocabulary.

The data analysis of the questionnaire shows that students are highly satisfied with Mobile-Assisted Language Learning, which proves that can be a way for students to improve their learning effects.

This study has applied two research instruments to analyze the results of students using MALL for Chinese vocabulary learning. Through the analysis of the pretest and posttest scores, this study has investigated the effects of the students' use of MALL. From the results, MALL can enhance the academic performance of the third-year Thai students. Overall, MALL possesses a high developmental significance for modern learning environment. Furthermore, through communication process, the said learning environment allows students to learn more easily, which is conducive to student's development.

9.   The Authors

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