Self-directed language learning using mobile technology in higher education

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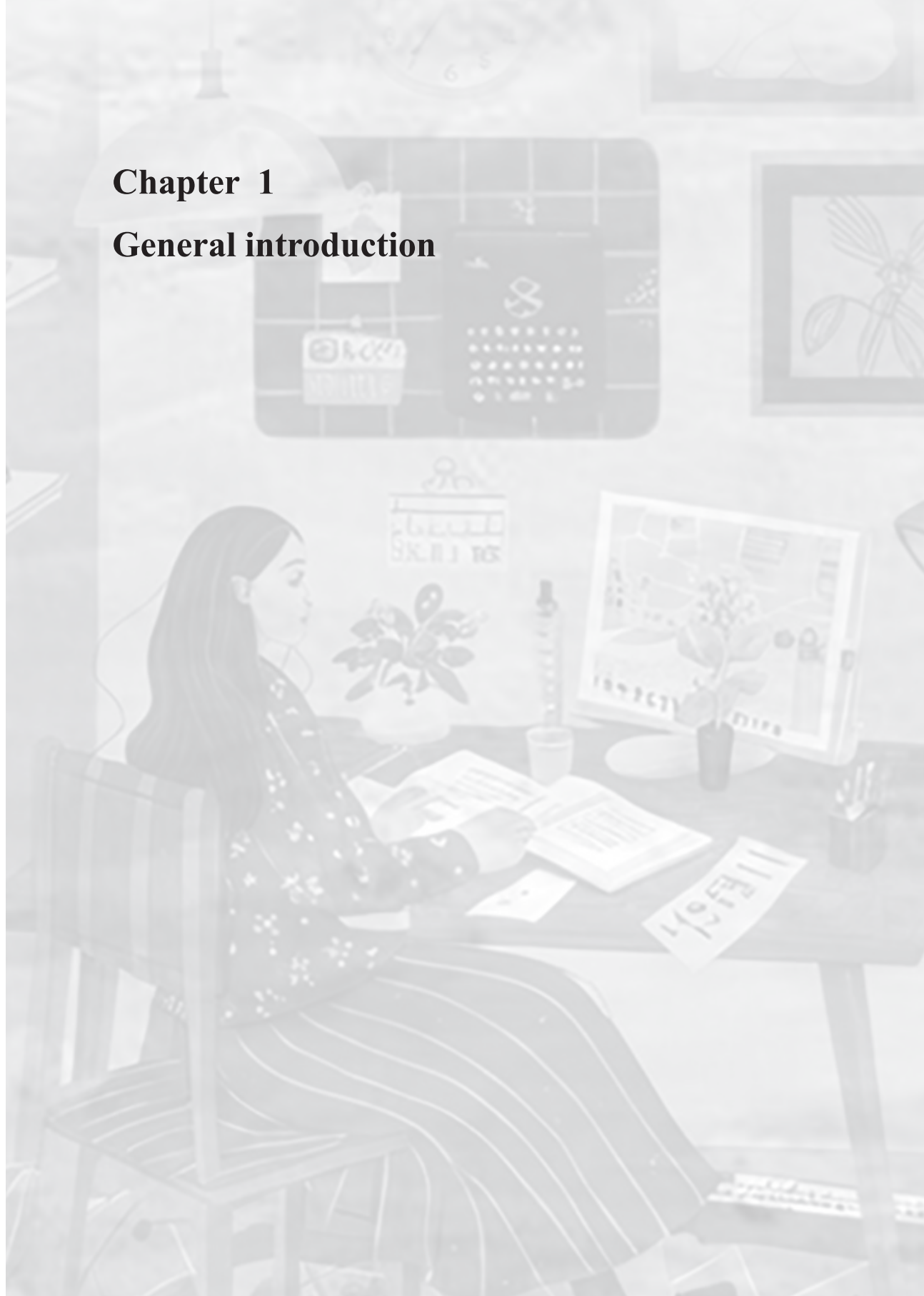
Chapter 1

General introduction



1.1 Introduction

The phenomenon of globalization has profound implications for the acquisition of foreign language skills, particularly in academic and business spheres (Kramsch, 2014). In today's interconnected world, proficiency in foreign languages is crucial for students engaging in international courses, whether on campus or online, as well as for academics operating within an international context. Mastery of foreign languages serves as a vital tool, enabling smooth collaboration, the dissemination of knowledge, and the exchange of ideas across disciplines. In essence, it's not merely a skill set but a fundamental requirement for effective communication, cultural appreciation, and collaborative efforts in our globalized society. However, integrating foreign language learning into the core curriculum of specific disciplines within higher education remains limited. Additionally, in some regions, students lack sufficient exposure to foreign languages in classroom settings, hindering their language acquisition process (Richards, 2015; Trinder, 2017; Tsou et al., 2006). To address this gap, many students are turning to self-directed language learning via mobile technology (SDLLMT) as a means to enhance their language skills beyond formal instruction. SDLLMT empowers individuals to take charge of their language learning journey independently (Merriam & Bierema, 2013), utilizing mobile applications such as italki, Babbel, Duolingo, HelloTalk, Tandem, YouTube, and Google Translate to create personalized learning environments. While students may receive support from teachers or peers, the process is primarily student-driven and self-directed (Lai et al., 2022). This approach enables learners to tailor their learning experience according to their needs and preferences, fostering a more flexible and effective language acquisition process outside traditional classroom.

Nowadays, the number of mobile technologies is consistently on the rise, with nearly every student owning a mobile device. According to the Horizon Report 2019, 95% of undergraduate students possess a mobile device (Alexander et al., 2019). In China, the prevalence of mobile technology is similarly high, where almost every university student owns devices such as smartphones, iPads, or laptops. 97% students own smartphones and 3% own non-smart phones (Dai, 2015). The advent of mobile technologies has fundamentally transformed how individuals interact with and perceive their environments. For many students, these technologies have become their primary means of engaging with learning materials (Alexander et al., 2019, p. 21). When utilizing mobile applications, learners often report heightened comfort and increased connectivity with peers and resources throughout their learning journey (Morris et al., 2019). Furthermore, the

integration of mobile technologies in higher education has demonstrated positive effects on student motivation and engagement (Bai, 2019; Nikou & Economides, 2018a). In this dissertation, mobile technology is defined as mobile phone, tablets, laptop and possible applications on them.

Over the past few years, there has been a notable surge in research on the integration of mobile technology and language learning. For example, Ma (2017) conducted a multi-case study investigating how mobile technologies mediate the language learning experience of a group of university students in Hong Kong. Similarly, Wang et al. (2021) explored students' perceptions of Chinese Island (CI), an immersive 3D virtual environment designed to facilitate authentic language use and enhance the learning experience for Chinese language learners in Australia. Additionally, Lee and Xiong (2023) examined how the personalization of Mobile-Assisted Language Learning (MALL) apps influences users' perceptions of concerning social support in terms of information, emotional and appraisal support and trust, which in turn influence their continuance usage intention. Despite these advancements, the predominant focus of MALL research has traditionally been on teacher-initiated learning (e.g., Gao & Shen, 2021; Ghorbani & Golparvar, 2020; Lee et al., 2017; Tai, 2022), neglecting the exploration of student-initiated learning outside the classroom (An et al., 2020). However, it is essential to recognize that the integration of mobile learning does not yield consistent results across all educational settings. A recent meta-analysis study on mobile learning revealed a higher effect size in informal settings compared to formal settings (Sung et al., 2016). Additionally, Hsu (2013) argued that the adoption of a teacher-centered educational approach negatively impacts students' attitudes toward MALL. Given the effectiveness of informal out-of-class learning and the adverse effects of a teacher-centered approach, there is a pressing need for research dedicated to self-directed learning outside the classroom, which is initiated by students themselves.

1.2 Self-directed learning

Self-directed learning (SDL) is a foundational concept that underscores the learner's active role in assuming responsibility for their own educational journey. It empowers learners to devise tailored and adaptable learning strategies based on their existing knowledge and individual needs. By doing so, SDL not only enhances learning outcomes but also equips individuals with essential skills for lifelong learning and future civic engagement. As articulated by Knowles (1975), SDL transcends

traditional educational boundaries and can manifest in both formal and informal learning environments. Knowles (1975) delineates SDL as follows

"*a process in which individuals take the initiative, with or without the help from others, in diagnosing their learning needs, formulating goals, identifying human and material resources, choosing and implementing appropriate learning strategies, and evaluating learning outcomes*." (Knowles, 1975, p. 18)

Researchers offer varied perspectives on SDL, each emphasizing different dimensions and contexts. Candy (1991) conceptualizes SDL not only as an endpoint but also as an ongoing process, delineating four key dimensions: learner control, independent pursuit of learning, self-management in learning, and personal autonomy. Of these, personal autonomy emerges as a central objective in education across diverse settings and age groups. Self-management refers to learners' capacity and willingness to regulate their own learning activities, emphasizing the exercise of personal autonomy throughout the learning process. Learner control pertains to the degree of control individuals exert over various aspects of their instructional environment, while the independent pursuit of learning relates to learning endeavors undertaken outside formal educational settings (Loyens et al., 2008). Importantly, Candy's model acknowledges that learners' self-directedness may vary depending on the context in which learning occurs. Brockett and Hiemstra (1991) integrate both personal attribute and process perspectives in their Personal Responsibility Orientation Model. Their model highlighted the significance of the social context, particularly the physical environments where learning takes place. Garrison (1997) proposes an SDL model that aligns with perspectives presenting SDL as both a personal attribute and a dynamic learning process. According to Garrison, SDL involves three interrelated dimensions: self-management, self-monitoring, and motivation. In addition to recognizing SDL as both a personal attribute and a learning process, Song and Hill (2007) introduce a third dimension to their model by incorporating the online learning context. Their model emphasizes the exploration of how environmental factors influence SDL within the realm of online learning.

By synthesizing the existing literature, SDL can be comprehensively understood through three distinct perspectives: personal attributes, process, and context. Personal attributes involve learners' motivations and capabilities in taking responsibility for their own learning, encompassing resource utilization and the development of learning strategies (Garrison, 1997). The process aspect refers to the exercise of personal autonomy, specifically encompassing planning, monitoring, and

evaluating one's learning activities (Moore, 1972). The context perspective emphasizes environmental factors and their impact on the learner's degree of self-direction. The current project regards SDL as a process in which individuals take responsibility and initiative over their own learning process, including diagnosing the learning needs, designing the learning plan, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating their learning results, with or without others' help (Knowles, 1975; Merriam & Bierema, 2013). It's noteworthy that many researchers use the terms "self-directed learning" and "self-regulated learning" interchangeably (Loyens & Rikers, 2008). While their definitions share similarities and both entail active engagement and goal-directed behavior, the key difference lies in the degree of control learners exert, particularly at the onset of the learning process (Loyens & Rikers, 2008). In self-directed learning, learners initiate learning tasks, whereas in self-regulated learning, they may not necessarily do so.

1.3 Self-directed learning using mobile technology for Chinese university students

SDL competency is an essential goal in higher education for improving the quality of student learning and preparing students for the future. SDL has attracted much attention in various disciplines, including the field of English language learning and teaching. In China, before entering into higher education, students learn the English language just for the entrance examinations. When students enter university, they begin to pay attention to their language competencies (like speaking, listening, writing, reading and translating). And, it is widely acknowledged that solely classroom-based learning of languages is likely to be insufficient (Benson & Reinders, 2011) in that learning a language is a long and continuous process. Thus, just practicing the English language in classroom with teachers and classmates is not enough to improve their English language competency due to the teacher-oriented teaching style, limited language-teaching equipment and limited class time. In order to encourage effective language learning, it is necessary to expand the time and space limits of classroom, enabling the student to have contact with English language at different moments of their daily life (Zhang, 2015). SDL out of class can meet this requirement.

Previously, the main way for self-directed language learning is to go to library to borrow some books and practice with peers. But, with the advent of emerging technologies, every college student in China has its own mobile technology device such as mobile phone, iPad or laptop. 97% of students own smartphones and 3% own non-smart phones (Dai, 2015), which guarantees

students' access to mobile technology for SDL. In this dissertation, mobile technology is defined as mobile phone, tablets, laptop and possible applications on them. In the realm of foreign language learning, mobile technology, characterized by affordable internet access, greater memory and processing power, can not only provide self-directed learners boundless access to language learning materials, offer more strategies and support and more ways to evaluate learning outcome (such as using some self-testing applications) (Hsu & Lin, 2021; Kukulska-Hulme & Viberg, 2018), but can also improve learners learning interests, reduce their anxiety when learning and enable learners to design a personalized and adaptive learning plan according to everyone's current knowledge base (Klimova & Prazak, 2018; Yilmaz et al., 2018). Many students therefore try to improve their foreign language competencies outside the curriculum, in a self-directed way. As demonstrated before, SDLLMT refers to learners taking control of their language learning process independently outside the classroom with the assistance of mobile technology, and determining what and how to learn (Merriam & Bierema, 2013). Furthermore, research indicates that self-directed language learning with technology outside the classroom correlates with positive affective outcomes and language proficiency gains (Lai et al., 2015; Sundqvist & Wikström, 2015). However, students exhibit a wide range of self-directed technology usage patterns in terms of frequency, types of technologies utilized, and the manner in which technology is integrated into their learning (Lai & Gu, 2011). Given this diversity, there is a pressing need to delve into the specific nature of university students' self-directed English language learning behaviors with technology (Sumuer, 2018; Zhang, 2010). Such insights can aid educators and researchers in identifying potential avenues for supporting and enhancing students' use of technology for self-directed language learning.

1.4 Theoretical background

1.4.1 How do students self-direct their language learning process assisted by mobile technology?

Although research showed that many students have been conducting self-directed learning using mobile technology, it's important to recognize that simply adopting a learning approach or utilizing mobile technology does not guarantee successful learning outcomes (Vogel et al., 2009). How students navigate the learning process is crucial, as it not only influences the effectiveness of their learning experiences but also serves as the foundational and essential step in fostering learners' competence in self-direction (Tan & Koh, 2014). In essence, the manner in which students engage

with the learning process plays a pivotal role in determining the extent to which they can effectively leverage self-directed learning strategies and technologies to achieve their educational goals.

Many models have been proposed to understand self-directed learning. For example, Candy (1991) presented a Four-Dimensional Model, which encompassed personal autonomy, self-management, autodidaxy, and learner-control. Grow (1991) created his Staged Self-Directed Learning Model to outline a process that assisted learners in navigating the various aspects of the self-directed learning process. Brockett and Hiemstra (1991) proposed the Personal Responsibility Orientation Model and emphasized two orientations of self-directed learning: process and goal. Garrison's Three-Dimensional Model (1997) viewed self-directed learning as a learning process and personal attributes. In addition to a learning process and personal attributes, Song and Hill (2007) added a third perspective: the learning context, which represented the environmental factors' impact on self-directed learning. Hiemstra and Brockett (2012) updated the Personal Responsibility Orientation model to The Person Process Context (PPC) Model, which included teaching-learning process, personal characteristics and learning context. All these models presented above provided us with a comprehensive view of self-directed learning, yet few focused on the specific and detailed perspective of self-directed learning being seen as a learning process. Only Garrison (1997) further noted that the process of self-directed learning involved self-management, self-monitoring, and motivation. However, Song and Hill (2007) stated that Garrison (1997) still emphasized the level of learner autonomy rather than the self-instructional process. Building upon the definition of self-directed learning, therefore, this dissertation developed a model to understand the self-instructional process of self-directed learning, which involves learners initiating their language learning tasks and regulating the learning process. More explicit, it includes learning task initiation phase and Zimmerman's three-phase model of self-regulation (Zimmerman, 2000), which comprises forethought, performance, and self-reflection phases. With this model, we could gain full insight into the entire process of SDL from why learners start to how they achieve their goals.

1.4.2 How do students improve the learning effectiveness in the context of self-directed language learning using mobile technology?

In order to improve the learning effectiveness, the initial adoption and continuous adoption of self-directed learning using mobile technology were investigated.

Despite the fact that university students engage in self-directed learning with mobile technology, various obstacles discourage active participation in this learning process. Concerns such as a lack of confidence in English proficiency during online interactions, apprehension about receiving incorrect feedback, and a mismatch between social network connections and language learning partners contribute to hesitancy (Lai & Gu, 2011; Lai et al., 2018; Lai & Zheng, 2018). Moreover, significant variability exists among university students regarding the frequency and types of technology used, as well as the manner in which technology is utilized for self-directed language learning. To elucidate the reasons behind these variations and hesitations, and to encourage frequent use of mobile technology for learning, the Integrative Model of Behavior Prediction (IMBP; Fishbein & Ajzen, 2010) was employed as the theoretical framework. IMBP, derived from the Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975) and the Theory of Planned Behavior (TPB; Ajzen, 1991), provides a parsimonious approach to investigating factors influencing a particular behavior in a given population (Admiraal et al., 2013). IMBP considers individual psychological processes and user-oriented factors, making it well-suited for exploring the use of mobile technology in self-directed learning, where behavior is determined by learners' choices. IMBP posits that attitudes, perceived norms, and self-efficacy predict intention to engage in a specific behavior, while intention, knowledge, skills, and facilitating conditions influence actual behavior. The application of the Integrative Model of Behavior Prediction (IMBP) in educational research has been previously validated by researchers such as Admiraal et al. (2013), Kreijns et al. (2013), Vermeulen et al. (2017), and Wang et al. (2019). However, all of them are conducted in teacher learning. In the current study, IMBP is applied to identify the determinants of university students' use of mobile technology in their self-directed learning process.

While acquiring initial users is a crucial milestone, retaining them and encouraging continued usage present significant challenges in the implementation of mobile learning (Yang et al., 2019). Addressing this concern, a conceptual model has been proposed to investigate learners' engagement, satisfaction, and persistence in self-directed language learning using mobile technology, taking into account both learner and teacher perspectives (Yang et al., 2019). By

exploring these dimensions, the model aims to provide insights that can inform self-directed learners, educators, and software developers on strategies to effectively enhance self-directed learning experiences with mobile technology.

1.5 The organization of the dissertation

This dissertation focused on self-directed language learning using mobile technology in higher education. It contains six chapters (see Figure 1.1). In order to understand this topic, **Chapter 2** firstly presented a selection of studies in order to provide an overview of empirical research into learning strategies that self-directed learners use with the support of mobile technology in language learning. Twenty studies were selected and systematically analyzed. The central research question in this study was what cognitive strategies, metacognitive strategies, affective strategies, and social strategies did students use during their self-directed language learning using mobile technology? The findings call for more studies exploring all self-regulatory stages in the process of self-directed learning using mobile technology and investigating the influence of learners and teachers on the process. For this reason, Chapter 3 to 5 were further proposed to fill in the research gaps.

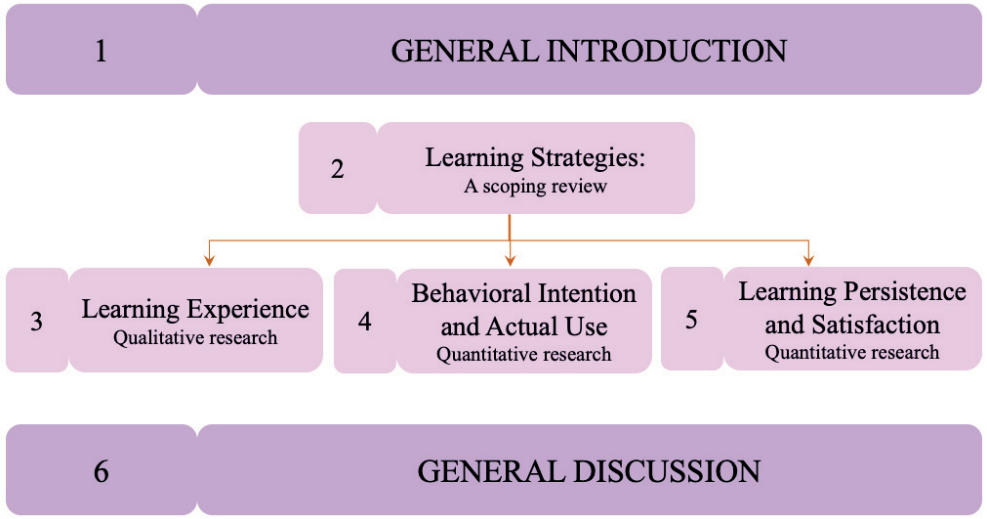


Figure 1.1 Overview of the dissertation.

In order to understand all self-regulatory stages in the process of self-directed learning using mobile technology, **Chapter 3** described a netnography study to gain insight into the learning experience of language learners in the context of self-directed learning using mobile technology. The research questions included (1) How do language learners initiate their learning in the context of self-directed learning using mobile technology? (2) What do language learners do in the forethought phase, performance phase and self-reflection phase in the context of self-directed learning using mobile technology? The netnography approach was employed to answer these question. 29 posts from an online platform for knowledge exchange were screened as the data. The coding of 29 answers was carried out based on a theory-driven framework.

From the perspective of self-directed learners, **Chapter 4** provided a research investigating the factors that influence university students' intention towards and actual use of mobile technology in self-directed language learning outside class. To answer the main research question, the following sub-questions were formulated: (1) To what extent do attitude, subjective norm and self-efficacy relate to university students' behavioral intention toward using mobile technology in self-directed learning? (2) To what extent do behavioral intention, facilitating conditions and self-regulation skills relate to university students' actual use of mobile technology in self-directed learning? (3) To what extent do self-regulation skills moderate the relationship between behavioral intention and actual use of mobile technology in self-directed learning? Survey data from 676 language learners in different disciplines from Chinese universities were collected and analyzed using Structural Equation Modeling approach.

In **Chapter 5**, we explored the factors that influenced foreign language learners' persistence and satisfaction towards self-directed language learning using mobile technology from the perspective of teachers and learners. The variable of teacher support provided recommendations and guidance about specific mobile applications, learning materials and learning tips, and encouragement in the learning process to improve students' learning experience. The learner-level variables showed learners' mobile-related knowledge, attitudes, skills, and competencies of learners in utilizing mobile technology effectively to achieve self-directed learning objectives (self-directed learning, mobile-learning self-efficacy, and optimism).

The research questions that guided this study were (1) Is there any difference in SDLLMT between students with high and low language proficiency? (2) How is learners' satisfaction

explained by teacher support, learners' mobile readiness and engagement in SDLLMT? (3) How is learners' persistence explained by teacher support, learners' mobile readiness and engagement in SDLLMT? (4) How do mobile readiness and engagement mediate the relationship between teacher support and both outcome variables of SDLLMT? Self-reported questionnaires from 446 language learners in different disciplines attending Chinese universities were collected. In order to answer these questions, an independent sample *t*-test, structural equation modeling and a mediation analysis were employed.

Chapter 6 offers a comprehensive overview of the research conducted in Chapters 2 to 5. It includes a summary of the key findings from the preceding chapters, a general discussion of the results, implications for practical application and future research directions, as well as an exploration of the limitations encountered in these studies.