A STUDY OF ATTITUDES TOWARD MOBILE-ASSISTED LANGUAGE LEARNING OF CHINESE COLLEGE STUDENTS

Yuxuan Lu

I.D. No. 6219631

A THESIS SUBMITTED IN PARTIAL FULFILLMENT FOR

THE DEGREE OF MASTER OF ARTS

IN ENGLISH LANGUAGE TEACHING

GRADUATE SCHOOL OF HUMAN SCIENCES

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Field of Study: ENGLISH LANGUAGE TEACHING

Thesis Advisor: ASST. PROF. DR. ROSUKHON SWATEVACHARKUL

Accepted by the Graduate School of Human Sciences, Assumption University in Partial Fulfillment of the Requirements for the Degree of Master of Arts in English Language Teaching

……..……...……..……..

(Dr. Chayada Thanavisuth)

Dean of the Graduate School of Human Sciences

Thesis Examination Committee

…….. Chair

(Dr. Marilyn Fernandez Deocampo)

……..…….…….. Advisor

(Asst. Prof. Dr. Rosukhon Swatevacharkul)

…….……. Faculty Member

(Asst. Prof. Dr. Prannapha Modehiran)

….…… External Expert

(Asst. Prof. Dr. Supalak Nakhornsri)

ABSTRACT

I.D. No.: 6219631

Keywords: ATTITUDE, ENGLISH, MOBILE-ASSISTED LANGUAGE LEARNING

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As information technology continues to spread and develop, popular information technologies such as mobile devices are widely used by students in their learning lives. Mobile-assisted language learning is mobile devices or technology used to assist in learning a language (Kukulska, 2012). The research objectives of this study are: 1) To identify the college students' attitudes toward mobile-assisted English language learning. The four sub-objectives discussed are 1.1) To identify the college students' perceived usefulness toward mobile-assisted English language learning.1.2) To identify the college students' affection toward mobile-assisted English language learning. 1.3) To identify the college students' perceived control toward mobile-assisted English language learning. 1.4) To identify the college students' behavior toward MALL.

This study collected quantitative data through a three-part questionnaire. The sample in this study comprises a convenience sample of 375 students at a public university in China. The survey questionnaire used the five-point Likert scale to measure the students' scores on each item. This study derived the mean value and standard deviation.

The findings presented: 1) The data description shows that students have a moderately high level of attitude toward MALL (M=3.666, SD = 0.545) at the public university. They are willing to try to learn and master the ability to learn using mobile devices if they are guided and taught. 1.1) The results revealed that students have a moderately high level of perceived usefulness toward MALL (M=3.763, SD=0.723); students are optimistic about the

perception of using MALL to assist in English learning. 1.2). Students have a moderately high level of affection (M=3.639, SD=0.576), which means they do not fear using MALL for English learning. In addition, students were found to have doubts about their ability to correct errors when using MALL. 1.3) Students have a moderately high level of perceived control toward MALL (M=3.536, SD=0.657). Thus, it shows that students believe they have the confidence and ability to use MALL. 1.4) From the data, students have a moderately high level of behavior toward MALL (M=3.732, SD=0.583). Their use of MALL after class shows that they are pleased to use this method to supplement their English learning.

The pedagogical implications of this study are that students need to receive some appropriate pre-training on the proper use of MALL to learn English. In addition, students may seek help from their teachers because they have problems they cannot solve when using MALL. Therefore, teachers also need to be trained to have the theoretical knowledge of how to operate MALL to provide better assistance to students.

ACKNOWLEDGEMENTS

Throughout the process of writing my thesis, I received a great deal of support and assistance.

I would first like to thank my supervisor, Asst. Prof. Dr. Rosukhon Swatevacharkul. She gave insightful feedback and suggestions on each chapter and helped me revise my thesis as much as she could. It was with her help I was able to complete my thesis.

I would also like to thank those who gave me feedback, which helped me improve this study, including the committee members, Dr. Marilyn Fernandez Deocampo, Asst. Prof. Dr. Ngamthip Wimolkasem, Asst. Prof. Dr. Prannapha Modehiran, and Asst. Prof. Dr. Supalak Nakhornsri. They gave me a lot of valuable comments and suggestions, which helped me improve my thesis quality.

In addition to that, I am also profoundly grateful to my parents. I am thankful to them for supporting me in completing my master's degree financially and for the moral support they gave me. Moreover, my father helped me collect the data for my thesis from the target university, which I couldn't have done alone without my parents' support.

Last but not least, I would like to thank my friend Lynn who not only helped me while I worked on my thesis, but we also got along well in our daily life. Due to the effects of COVID-19, she and I both stayed away from home to study. I am grateful to have her as my companion and support.

PLAGIARISM STATEMENT

I acknowledge that the sources not my works are adequately cited in this thesis, and I declare that this work has been carried out and written in its entirety by myself. I have not used any other sources than the ones mentioned. Any parts copied or paraphrased from other sources have been cited and acknowledged.

Field of Study: English Language Teaching Student's Signature.....

Graduate School of Human Sciences Advisor's Signature.....

Date:

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CHAPTER I

INTRODUCTION

This chapter contains the main contents, the background of the study, rationale, research questions, research objectives, theoretical framework, conceptual framework, the scope of the study, the definition of the terms, the significance of the study, and the organization of the study.

Background of the Study

The mobile learning concept was introduced to China in 2000; it has evolved through exploration and research over the past 20 years. Later, combining the ideas of computer-assisted language learning (CALL) and mobile learning, mobile-assisted language learning (MALL) was proposed by scholars and applied to English learning research (Chen & Jia, 2020). MALL was claimed by Kukulska (2012) as mobile devices or mobile technology resources that are used to assist in the process of learning a language. MALL is a time- and space-independent learning method for mobile learners, who can turn on their mobile devices at any free time and in any random location and go in to learn the language. MALL can be an informal learning process for individual learners to improve their language learning. Schools or institutions can use it to help students learn a language more effectively and consider it a supplementary learning tool for formal classroom learning (Liu, 2017). For instance, students use mobile applications to help memorize vocabulary and make learning less monotonous. Playing listening materials through media to help improve listening skills; or using mobile social media to communicate with other students when completing group activities. Fundamentally, the main factors that affect college students' choice to use mobile-assisted language learning are convenience, usefulness, portability, and the speed of obtaining resource information (Li, 2019).

According to the statements of several researchers above regarding attitudes, it is also

essential to discuss attitudes toward MALL. Students' attitudes toward using MALL to learn the target language can also affect the efficiency of the learning process. In other words, they can maximize the use of MALL in language learning. Ozer and Kılıç (2018) indicate that students are willing to download e-books or mobile applications to assist in language learning. However, mobile learning requires proper educational guidance to help users properly apply it in their daily learning, thus leading to the derivation of MALL from the concept of mobile learning. In the process of using MALL, the teacher's attitude toward using MALL in teaching can gain from the students' attitude toward MALL. That is, if the students have a positive attitude toward using MALL, it will also affect the teacher's perspective and make the teacher more willing to use MALL as a tool in teaching (GhouNane, 2019).

A large amount of research evidence suggests that mobile-assisted language learning has a great potential to provide language learning opportunities for learners, as it enables learners to self-learn anytime and anywhere with the help of mobile technology (Guo & Liu, 2011; Yang, 2012; Yorganci, 2017; Li, 2019; Zhang, 2019). Guo Xiong & Liu (2011) focused on the persistence of interest in mobile English learning of college students. They found that college students have a particular interest in mobile-assisted language learning. Still, the continuation of this interest in English mobile learning is not high enough. Yang (2012) explored the attitudes and self-efficacy of MALL by comprising 58 sophomore Chinese college students with minimal experience in using mobile devices to assist in English language learning through the task-based approach. The findings indicate that MALL can increase students' learning participation in the learning tasks; apart from that, there is no difference in students' attitudes and self-efficacy in MALL. Wang's (2015) study aims to determine Chinese non-English major students' attitudes toward using mobile applications for autonomous learning and also explore the teachers' attitudes toward learning English through mobile applications. Zhang (2019) researched the interest of non-English major college

students in mobile learning, among which 90% of the survey respondents are interested in English, and found that those students who are more interested in English learning are more interested in using mobile-assisted learning methods.

In this study, the attitude was identified as students' behavior led by the perceptions, feelings, and beliefs of control in MALL. Attitude includes four components of perceived usefulness, affection, control, and behavior (Liu, 2017). Mobile-assisted language learning (MALL) was claimed by Kukulska (2012), which means mobile devices and mobile technology resources are used to assist students' English learning process.

In addition to some generalized studies of students' attitudes toward using mobile devices to assist in English language learning, some studies have focused on the feasibility of a specific application and its effectiveness, particularly in English language skills, such as listening, speaking, and vocabulary learning (Shi,2015; Zhang & Zhang, 2015; Yu, 2017; Bian & Liu, 2017). These studies have focused on exploring students' practice of specific skills using ELA apps, such as word apps, to help memorize English vocabulary.

Research exploring college students' attitudes toward mobile science and technology for English language learning in higher education remains limited. Compared with ordinary middle and high school students, college students must face different social responsibilities or obligations, such as family or work responsibilities. They are faced with declining study time and compelled to study during breaks, such as traveling, lunch breaks, or waiting for dinner (Liu, 2017). Learning with mobile devices has countless advantages in terms of flexibility. In other words, mobile devices allow learners to use them in any fragmented time.

Moreover, it is challenging to figure out how college students transport their learning material and what the perceptions and feelings of using these kinds of mobile learning resources are. Mobile technology can be a high-potential new and inventive learning tool for college students. Different researches show much potential to be explored in mobile-assisted

language learning. The purpose of this study wants to explore Chinese college students' attitudes toward mobile-assisted English language learning. Hopefully, the research data obtained through this study will help educators explore more teaching methods in the English language teaching process. The target students of this study are public universities from Yunnan Province, China, covering mainly all undergraduate students and students of all majors. And 375 participants were collected by questionnaire to analyze and explore the research questions and objectives.

Rationale

MALL has received much attention and exploration from researchers today (Chen & Jia, 2020). Researchers have attempted to find appropriate instructional designs for MALL to be used as a tool to assist language teaching in the classroom. Researchers have tried to find suitable instructional techniques to use MALL as a classroom language teaching tool. Researchers used a classroom experiment to test the practical effects of using MALL in the classroom by observing student performance. The rich resources and vivid and attractive learning materials that MALL can provide. It is a thought-provoking research topic to study students' attitudes and behaviors towards using MALL outside class, participating in in-class group learning discussions, and utilizing MALL in language learning.

Researchers have continued to focus on the educational use of mobile devices, with English language learning being one of the significant areas of mobile learning research. Some researchers have combined mobile-assisted learning with classroom teaching to explore effective classroom educational approaches and extracurricular activities that can help students in their English language learning.

According to the Ministry of Education of the People's Republic of China (2017), English courses for university students in China are still revised as compulsory courses in the curriculum regulations for university students. Chinese college students, whether English

majors or non-English majors, must take College English Courses in their freshman through junior years. In addition, universities will make passing the CET-4 exam one of the mandatory requirements for college students to graduate and encourage them to give the CET-6. CET-4 refers to college English test level 4, and CET-6 refers to college English test level 6. The CET-6 test is more complicated than the CET-4 test. Both of these tests are part of the University English Standard Level Examination. It shows that college students also continue to learn English during their college years.

Students enjoy the mobile apps that help them practice the four skills of English language learning, listening, reading, and writing. Some researchers have looked more deeply into mobile learning in English language learning for particular skills. The four English skills, vocabulary, speaking, reading, and listening, have been explicitly studied in other research (Zhang & Zhang, 2015; Shi, 2015; Liu, 2017; Yu, 2017). It follows that researchers must investigate students' attitudes toward MALL if they want to study more about its potential ability as a language learning tool. This is because students are the main target of language teaching and learning. Do students have positive or negative beliefs about using mobile-assisted language learning? Do they have negative or positive attitudes toward mobile-assisted language learning? Whether they are proficient with mobile devices and whether they own mobile devices are all questions that need answers to be supported by survey data. Therefore, it is also necessary to investigate students' attitudes toward mobile-assisted English language learning in the context of English learning research.

China is a vast country, and each provincial city's economic development and technology will vary. As a result, there are also differences in the level of education in each city's universities. This leads to different acceptance levels of mobile-assisted learning among university students in each city. The ability to properly use mobile-assisted learning also varies. The target school of this study is located in Yunnan Province, a public university in

China. Currently, the target university has minimal research in the field of mobile learning; only one paper (Liao, Ma, Ou & Li, 2019) on the current status.

Mobile-assisted language learning is portable, so students can access many online learning resources. At the same time, problems have emerged: the benefits of mobile-assisted language learning for English language learning have not been reflected in general education in China (Chen & Jia, 2020). One of the apparent problems is technology. If students have problems using mobile devices or if they have issues using mobile devices in classroom activities. Then, it will negatively affect language learning. In addition, because of the richness of mobile web-based learning resources, there is one problem matching the online resources to the educational learning objectives.

MALL can provide many learning resources and access, and its good visual-auditory experience can also attract students to learn the language in this way. However, in addition to this, MALL also has the potential to distract students from the learning process. This is because Internet connections provide a wealth of learning resources and a lot of entertainment. How to properly guide students' use is also necessary.

Although mobile-assisted language learning has been popular in English language learning for university students, few university classrooms use mobile devices in their general teaching and learning process (Chen & Jia, 2020). With the current impact of COVID-19, universities must use online delivery for particular periods. Mobile technology devices are essential to help students' English learning, which is part of the university's policy to consider.

Therefore, this study investigates Chinese university students' attitudes toward mobile-assisted English language learning. This may provide further insight into college students' mobile-assisted English language learning.

Research Questions

There is one main research question with four sub-questions as follows:

1. What are the Chinese college students' attitudes toward mobile-assisted English language learning? Based on the four components of perspectives, the further questions were:

    1.1. What are the Chinese college students' perceived usefulness toward mobile-assisted English language learning?

    1.2. What is the Chinese college students' affection toward mobile-assisted English language learning?

    1.3. What are the Chinese college students' perceived control toward mobile-assisted English language learning?

    1.4. What is the Chinese college students' behavior toward mobile-assisted English language learning?

Research Objectives

The research objectives of this study are as follows:

1. To identify the Chinese college students' attitudes toward mobile-assisted English language learning.

    1.1. To identify the Chinese college students' perceived usefulness toward mobile-assisted English language learning.

    1.2. To identify the Chinese college students' affection toward mobile-assisted English language learning.

    1.3. To identify the Chinese college students' perceived control toward mobile-assisted English language learning.

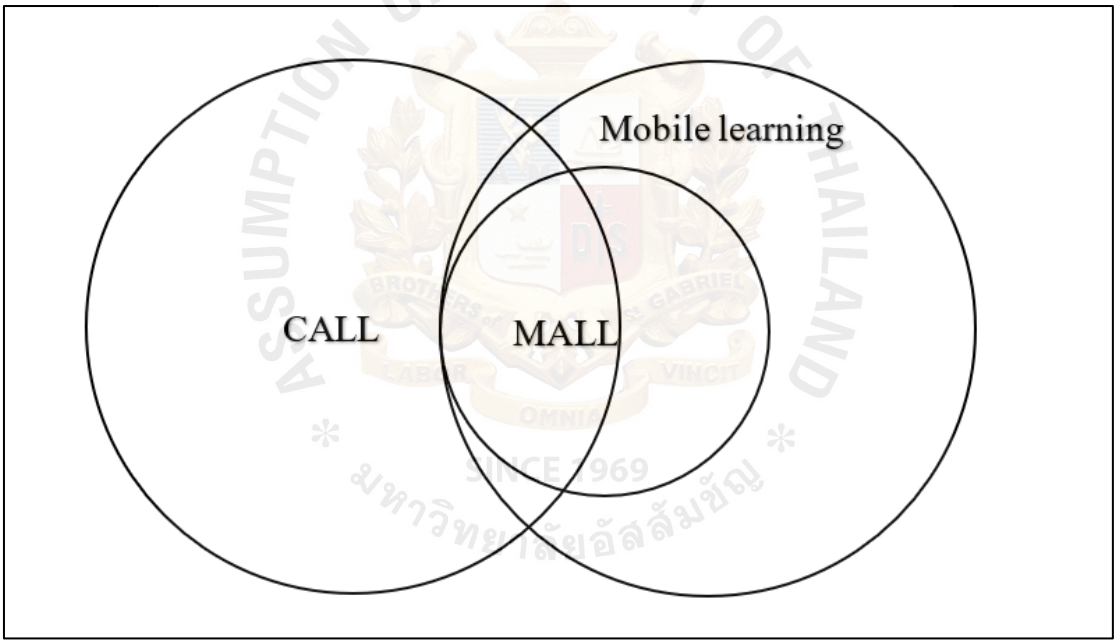
    1.4. To identify the Chinese college students' behavior toward mobile-assisted English language learning.

Theoretical Framework

MALL has involved computer-assisted language learning (CALL) and mobile learning (Cakmak, 2019); it differs from CALL for its personal use and portability across different contexts. However, it mirrors mobile- learning as they both focus on contextualized learning, flexibility, and active community participation of the learner. Additionally, MALL uses the same mobile technologies for language learning, such as personal digital assistants (PADs), mobile phones, tablet PCs, etc. (Kukulska, 2012).

Figure 1.1

The Theoretical Framework of MALL



The theory of mobile-assisted language learning combines computer-assisted language learning (CALL) and mobile learning (M-Learning). The theoretical foundation of the questionnaire on attitudes toward mobile-assisted learning also refers to computer-assisted language learning and mobile learning. The scale formulated was within the framework for assessing attitudes toward computers, the internet, and PDA. These researchers have stated distinct constructs on which to base the assessment of attitudes:

affection, perceived usefulness, perceived control, and behavior (Selwyn, 1997; Tsai et al., 2001 & Tsai et al., 2010; Hwang, 2010).

According to the attitude theory, it was stated by Hovland & Rosenberg (1960) that there are three main component models of attitude cognition, affect, and readiness for action. It was then developed by several researchers (Selwyn, 1997; Tsai et al., 2001; Tsai et al.,2010; Yang, 2012). Table 1.1 will list the corresponding attitude constructs by several researchers.

Table 1.1

Framework for the Attitude Constructs

Constructs of attitudes	Reference
Cognition, affect, action	Hovland &Rosenberg (1960)
Affection, perceived usefulness, perceived control, behavior	Selwyn (1997)
Affection, perceived usefulness, perceived control, behavior	Tsai et al. (2001)
Affection, perceived usefulness, perceived control, behavior	Tsai et al. (2010)
Affection, perceived usefulness, perceived control, behavior	Yang (2012)
Affection, perceived usefulness, perceived control, behavior	Liu (2017)

Liu (2017) defines attitudes as the learner's behavior led by the perceptions, feelings, and beliefs of control in MALL. Thus, attitudes refer to students' perceptions impact of MALL, students' feelings while using MALL, students' beliefs of control MALL, and the specific actions while using MALL. These particular performances correspond to the four constructs based on the assessment of attitudes, respectively: perceived usefulness, affection, perceived control, and behavior (Liu,2017). Self-efficacy is a learner's belief about their ability to perform MALL in language learning, which is also based on internal factors such as

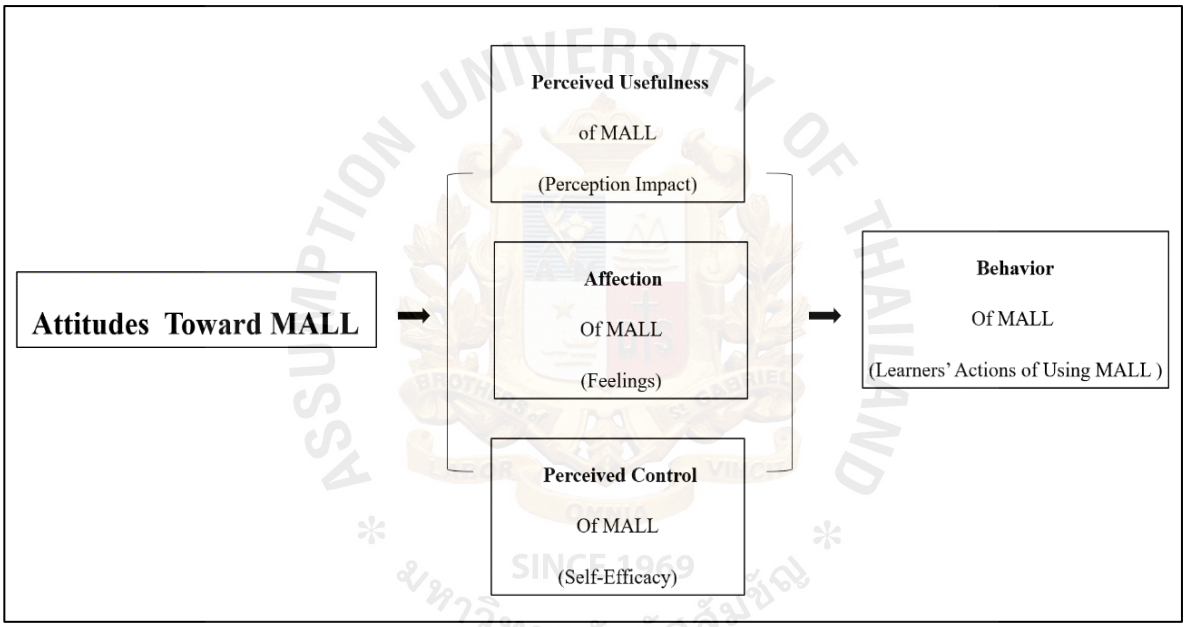
learners' background knowledge, confidence, and skills (Bandura, 2010). This can be clarified by the perceived control in Liu's (2017) theory of attitude.

Conceptual Framework

The following figure demonstrates the conceptual framework applied in this study; the main concepts of attitudes toward MALL were based on Liu's (2017). conceptual framework.

Figure 1.2

Conceptual Framework



As described in the conceptual framework above, attitudes consist of four main components: perceived usefulness, affection, control, and behavior. Any information or background knowledge the learner has about MALL and positive or negative perceptions of MALL are the perceived usefulness component. Based on background knowledge of MALL and fundamental influences, learners develop emotional responses to MALL, such as feelings of liking or disliking the use of MALL, and these feelings are part of affection. The learner's confidence in the ability to control and use MALL proficiently is a part of perceived control. Perceived control and self-efficacy are similar and correspond to each other. Based on the

above factors, learners' behavior toward using MALL will be strongly influenced. Based on the knowledge background, emotion mapping, and beliefs, learners will form specific behaviors, which is the MALL process from perceived use, emotion, and belief control to actual use behavior output (Bandura, 2010; Liu,2017).

The attitude theory of this study is mainly referenced by Liu (2017) due to this study adopted its English Mobile Learning Attitudes Scale for Adult learners' questionnaire. Liu's (2017) research purposes regarding learners' attitudes toward MALL and surveyed in Chinese background. This study used Liu's (2017) theory to discuss the use of MALL in English learning. More details are presented in Chapter 3.

Scope of the Study

This study explores the students' attitudes toward mobile-assisted English language learning. The population of this study includes more than 14,376 college students, and there are 375 participants from a public university in China. The questionnaire used the convenience sampling method.

This study used the quantitative method. The English Mobile Learning Attitudes Scale adopted a 21-item questionnaire for adult learners (Liu, 2017), see Appendices. Data collection of the questionnaire used Wenjuan Xing online. Wenjuan Xing is an online platform it can help collect the data by sending questionnaire links to students. SPSSAU is also an online platform, and it can provide SPSS services. Due to SPSSAU can import the data collected from Wenjuan Xing. The Wenjuan Xing platform has SPSSAU data analysis system. Therefore, analyzing the questionnaire on the Wenjuan Xing website as well.

Definition of Terms

The definitions of terms in this study are as follows:

Attitudes: refers to a student's behavior led by the perceptions, feelings, and beliefs of control in MALL. This includes four components: perceived usefulness, affection, control, and behavior. The five-point Likert scale was used to measure attitudes.

Perceived Usefulness: refers to the student's perceptions about using MALL on individuals. The five-point Likert scale was used to measure perceived usefulness.

Affection: refers to the students' feelings when using MALL— The five-point Likert scale was used to measure affection.

Perceived Control: refers to self-efficacy, which is the student's belief or confidence in their independent control or the ability of MALL. The five-point Likert scale was used to measure perceived control.

Behavior: refers to students' perceived actions or performance when using MALL. The five-point Likert scale was used to measure behavior.

Mobile-Assisted Language Learning (MALL): refers to the learning method used by Chinese college students who want to achieve their English learning using mobile devices.

Chinese College Students are full-time Chinese undergraduate college students who attend the public university in China. Including freshman, sophomore, junior, and senior.

Significance of the Study

This study presents college students' attitudes toward using MALL in a Chinese university as an example. This study reported the college students' attitudes toward mobile-assisted English language learning. A careful exploration of college students' mobile-assisted English language learning attitudes may provide more insight into college students' different learning needs and assist college students in becoming effective learners of English. The perceived usefulness makes it possible to understand the students' macro view on using

MALL to learn English. Perceived control and behavior explore how students interact with the use of MALL, such as whether they are confident in using MALL alone and how they apply MALL to classroom activities. The data obtained can be analyzed to help educators better understand the use of MALL in language learning. Considering that the target university of the study has not involved a field study investigating students' attitudes towards using MALL for English learning. It is hoped that educators and researchers in Chinese colleges can use the survey analysis data as a reference and understand more about students' preparedness for mobile-assisted English language learning.

Organization of the Study

This thesis is composed of five chapters. Chapter one is the introduction; it presents the background information of this study, rationale, and problem statement, and gives information on chapters two and three, including theoretical framework, conceptual framework, research questions, research questions, research objectives, and research design. Chapter two mainly introduces the literature review about mobile-assisted language learning, the theory of attitudes, and previous related studies that will be presented in this chapter. Chapter three introduces the research methodology, including research design, population, sample, research instrument, collection of data, and data analysis. Chapter four is the results and discussion. With the results from the questionnaire, research questions are answered in this chapter. We can get the answer to Chinese college students' attitudes toward mobile-assisted English language learning from the results. After collecting the research data from the questionnaire, a relevant discussion on the data will be presented. Chapter five is a summary, discussion, and recommendation. It summarizes the significant findings of the research and indicates the potential. This chapter also raises the limitations of this study and suggestions and recommendations for further investigation.

CHAPTER II

REVIEW OF RELATED LITERATURE

In this chapter, the related literature review will be presented, composed of five parts: educational theories and approaches, Technologies in English language learning, mobile-assisted language learning (MALL), attitudes, the four components of attitudes, and related studies.

Educational Theories and Approaches

Constructivism Theories of Learner

The psychological process involves constructing personal knowledge (Piaget, 1970). Vygotsky (1980) claims that individuals cannot put themselves in a society where they live independently, and the culture and language they belong to correspond to reality inevitably. Vygotsky believes that the social and historical environment will affect the construction of the knowledge system. Bodner (1986) refers that the constructivism of learners can build understanding, which means learners can not only simply imitate and reflect on what they say or read but also find regularity and order in world events even in the absence of complete information. When students use mobile-assisted language learning, they may encounter knowledge content that has not been taught during the learning process. Since students' knowledge system is not mature yet, learning is also a process of knowledge construction.

Constructivism is a learning theory that assumes that students will actively construct a body of knowledge through what they have already learned to support long-term learning (Von Glasersfeld, 1996; Fosnot & Perry, 1996; Schcolnik & Abarbanel, 2006). Knowledge under constructivism is not regarded as a valuable item transferred from experts to learners but as a structure assembled through active participation and interaction with the information environment (Schcolnik & Abarbanel, 2006). Constructivism describes how students can make sense of the materials or experiences and how the materials and experiences can be

taught effectively in practice (Amineh & Asl, 2015). Learners will build knowledge and experience through the analysis, questioning, and examination of tasks in the classroom. Similarly, when using mobile devices to learn, learners will also construct a set of learning systems that suit them from the appropriate learning materials and the learning experience of other learners.

Mobile-assisted language learning provides students to practice their knowledge in or outside the classroom. The mobile device is like a mini-learning database that can be consulted whenever there is a problem. When students construct their knowledge system, the mobile device acts as a guidebook to help students learn.

Learner-Oriented Learning Approach

Learner-oriented learning evolves from adopting a constructivist approach to learning; conceptually, students will be engaged in actual activities which are meaningful, contextual, and situated. Also, this will encourage students to take control and be responsible for their learning (Wang, 2015). Mobile-assisted English language learning supports the concept of learner-oriented learning. Learners can freely control their choice of learning time and space when using mobile devices to learn (Viberg & Grönlund,2012). Learners can choose suitable learning materials according to their knowledge base, and at the same time, they are responsible for their learning behaviors when using mobile devices to learn.

Informal Learning Approach

Informal language learning can take place among all kinds of people (Kukulska, 2012). When learners use mobile devices to support the learning process because they want to get more knowledge to supply their curricular content informally (Clough, Jones, McAndrew & Scanlon,2008). Informal learning provides the students with a chance to learn by technology flexibly; learners are not limited by the time or location of the class and can also change the learning plan at any time according to the learner's acceptance based on

learning capability. Adult learners can improve their proficiency in the target language through their efforts in an informal learning environment. Furthermore, adult learners may do as well or better than learners who have spent a certain amount of time learning the target language in a formal learning environment (Krashen, 1981). Livingstone (2001) defined informal learning as anything people do to gain knowledge, skills, or understanding from anything else that interests them. Informal learning is simply defined as the learning process that occurs outside schools. However, the process of how learning is organized and supported is more important than where the learning process happened (Rogoff, Callanan, Gutierrez & Erickson, 2016).

Nowadays, people spend a lot of time surfing the internet on mobile devices, and while they browse all kinds of information, they are also learning unconsciously. Even if people do not formally study in schools or some teaching institutions, they still absorb all types of information obtained in life. In other words, people have been learning informally. Suppose those students with higher education levels can focus on cultivating their mobile learning awareness and give the correct guidance. In that case, using mobile devices for academic learning will be more beneficial.

Lifelong Learning Approach

Informal and formal learning and the knowledge, skills, attitudes, and behaviors people acquire daily are all categorized as lifelong learning (Dunn, E., 2003; Laal, M. & Salamati, 2012). Whether in school, at home, at work, or in the community, people continuously acquire new knowledge and skills, and lifelong learning occurs throughout life (Jarvis, P., 2007). Lifelong learning can help people keep up with the latest technologies and gain the knowledge and skills needed. Meanwhile, mobile-assisted language learning has become popular in the recent decade, and it can also help learners' individual learning needs in many areas.

Mobile-assisted language learning is defined as learners who can learn anytime and anywhere as long as it is convenient (Kukulska & Shield, 2007). Therefore, mobile-assisted language learning supports the continuous learning process of acquiring knowledge and skills in the characteristics of lifelong learning. Mobile-assisted language learning is not only helpful for college students learning outside the classroom; even those who are already working can still use mobile devices to assist in learning. This also caters to the universality of lifelong learning.

Technologies in the English Language Learning

English learning is influenced by many factors, such as motivation, age, personality, learning anxiety, learning goals, learning attitudes, and so on (Garder,1985). Fakeye (2010) claimed that attitude was considered to be one of the essential effects in the process of learning a language. Attitudes are an individual's thoughts and behaviors about something influenced by perceptions and conventions (Shih, Chu, Hwang & Kinshuk, 2010). Intellectual or linguistic ability is not the only impact on students' mastery of a second language; students' perceptions and attitudes toward the target language of study also greatly influence the learning process (Gardner & Lambert, 1972). Therefore, attitudes play an integral role in learning a language, and differences in attitudes affect students' progress in acquiring the target language.

Isam (2012) defined technologies as the practical application of knowledge in the learning of a knowledge trial, especially in a specific field; the use of technical methods or knowledge and the process of its use in the accomplishment of a learning task; professional work in a particular field or educational technology. Computer-assisted language learning （CALL）has been used in language education to satisfy students' visual and auditory needs when learning a language, which essentially increases the interest in learning. Since then, mobile-assisted language learning has come to the forefront of research in technology

development, and MALL has been defined as the support of language learning through mobile devices or technologies (Kukalska, 2013). Compared to CALL, MALL is enriched with learning resources (e.g., mobile applications, mobile web pages, video, audio materials, etc.) that essentially satisfy students' learning needs. It is also more flexible and portable, fulfilling the need to access learning resources anywhere and anytime (Shyamlee & Phil, 2012).

Mobile-Assisted Language Learning (MALL)

Definitions of Mobile-Assisted Language Learning (MALL)

MALL, defined by Kukulska (2012), is the use of mobile devices or technologies in learning a language and taking advantage of the portable use of mobile devices in the context of learning a language. Using mobile devices to learn English has the benefits of being portable, flexible, and convenient. This is also a unique feature of mobile-assisted language learning. MALL was mentioned by Stockwell and Hubbard (2013) in their study of second language learning. The use of MALL in target language learning contexts is becoming increasingly accepted by learners, who can use a wide range of mobile devices or applications as aids to their second language learning or teaching. The use of mobile devices in learning contexts is attractive. In their study on MALL, Viberg & Grönlund (2012) indicated that the theory of MALL was proposed by combining the theory of mobile learning (M-learning) and the theory of computer-assisted language learning (CALL). Mobile learning (M-Learning) is defined by Traxler (2005) as the process of education or learning in which mobile technology or devices are used as the sole or dominant tool to support the needs of teaching and learning. Kukulska & Shield (2007) stated that mobile learning refers to such learning could be formal or informal, learning with a handhold and being available anytime, anywhere. Mobile Assisted Language Learning (MALL) is noted by Viberg & Grönlund (2012) as being included in the research area of mobile learning (M-learning), a subfield of

M-Learning, and is receiving increasing attention from several scholars. MALL was noted by Cakmak (2019) for its involvement in computer-assisted language learning (CALL) and mobile learning, and the difference between MALL and CALL lies in the learners' usability and portability in different learning contexts. At the same time, both MALL and CALL reflect mobile learning as they both focus on the flexibility of learning and whether learners are actively involved in contextualized learning. In addition, MALL uses the same mobile technologies for language learning, such as tablets, cell phones, smart readers, Kindle, etc. Studies using these types of mobile devices for target language learning dominate the MALL literature, with findings on how language learning is facilitated by mobile devices or to what extent mobile devices can support MALL. Mobile learning is a micro-learning method that includes learner mobility and content mobility. Mobile-assisted language learning has some characteristics such as personality, situational, authentic, spontaneous, and informal (Kukulska-Hulme & Shield, 2008). It can be enhanced through textual or language communication and other diversified forms to strengthen the effectiveness of foreign language learning (Chen & Jia, 2020).

Mobile learning is experiencing evolution rapidly. The use of mobile technology to support language learning is becoming more and more common as the area covered by wireless networks in the current learner-learning environment continues to expand. The devices that can use the web to communicate with each other are being updated with more innovative mobile devices that can support MALL implementation. Learners are increasingly motivated by their personal needs, like learning, future career, lifelong learning, or traveling needs. Learners choose to use mobile devices not only to support their social contact but also for their learning plan.

Characteristics of Mobile-Assisted Language Learning (MALL)

According to studies (Gilgen, 2005; Chinnery, 2006; Kukulska-Hulme, 2006),

learning through MALL provides learners with a vivid language learning experience that is authentic, relevant, and contextualized. MALL is mentioned by Kukulska-Hulme (2010) to be most effective when it is used to support learner-led inquiry into the learning process, promote social inclusion, and sustain lifelong learning. In addition, Kukulska-Hulme (2012) states that mobile technology supports and provides an environment where learners can learn online and complete activities online, allowing learners to enjoy flexible learning styles and instant access to acquiring information. There are several characteristics as follows:

Authenticity

Gulati (2008) found that the authentic learning context characteristic of mobile learning positively impacted second language acquisition. In addition, authentic learning contexts helped learners connect formal and informal learning experiences, allowing them to switch between learning styles. In other words, authentic tasks in authentic contexts are provided by mobile learning resources that enable students to learn by connecting contextual tasks and textbooks to real-world realities to achieve better understanding within the textbook and to improve learning. For some vocabulary applications, a real-person voice recording will be used in the pronunciation of words to match the pronunciation of native English speakers. Besides, selecting practicing English reading or listening materials will choose BBC news articles or journal articles. When students use mobile devices to learn, the online learning resources they choose are related to real life, and the use of authentic learning materials is also one of the ways to attract students to learn (Mompean, 2010; Judd & Cropper, 2010).

Personalization

Students can learn using mobile devices when they desire and whether they study in college or work in a company (Miangah & Nezarat, 2012). The portability and handheld nature of mobile devices allow students to choose the place and time of their study independently, and they can study anytime and anywhere as long as they are free. Students

can also select different learning materials according to their learning ability. Compared with traditional teaching, mobile learning allows students to choose the place and time of learning according to their own needs, learn independently, and give full play to the characteristics of personalized learning (Yu, 2012).

Ubiquity

Kukulska and Shield (2007) refer to mobile learning as using handheld devices to learn anywhere and anytime. Nowadays, the popularity of wireless networks and mobile devices allows mobile-assisted language learning to appear anywhere; students can also use their mobile devices to learn anytime, anywhere, as long as they want.

Flexibility

Providing more environments for students to learn a language is a significant educational goal for improving their achievement and supporting their specific learning needs (Miangah & Nezarat, 2012). Based on the flexibility of the choice of the learning environment and the choice of learning time given to students by mobile learning, students can participate at any place and on any date at their convenience.

Portability

Most mobile devices are small and portable, allowing students to bring their own devices to study without time and space limitations (Ozdamli & Cavus, 2011). Nowadays, technology is advanced, and the level of technology is far beyond before. With the support of wireless networks and mobile data, students can use online learning resources at any time, even if they are not indoors.

Lifelong Learning

MALL can be informal or formal, meaning students no longer have to learn through classroom courses or school time. Outside the classroom, after graduation, a continuous learning process. Lifelong learning can happen anytime and anywhere according to the needs

of the individual (Nordin, Embi & Yunus, 2010). The characteristics of MALL allow learners to learn anywhere and anytime; they can study conveniently. Learners can always construct new knowledge with the information they get from their mobile devices. The characteristics of mobile-assisted language learning promote the concept of lifelong learning (Kukulska-Hulme, 2010).

Yang (2012) has pointed out that to achieve improved comprehension and learning outcomes for students when learning a language, students need to connect textbook content to real-world experiences. Therefore, formal and informal language learning experiences are combined through authentic learning situations and authentic learning tasks provided by MALL. Students widely use mobile technology and devices for language learning and learn how to create learning opportunities and access learning materials through mobile resources from MALL. Mobile applications and resources designed specifically for learning provide learners with a variety of options for language learning, thus meeting their diverse needs. A study by Cheon, Lee, Crooks, and Song (2012) noted that these features of MALL provide learners with different learning experiences and allow them to enjoy various learning styles in language learning.

Benefits of Mobile-Assisted Language Learning (MALL)

In foreign language (EFL) education and learning, MALL is a potential teaching tool to help learners with their language learning. Lee's (2012) study notes that most researchers believe MALL has excellent potential for use in learners' second language acquisition. Oz (2015) emphasized that if used appropriately, mobile learning technology as a supplementary tool in and outside the classroom can enhance successful language learning. With an internet connection, mobile devices can provide rich learning materials for students' English language learning (Hassan, Sulan, Sipra, & Ahmad, 2016). There are many speaking, writing, listening, reading, vocabulary, and grammar materials for students' needs. Most learners are optimistic

that mobile learning technologies provide opportunities to practice English, transfer learning information and skills as students learn a language, and remove time and space constraints from the language learning process (Oz, 2015). Lee (2012) also claims that MALL can provide precious foreign language learners and offer a wealth of advantages for their learning needs.

Previous studies divided MALL into content-based, design issues, and learner needs (Kukulska-Hulme & Shield, 2008). Content-based concentrates on developing activities and learning materials in a formal language context. Students typically are provided materials by the teachers in the traditional educational paradigm. In addition, learners have defined their learning for design issues, and learner needs and even offered materials to other learners (Kukulska-Hulme & Shield, 2008). The idea that MALL's theoretical framework for learning focuses on a student-centered learning approach was proposed by Hoven and Palalas (2011). Most mobile-assisted language learning can be used for inside-the-class learning and outside-the-class learning. Still, due to portability and mobility, students are more willing to choose to use mobile-assisted language learning outside the classroom to supplement course content learning.

Using mobile devices to learn presented, learners can control the learning process and progress in their own space and time based on learners' cognitive states (Viberg & Grönlund,2012). Mobile-assisted language learning allows students to control the learning process independently. Students can decide when and how to use mobile-assisted language learning according to their learning plans. Miangah & Nezarat (2012) pointed out that MALL deals with mobile technologies in language learning, and students do not always need to stay in the classroom to learn a second language. Due to the portability and handheld characteristics of mobile devices, there are no time and space restrictions in mobile-assisted language learning, which enables mobile learning anytime, anywhere.

Limitation of Mobile-Assisted Language Learning

There are limitations to using mobile devices to assist in learning. For example, most portable device screens are relatively small, and the font size of the displayed text content will also be limited. At the same time, it will cost a corresponding fee when using the data network to download learning resources. Some students will be unwilling to use it (Miangah & Nezarat, 2012; Wang, 2015). Using MALL in the classroom to launch practical learning sessions requires teachers' and students' ability to use mobile devices or apps properly, a finding suggested by Chen and Jia (2020). In addition, they mentioned that the use of MALL to emerge as an aid in learning a language in the classroom is not yet widespread in China. Oz (2015) also points out that the current Chinese education system is not ready to provide this approach in the classroom on a large scale, i.e., to bring MALL into the classroom language education program, which is still a big problem. Using mobile-assisted language learning may be interfered with by other entertainment apps on the device, which will distract students and lead to low learning efficiency. Currently, fewer apps synchronize with the textbook's content in the school classroom, which makes the students' extracurricular learning lack contact with internal learning (Zhou, Zhou, Liu, Zhang & Wu, 2016).

Zhang & Wu (2017) pointed out that although Chinese college students have generally started mobile-assisted English language learning, they lack systematic guidance in their use. Their self-regulatory ability for autonomous learning is limited. This results in instability and poor operability in mobile-assisted language learning. It makes it far from being a substitute for traditional English learning methods. Because the knowledge base of English for students who have not used it differs, the benefits obtained when using mobile-assisted language learning are also different. Students will appear to be attracted by other entertainment information when using mobile devices to study, which leads to the fact that the actual use of mobile devices to learn is not extended, so the learning efficiency is also low

(Wang, 2015). According to Wang's (2015) research, students might use mobile devices to spend a lot of time, but just a little time is spent on English learning. In addition, there is no systematic English learning plan developed through mobile phone-assisted language learning; comparatively, the English learning ability has not significantly improved.

Attitudes

Definitions of Attitudes

Allport (1933) states that individual attitudes determine the individual's actual or potential perceptions of the outside world and reflect the process of personal psychological perception change. In other words, attitude is an individual's perception of the value of something or an item, which may be positive or negative. Hovland & Rosenberg (1960) refers that there are three main component models of attitude cognition, affect, and readiness for action. When researchers explore learners' attitudes, they try to explain their behavior. Pickens (2005) claims that attitudes help us define how people see and behave toward the situation or objective. Moreover, there are three description models of attitudes: an affect (a feeling), a cognition (a thought or belief), and behavior (an action) (Pickens, 2005).

Figure 2.1

Tri-component Model of Attitudes (Pickens, 2005)

In a study by Shih, Chu, and Hwang (2011), attitudes influence how individuals think, behave, and think and behave. Based on Pickens (2005) and Shih, Chu, and Hwang (2011), attitudes' three descriptions model attitudes, cognition, affective, and behavior. In Liu's

(2017) definition, attitudes include four components: perceived usefulness, affection, control, and behavior.

Table 2.1

Framework for the Attitude Constructs

Constructs of Attitudes	Reference
Beliefs, feelings, actions	Pickens (2005)
Cognition, affective, behavior	Yang (2012)
Perceived usefulness, affection, perceived control, behavior	Liu (2017)

This study will follow Liu's (2017) attitude questionnaire scale, which consists of four components: learners' perceptions of the positive impact of using mobile devices (perceived usefulness), learners' real feelings during the use of mobile devices (affection), learners' beliefs about their independent control of mobile devices to aid learning (perceived control), and learners' reactions and performance while using the mobile device (Behavior). These four descriptions of attitudes will be used in the questionnaire part. Further details are provided in chapter three.

Attitudes Toward MALL

Several research papers have developed questionnaires to measure attitudes toward computers, the internet, mobile phones, and PDAs, respectively (Loyd and Loyd, 1985; Selwyn, 1997; Tsai et al., 2001; Tsai et al., 2010). Later, Yang (2012) made the attitudes toward mobile-learning questionnaires survey based on the theory of previous studies. Liu (2017) developed the questionnaire survey based on Yang’s (2012). This study adopted Liu's English Mobile Learning Attitudes Scale (2017).

Table 2.2

Framework for the Attitude Constructs of Scale (Liu,2017)

Scale	Constructs of attitudes	Reference	Number of Questions
Computer Attitudes Scale (CAS)	Computer anxiety, computer confidence, computer liking, computer usefulness	Loyd and Loyd (1985)	40 questions Five-point Likert scale
Computer Attitudes Scale (CAS)	Affection, perceived usefulness, perceived control, behavior	Selwyn (1997)	21 questions Five-point Likert scale
Internet Attitudes Scale (IAS)	Affection, perceived usefulness, perceived control, behavior	Tsai et al. (2001)	18 questions Five-point Likert scale
PDA Attitudes scale (PAS)	Affection, perceived usefulness, perceived control, behavior	Tsai et al. (2010)	16 questions Five-point Likert scale
Mobile Attitudes Survey (MAS)	Affection, perceived usefulness, perceived control, behavior	Yang (2012)	Ten questions Five-point Likert scale
The English Mobile Learning Attitudes Scale (MAS)	Perceived usefulness, affection, perceived control, behavior	Liu (2017)	21 questions Five-point Likert scale

The theory of MALL combines CALL and M-Learning; therefore, while the researchers design the questionnaire, they also combine the design of the survey scale of

CALL and the design of the survey scale of M-Learning. According to table 2.2, we can clearly understand the questionnaire development process adopted in this study.

The present study identifies attitudes as students' behaviors guided by perceived, felt, and controlled beliefs in MALL. Attitudes include four components: perceived usefulness, affection, perceived control, and behavior (Liu, 2017). Mobile-Assisted Language Learning (MALL) implies that mobile devices and mobile technology resources are used to help students' English learning process. (Kukulska, 2012)

Perceived Usefulness Toward MALL

Liu (2017) indicated that perceived usefulness is the student's perception of the positive impact on the individual student when using MALL to learn the target language. When students choose to use different technological devices, mobile learning materials, or mobile applications to support their language learning, the tool's usefulness is determined by the impact of the learning experience.

Affection Toward MALL

The affections are expressed in the feelings of anxiety when students use MALL. Depending on the students' perceived control over MALL, they will face pressure or expectation to use it correctly, which Liu (2017) defined as students' affection for using MALL. Depending on the perceptions and beliefs about MALL, individual students may have biases about the use of MALL, that is, whether they like to use it or dislike it. These feelings belong to the affection component (Alderen-Smeets, 2011).

Perceived Control toward MALL

Perceptual control was defined by Liu (2017) as students' confidence to independently control and use mobile devices to assist in English language learning. Self-efficacy is also defined as people’s belief in their ability to achieve a specified level of performance that will affect events and lives. Self-efficacy identifies a learner’s beliefs about their ability to

perform MALL in language learning, which is also based on internal factors such as learners' background knowledge, confidence, and skills (Bandura, 2010). Previous activities and achievements impact learners' self-efficacy. According to Liu's (2017) definition of perceived control and self-efficacy are very similar; therefore, the students' self-efficacy and perceived control regarding the use of MALL mentioned in this study will be discussed in combination.

Behavior Toward MALL

Students' behavior or habits in using mobile devices to assist in English language learning is defined as behavior (Liu, 2017). Three other components of attitude lead to students' behavior, manners, or performance in using MALL: perceived usefulness, affection, and control (Alderen-Smeets, 2011). Alderen-Smeets (2011) indicate that students who experience a practical learning impact when using MALL to learn English will be guided to use MALL to complete tasks or other group activities. Students who have the belief that they can use MALL independently to enhance language learning and students' feelings about using it will also influence their behavior in using MALL.

Related Studies on Attitudes toward MALL

Students' attitudes toward a learning activity can reflect learners' feelings, behaviors, perceptions, and beliefs. And the four components of an attitude refer to perceived usefulness, affection, perceived control, and behavior. According to a previous explanation of one of the components, perceived control, this component is very similar to self-efficacy. Therefore, the relevant studies also include self-efficacy. Attitudes have also mainly been investigated in different areas. Among the collected research, researchers have investigated students' attitudes toward mobile-assisted English language learning. In contrast, others have combined mobile-assisted language learning with classroom tasks to conduct observations and research.

Wu and Tsai (2006) researched to explore university students' attitudes and self-efficacy toward the internet and also investigated the relationship between attitudes and self-efficacy toward the internet. If students want to access online learning materials, an internet connection should be needed when learners are trying to use mobile-assisted English language learning. Therefore, this research might help. The sample of this study included 1313 students coming from three universities in Taiwan. This study uses two instruments: the Internet Attitudes Survey (IAS) and the Internet Self-efficacy Survey (ISS), to measure students' internet attitudes and self-efficacy. The study proposed that learners' attitudes toward the internet may influence their motivation and interest in learning to use the internet. It also suggested that some training programs or courses may help improve university students' attitudes and self-efficacy toward the internet. Besides, the result also pointed out that students' attitudes toward the internet were correlated highly with their internet self-efficacy.

Soleimani, Ismail, and Mustaffa's (2014) study investigated the acceptance of mobile-assisted language learning among postgraduate ES students in Malaysia. The sample was 25 English Language Studies, graduate students. And using the questionnaire adapted from Clark et al. (2017) as the instrument. And the result shows that learners' attitudes toward MALL reflect positively. The role of MALL is a convenient, practical, and easy way of assisting ESL learners in enhancing their ESL learning. By allowing them to access various valuable materials, carry out different activities in English, and communicate and interact with their friends and lecturers using English.

Azar and Nasiri's (2014) research investigated learners' attitudes toward mobile-assisted language learning in L2 listening comprehension. The participants of this study were classes among the experimental group of Iranian EFL learners and a total of 70 students. The research instrument includes the questionnaire, audiobooks, and the measured test. The result

shows students have a positive attitude toward using mobile-assisted language learning and think using mobile devices to learn a new language is very attractive and innovative. It is also mentioned that the teacher should appropriately use student-oriented teaching methods when teaching a language. Students should also use mobile device resources to learn more diversely rather than just using the mobile device itself.

Based on the MALL theory, Davie and Hilber (2015) focused on students' attitudes toward using mobile devices to learn English vocabulary. The sample was a total of 42 students, and the questionnaire consisted of 24 Likert-scale questions as the instrument. After the questionnaire, ten undergraduate students, five males, and five females, were invited to do the interview part. The results showed that different learning activities set students to have a great interest when using mobile devices to learn English, and students have a positive attitude toward mobile devices to learn English vocabulary. Meanwhile, the author believes mobile devices have great educational potential for learning English vocabulary.

Wang (2015) aims to investigate EFL students' mobile-assisted English language learning at Guizhou University in China. In this study, 300 freshmen and sophomore students of Guizhou University were randomly selected as volunteers to fill out the survey questionnaire. Ten students were selected for interviews at the end of the questionnaire. The main questions of the study investigated whether students were using mobile-assisted language learning at Guizhou University. If so, how and to what extent were students using mobile-assisted English language learning, and what were the students' attitudes toward using mobile-assisted English language learning? The study found that almost all students surveyed had at least one mobile device for English language learning. Most students spend their time using mobile devices but little on English language learning. They use mobile devices to assist them in their English listening, writing, reading, vocabulary, and translation studies. However, the applications of mobile devices used for learning English skills vary from

student to student. Most students use mobile devices frequently when learning English listening, translation, and vocabulary. Students are primarily optimistic about mobile-assisted English language learning, and 92.7% are willing to use it if it provides rich learning resources.

Yorganci (2017) investigated the students' self-efficacy and attitudes toward the use of mobile learning. The participants of this study included 480 freshmen vocational school students from five different study programs of Erzurum Vocational College, Ataturk University. The researcher used two survey questionnaires from Computer Self-efficacy Measure (CSM) and M-learning Attitudes scale as the instrument. The results show that most students believe in the ability to learn using mobile devices under the influence of a mobile-assisted learning environment. The majority of students have positive attitudes toward the use of mobile-assisted language learning. In addition, the researcher mentioned that gender differences only existed in the students' attitudes, with the male students having more positive perspectives toward the use of m-learning than female students.

GhouNane (2019) focused on EFL students' attitudes toward learning English pronunciation through mobile-assisted language learning at Dr. Moulay University. This study investigated the attitudes of students and teachers toward the use of mobile-assisted English language learning. Fifteen teachers and 95 students came from the same university. The students were observed through a six-month experiment in which they were required to download appropriate mobile applications to assist in their English pronunciation. This field shows both students and teachers are happy to use mobile devices to support language learning. Still, this study was not only learner-oriented, but also students needed teachers' help in selecting the appropriate applications for English pronunciation learning.

Comparing the already existing studies with the present study, the target participants of the present study differed from the related studies. Some related studies focused on

students' attitudes toward using MALL to learn English vocabulary or specific English language skills, and the student's educational backgrounds differed. China is a large and diverse country with different economic development and education levels. The results of the selected related studies can help the exploration of this study and support or argue the findings of the study. The target university of this study has explored less in the area of MALL. What was found to affect students' use of MALL in this study was encountering errors that students did not have the means to correct on their own. This may be one of the issues that need to be considered for the future introduction of MALL into the classrooms.

Chapter Summary

This study focuses on Chinese college students' attitudes toward mobile-assisted English language learning. This chapter presents a detailed review of related theories and the development of MALL and related research. Additionally, reviewing the definition of attitudes followed in this study. According to the research questions, attitudes are divided into four components and examined with MALL. The theoretical knowledge used in this study is systematically reviewed in this chapter.

CHAPTER III

RESEARCH METHODOLOGY

This chapter presents the research design, describes the population and sample of the study, then discusses the research instrument. The next part explains the collection of data and analysis of data. After that, the summary of the research process is listed. Finally, a concise summary of the chapter.

Research Design

The main research objective of this study was to identify college students' attitudes toward mobile-assisted language learning. The data collection of this study was a quantitative research method. Quantitative research frequently has the aim of attempting to collect information for statistical analysis of the population sample. Additionally, this study also followed the descriptive research design. Descriptive research is used for statistical calculation, which can describe the characteristics of the participants in this study. In the meantime, descriptive research is a better method for conducting a survey investigation (Siedlecki, 2020). The questionnaire used to gather the data was from the target college in China through the survey investigation.

Context of the Study

Compared with the university in the center of China or southeast of China, the university in Yunnan may have fewer international activities, which means the public university students may have less chance to use English in an actual situation. Moreover, the English environment of these students might not be as good as in the center or southeast of China. The university requires students to take college English courses. Before graduating from university, students are required to pass the College English Test-4 (CET-4). CET-4 test was referred to as College English Test, a national English level test in China. Frequently, Chinese college students' English levels were used to determine CET-4. Students will have

different ways to help them improve their English to pass the tests. One of the methods students will use is by using MALL to assist in their English learning. They will download study resources on their mobile devices to support their English learning or use mobile apps directly. Some English learning apps will offer many different levels of English practice, and students will improve their English by doing the exercises. In addition to the exercises students can do through MALL, they also use the English Vocabulary app to help them search, learn and memorize English vocabulary. Many students use this feature when doing English reading exercises.

Furthermore, there is also English listening, reading, and English speaking practice, and one of the reasons why learners like to use MALL is that it offers a wide range of training.

Population and Sample

The population of this study was 14,376 undergraduate students from a public university located in Yunnan province, a city in southwest China. It included all full-time undergraduate students in all majors.

For a population of around 14,000, when the sampling error is less than or equals to 0.05 and reliability equals 95%, 375 participants are sufficient (Taherdoost, 2017). Three items were listed in the first part of the questionnaire to attain participants' personal information—students' level of study, gender, and what kind of test they passed. Tables 3.1 to table 3.3 are about the participants' personal information. This personal information can visually tell which students are most interested in using mobile-assisted English language learning. To get a general idea of students' motivation for learning.

Table 3.1

Participants' Level of the Study

Grade	N	Percent (%)	Cumulative Percent (%)
Freshman	181	48.27	48.27
Sophomore	88	23.47	71.73
Junior	45	12	83.73
Senior	61	16.27	100
Total	375	100	

Table 3.1 gives information on the level of participants. From the above table, out of the 350 participants, 48.27% were freshmen, 23.47% were sophomores, 12% were juniors, and 16.27% were seniors. Based on the College English Teaching Guide (2020) requirement, freshmen and sophomores have College English courses, so they have more chance of applying mobile in English learning than other students. Besides, passing the CET-4 exam is one of the graduation requirements for Chinese college students. Many freshmen and sophomores choose to take the exam at this time, increasing the opportunities for freshmen and sophomores to learn English. As senior students approach graduation, they consider the direction of their future choices, whether to seek employment or to continue their studies for further education. Perhaps they will be more active in their English studies than juniors.

Table 3.2

Gender of the Participants

Gender	N	Percent (%)	Cumulative Percent (%)
Male	50	13.33	13.33
Female	325	86.67	100
Total	375	100	

Table 3.2 lists the gender information of the participants. The table above shows that 13.33% of the participants are male, and 86.67% are female. This indicates that the number of females at the public university dramatically exceeds that of males.

Table 3.3

Type of English Tests Have Participants Attended

Categories	N	Percent (%)	Cumulative Percent (%)
CET-4	359	95.73	100
CET-6	47	12.53	100
IELTS	9	2.4	100
TOEFL	5	1.33	100

Table 3.3 above is about the different tests that participants attended. This table shows that 95.73% of the participants attended the CET-4 test, and 12.53% of participants attended CET-6 test. For IELTS and TOEFL are 2.4% and 1.33%. The questionnaire data shows that most students took the CET-4 test to meet graduation requirements. As previously mentioned, students at the target public university must pass the CET-4 test to meet university graduation requirements. As shown in the table above, most students have taken the CET-4 test. A part of the students took the CET-6 test. Only a small percentage of students to go abroad choose to take the IELTS and TOEFL tests.

Research Instrument

This study used the questionnaire as a research instrument. The questionnaire has two parts which were adopted from Liu (2017). Wenjuan Xing and SPSSAU will be used for data collection and data analysis, respectively. Wenjuan Xing is a web-collected questionnaire platform that collects answers from target participants after entering the questionnaire questions and design scale criteria and sending them to participants via a link. It can collect data conveniently through social applications or websites. SPSSAU is also an online data

analysis platform that provides the same services as SPSS. Because SPSSAU supports the direct import of data samples collected by Wenjuan Xing, it is easy to analyze the data directly. Using a convenience sampling method to collect the questionnaire data, sending the questionnaire link to the students' Wechat group, which includes all majors.

Questionnaire

The English Mobile Learning Attitudes Scale for Adult learners (Liu, 2017) was used to collect data. Liu's (2017) questionnaire is the English version; this study adopts the questionnaire and keeps the original English version. The questionnaire was composed of two parts, including the demographic profile of the participants about gender, grade, and what kind of English test the students passed; a total of 3 questions in this part. It also has 21 items to measure students' attitudes toward mobile-assisted language learning. Overall, 24 items were included (See Appendices). The category of the survey question part is shown in table 3.4.

Table 3.4

Category of the Survey Questions

Category	Construct	Number of items
Demographic profile		3
Attitudes scale	Perceived usefulness	9
	Affective	3
	Perceived control	4
	Behavior	5
Total		24

The questionnaire has two parts: First: students' demographic profile (gender, grade, passed test). Second part: Likert scale questionnaire of attitudes.

The first part was a demographic profile of participants, including gender, grade, and what kind of English test the participants passed. The information collected from this part

helped analyze the following questionnaire data in the discussion.

The second part was adopted from Liu's (2017) English Mobile Learning Attitudes Scale for Adult learners. Liu (2017) developed the questionnaire through the participants from Taiwan college in China, which was for students with similar Chinese educational backgrounds as the students in this study. Consequently, this questionnaire was suitable for the target students. The questionnaire is in English, and the students can understand the meaning of the questionnaire.

This part included 21 items and four components of attitudes: perceived usefulness, affective, perceived control, and behavior. The 21 items were divided into four areas: Factor 1 (Perceived usefulness) included Item 1, 2, 3, 4, 5, 6, 7, 8 and 9; Factor 2 (Affective) included Item 10,11 and 12; Factor 3 (Perceived control) included Item 13, 14, 15 and 16; Factor 4 (Behavior) included Item 17, 18, 19, 20 and 21. Nineteen items' statements in this part contained positive meanings, except for two items, which were item 10 and item 12. These two items had negative meanings since they were adopted by Liu (2017). Due to these two items presenting a negative description, this study reversed the coding of these items.

The four factors and their reliability scores were: Perceived usefulness (α = .927), Affective (α = .938), Perceived control (α = .929), Behavior (α = .93). The Cronbach's alpha reliability for the entire scale was high (α = .937). The results are reported in table 3.5.

Table 3.5

Abstract of Reliability Analysis for the MALL Attitude Survey (Liu,2017)

Construct	Cronbach's α value	Number of items
Perceived usefulness	.927	9
Affective	.938	3
Perceived control	.929	4
Behavior	.930	5

Note. Total Cronbach's α = .937

In the original questionnaire, Liu applied exploratory factor analysis and principal component analysis with oblique rotation to obtain factors with an eigenvalue higher than 1.0. An item was retained only when its loading was greater than .40 on the relevant factor and less than 0.4 on the nonrelevant factor. The scale had good construct validity; the total variance explained was 69.697%. Moreover, in this scale, the Kaiser-Meyer-Olkin test (KMO) was used to check the validity of this questionnaire, and the KMO = 0.947, which indicates high validity.

The questions for English Mobile Learning Attitudes (Liu, 2017) were on a five-point Likert-type scale designed to be analyzed quantitively. Gable and Wolf (1993) stated that Likert scales are statements presented in a five-point agree-to-disagree format. Likert scales are frequently used because they are easy to construct, highly reliable, and have been successfully adapted to measure many types of affective characteristics. Students were asked to indicate their beliefs with each statement and to answer as honestly as possible. According to the Likert Scale, students need to rate items as follows: ‘Strongly disagree,’ ‘Disagree,’ ‘Neutral,’ ‘Agree,’ and ‘Strongly agree.’ Scores obtained were by allocating numerical values to responses according to five Likert.

Table 3.6

Scaling Criteria

Score	Interpretation
1	Strongly disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly agree

Scores from items can provide an individual score on each attitude construct. The 21 individual scores can also provide a total score representing the overall attitudes toward

English mobile learning. A copy of the questionnaire conducted in the present study concludes in the Appendices.

Collection of Data

The questionnaire was in the form of an online questionnaire, and the questionnaire was answered through the convenience sampling method. The questionnaire used the Chinese questionnaire platform called Wenjuan Xing. This tool also saved the information in the questionnaire as an electronic file, which was more convenient for later data analysis.

The questionnaire collection step was as follows: First, the questionnaire items were put into Wenjuan Xing; and sampled by a convenient sampling method.

Secondly, the questionnaire link was shared with the teacher, and the teacher in charge of the students assisted in sending the questionnaire link to the Wechat group for the students.

Thirdly, the participants chose the agreement degree from 1 to 5 according to the item description. Set the collection time as one week, after a week of collecting questionnaire information and preliminary selection from the collected questionnaires, the total collection of 375 questionnaires.

Lastly, the researcher collected the questionnaire data via Wenjuan Xing.

Data Analysis

After collecting the questionnaire data, means value (M) and standard deviation (SD) were used to analyze students' attitudes toward mobile-assisted English language learning of Chinese college students in Wenjuan Xing.

To answer the research question was based on the second part of the questionnaire adopted from the English Mobile Learning Attitudes Scale for Adult learners (Liu, 2017). The questionnaire has four sections based on each of the four components of attitude, and the four sub-questions were analyzed based on data from each section.

Carrying out data analysis using a descriptive statistic, means value (M), and standard deviation (SD) analysis- using descriptive statistics to see students' demographic profiles. Analysis of means values (M) showed the actual condition of students' attitudes toward mobile-assisted language learning. Using standard deviation (SD) analysis to measure different effects of students' mobile-assisted language learning experience.

Furthermore, analyze the Likert scale to determine to mean scores (M) and standard deviation (SD) for each statement of attitudes scale. To answer research questions, the scores for each of the constructs of attitudes. The attitude of scaling interpretation Liu (2017) listed as following table 3.7.

Table 3.7

Attitudes Scaling Interpretation (Liu,2017)

Score	Meaning
1.0-1.5	students have a low level of attitude toward MALL: perceived usefulness, affective, perceived control, and behavior.
1.51-2.5	students have a moderately low level of attitude toward MALL: perceived usefulness, affective, perceived control, and behavior.
2.51-3.5	students have a moderate level of attitude toward MALL: perceived usefulness, affective, perceived control, and behavior.
3.51-4.5	students have a moderately high level of attitude toward MALL: perceived usefulness, affective, perceived control, and behavior.
4.51-5.0	students have a high level of attitude toward MALL: perceived usefulness, affective, perceived control, and behavior.

Summary of the Research Process

Research Objective	Source of Data or Sample	Data Collection Method or Research Instrument	Method of Data Analysis
1. To identify the students' attitudes toward mobile-assisted English language learning. 1.1. To identify the college students' perceived usefulness toward mobile-assisted English language learning. 1.2. To identify the college students' affection toward mobile-assisted English language learning. 1.3. To identify the college students' perceived control toward mobile-assisted English language learning. 1.4. To identify the college students' behavior toward mobile-assisted English language learning.	375 full-time college undergraduate students from the public university in total	Using English Mobile Learning Attitudes Scale for Adult learners (Liu, 2017)	Descriptive statistics, mean value, and standard deviation,

Chapter Summary

Chapter three introduced the research design, the background information on the population, the sampling method, the research instrument in detail, and the steps of collecting. Three hundred seventy-five full-time college undergraduate students from the public university were participants in quantitative data collection and were sampled conveniently. The instrument of this study is to use a questionnaire for the quantitative method. All data was collected online by Wenjuan Xing. And the data from the questionnaire was analyzed by the SPSSAU platform. The Mean, value, and standard deviation were calculated.

CHAPTER IV

RESEARCH FINDINGS

This chapter mainly introduces the result of quantitative data. First, we analyze the findings of objective one, and then we analyze the findings of each of the four sub-objectives. Finally, it is concluded with a chapter summary.

Findings of Research Objective

In the second part of the questionnaire, the English Mobile Learning Attitudes Scale, which includes 21 items, was divided into four areas. Objective one is 'To identify the college students' attitudes toward mobile-assisted English language learning.' Based on the overall data (M = 3.666, SD = 0.545) of 21 items from data analysis. The findings show that college students have positive attitudes toward mobile-assisted language learning. According to table 4.1, the data for each component are listed separately.

Finding of Research Objective 1

Table 4.1

Students' Attitudes Toward MALL

Attitudes toward MALL	Mean Value (M)	Standard Deviation (SD)	Interpretation
Overall	3.666	0.545	Moderately high
1. Perceived Usefulness	3.763	0.723	Moderately high
2. Affection	3.639	0.576	Moderately high
3. Perceived Control	3.536	0.657	Moderately high
4. Behavior	3.732	0.583	Moderately high

Table 4.1 shows the students' attitudes toward MALL for each component, an intuitive listing of the data for each section. It indicated that four components of attitudes had a moderately high interpretation. Perceived usefulness (M = 3.763, SD = 0.723), affection (M

= 3.639, SD = 0.576), Perceived control (M = 3.536, SD = 0.657), and behavior (M = 3.732, SD = 0.583). This shows that students had moderately high attitudes toward MALL.

This scale was to obtain data on participants' attitudes toward mobile-assisted language learning. Table 4.2 to table 4.5 separately give further information through four components of attitudes to show the findings of the participants' attitudes toward mobile-assisted English language learning.

Finding of Research Objective 1.1

Table 4.2

Students' Attitudes Toward MALL (Factor 1: Perceived Usefulness)

Item	Question	Mean Value (M)	Standard Deviation (SD)	Interpretation
1	Using mobile devices for English learning can help me attain more ideas.	3.781	0.856	Moderately high
2	Using mobile devices for English learning is helpful for my English learning.	3.805	0.841	Moderately high
3	The use of mobile devices for English learning presents the learning material.	3.747	0.867	Moderately high
4	The use of mobile devices for English learning can enhance my learning motivation.	3.56	0.937	Moderately high
5	Using mobile devices for English learning provides me with another way to learn.	3.917	0.785	Moderately high
6	Using mobile devices for English learning can allow me to do more interesting and imaginative work.	3.776	0.823	Moderately high

Item	Question	Mean Value (M)	Standard Deviation (SD)	Interpretation
7	The use of mobile devices for English learning makes a great contribution to lifelong learning.	3.773	0.817	Moderately high
8	Using mobile devices for English learning makes it possible to work more productively.	3.739	0.805	Moderately high
9	Using mobile devices for English learning helps me organize my school work effectively.	3.771	0.791	Moderately high
Overall		3.763	0.723	Moderately high

Table 4.2 shows descriptive statistics of scores of students' attitudes toward mobile-assisted language learning (Factor 1: perceived usefulness). The lowest and highest scores on the English Mobile Learning Attitudes scale are 1 and 5, respectively. In this factor of perceived usefulness, the perspective of using mobile devices for participants' English language learning was explored. Through the data overall, nine items have shown that participants have moderately high perceived usefulness (M =3.763, SD = 0.723).

Item 1 shows that students agreed that using mobile devices to assist in English language learning can help them attain more ideas during the learning process (M = 3.781, SD = 0.856). The mean score list for item 2 states that using mobile devices for English learning is helpful for students' English learning (M = 3.805, SD = 0.841), and the participants show their agreement. Item 3 shows that students agreed that using mobile devices to assist in English language learning will present learning materials more clearly (M =3.747, SD = 0.867).

Item 4 has the lowest score compared with other items (M =3.56, SD = 0.937). This one lists the statement that using mobile devices for English language learning can enhance

participants' English learning motivation. Differences exist in whether using mobile devices to assist in English learning enhances students' motivation to learn English. Instead, Item 5 has the highest score compared with other items (M =3.917, SD = 0.785); apparently, participants agreed that using mobile devices provides another way of learning English. And the slightest difference exists in this option. Item 6 shows that using mobile devices to learn English allows students to complete more fun and imaginative activities (M =3.776, SD = 0.823). Mobile devices' ability to present the content of tasks visually and vividly can make the activities more interesting.

Item 7 lists the score that using mobile devices to assist in English language learning can greatly contribute to lifelong learning (M =3.773, SD = 0.817). Participants agreed with this statement that mobile devices are now indispensable tools in people's daily lives. It enables learners to learn anytime and anywhere, regardless of time and space constraints. This also supports the learning process to start anywhere and everywhere. Item 8 states that learning the English language through mobile devices makes it possible to do activities productively. And students show their agreement in this item (M =3.739, SD = 0.805).

The last item of this component states that using mobile devices for English language learning can help students systematically build and organize their English knowledge (M =3.771, SD = 0.791). The data from this item shows low variability in students' opinions on this question.

Finding of Research Objective 1.2

Table 4.3

Students' Attitudes Toward MALL (Factor 2: Affections)

Item	Question	Mean Value (M)	Standard Deviation (SD)	Interpretation
10	I hesitate to use a mobile device for English learning because I	2.819	0.895	Moderate

Item	Question	Mean Value (M)	Standard Deviation (SD)	Interpretation
	fear making mistakes I cannot correct.			
11	I am not afraid of using mobile devices for English learning.	3.843	0.727	Moderately high
12	If given the opportunity to use the mobile device, I am afraid I might damage it somehow.	2.904	0.985	Moderate
Overall		3.639	0.576	Moderately high

The result of factor 2 (affections) of students' attitudes toward mobile-assisted English language learning is listed in table 4.3. This component of attitudes (affections) has two negative items, item 10 and item 12 of the English Mobile Learning Attitudes scale, so the scoring of these two items was reversed for calculation. Based on the description of the three items' data in factor 2 (affections), students have moderately high effectiveness when using MALL (M = 3.639, SD = 0.576).

Item 10 lists that students hesitate to use mobile devices to assist with English language learning because they fear encountering problems they cannot correct. This item shows whether students are confident in using their mobile devices to assist in their English learning. The results show students moderately interpret this item (M =2.819, SD = 0.895). When students use MALL, they are not confident they can correct the errors themselves if they face some errors.

Items 11 participants are willing to use mobile devices to support English language learning and are not resistant to trying it if allowed (M =3.843, SD = 0.727). Item 12 states that if it is possible to use mobile devices to assist in English language learning, participants might feel afraid of being damaged somehow. And for this item, participants also had a moderate interpretation (M =2.904, SD = 0.985).

Finding of Research Objective 1.3

Table 4.4

Students' Attitudes Toward MALL (Factor 3: Perceived Control)

Item	Question	Mean Value (M)	Standard Deviation (SD)	Interpretation
13	I can learn how to use a mobile device by myself.	3.709	0.776	Moderately high
14	I am in complete control when I use mobile devices for English learning.	3.4	0.784	Moderate
15	I have confidence in learning new mobile learning skills, such as using new apps or software.	3.517	0.78	Moderately high
16	I have confidence in using the internet for English learning through a mobile device.	3.517	0.759	Moderately high
Overall		3.536	0.657	Moderately high

The descriptive Statistics of table 4.4 were factor 3 (perceived control) of students' attitudes toward mobile-assisted English language learning. The overall four items at factor 3 (perceived control) showed that students have moderately high perceived control in MALL (M =3.536, SD = 0.637).

Items 13, 15, and 16 are at 'Moderately high' on the support option. Item 13 shows the agreement of students that they can learn how to use mobile devices by themselves (M =3.709, SD = 0.776). Item 14 also shows students' confidence in controlling their mobile devices while learning English through MALL (M =3.4, SD = 0.784). Moreover, in this item, students are at 'Moderate.' The data of item14 shows that students are not very confident in using MALL. Referring to item 10 (M =2.819, SD = 0.895), it may be inferred that students are afraid of making a mistake and not being able to correct it themselves.

Item 15 states that participants have confidence in learning new skills, such as an application or new software, to learn English (M =3.517, SD = 0.78). This item is associated

with item16 because item 16 indicates whether students are confident in learning English through the Internet on mobile devices. Some applications and software, or web-based learning resources, require Internet access to be used. Maybe this was why the two items have the same mean value (M =3.517, SD = 0.759).

Finding of Research Objective 1.4

Table 4.5

Students' Attitudes Toward MALL (Factor 4: Behavior)

Item	Question	Mean Value (M)	Standard Deviation (SD)	Interpretation
17	I use mobile devices to extend my learning after class.	3.68	0.756	Moderately high
18	I use mobile devices after class to collaborate or communicate with others such as email and WeChat.	3.717	0.757	Moderately high
19	I use mobile devices to collect different learning materials.	3.883	0.714	Moderately high
20	I use mobile devices to join group discussions, such as WeChat.	3.763	0.72	Moderately high
21	I use mobile devices to learn English on what I am interested in.	3.811	0.704	Moderately high
Overall		3.732	0.583	Moderately high

The result of factor 4 (behavior) of students' attitudes toward mobile-assisted English language learning was listed in table 4.5. And from the description of the overall five items of factor 4 (behavior) showed that students have moderately high behavior in MALL (M = 3.732, SD = 0.583). According to the data table above, this section focuses on students' behavioral performance using MALL after class. Moreover, every option is moderately high, which shows that students are pleasant and enjoy using MALL after school to help them learn English.

Items 17 listed students will use mobile devices to learn English after class. This same point upholds learners can use mobile-assisted learning anytime and anywhere. In addition, the learners may use mobile devices for self-study or review of class content after class (M = 3.68, SD = 0.756).

Item 18 states students will use mobile devices' social applications after class to collaborate or communicate with others (M = 3.717, SD = 0.757). That means that if there is an after-school practice or activity, students are willing to communicate with each other through the social app. This may enable some English learning activities outside the classroom.

Item 19, students were surveyed about their feelings about using different learning resources via mobile devices, and the records showed that participants were willing to use mobile learning resources (M = 3.883, SD = 0.714). The use of different mobile learning resources is inevitable in the process of learning with mobile devices. This item determines the level of student acceptance of such learning resources. Item 20 lists whether students will use mobile social applications to join a group discussion.

Item 20 and item 18 have some correlation. Both selections discuss participants' feelings about using mobile social applications for communication and discussion. And participants also show their agreement to discuss in a group chat (M = 3.763, SD = 0.72). Item 21 shows that students are biased toward choosing areas of interest when using mobile-assisted English language learning (M = 3.811, SD = 0.704). This state suggests that it is necessary to select the content that interests students when designing learning activities for mobile-assisted language learning.

Chapter Summary

This chapter describes each of the three sections of the questionnaire, respectively. Participants' demographic profiles and students' attitudes toward the mobile-assisted English

language learning scale. 95.73% of the participants took the CET-4 test, and passing this test is perhaps one of the English learning goals of public university students during their school experience. This chapter answers two questions: 1) The data description shows that students have a moderately high level of attitude toward mobile-assisted language learning at public universities. And they are willing to try to learn and master the ability to use mobile devices if they are guided and taught. 1.1) The results revealed that students have a moderately high level of perceived usefulness toward MALL; students are cognitive about the perception of using MALL to assist in English learning. 1.2) Students have a moderately high level of affection, meaning they do not fear using MALL for English learning. In addition, students were found to have doubts about their ability to correct errors when using MALL. 1.3) Students have a moderately high level of perceived control toward MALL. Thus, students believe they have the confidence and ability to use MALL. 1.4) From the data, students have a moderately high level of behavior toward MALL. Their use of MALL after class shows that they are pleased to use this method to supplement their English learning.

CHAPTER V

SUMMARY, DISCUSSION, AND RECOMMENDATIONS

This chapter summarized this study, followed by a discussion of the findings based on the questionnaire investigation data. Moreover, this research gave some related suggestions for students' mobile-assisted language learning at the target University. Next, the pedagogical implication is also included in this chapter. Limitations and suggestions for future studies are discussed as well. The conclusion is at the end of this chapter.

Summary of the Study

Mobile learning has developed in China for about twenty years. With the constant updating of technological devices, the feature of electronic devices being easy to carry around and use at any time is becoming increasingly apparent. Gradually people are using mobile devices to access learning resources in the learning process. Therefore, the field of mobile devices for English language learning has attracted the interest of many researchers. The objective of this study was to investigate the attitudes toward mobile-assisted English learning among students at the public university. The questionnaire survey in this study included two, which are: demographic profiles and the English Mobile Learning Attitudes Scale (Liu,2017). 375 Participants from the public university have completed the scale. The findings show that 1) Students have a moderately high level of attitudes toward mobile-assisted English language learning and are willing to use mobile devices when completing learning tasks or in group discussions. And the four sub-findings: 1.1) The results revealed that students have a moderately high level of perceived usefulness toward MALL and are cognitive about the perception of using MALL to assist in English learning. 1.2) It indicated that students have a moderately high level of affection, which means they have a good feeling about using MALL for English learning. 1.3) Students have a moderately high level of perceived control toward MALL. Thus, it can be seen that students believe they can use

MALL. 1.4) From the data, students have a moderately high level of behavior toward MALL. Students are delighted to use MALL after class when they are learning English.

Discussion of the Findings

According to the survey results, most of the students at the public university have a moderately high level of attitude toward mobile-assisted English learning. Students are confident they can use mobile-assisted English language learning properly, provided they have the correct instruction or experience with mobile learning to complete their learning tasks.

Discussion of the Research objectives

Discussion of the Research Objective 1

Research findings show that students have a moderately high level of attitudes toward the use of mobile-assisted English language learning. Nowadays, various advanced technologies, such as mobile applications, mobile aids, computers, and other portable devices, are being used in teaching English. As the younger generation, students are more aware and receptive to technology devices, which makes their attitude toward MALL positive. In addition, according to the affections section, it was found that students were not confident that they could correct the errors they encountered when using MALL on their own. This shows that the teacher's support is needed in learning English with MALL.

Moreover, the reason students are pleased to use MALL after class to supplement their English learning may be that MALL offers students a great deal of flexibility. They can choose their favorite apps or learning resources to facilitate their English learning. Wu and Tsai (2006) claimed that students' attitudes toward using online resources affect their interest and motivation to use the Internet for learning. Similarly, students' use of MALL to learn English is also influenced by curiosity and motivation.

Discussion of the Research Objective 1.1

The part of the English mobile learning attitudes scale included the perceived usefulness component. Students believe that mobile-assisted English learning can help them get more ideas for learning English. And mobile devices can support students' English learning. Mobile-assisted language learning can motivate students to learn English and increase their motivation. In addition, students think viewing learning resources through mobile devices provides a more organized view of the content. And, because mobile devices provide a visual display of learning content and more interesting learning resources, they can enhance students' interest in learning English and allow them to be more imaginative in completing activities or tasks. In other words, mobile-assisted English learning provides students with an alternative way of learning.

MALL can provide and cover many different levels of English learning activities, giving students access to more valuable learning materials and more opportunities to interact with friends while completing homework assignments (Soleimani, Ismail, and Mustaffa, 2014). And according to the finding of this study, students also agreed that it was more productive to complete English learning activities through mobile devices. It can help students better organize and construct what they learn in the English classroom. Mobile devices with various convenient skills and abundant mobile learning resources can support learners' lifelong learning, not only in English. Students reported that using MALL to complete learning activities significantly increased their motivation and made the task fun while completing it. They also felt that using MALL to complete the task helped them save time to complete it (Yang, 2012).

Discussion of the Research Objective 1.2

The second section is about students’ affection toward MALL. Students hesitate to use mobile-assisted English language learning because they worry about encountering

unsolved difficulties in the learning process or damaging their mobile devices.

Compared to existing studies (Yang, 2012; Yorganci, 2017; Liu, 2017), this study has new findings on error correction during student use of MALL. According to the survey data, students are hesitant to use MALL alone to help them learn English because they are concerned that they will not be able to correct the errors they encounter alone. Students using MALL in English learning independently or autonomously doesn't mean learning in isolation. Teachers can help students in the process of learning English using MALL. If a student faces a problem they cannot solve, they can request help from the teacher by emailing or communicating with them on social media. It may help students to use the MALL better when learning English.

According to the findings, students were moderate about the existence of these two negative factors. This means that this is a potential factor that affects students' use of mobile devices. However, the students were still optimistic about using mobile to aid English language learning. For these findings, Yang (2012) also indicated that most of the students expressed interest in using mobile learning, which can support the finding of this component.

Discussion of the Research Objective 1.3

The following scale attitudes component was perceived control. According to the findings, students have a positive attitude toward using mobile devices and related mobile applications on the Internet. They are confident that they can control the use of mobile devices and applications. The perceived control refers to students' self-efficacy, which they believe in the ability to use MALL in English learning. Students are willing to use mobile devices to learn English, even if it's their first time trying to use them. But if there is instruction on how to use it properly before using it, if they have observed others using mobile devices to learn, or even if they have the help of an instruction manual when using mobile-assisted English language learning. All will make students more confident in using

mobile devices for learning. Yorganci (2017) believes that prior experience with mobile learning and academic specialization played a role in students' self-efficacy and attitudes toward using mobile learning. Besides, statistically, significant differences were found in students' self-efficacy for mobile learning based on prior learning experiences. Students' ability and confidence in using mobile devices will improve if they attend recurring instructional sessions in mobile-assisted English language learning before use. It is also suggested by Wu and Tsai (2006) that some training courses on using MALL can help college students learn how to use this resource better to support their studies.

Discussion of the Research Objective 1.4

The last component of attitudes was behavior. According to this part of the scale, it was found that students use mobile devices for extended learning after class. They will join group learning discussions through mobile social apps or collect learning resources of their interest. Learners do not resist using mobile devices for learning and will actively participate in such opportunities if offered. MALL gives students the flexibility to learn, which means they are free to choose their learning resources. Wang (2015) also supports the idea that MALL is flexible in its use and that students' interest can motivate their English learning. After class, students can choose to study in a way that interests them, such as watching English movies or TV shows to practice listening and speaking or learning apps. The mobile app market offers many apps to help students practice reading or vocabulary. Alderen-Smeets (2011) indicated that the three components, perceived usefulness, affection, and control, will lead to student behavior or performance and the resulting overall student attitude. It is concluded that students' behavior toward using MALL is closely related to the other three components; students' perceptions, preferences, and self-efficacy toward MALL are reflected in students' behavioral performance in using MALL.

Pedagogical Implications

Students use mobile devices as one of the tools to help improve their English learning after school, which means that most of the time, students are self-learning and trying out how to use these tools on their own. Objective 1.2 mentions that students can seek help from their teachers when they encounter errors they cannot self-correct. Therefore, teachers also need to learn more about using mobile devices (e.g., mobile apps, use of web-based learning resources, and selection of audition material. Teachers need to have enough knowledge of MALL to maximize its use to help students learn English. Technology advancements have allowed more interesting learning materials to be used in the learning process to increase students' interest and motivation. The better the teacher understands MALL's learning resources, the better they can advise and assist students in their studies.

According to the literature review, it can be found that there are already researchers exploring the effects and impacts of introducing MALL within the classroom. Introducing MALL into the classroom requires teachers' support, and educational administrators' support is also necessary. The following are some relevant suggestions for English teachers and educational administrators.

1. Educational administrators need to organize training courses on MALL for teachers who have not been exposed to MALL. A formal training course to help teachers better understand it in order to provide help when they encounter students seeking help and to make better use of MALL in the classroom to support teaching and learning.

2. According to the objective1.3, it was found that students felt that having pre-training sessions would increase their confidence in using MALL. In addition to organizing MALL-related training sessions for teachers, it is also necessary to manage training sessions for students using MALL.

Students use MALL to supplement their English language learning because of its vast wealth of learning materials. The mobile device satisfies visual and auditory needs and adds to learning fun. The addition of a teacher helps students plan and use MALL to learn the language properly.

Limitations of the Study

However, there are still limitations to this study. This study has the following limitations:

1. The target population of this study is the entire undergraduate student body of the university, including all majors. The data obtained are biased toward macro data, and the analysis discusses all students on a macro level. For example, English majors may have strengths in English learning compared to other majors.

2. This study only deals with quantitative research and does not collect and analyze qualitative data. This study did not collect data from the study participants through interviews or classroom observations. Alternatively, student feedback was gathered during classroom observations to explore students' actual use more deeply. Therefore, there are some limitations in the study findings.

3. In this study, in the adapted questionnaire, in the second part of the affective component, there are two negative items—these two options needed to be reversed in analyzing the data in calculating the score.

Recommendation for Further Study

1. Since the present collection covers all undergraduate students and all majors, for future research, if researchers want more detailed professional data, perhaps you can narrow down the grades and majors to get more targeted data analysis results.

2. In addition to quantitative research methods, qualitative research methods can be added. It means that interviews or classroom observations can be conducted to obtain more

detailed information, like how students use MALL and the feedback after students use MALL.

3. For future studies, in case the questionnaire of Liu (2017) is also to be adapted. It is recommended that some measures be taken for the negative items of the second part of the affective component by rewriting new positive options or modifying these two options in other better ways to facilitate the analysis of the data.

Conclusion

This study discusses students' attitudes towards using MALL on a macro level. It also examines students' basic perceptions of using MALL, their confidence in using MALL, and whether they like using MALL based on the four components of attitudes: perceived usefulness, affection, and perceived contradiction. The study found that students had a high level of attitude towards using MALL to learn English. In addition, it was found that the reasons that affect students' use of MALL are that students encounter mistakes they cannot fix. This would make students less confident in their ability to control the tool perfectly when using MALL.

According to research, students feel confident that they can learn to use MALL to learn English independently, but having a study manual or a training course will improve their confidence in using MALL. In addition to students needing training courses, teachers also need to receive appropriate training courses so that when students encounter errors they cannot correct or solve on their own, they can seek help from teachers. It is also necessary for teachers to receive appropriate training courses to help students solve their problems.

It shows that using MALL to learn English is not only a popular choice for students, but teachers should also meet students' learning needs. They should have the appropriate theoretical operational knowledge to help students use MALL correctly.

REFERENCES

Ahmadi, D., & Reza, M. (2018). The use of technology in English language learning: A literature review. International Journal of Research in English Education, 3(2), 115-125. http://ijreeonline.com/article-1-120-en.html

Al-Emran, M., Elsherif, H. M., & Shaalan, K. (2016). Investigating attitudes toward the use of mobile learning in higher education. *Computers in Human Behavior*, *56*, 93-102.http://dx.doi.org/10.1016/j.chb.2015.11.033

Alhassan, R. (2016). Mobile Learning as a Method of Ubiquitous Learning: Students' Attitudes, Readiness, and Possible Barriers to Implementation in Higher Education. *Journal of Education and Learning*, **5**(1), 176-189.http://dx.doi.org/10.5539/jel.v5n1p176

Allport, G. W. (1933). 1. Attitudes. *Terminology*, *219*.

Asma, L., Van Der Molen, J. W., & van Aalderen-Smeets, S. (2011). Primary teachers' attitudes towards science and technology: Results of a focus group study. In *Professional development for primary teachers in science and technology* (pp. 89-105). Brill.

Amineh, R. J., & Asl, H. D. (2015). Review of constructivism and social constructivism. Journal of Social Sciences, *Literature, and Languages*, *1*(1), 9-16.

Azar, A. S., & Nasiri, H. (2014). Learners' attitudes toward mobile-assisted language learning (MALL) effectiveness in L2 listening comprehension. *Procedia-Social and Behavioral Sciences*, 98, 1836-1843. https://doi.org/10.1016/j.sbspro.2014.03.613

Bandura, A. (2010). Self-efficacy. *The Corsini encyclopedia of psychology*, 1-3.

Bandura, A., & Wessels, S. (1994). Self-efficacy (Vol. 4, pp. 71-81). *New York: Academic Press.*

Barcelos, A. M. F. (2003). Teachers' and Students' beliefs Within a Deweyan Framework: Conflict and Influence. *In Beliefs about SLA* (pp. 171-199). Springer, Dordrecht. https://doi.org/10.1007/978-1-4020-4751-0_8

Bian, Y, & Liu Y.R. (2017). Investigation and Analysis of the Current Situation of College Students' English Learning Apps. *New Media Research*, *3*(16), 21-22.

Bodner, G. M. (1986). Constructivism: A theory of knowledge. *Journal of chemical education*, *63*(10), 873.

Cakmak, F. (2019). Mobile Learning and Mobile Assisted Language Learning in Focus. *Language and Technology*, *1*(1), 30-48. https://dergipark.org.tr/en/pub/lantec/issue/42816/517381

Chen Z.Zh, & Jia Jiyou. (2020). Twenty Years of Research on Mobile-Assisted Language Learning in my Country: review and prospects. *Foreign language circles*, 1.

Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An Investigation of Mobile Learning Readiness in Higher Education Based on the Theory of Planned Behavior. *Computers & Education*, *59*(3), 1054-1064. https://doi.org/10.1016/j.compedu.2012.04.015

Chinnery, G. M. (2006). Going to the MALL: Mobile Assisted Language Learning. *Language Learning & Technology*, *10*(1), 9-16. http://llt.msu.edu/vol10num1/emerging/

Clough, G., Jones, A. C., McAndrew, P., & Scanlon, E. (2008). Informal Learning with PDAs and Smartphones. *Journal of Computer Assisted Learning*, *24*(5), 359-371.https://doi.org/10.1111/j.1365-2729.2007.00268.x

Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a Measure and Initial Test. *MIS Quarterly*, 189-211. https://doi.org/10.2307/249688 https://www.jstor.org/stable/249688

Compeau, D. R., & Higgins, C. A. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. *MIS Quarterly*, 189-211. https://doi.org/10.2307/249688

Cortazzi, M., & Jin, L. (1996). Cultures of Learning: Language Classrooms in China. *Society and the Language Classroom*, *169*(206), 42.

Davie, N., & Hilber, T. (2015). Mobile-Assisted Language Learning: Student Attitudes to Using Smartphones to Learn English Vocabulary. *International Association for Development of the Information Society*.

Dunn, E. (2003). Life through learning; learning through life, the lifelong learning strategy for Scotland: Summary. *The Scottish Government*, 3.

Fakeye, D. O. (2010). Students' Personal Variables Correlate with Academic Achievement in English as a second language in Nigeria. *Journal of Social Sciences*, 22(3), 205-211.

Flammer, A. (2001). Self-efficacy.

Fosnot, C. T., & Perry, R. S. (1996). Constructivism: A psychological theory of learning. *Constructivism: Theory, perspectives, and practice*, *2*(1), 8-33.

Fu Jian, & Yang Xue. (2009). A ten-year overview of domestic mobile learning theory research and practice. *China Audio-visual Education*, *7*(270), 36-40.

Gable, R. K., & Wolf, M. B. (1993). A Review of the steps for developing an effective instrument. *Instrument Development in the Affective Domain*, 237-266. https://doi.org/10.1007/978-94-011-1400-4_6

Gardner, R. C. (1985). Social psychology and second language learning: The role of attitudes and motivation. *Arnold*.

Gardner, R. C., & Lambert, W. E. (1972). Attitudes and motivation in second-language learning.

GhouNane, N. (2019). The attitudes of second-year EFL students at Dr. Moulay Tahar University toward learning English pronunciation through mobile-assisted language.

Arab World English Journal (AWEJ) Special Issue on CALL, (5). http://dx.doi.org/10.2139/ssrn.3431753

Gulati, S. (2008). Technology-enhanced learning in developing nations: A review. *The International Review of Research in Open and Distributed Learning*, *9*(1). https://doi.org/10.19173/irrodl.v9i1.477

Guo, H.X, Xiong, K, & Liu, Z.R. (2011). A survey of college students' English mobile learning and its interest persistence (Doctoral dissertation).

Guo, S. C. (2011). Impact of an out-of-class activity on students' English awareness, vocabulary, and autonomy. *Language education in Asia*, *2*(2), 246-256. http://dx.doi.org/10.5746/LEiA/11/V2/I2/A07/Guo

Hassan Taj, I., Sulan, N., Sipra, M., & Ahmad, W. (2016). Impact of mobile-assisted language learning (MALL) on EFL: A meta-analysis. *Advances in language and literary studies*, *7* (2). https://ssrn.com/abstract=2931654

He, D., & Zhang, Q. (2010). Native speaker norms and China English: From the perspective of learners and teachers in China. *Tesol Quarterly*, *44*(4), 769-789. https://doi.org/10.5054/tq.2010.235995

Heslin, P. A., & Klehe, U. C. (2006). Self-efficacy. *Encyclopedia Of Industrial/Organizational Psychology, SG Rogelberg, ed*, *2*, 705-708.

Hoven, D., & Palalas, A. (2011). (Re) conceptualizing design approaches for mobile language learning. *Calico Journal*, *28*(3), 699-720. https://www.jstor.org/stable/calicojournal.28.3.699

Hovland, C. I., & Rosenberg, M. J. (1960). Attitude organization and change: An analysis of consistency among attitude components (Vol. 176). *New Haven*, Yale UP. http://www.ccsenet.org/journal/index.php/elt https://doi.org/10.1097/NUR.0000000000000493

Hyland, F. (2004). Learning autonomously: Contextualising out-of-class English language learning. *Language awareness*, *13*(3), 180-202. https://doi.org/10.1080/09658410408667094

Isman, A. (2012). Technology and technique: An educational perspective. Turkish Online *Journal of Educational Technology-TOJET*, *11*(2), 207-213.

Jarvis, P. (2007). Globalization, lifelong learning, and the learning society: Sociological perspectives. Routledge. https://doi.org/10.4324/9780203964408

Judd, T., Kennedy, G., & Cropper, S. (2010). Using wikis for collaborative learning: Assessing collaboration through contribution. *Australasian Journal of Educational Technology*, *26*(3). https://doi.org/10.14742/ajet.1079

Krashen, S. D. (1981). Second language acquisition and second language learning. *The University of Southern California.*

Kukulska-Hulme, A. (2006). Mobile language learning now and in the future. http://www2.humlab.umu.se/itas/bok/default.asp

Kukulska-Hulme, A. (2009). Will mobile learning change language learning? *ReCALL*, *21*(2), 157-165. https://doi.org/10.1017/S0958344009000202

Kukulska-Hulme, A. (2010). Mobile learning for quality education and social inclusion. http://iite.unesco.org/files/policy_briefs/pdf/en/

Kukulska-Hulme, A. (2012). Mobile-Assisted language learning. *The encyclopedia of applied linguistics*, 1-9.

Kukulska-Hulme, A., & Shield, L. (2007). An overview of mobile-assisted language learning: Can mobile devices support collaborative practice in speaking and listening? *ReCALL*, *20*(3), 1-20.

Kukulska-Hulme, A., & Shield, L. (2008). An Overview of Mobile-Assisted Language Learning: From Content Delivery to Supported Collaboration and

Interaction. Kukulska-Hulme, A. and Shield, L. https://doi.org/10.1017/S0958344008000335

Laal, M., & Salamati, P. (2012). Lifelong learning; why do we need it? *Procedia-Social and Behavioral Sciences*, *31*, 399-403. https://doi.org/10.1016/j.sbspro.2011.12.073

Lai, C., Zhu, W., & Gong, G. (2015). Understanding the quality of out-of-class English learning. *TESOL Quarterly*, *49*(2), 278-308. https://doi.org/10.1002/tesq.171 *Language Education*, 2013, 1-15.

Laufer, B. (1991). The development of L2 lexis in the expression of the advanced learner. *The Modern Language Journal*, *75*(4), 440-448. https://doi.org/10.2307/329493

Laufer, B. (2009). Second language vocabulary acquisition from language input and form-focused activities. *Language teaching*, *42*(3), 341-354. https://doi.org/10.1017/S0261444809005771

Li Juan. (2019). Influencing factors of college students' acceptance of mobile English learning. *Literature Education* (Part 2).

Liao, C.T., Ma, M.C., Ou, L.D., & Li, Shuilan. (2019). Suggestions for contemporary college students to use mobile learning platforms - A case study of Yuxi Normal University. *Science and Technology Innovation Herald.*

Lingyun Kong. (2018). A Brief Analysis of English Word Memorization in Junior Middle School. *Educational Science (Citation Edition)*, (01), 00158-00158.

Liu, T. Y. (2017). Developing an English mobile learning attitude scale for adult learners. *Journal of Educational Technology Systems*, *45*(3), 424-435. https://doi.org/10.1177/0047239516658448

Livingstone, D. W. (2001). Adults' informal learning: Definitions, findings, gaps, and future research. https://hdl.handle.net/1807/2735

Loyd, B. H., & Loyd, D. E. (1985). The reliability and validity of an instrument for the assessment of computer attitudes. *Educational and psychological measurement, 45*(4), 903-908. https://doi.org/10.1177/0013164485454021

Maddux, J. E., & Gosselin, J. T. (2012). Self-efficacy. *The Guilford Press*.

Mahat, J., Ayub, A. F. M., & Luan, S. (2012). An assessment of students' mobile self-efficacy, readiness, and personal innovativeness toward mobile learning in higher education in Malaysia. *Procedia-Social and Behavioral Sciences*, *64*, 284-290. https://doi.org/10.1016/j.sbspro.2012.11.033

Mcconatha, D., Praul, M., & Lynch, M. J. (2008). Mobile learning in higher education: An empirical assessment of a new educational tool. *Turkish Online Journal of Educational Technology-TOJET, 7*(3), 15-21. http://www.tojet.net

McGroarty, D. O. (2010). Students' personal variables correlate with academic achievement in English as a second language in Nigeria. *Journal of Social Sciences*, *22*(3), 205-211. https://doi.org/10.1080/09718923.2010.11892803

Messinger, J. (2011). M-learning: An exploration of the attitudes and perceptions of high school students versus teachers regarding the current and future use of mobile devices for learning.

Miangah, T. M., & Nezarat, A. (2012). Mobile-assisted language learning. *International Journal of Distributed and Parallel Systems*, *3*(1), 309.

Ministry of Education of the People's Republic of China. (2017). *College English Teaching Guide*. Retrieved December 11, 2020, from http://www.gzcc.edu.cn/dxwyjxb/contents/8814/29422.html

Mompean, A. R. (2010). The development of meaningful interactions on a blog used to learn English as a Foreign Language. *ReCALL: The Journal of EUROCALL*, *22*(3), 376. https://doi.org/10.1017/S0958344010000200

Nomass, B. B. (2013). The impact of using technology in teaching English as a second language. *English language and literature studies*, *3*(1), 111. https://doi.org/10.5539/ells.v3n1p111

Nordin, N., Embi, M. A., & Yunus, M. M. (2010). Mobile learning framework for lifelong learning. *Procedia-Social and Behavioral Sciences*, *7*, 130-138. https://doi.org/10.1016/j.sbspro.2010.10.019

Nunan, D. (1991). Language teaching methodology (Vol. 192). *New York: prentice hall.*

Oz, H. (2015). An Investigation of Preservice English Teachers' Perceptions of Mobile-Assisted Language Learning. *English Language Teaching*, *8*(2), 22-34.

Ozdamli, F., & Cavus, N. (2011). Basic elements and characteristics of mobile learning. *Procedia-Social and Behavioral Sciences*, *28*, 937-942. https://doi.org/10.1016/j.sbspro.2011.11.173

Ozer, O., & Kılıç, F. (2018). The effect of mobile-assisted language learning environment on EFL students' academic achievement, cognitive load, and acceptance of mobile learning tools. *EURASIA Journal of Mathematics*, Science and Technology Education, *14*(7), 2915-2928. https://doi.org/10.29333/ejmste/90992

Piaget, J. (1970). Science of education and the psychology of the child. Trans. D. Coltman.

Pickard, N. (1996). Out-of-class language learning strategies. *ELT* Journal, *50*(2), 150-159.

Pickens, J. (2005). Attitudes and perceptions. *Organizational behavior in health care*, *4*(7).

Pun, M. (2013). The use of multimedia technology in English language teaching: A global perspective. *Crossing the border: International journal of interdisciplinary studies*, *1*(1), 29-38. https://doi.org/10.3126/ctbijis.v1i1.10466

Reinders, H. (2014). Personal Learning Environments for Supporting Out-of-Class Language Learning. *In English Teaching Forum* (Vol. 52, No. 4, p. 14). US Department of State. Bureau of Educational and Cultural Affairs, Office of English Language

Programs, SA-5, 2200 C Street NW 4th Floor, Washington, DC 20037. http://www.forum.state.gov

Rogoff, B., Callanan, M., Gutierrez, K. D., & Erickson, F. (2016). The organization of informal learning. *Review of Research in Education*, *40*(1), 356-401.

Schcolnik, M., Kol, S., & Abarbanel, J. (2006). Constructivism in theory and practice. *In English teaching forum* (Vol. 44, No. 4, pp. 12-20). US Department of State. Bureau of Educational and Cultural Affairs, Office of English Language Programs, SA-5, 2200 C Street NW 4th Floor, Washington, DC 20037. http://americanenglish.state.gov/english-teaching-forum-0

Schunk, D. H. (1984). Self-efficacy perspective on achievement behavior. *Educational psychologist*, 19(1), 48-58.

Selwyn, N. (1997). Students' attitudes toward computers: Validation of a computer attitude scale for 16–19 education. *Computers & Education*, *28*(1), 35-41. https://doi.org/10.1016/S0360-1315(96)00035-8

Shi, J.L. (2015). Research on Mobile Learning of College English Vocabulary (Master's thesis, Guangxi Normal University).

Shih, J. L., Chu, H. C., & Hwang, G. J. (2011). An investigation of attitudes of students and teachers about participating in a context-aware ubiquitous learning activity. *British Journal of Educational Technology*, *42*(3), 373-394. https://doi.org/10.1111/j.1467-8535.2009.01020.x

Shyamlee, S. D., & Phil, M. (2012, March). Use of technology in English language teaching and learning: An analysis. In International Conference on Language, *Medias, and Culture*, *33*(1), 150-156.

Siedlecki, S. L. (2020). Understanding descriptive research designs and methods. *Clinical Nurse Specialist*, *34*(1), 8-12.

Soleimani, E., Ismail, K., & Mustaffa, R. (2014). The acceptance of mobile-assisted language learning (MALL) among postgraduate ESL students in UKM. *Procedia-Social and Behavioral Sciences, 118*, 457-462. https://doi.org/10.1016/j.sbspro.2014.02.062

Stockwell, G., & Hubbard, P. (2013). Some emerging principles for mobile-assisted language learning. *The International Research Foundation for English*

Taherdoost, H. (2017). Determining sample size; how to calculate the survey sample size. *International Journal of Economics and Management Systems*, Vol. 2, Available at SSRN: https://ssrn.com/abstract=3224205

Tian, Y.Y. (2018). Research on the Effectiveness of College Students' English Vocabulary Learning Based on Mobile Devices (Master's thesis, Southeast University).

Topkaya, E. Z. (2010). Pre-Service English Language Teachers' Perceptions of Computer Self-Efficacy and General Self-Efficacy. *Turkish Online Journal of Educational Technology-TOJET*, *9*(1), 143-156. http://www.tojet.net

Traxler, J. (2005, June). Defining mobile learning. In *IADIS International Conference Mobile Learning* (pp. 261-266).

Tsai, C. C., Lin, S. S., & Tsai, M. J. (2001). Developing an Internet attitude scale for high school students. *Computers & Education*, *37*(1), 41-51. https://doi.org/10.1016/S0360-1315(01)00033-1

Tsai, P. S., Tsai, C. C., & Hwang, G. H. (2010). Elementary school students' attitudes and self-efficacy toward using PDAs in a ubiquitous learning context. *Australasian Journal of Educational Technology, 26* (3). https://doi.org/10.14742/ajet.1076

Viberg, O., & Grönlund, Å. (2012). Mobile-assisted language learning: A literature review. *In 11th World Conference on Mobile and Contextual Learning.*

Vygotsky, L. S. (1980). Mind in society: The development of higher psychological processes. *Harvard university press*.

Wang, J.Y, & Bai, H.L. (2008). Four exploratory learning abilities need to be cultivated in extracurricular English learning. *Journal of Civil Aviation Flight University of China*.

Wang J.X. (2015). Mobile learning application in the autonomous English learning of non-English major college students (Master's thesis, Hunan University).

Wang Y (2015). Study on EFL Students' Mobile Assisted English Learning in Guangzhou University, M.A. Thesis.

Wilkins, D. A. (1972). Linguistics in language teaching. E. Arnold, 1973.

Wu, Y. T., & Tsai, C. C. (2006). University Students' Internet Attitudes and Internet Self-Efficacy: A study at Three Universities in Taiwan. *Cyberpsychology & behavior*, *9* (4), 441-450. https://doi.org/10.1089/cpb.2006.9.441

Yang, H.Y, & He, S. (2019). A study on the effect of teacher motivation strategies on enhancing college students' extracurricular English learning motivation. *Foreign language circles*, *3*.

Yang, S. H. (2012). Exploring college students' attitudes and self-efficacy of mobile learning. *Turkish Online Journal of Educational Technology-TOJET*, *11*(4), 148-154. http://www.tojet.net

Yorganci, S. (2017). Investigating Students' Self-Efficacy and Attitudes toward the Use of Mobile Learning. *Journal of Education and practice*, *8*(6), 181-185. http://iiste.org/Journals/index.php/JEP

You, C. J., & Dörnyei, Z. (2016). Language learning motivation in China: Results of a large-scale stratified survey. *Applied Linguistics*, *37*(4), 495-519. https://doi.org/10.1093/applin/amu046

Yu M. (2012). Research on the Status Quo and Countermeasures of College Students' English Mobile Learning (Doctoral dissertation, Jiangxi Normal University).

Yu, S.Y. (2017). Research on Comprehensive Evaluation of Usability in Mobile Learning APP-Take the English vocabulary Learning App for Example. (Master's thesis, Zhejiang University of Technology).

Zhang, H. (2019). A survey of mobile English learning for non-English major college students. *Heilongjiang Higher Education Research, 7*.

Zhang Q.M, & Wu, L. (2017). Research on mobile English learning of college students based on smartphones. *Collection, 7.*

Zhang, X.M., & Zhang, X.H.. (2015). Research on Mobile Learning Mode of College English Vocabulary Based on Mobile Phone. China Education Informationization: Basic Education, (9), 23-26.

Zhang, X.Z. (2018). Research on "Hundred Words" application effect in the English vocabulary learning of secondary vocational students (Master's thesis, Ningxia University).

Zhou, J.H, Zhou, X.L., Liu L.J, Zhang, S.N., & Wu, Y.L. (2016). Survey and research on mobile English learning status quo for college students in Hunan Province-Based on English learning apps. *Modern Communication, 17.*

APPENDIX

Questionnaire

Dear participants,

Hello, this questionnaire is based on a survey of university students to understand the students' attitudes toward MALL English learning. (Note: Mobile-assisted English language learning refers to a learning method that can be carried out at any time and place using wireless mobile communication network technology and wireless network communication equipment (such as mobile phones, MP4, PDA, laptops, etc.). This questionnaire will be conducted anonymously. The answer is based on your actual situation, and there is no distinction between right and wrong. Please answer according to your actual thoughts.

Thank you for taking the time to fill out this questionnaire.

Demographic profile

1. What's the level of your study_____.

A. Freshman B. Sophomore C. Junior D. Senior

2. Your gender_____.

A. Male B. Female

3. What kind of test do you take_____?

A. CET-4 B. CET-6 C. IELTS D. TOEFL

English Mobile Learning Attitudes Scale for Adult Learners

Item	Question	Strongly agree = 5; Agree = 4; Neutral = 3; Disagree = 2; Strongly disagree = 1				
	Perceived usefulness component					
1	Using mobile devices for English learning can help me attain more ideas.	1	2	3	4	5
2	Using mobile devices for English learning is helpful for my English learning.	1	2	3	4	5
3	The use of mobile devices for English learning clearly presents the learning material.	1	2	3	4	5
4	The use of mobile devices for English learning can enhance my learning motivation.	1	2	3	4	5
5	Using mobile devices for English learning provides me with another way to learn.	1	2	3	4	5
6	Using mobile devices for English learning can allow me to do more interesting and imaginative work.	1	2	3	4	5
7	The use of mobile devices for English learning makes a great contribution to lifelong learning.	1	2	3	4	5
8	Using mobile devices for English learning makes it possible to work more productively.	1	2	3	4	5
9	Using mobile devices for English learning helps me organize my school work effectively.	1	2	3	4	5
	Affective component					
10	I hesitate to use a mobile device for English learning because I fear making mistakes I cannot correct.	1	2	3	4	5
11	I am not afraid of using mobile devices for English learning.	1	2	3	4	5
12	If given the opportunity to use the mobile device, I am afraid I might damage it somehow.	1	2	3	4	5

Item	Question	Strongly agree = 5; Agree = 4; Neutral = 3; Disagree = 2; Strongly disagree = 1				
	Perceived control component					
13	I can learn how to use a mobile device by myself.	1	2	3	4	5
14	I am in complete control when I use mobile devices for English learning.	1	2	3	4	5
15	I have confidence in learning new mobile learning skills, such as using new apps or software.	1	2	3	4	5
16	I have confidence in using the internet for English learning through a mobile device.	1	2	3	4	5
	Behavior					
17	I use mobile devices to extend my learning after class.	1	2	3	4	5
18	I use mobile devices after class to collaborate or communicate with others such as email and Wechat.	1	2	3	4	5
19	I use mobile devices to collect different learning materials.	1	2	3	4	5
20	I use mobile devices to join group discussions, such as WeChat.	1	2	3	4	5
21	I use mobile devices to learn English on what I am interested in.	1	2	3	4	5