Chapter 20
Mobile-Assisted Language Learning in China's College English Education: The Reality and Research

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Abstract Due to the increased college enrollments in China in recent years, today's college English teachers are facing more challenges than ever. Influenced by the traditional Chinese culture, mainly Confucian, current college English classes in China are often critiqued for their teacher-centered approach, the lack of student autonomy, as well as detachment from realistic social purposes. The use of mobile technologies in language acquisition has been explored by many researchers around the world, and has the potential to spark positive changes in China's college English education, including enhanced teacher competencies, increased learner autonomy, and improved teacher–student interaction. This paper provides an overview of existing research and practices about mobile-assisted language learning in China's college English education, and proposes that certain elements should be in place to ensure its successful integration.

20.1 Introduction

With the globalization of China in recent decades, there is a growing demand for college graduates that are proficient in the use of English (Ruan and Jacob 2009), which has become "the lingua franca of the world due to its widespread use in academia, business, commerce, and technology" (Spolsky and Shohamy 1999, as cited in Lan et al. 2007, p. 130). To meet this demand, English has been made a mandatory subject for all freshmen and sophomores across the country (Xie 2013).

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Moreover, with the purpose of producing employable college graduates that are competent in various facets of English, including reading, writing, listening and speaking, college English test (CET) 4 has been integrated as an undisputable prerequisite for college graduation (Xie 2013).

Numerous research studies have revealed, however, that current college English education is far from satisfactory in producing such ideal graduates (Li 2014). On the one hand, both teachers and students are deeply influenced by the Confucius culture (Biggis and Watkins 2001), making English classes teacher-centerd and lecture-based. The passive role of students in class has led them to have little autonomy over their English learning. On the other hand, the college expansion policy has increased college enrollments dramatically and resulted in a severe shortage of competent English teachers in higher education in China (Cai 2006). Many in-service college English teachers, therefore, are often found to be lacking adequate knowledge about how English should be taught and how students learn second/foreign languages best (Chen and Goh 2011). Consequently, Chinese college English learners not only perceive China's college English education negatively (Cai 2012), but also fail to support and sustain their own learning when teachers are not present (Hurd and Xiao 2006).

With increased accessibility and awareness of using information and communications technology (ICT), Chinese policymakers have recognized the important role ICT plays in supplementing college English education. In 2002, the Chinese Ministry of Education proposed an ICT-incorporated teaching approach that aimed to not only promote students' learning autonomy but also improve teachers' efficiency and productivity (Hu and Mcgrath 2011). This proposal, despite its theoretical validity, was not implemented well in China's higher education institutions. One of the major reasons was that integrating ICT into English education required not only teachers' proficiency of utilizing technologies but also some fundamental changes regarding the roles they and their students should play, both of which can only happen with the provision of effective and continual support from their organizations (Hu and Mcgrath 2011).

Mobile technologies, while originally derived from information and communication technologies, have taken on unique characteristics with its recent developments. Aside from the benefits it brings in as a regular computing technology, it also possesses distinctive advantages, such as mobility, portability, connectivity, and ubiquity to its users (Kukulska-Hulme and Shield 2008). Simply put, mobile technologies allow its users to access resources and connect with the rest of the world from anywhere at any time with access to the Internet. The effectiveness of using mobile technologies to support language acquisition has been spotted in numerous research studies across different subjects around the world. For instance, Motallebzadeh and Ganjali (2011) investigated the effectiveness of using SMS to deliver English words to 40 Iranian university students, and it was found that those that learned with this service outperformed significantly than those who received traditional board and paper instruction, because learning content received

via SMS was more convenient and accessible. In Wong and colleagues' (2010) study, 40 primary students were asked to use a camera on given smart phones to take photos of objects and/or scenes that would demonstrate their understanding of assigned English idioms. They found that mobile technology not only allowed students to create artifacts easily, but also promoted in situ learning that connected learning with their real-life context.

Mobile technologies in China, while widely accessible, have not been investigated much as a language learning tool through an academic lens. Relevant studies are not only scarce, but also problematic in certain domains, such as a lack of originality, inadequate research methodologies as well as inconsistent control of quality. This paper pinpoints current research and practices of mobile-assisted language learning (MALL) in China's college English education, with the purpose of identifying trends, gaps, and issues that may inspire future researchers and other interested parties to improve the status of MALL-related research and practical uses in related contexts. Specifically, we argue that in order to promote and integrate mobile technology as an appropriate and effective way to support college students' English learning, the capacity and culture of using mobile technology as a learning tool must be built first among all stakeholders, including college teachers, students, administrators, and policymakers through recommended ways.

20.2 Definitions of Key Terms

In order to maintain consistency throughout this paper, relevant terms are defined as below:

- MALL (Mobile-Assisted Language Learning): "Language learning enabled by the mobility of the learner and …portability of handheld devices…" (Hoven and Palalas 2011, pp. 76–77)
- Mobile Technology: Communication technologies that utilize cellular data, such as mobile phones, GPS, 4G data, etc.
- Mobile Learning or m-learning: "learning mediated via handheld devices and potentially available anytime, anywhere" (Kukulska-Hulme and Shield 2008, p. 273).
- SLA (Second Language Acquisition): SLA theories address "cognitive issues (how the brain processes information in general and language in particular), affective issues (how emotions factor into second language processing and learning), and linguistic issues (how learners interact with and internalize new language systems)" (Florez and Burt 2001, p. 1).

20.3 College English Education in China

20.3.1 Historical Context

College English language education in Mainland China has always been interweaved with China's political situations and decisions (Lam 2002; Hu 2007). For example, in 1991, after detaching from the former Soviet Union, China was facing a political situation in which a more international stance was possible (Lam 2002). This pursuit of a more international role since then has been furthered by China's constant engagement in the international arena, such as its entry into the World Trade Organization and the hosting of 2008 Olympics in Beijing. Such globalization of China demands versatile professionals that are not only experts in their fields of study, but also proficient in the use of English (Li 2014). As a result, college English curriculum in Mainland China has been reformed several times to meet this demand, namely 1980, 1986, 1999, and 2007 college English curricula (Table 20.1). From 1980 to 2007, there have been some transformative changes pertaining to teaching aims and approaches, such as a qualitative shift from

Table 20.1 College english curricula from 1980 to 2007 (from Li 2014, p. 294)

	1980 Curriculum	1986 Curriculum	1999 Curriculum	2007 Curriculum
Aim	To provide students with capability to gain some information through English	To provide students with capability to gain some information through English for their professional needs	For students to be capable of exchanging information in the target language	For students' comprehensive ability to use English to communicate effectively and to study independently, and to improve their cultural awareness in international exchanges
Objective	No specific description	Proficiency reading ability, certain listening ability and elementary speaking and writing ability	Strong reading ability and fairly good ability for listening, speaking, writing and translating	Competent in using English in a well-rounded way, especially in listening and speaking
Methodology	Teacher-centered, grammar translation	Learner centered (grammar translation and audiovisual approach in practice)	Learner centered (grammar translation and audiovisual approach in practice)	Learner centered in combination with modern technology (grammar translation and audiovisual approach in practice)
Vocabulary	From 1,500 to L800	From 1,600 to 4,000	From 4,200 to 6,500	From 4,500 to 6,500

emphasis on linguistic competence to communicative competence, and from teacher-centered to learned-centered approach (Li 2014).

20.3.2 Problems

While significant development has been achieved in college English curricula reform, "present college English language education in Mainland China is continuously criticized for failing to meet the public's demand for good English proficiency" (Li 2014, p. 292). One of the main problems is that, regardless of their theoretical soundness, the college English curriculum requirements were never executed well in practice (Li 2014). As a result, college English education in China has been rather perceived as time-consuming and ineffective (Cai 2010) by different entities.

The ineffectiveness of China's college English education can be first observed in some national studies that investigated the perceived effectiveness of current college English education. For instance, Yu and Zhong (2008) surveyed 1,615 students through random sampling in 12 universities and found out that, among all the courses they are studying, students were most unsatisfied with their improvement in English. Specifically, 11.3 % of the surveyed students considered themselves having made considerable progress, while 23.6 % reported to have made no progress and 24.6 % believed that they even digressed compared with their English proficiency in high school. Cai (2010) surveyed a total of 1,246 students from eight provinces in 16 universities about their English learning experience and the results showed that only 3.9 % of the students believed that college education improved their English capability to a great extent; 35.2 % believed that some progress was made; 25.4 % stated that not much was learned while as high as 35.1 % of the students felt that their English proficiency deteriorated from high school to college.

The reasons that have led to student dissatisfaction with college English education are multitude. To begin with, the current in-service college English teachers do not meet students' need adequately. Starting 1999, the Chinese government has implemented the expansion policy of higher education to increase the number of college graduates (Bai et al. 2012). During the 1996–2000 period, there was a total enrollment of over 11 million, while from 2001 to 2005 the number of university students was expected be up to 16 million (Meng and Tajaroensuk 2013). However, this policy has caused a severe shortage of qualified college English teachers (Cai 2006). According to a national study conducted by Dai and Zhang (2004), 32.4 % of the surveyed college English teachers had no more than five years of teaching experience. Also, Wang and Wang (2011) investigated 457 colleges in China and found out that among the surveyed 21, 065 English teachers, only 1.5 % held a doctor's degree and 60.1 % held a master's, which is below average when compared with other majors and programs.

The increased college enrollments have also resulted in heavier workloads for in-service teachers. According to Zhang (2006), the college English teacher to

student ratio is nearly 1:200. Limited time and the overwhelming workload are critical factors that hinder these teachers from participating in continuous professional development (Carney 2003; Quaglia et al. 1991; Day and Gu 2010).

In terms of pedagogy, most college English teachers enter the profession without a solid understanding of SLA theories, psychology, and pedagogy (Chen and Goh 2011). The absence of such knowledge may exert an adverse influence on students' language learning experiences. For example, without being exposed to contemporary learning theories, such as Constructivism, most English instructors are still employing "a teacher-centered, textbook-reliant, grammar-translation teaching method" (Li 2014, p. 296). This traditional approach prevents students from engaging in active English learning and having ownership of their learning process. Culture, on the other hand, also has a profound influence on Chinese classroom dynamics. Chinese education is infused with Confucius beliefs and principles (Biggs and Watkins 2001; Li 2003), which hold that students should highly respect their teachers as authority figures and do as the teachers dictate (Ho 2001).

When students learn passively, however, they are less likely to be motivated to learn (Cai 2010) and may thus produce unfavorable results that harm their self-efficacy and increase their reluctance of using English in or outside of classrooms. Research indicates that many employers have complained about how college graduates often perform poorly when it comes to communication in English (Ruan and Jacob 2009), regardless of their performance in the written form of College English Tests (CET).

In order to tackle some of the above challenges, the Chinese Ministry of Education initiated a reform of college English that proposed for a "more economical and effective methodology in language teaching based on the use of information and communications technology (ICT)" was recommended in the reform (Hu and Mcgrath 2011, p. 42). The incorporation of ICT was believed to not only support and enhance language teaching and learning, but also provides students more access to resources that they can learn independently. Ideally, it would lessen teachers' workload and alleviate the tension caused by the shortage of college English teachers (Hu and Mcgrath 2011). However, the proposal was not implemented well and created even more challenges for these teachers. Hu and Mcgrath (2011) stated that

> …The reasons are manifold: inefficient CPD (college professional development), insufficient access to ICT facilities, unfavorable ICT policies, lack of technical support, improper appraisal systems related to ICT use, difficulty in changing deep-rooted roles of teachers as well as roles of schools and students, inappropriate beliefs and attitudes toward ICT use, and as noted above, lack of ICT knowledge and skills among teachers and students, and poor ICT pedagogy (O'Mahony 2003). All these issues hinder the use of ICT in schools. (p. 43)

In short, college English education in China is now facing multifaceted challenges. On a social level, deeply rooted Chinese culture (e.g., Confucian) is still influencing the roles that teachers and students, respectively, play (Tang 2009). On the institutional level, national policies and propaganda that aim to improve CE education fail to be implemented wholeheartedly due to the complexity of incorporating ICT,

the lack of effective training and just-in-time support from school administrations. On an individual level, college teachers and students are both confronted with issues that prevent them from achieving desirable goals. Notably, college English teachers are expected to obtain more advanced qualifications in their profession, and enhance pertinent knowledge and skills on not only subject matters but also popular instructional technologies, while striving to maintain a balance between such expectations and their overwhelming workload. Students, on the other hand, need to transform their existing beliefs about how they are expected to learn, take a more active role in learning English, and learn to locate and utilize available resources on their own. Having a clear and comprehensive understanding of these challenges and relevant policies can help us demarcate what needs there are to be met, and if they can be met appropriately and efficiently by developing potential solutions or strategies.

Mobile technologies, which are introduced in the following section, are believed to have a tremendous potential to alleviate, if not entirely resolve, the problems and needs identified above.

20.4 Mobile Technologies

In recent years, mobile visitors have become the fastest growing web community that access web pages or locate web information (Chen 2008). Cell phones, most of which are well equipped with functionalities including Internet access, media player, digital camera and video recorder, have become the most widely used and accessible devices for almost every university student (Chirimbu and Tafazoli 2013). In China, so far 85 % of the younger urban residents (age from 18 to 30) own smartphones (NetEase News 2013). With regard to college students, around 80.8 % has at least one smartphone with Internet-connected service, which means virtually all higher education students carry some form of mobile devices (People's Daily Online 2013). The widespread ownership of mobile devices among Chinese college is an active index of its accessibility and makes its integration as a learning tool possible.

Mobile devices, such as smart phones, PDAs and tablets, provide its users with many advantages that surpass the affordances of other ICT tools. According to Klopfer and Squire (2008), such advantages include but do not limit to (1) portability—they are lightweight handheld devices that can be easily carried everywhere; (2) mobility—which indicates the accessibility of resources even while both the users and the devices are on the move; (3) connectivity—the availability of cellular data on those devices empowers its users to connect with the rest of the world from almost anywhere at any time; (4) individuality—not only can users customize the device in a way that best suits their preferences, but also seek information that is tailored to their particular needs or requests.

These characteristics of mobile technologies have an enormous potential in improving college students' language learning experience and solving many of the

aforementioned problems. For instance, one of the major problems recognized above is Chinese students' low level of learner autonomy—they learn about what is being told to learn. In contrast, with Internet-connected mobile devices, students may search for and actively learn about English topics that they are sincerely interested in, rather than required by the curriculum. Driven by their innate passion, students are more likely to learn deeply and take responsibility for their own learning, and thus increase learner's autonomy (Benson 2007). At the same time, the abundance and diversity of English learning resources on the Internet allow students to acquire knowledge that may not be taught well, or at all, by their less qualified English instructors. In that sense, not only can they learn more, but also rely less on their instructors as a major learning source. Mutual benefits can also be achieved when mobile devices are used as an assessment tool. English instructors can easily create quizzes or polls on a mobile device to collect data about student learning quality, while every student can participate in a quiz or poll on their own mobile device to make their opinions count. Frequent assessment allows instructor to be accurately aware of where students are, so that corresponding adjustments in teaching methods or progress are made.

While positive findings of using MALL have been reported in numerous studies in countries like US and Japan (e.g., Hegelheimer and O'Bryan 2009; Miyakoda et al. 2011), China is a developing country that possesses its unique characteristics, including historical context, economic status, political structure, and education system. It is thus paramount to examine MALL studies that resonate with the local culture and situation of CE education in China, which may shed the most light on its future development. While China consists of provinces and districts that often vary dramatically in economic and political status, it is the author's intention to review only Mainland China where both statuses are more consistent and analogous.

20.5 MALL Research in China's Higher Education

In China's college English education, mobile-assisted language learning, while being used consciously or unconsciously, is still a new concept. For instance, the search for MALL studies in the target context yielded very few results compared with the high volume of MALL studies conducted in countries like the United States or Japan. In addition to the lack of research, the awareness of this concept among public is low as well: Most of the participants in related studies admitted to have heard of mobile learning for the first time at the time of study (e.g., Wang et al. 2009), regardless of their ownership of, and experience with, mobile devices. As a technology, which is defined by Rogers (2003) as "a design for instrumental action that reduces the uncertainty in the cause–effect relationships involved in achieving a desired outcome" (pp. 139–140), MALL in China's higher education obviously still resides in the initial stage of technology transfer—research and development (Rogers 2003). During this stage, scientific and applied researches are conducted

about a problem and initial prototyping solutions are proposed by lead users (Rogers 2003). Specifically in China, problems related to current college English education have been recognized in numerous studies (e.g., Cai 2012; Wang and Wang 2011), and MALL has been advocated as a potentially viable solution to address many of the identified problems.

Current research, in terms of the purpose of studies, has primarily focused on three broad categories: theoretical rationality, user perceptions, and empirical effectiveness. Studies related to theoretical rationality are concerned with where MALL derived from and what theoretical frameworks it is built upon. Such studies provide Chinese readers with the research foundations of MALL, helping them to understand the rationale behind MALL design and a promising integration with pedagogical practices. For example, Liu and colleagues (2013) provided an overview of three relevant theories, including situated cognition theory and Construction of Cognitive Learning Theory and collaborative learning. However, their report was merely a reinstatement of important concepts often found on relevant international journals, and thus lack originality and connection with China's context.

Most of the reviewed studies have focused on the affective domain of learning, namely how students perceive MALL with regard to its usefulness and viability, and whether there is need or market for MALL. For example, Li (2014) conducted a survey on 89 undergraduates at Guangxi University, aiming to investigate their current perceptions and uses of mobile devices to support language learning. Zou (2014) used a mixed method approach to research Chinese undergraduates' perceptions of MALL, and found that 78 % of the examined students hold a positive attitude of trying MALL, but many are not aware of how to use mobile technologies to learn.

The third type of studies was the least researched among all. One of the possible causes could be that awareness of MALL is not yet high among college teachers or students, let alone using it intentionally. The search only yielded three empirical studies, which interestingly focused on different aspects of MALL. Xue (2014) explored how effective mobile technology (including MMS, mobile apps) could help increase students' test scores; Ruan and Ma (2014) reported the use of an intentionally designed mobile app to improve students' grammar learning; Yin (2013) investigated the effectiveness of using a social media tool—WeChat—to push learning information (vocabulary, grammar, etc.) as a way to prepare students for CET 4 test.

While the three categories of studies collectively provide a preliminary framework for MALL research in China's CE education, there yet has much to be done if MALL is to be integrated as a legitimate component of China's higher education system. In this section, problems associated with, or derived from, these studies are identified and some preliminary considerations are given to potential strategies for future directions.

Overall, studies about MALL in China's higher education are increasing in recent years, but are still in their infancy. First of all, the quality of reviewed studies is concerning. Most of the current studies were published in local Chinese journals that were not internationally peer-reviewed and often had a low threshold for publication. These same studies are also questionable regarding their validity and

reliability, because they often do not adhere to consistent academic writing standards. For instance, it is common among these studies to cite less than ten references, or be composed to writings of less than three pages, or fail to articulate certain critical research writing components, such as limitations, instrument description, or theoretical frameworks. Also, the abstracts of those studies are unsatisfactory. According to Pyrczak (2003), an abstract should be a summary of a research that consists of a purpose of study, methodology, results and implications, or future directions. The reviewed abstracts, however, fail to include those essential components that synthesize the gist of the study; rather, they often come from the first few sentences of a study's introductory paragraphs that provide little for readers to understand the research at hand. Moreover, relevant appendices are usually missing in the reviewed studies, especially survey instruments. What questions are asked in a survey and how valid those questions prelude to a certain degree if a survey is reliable, and thus should be described and explained.

Research studies in journal articles are perceived as authoritative and reliable sources of knowledge for Chinese educators, researchers, and even the entire public. The quality of these studies, such as accuracy and validity, has an undeniable influence on readers' understanding of MALL, such as its legitimacy, prevalence, usability, etc. Therefore, editors of relevant journals should establish consistent criteria for acceptance and publication, especially about data collection, analysis, and content originality, since these are often most convincing information among all. Incentives can also be considered as a strategy to encourage related research, such as allocating grants for innovative use of MALL in higher education.

Second, some studies are found to be mere reiterations of MALL findings or trends reported in foreign language journals, with little or no originality or applicability in China's context. Such knowledge, while providing readers with an overview of what is happening worldwide, does not contribute much to the growth of MALL in China, which has its unique set of characteristics. For instance, the educational hierarchy is much different in China from that of the U.S. due to their difference in political structure. It is thus recommended that researchers synthesize research from countries that share as many similarities with China as possible, so that Chinese reformers can draw upon successful experiences from those areas when planning or initiating changes for MALL.

Third, current research studies are often limited in their scope of study. While mobile technology has the potential to benefit both students and teachers (Aubusson et al. 2009), most published studies pertaining to mobile learning have focused almost exclusively on students as the learners or consumers of mobile technology. However, for any educational change to happen, it is indispensable to involve the collective effort among all stakeholders (Fullan 2007), which in this case include not only students, but also teachers, administrators, and policymakers. For instance, to incorporate and promote MALL in regular instruction, teachers must be equipped with knowledge of MALL themselves, while administrators will have to design corresponding training and provide continual professional development for such knowledge, and policymakers have to at least not prohibit, if not promoting officially, the use of MALL in higher education. At the same time, incorporating any

new educational technology may unavoidably demand additional effort and time from teachers, who already have a heavy workload to maintain. To get teachers' buy-in, the right conditions for change must be present, including clear and practice guidance for the change, support from administrative leaders, and readily accessible resources (Fullan 2007). Research on solely any of the stakeholders without making connections with others would result in a partial and even inaccurate understanding of the big picture that hinders a successful integration of MALL. Future research may turn to stakeholders other than students to collect data about their perceptions of, attitudes toward, and current uses (if any) of MALL in the context of higher education, so as to build organizational capacity, which is defined as "policy, strategy and actions taken that increases the collective efficacy of a group to improve student learning through new knowledge, enhanced resources, and greater motivation on the part of people working individually and together" (Fullan 2007, p. 58).

Methodology wise, in addition to quantitative approaches, such as survey or questionnaire, researchers are suggested to also utilize qualitative methods more, so that they can gain more in-depth and rich understanding of target research topics or populations.

Last but not least, pedagogical knowledge, which is the foundation of most educational innovations, is often missing in the reviewed MALL studies. A pedagogically competent English instructor should demonstrate mastery of diverse learning theories, sensitivity to student needs and proficiency in student assessment. However, due to the severe lack of empirical research in current MALL studies, it cannot be concluded if pedagogical components were present in MALL integration.

20.6 Recommendation

Although mobile devices have enormous potential to improve college students' English learning in numerous ways, it should be cautioned that the provision of access to technology does not ineluctably promise its successful integration into teaching and learning, especially when the learners are not motivated to use the technology (Selwyn 2007). Language instructors must carefully examine and evaluate any MALL tools they plan to integrate, and ensure that all conditions conducive to successful MALL integration are present before adopting one officially. Two key principles are recommended below:

- Identify pedagogical theories that scaffold the design of learning activities. Good learning design should characterize sound theoretical support, such as Behaviorism, Cognitive Information Processing, and Constructivism. For instance, Behaviorism is widely used to guide the design of assessments; Cognitive Information Processing dictates how learners process incoming information, and helps instructors choose mobile technologies that provide information in a manageable size, facilitate long-term memory, and increase autonomy; Constructivism denotes a series of principles that epitomize

individual meaning-making, collaborative learning as well as social meaning construction. Each of these theories has a branch of summarized practical principles that can be easily applied by instructors (e.g., Driscoll 2005).

- Seek mobile technologies that afford features that are most relevant with and conducive to student learning. In their case study about PDA's educational affordances, Churchill and Churchill (2007) inductively summarized five roles of PDAs for learning: Multimedia access tool (tool for multimedia delivery and access); connectivity tool (tool for interpersonal connection and interaction); capture tool (tool for information capturing); representational tool (tool for mind mapping or knowledge conceptualization); analytical tool (tool for calculation). This categorization is also applicable to MALL with some minor changes. For instance, students with mobile devices can access videos, audios, or images that help them improve English listening, speaking, or vocabulary in a more engaging way; some mobile apps, such as WeChat and Edmodo, characterize group chat or information sharing, allow students to discuss interesting topics in English or share useful resources with just a click. As a capture tool, mobile devices can be used to take photos and record videos of human activities, objects, or scenes to help students learn about vocabularies more deeply and meaningfully. Compared with PDAs, mobile phones are more prevalent, and often have smaller screens, which makes mind mapping on them less convenient. The analytical function makes more sense to language learners when it provides information about learning progress and outcome instead of ordinary calculation for math-related subjects. For example, certain language learning apps provide statistics on how much scores a learner gains by narrating English conversations or what his or her rank is compared with other app users (e.g., Liulishuo).

Aside from teachers, school administrators are also recommended to take corresponding actions. For instance, they may consider providing free Wi-Fi access to students and teachers on campus, so that they can browse relevant knowledge on the Internet without worrying about their data plans or extra charges resulted from English learning. Incentives can also be used to encourage MALL initiatives. For example, school administrators may establish innovative teaching awards to promote MALL awareness as well as related activities. It is equally important to form offices that are specifically designated for MALL training and professional learning, so that instructors feel supported and know where to seek assistance at times of need.

20.7 Conclusion

The current college English education in China is far from satisfactory. The various affordances of mobile technologies and their wide accessibility among Chinese college students have made MALL a favorable and potential solution for some of the prominent issues identified in our earlier review. However, whether mobile technologies can become an integrated component of, or a positive catalyst for

improving, China's college English education needs further and more comprehensive exploration and investigation. Current related research is not only insufficient, but also deficient in terms of quality of writing, design of methodologies, as well as scope of study. Future researchers may strive to improve upon these problematic areas, so that interested users or adopters of MALL can gain a more thorough and clear understanding of its viability in their specific contexts and compatibility with their existing practices. Instructors that are interested in adopting MALL tools should also be aware of the various affordances those tools provide and use pedagogical knowledge to make informed decisions regarding what activities can be best conducted on mobile devices and how to achieve desirable learning outcomes. Finally, university or college administrators should strive to create a positive environment for MALL integration, so as to gain sustainable development in college English education in the long run.

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