TABLETS FOR INFORMAL LANGUAGE LEARNING: STUDENT USAGE AND ATTITUDES

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Mobile-assisted language learning (MALL), a relatively new area of CALL inquiry, is gaining more and more attention from language educators with the development of new mobile devices. Tablet computers—featuring high mobility, convenient network connectivity, and smart application extendibility—are part of a wave of the latest mobile inventions; how these new mobile devices enhance MALL and how students perceive them as a language learning tool have yet to be broadly explored. This action research project sought to investigate how students used tablet computers to learn English in informal settings outside of class and how to foster more effective usage of the tablet for independent language learning. The study shows that tablet computers are ideal tools for creating an interactive, collaborative, and ubiquitous environment for language learning, provided that the technological affordances of the device have been fully explored with the students. This investigation also reveals that students have a generally favorable attitude towards the usability, effectiveness, and satisfaction of tablet computers for MALL.

Keywords: Tablet-Assisted Language Learning, Mobile-Assisted Language Learning, Action Research

INTRODUCTION

The ubiquitous availability of portable devices, including mobile phones, laptops, tablets, and multimedia players has changed foreign language instructional methods and learning strategies with today's students (Abdous, Camarena, & Facer, 2009), with mobile learning (m-learning) emerging as the next generation of e-learning (Sharples, 2009). A new type of mobile device that is quickly gaining popularity and language educators' attention is the tablet computer, which features a large-size touch screen for convenient operation, multimedia functions for sound and video playbacks, Wi-Fi/3G enabled network for easy connectivity, as well as small size for easy portability. Because of its newness, the technological affordances of this new type of device, especially how it can support foreign language learning and instruction, have yet to be widely explored.

The present paper reports on an action research (AR) project that investigated how university students in China used tablet computers to learn English in informal settings outside of class and how they could be better guided to fully exploit the tablets' functionalities for autonomous and collaborative foreign language learning. Student attitudes towards the tablets' usability and effectiveness, and these students' satisfaction with this new language learning tool were also of interest to the author in this investigation.

M-learning, defined by Vavoula as "any sort of learning that happens when the learner is not at a fixed predetermined location, or learning that happens when the learner takes advantage of the learning opportunity offered by mobile technologies," (2005, p. 11) has been found to be effective in improving educational outcomes because it (a) improves access to education and (b) promotes learning that is learner-centered, personalized, collaborative, situated, and ubiquitous (Valk, Rashid, & Elder, 2010). A survey of the MALL literature reveals that the bulk of this research appears to make use of the now-conventional mobile technologies, such as mobile phones (Amer, 2010; Baleghizadeh & Oladrostam, 2010; Başoğlu & Akdemir, 2010; Reinders, 2010; Zhang, Song, & Burston, 2011; de Jong, Specht, & Koper, 2010), PDAs (Chang & Hsu, 2011; Wong & Looi, 2010), and the mostly out-of-fashion laptop-with-stylus tablets (Lan, Sung, & Chang, 2007; Orden, 2006; Ozok, Benson, Chakraborty, & Norcio, 2008). However, there is a lack of research on how the latest pad tablets—led by Apple's iPad series and numerous Android-based models—can be utilized in the language learning arena. The present study is

further motivated by the desire to understand how the new mobile technology can foster the development of independent learning skills in students' daily informal learning environment, which is as important—if not more so—than the formal learning space. It has been found that MALL has great potential to bridge the gap between formal and informal learning (Bo-Kristensen, Ankerstjerne, Neutzsky-Wulff, & Schelde, 2009; Hsu, in press; Wong & Looi, 2010), but the nature of mobile learning can only be understood by viewing its use in naturalistic settings other than the artificial environment of the classroom (Stockwell, 2010).

The study addresses the above issues by adopting Kemmis and McTaggart's (1988) spiral framework of action research (see Figure 1 below). Although the four phases of planning, action, observation, and reflection in each iterative cycle of their framework have been criticized by some authors as being too fixed and rigid (Burns, 2010) and other AR models have been put forward (see Koshy, 2005, p. 3 for a discussion of other models), Kemmis and McTaggart's model is still considered to be the most classic as it "summarizes very succinctly the essential phases of the AR process" (Burns, 2010).

MOBILE ASSISTED LANGUAGE LEARNING

Mobile assisted language learning is the formal or informal learning of a foreign language with the assistance of mobile devices. It is a relatively new research area (Vavoula & Sharples, 2008), despite the fact that people have now been using personal portable devices for some time. The major distinguishing characteristic of MALL from traditional language learning is the mobility the former affords, in addition to the possibilities of spatial and time shifts yielding increased learning opportunities (Kukulska-Hulme, 2009). This is to say, as access to mobile devices can be at any time and from any place—as long as students carry their device—the time and space constraints of formal language learning can be greatly reduced, offering more flexible informal learning opportunities.

Another distinguishing feature of MALL is its connectivity. Through the in-built GPRS, Wi-Fi, and 3G Internet access, modern mobile devices provide language learners with opportunities to be involved in meaningful real-context interactions, which are usually lacking in traditional language learning environments, especially in informal out-of-class situations (cf., Bo-Kristensen et al., 2009; Vavoula, 2005). Consequently, language learning is no longer limited to one-way individual learning, but can be expanded to a two- or multi-way collaborative learning (Lan et al., 2007; Chang & Hsu, 2011).

MALL may not only improve access to education, but it also facilitates alternative learning processes and instructional methods (Valk et al., 2010). For instance, MALL has the potential to bridge the gap between formal and informal learning spaces (Wong & Looi, 2010). Students in Wong and Looi's study learned the meaning and usage of new prepositions and idioms in the formal classroom setting, and then they went out of the classroom to take photos illustrating the newly acquired words and idioms with network-enabled pocket PCs. They were further encouraged to carry the mobile phones home and take photos of daily scenes to illustrate the idioms they had learned in class. These photos were then uploaded onto the Web to be commented on by peers to encourage collaborative learning. It was concluded that the combination of formal and informal learning fosters contextualized learning, productive outputs, and a socio-constructivist acquisition of the target language. By synthesizing learning inside and outside of the classroom, students are encouraged to take more responsibility for their learning, thus developing their independent learning skills (Barrs, 2012) and benefitting their future studies.

The topics of MALL research exploiting various mobile technologies have been wide-ranging. Studies with mobile phones have focused on fostering grammatical accuracy (Baleghizadeh & Oladrostam, 2010), improving speech fluency (Kessler, 2010), learning vocabulary (Thornton & Houser, 2005), and evaluating student preferences and attitudes towards MALL (Stockwell, 2007, 2010). PDAs have been found effective in promoting intensive reading comprehension (Chang & Hsu, 2011) and creative learning of idioms (Wong & Looi, 2010). Student and teacher perception of the usability (Ozok et al., 2008),

effectiveness (Demirbilek, 2010), and acceptance (Hsu, in press) of MALL are also topics of interest to scholars of this field.

However, most MALL studies to date have mainly focused on transferring former classroom- or computer-based contents onto the mobile platform, such as delivering materials previously used with paper- or computer-based media, or developing trans-platform applications like mobile dictionaries, quizzes, or survey tools. These studies simply consider mobile devices as a new means for content delivery, rather than tools that will facilitate new learning. The collaborative and communicative affordances of mobility and connectivity have not been fully exploited (Kukulska-Hulme & Shield, 2008). It is therefore necessary that MALL researchers "move beyond a superficial understanding of the field and focus more on how mobility, accompanied by digital, location-aware technologies, changes learning" (Kukulska-Hulme, 2009). This goal can be achieved by first investigating how mobile tools are actually used by learners in the learning process, especially in naturalistic settings where the nature of mobile learning is to be fully understood (Stockwell, 2010), and how learners perceive mobile devices as tools to assist language learning. Only through a better understanding of the role MALL plays in the language learning process can language instructors offer learners valuable guidance on how to better utilize them to reach the learning goals.

THE PRESENT STUDY

The aim of this action research study was to investigate how students used tablet computers as a language learning tool, especially in informal learning situations outside of the classroom. Special interest was placed on the length of time, locations, activities, and student experiences involving the tablets, as well as the perceived usability, effectiveness, and satisfaction of this mobile technology. A spiral model of AR (Figure 1; see Kemmis & McTaggart, 1988) was adopted for this research project.
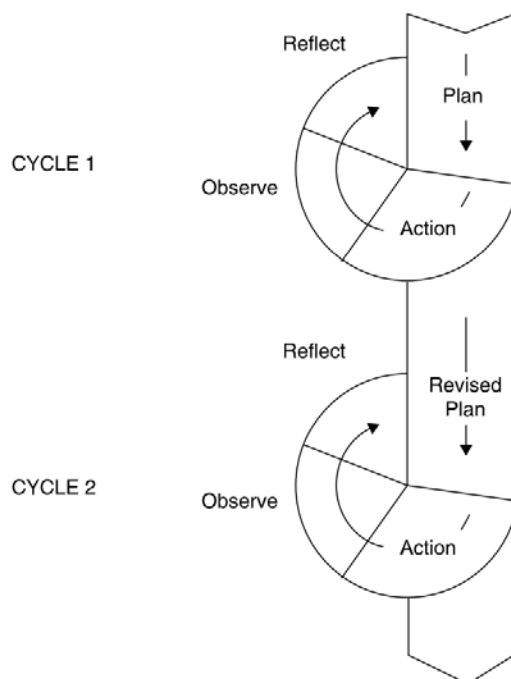
Figure 1. Kemmis and McTaggart's (1988) Cyclical AR model, adapted from Burns (2010).

Participants

Participants of the study consisted of 10 freshmen English majors (four men and six women) from the author's university. They were randomly chosen by drawing lots from nearly 30 volunteers recruited from

an Intensive Reading class. A survey questionnaire (Appendix A) was administered to collect background information concerning participants' former experience with mobile devices, English levels, and computer literacy.

Participants' ages ranged from 17 to 20 years old ($M = 18.8$; $SD = .92$), and the participants were intermediate English learners, according to the results of a placement test administered upon their arrival at the university ($M = 59.65$ out of a perfect score of 100, $SD = 6.36$) and their self-reported English proficiency ($M = 2.7$ on a five-point scale, $SD = .48$). Their self-rated computer skills were also intermediate ($M = 3$, on a five-point scale, $SD = .81$).

A background survey also showed that while mobile phone ownership was universal (eight students owned ordinary mobile phones; two had smart phones), only one participant claimed ownership of a tablet, but he had never used it to learn a foreign language. All participants said that they had used their mobile phones to learn English. Major language learning activities on the mobile phone included looking up new words in e-dictionaries and listening to English audio. The majority of students (7 out of 10) agreed that mobile technologies were useful for language learning because they were easily accessible and very straightforward to use.

Procedure

A two-cycle procedure (see Figure 1) was followed to assess the students' daily English learning activities with the tablet. The main purpose of the first cycle was to understand how the participants used tablet computers for informal learning of English outside of the classroom and the potential problems they might encounter. In the second cycle, the author aimed at fostering more effective use of the tablet for improved independent and collaborative learning.

Cycle 1, Plan and Action

On the first day of the study, students were each given a Teclast P85 tablet, a pad-like handheld computer featuring an 8-inch touch screen, 8GB internal memory, Wi-Fi connection, a Webcam, and basic audio/video functionalities. The Teclast P85 uses Google Android, the most popular operating system specifically designed for mobile devices ("Mobile operating system," 2012); accordingly, it is capable of running any of the hundreds of thousands of applications developed for Android. Upon receiving the tablets, the 10 participants were instructed on how to operate them. They were also told the purpose of the study and asked to use the tablets mainly for English study. Participants were allowed to carry and use the tablets whenever and wherever they wanted.

Cycle 1, Observe

Throughout the entire investigation, the participants were requested to fill in daily usage reports (Appendix B), in which they kept note of their everyday experience with the tablets, including where, for what purposes, and for how long they had used the tablets. They were also encouraged to document any problems or comments concerning the tablets in their daily reports. In case a participant forgot to fill in the daily report form, mobile phone text messages were sent every night at around 10 o'clock to remind the participants of this task during the research cycles. The daily activity report forms were collected weekly when the class met.

By the end of the first week of the study, the author and the participants met for a semi-structured group interview, in which questions concerning the participants' experiences with the tablets were asked. Example questions included how the tablets were used to learn English, what advantages and disadvantages the participants thought they had, problems they encountered and whether and how they were solved, whether they considered tablets a useful tool for language learning, and so forth. The interview lasted for about 30 minutes and was audio-recorded for subsequent analysis.

Analysis of the data collected from the first week's study gave the researcher new insights into how tablet

computers were used by the participants and the problems they experienced with the device. It was found that most participants used their tablets almost every day, especially on weekdays. They spent a daily average of 2.39 hours ($SD = 1.42$) using the tablets, mostly in the dormitory ($M = 1.95$, $SD = 1.45$). The university library ($M = .36$, $SD = .79$), classrooms ($M = .05$, $SD = .18$), and other locations ($M = .03$, $SD = .15$), including student canteens and the subway, were also places where the tablets were frequently used. The time spent on different activities on the tablets varied from person to person, but English learning was the activity that participants spent the most time on. An average of .61 hours ($SD = .62$) was spent daily on learning English with the device. However, this was only one fourth of the total time with the tablets: most tablet activities were not directly related to English learning. The tablets were also used for surfing the Internet, reading E-books, and entertainment activities, such as games, music, and movies. Some participants even used them to shop and communicate with friends on line. Although the purpose of these activities was not language learning, some students claimed in a later interview that a lot of them were done in English. Table 1 summarizes the average hours each participant spent daily on different activities in the first week.

Table 1. *Mean Length of Time (Hours) Spent Daily on Different Activities in the First Week*

	Learning English	Surfing the Internet	Reading E-books	Playing games	Watching movies	Listening to music	Other activities
Mean	.61	.55	.24	.27	.13	.25	.38
SD	.62	.78	.50	.42	.41	.54	.62

Qualitative data from the daily reports and the group interview revealed the advantages of the tablets as a mobile-assisted language learning tool because of their easy-to-operate touch screens, fast Wi-Fi connection, expandable application installation, and convenient portability. Participant commentary includes the following:

> Today in the library, I used the faster connection to download some apps and resources. When I was in the dorm, I slept in the bed watching the CNN student news and two episodes of American TV series that I just downloaded. While I was reading, I also used the tablet computer to look up new vocabulary.

> In the afternoon, I read English E-books with the tablet and downloaded other books on the Internet. I like reading E-books and it's convenient for me to finish my reading task with the tablet computer.

> Did reading comprehension exercise, use the app "Daily English Communication 1001" and "business English". The materials are all in the tablet, which are convenient to use.

> Today I spent 3 hours to use the tablet computer in the library. I downloaded many English-studying systems, including some English E-books and listenings, which I think is very useful for me to do English listening and reading.

Anecdotally, one student claimed that the actual act of using the tablet was a learning experience:

> Today I changed the language from Chinese to the United States English, maybe be helpful for learning new words, such as "install", "browser"…

Despite the fact that most participants found the tablets to be an effective tool for language learning, they also reported some problems, which mainly concerned system operation, Wi-Fi availability, and how to evaluate language learning applications. For example, some students felt it inconvenient to type by tapping the touch screen because they were more used to using physical keyboards. Others did not know

how to open MS Office files on the tablet. Typical complaints from the participants include:

> The Wi-Fi is not spreaded everywhere, so it's not as convenient as I have thought… I used 1.5 hours to download softwares and another 1.5 hours to try to login in my e-mail box to download some documents. But finally I failed because of the poor network.

> …there may be something wrong with it [the tablet] because sometimes I can't open some Apps and the tablet can't work, then I need to restart up the computer.

> I have planned to use those softwares which are helpful to English study, but most softwares need connecting the Internet. So I played some small games and copied some E-books. I think if there is no Wi-Fi, the table [tablet] computer only can be used as an E-book, a dictionary, a game player, or a MP4.

Lack of self-control was another factor preventing effective usage of the tablet for language learning:

> I can't help being tempted to play games, though I haven't download any game, study hasn't come to my mind.

Cycle 1, Reflect

Reports on how the participants used their tablets and the problems they encountered during this process urged the researcher to take measures to help them better utilize these devices for language learning. Results of the first cycle's observation stage revealed that the participants spent little time for interactive activities on their tablets. Most of the tablet activities were carried out individually, not making full use of the technology's connectivity for interactive and collaborative learning, which is essential to language learning. Additionally, lack of knowledge about the tablets' system and which applications could be used for learning which aspects of the English language prevented the participants from effectively using the devices to learn English in informal settings. Simply providing learners with the latest mobile tool did not automatically result in more effective learning since there was no detailed instruction on the use of the technology. This resonates with Hubbard's (2004) urge for CALL instructors to take responsibilities in helping learners "make informed decisions about how to use computer resources effectively to meet their learning objectives" (p. 51).

Cycle 2, Revised Plan

By analyzing the data collected in the first cycle, the author came up with a revised plan, the purposes of which were twofold: (a) to guide students on the technological affordances of the tablet, and (b) to foster interactive and collaborative learning.

The first step was to deal with the problems that occurred during the first week of the study. These were mostly technical problems due to system limitations or lack of understanding of the tablet computers. For example, some participants wanted to know how to copy files from a USB memory to the tablet, how to install and uninstall applications, where downloaded files were stored, and how to deal with system failures, among other things. The author collected all the questions the participants asked and composed a Q&A document for them. The document was shared online with the participants, who later reported that most of their technical problems had been solved.

The second step was to create a mobile platform for communication and collaboration between participants. Since the study focused on how tablets will help foster learner autonomy or independent learning in informal settings, the author decided to let the students take responsibility for their own learning. The instructor adopted an assisting role. Consequently, the 10 participants were divided into three groups, each of which was assigned to research on some aspects of tablet-assisted language learning: (a) listening and speaking, (b) reading and writing, and (c) real life language usage. These groups were required to review possible apps for these aspects and design learning activities that might

involve other learners. The second week of the study was reserved for these tasks.

Cycle 2, Action

Another meeting was called by the end of the second week to discuss possible methods for creating an interactive and collaborative learning environment. The three groups of participants contributed importantly to the design of the following activities:

- creating an English Weixin (Micro-message) group to allow for multi-user synchronous/asynchronous audio and text chats. Weixin is a mobile application developed by China's biggest instant messaging service provider Tencent. This application is widely used by Chinese smart phone users because of its convenience and low cost. It runs well on the Android tablet. The Weixin interactive group provides a good way to practice writing, listening, and speaking on the tablets because it enables meaningful interactions with other learners.

- using Weibo (Micro-blog)—Twitter's Chinese counterpart—to share interesting stories and thoughts in English. Before the study, most students updated their Weibo in Chinese because most of their followers spoke Chinese only. As English majors, the participants wished to use in daily life the foreign language they were learning, but were afraid of not being understood by others. The ten participants decided to follow each other's micro-blog so as to create an online English circle for themselves with the help of the tablets, which allowed them to share their stories and thoughts anytime, anywhere. They even established the rule that only English could be used to write and comment on micro-blog entries.

- reviewing major mobile apps and recommending two E-book reader series—*10000+ Free eBooks Reader* and *Go Book,* both featuring thousands of downloadable free E-books—to practice reading comprehension. Another recommended application that combines listening and reading practice is *Langren Tingshu* (Audio Books for Lazy People), which also broadly captured the interest of the participants. The large screen of the tablets, its mobility, and multimedia functionality made the device a perfect tool for E-books and audio books.

Cycle 2, Observe

In the following week, the participants carried out the activities they designed while at the same time they continued logging their daily activities. The mean length of time participants spent on the tablets for different activities after the implementation of the revised plan was calculated, as shown in Table 2.

Table 2. *Mean Length of Time (Hours) Spent Daily on Different Activities in the Third Week*

	Learning English	Surfing the Internet	Reading E-books	Playing games	Watching movies	Listening to music	Other activities
Mean	.62	.43	.15	.08	.09	.22	.08
SD	.86	.65	.42	.24	.23	.44	.32

During the third week of the study, the average time participants spent daily with their tablets was 1.68 hours ($SD = 1.16$), which was significantly shorter compared to that of the first week according to an independent-samples *t*-test ($p < .01$). One possible reason was that their curiosity towards the tablet was wearing off. Another reason might have been the approach of final examinations, which were scheduled two weeks after the study. However, the proportion of time spent learning English increased by 11.4% from the first week's 25.5% (.61 out of a daily total of 2.39 hours using the tablet were spent in learning English) to 36.9% (.62 out of 1.68 hours) in the third week. This indicates that more guidance on how to better utilize the tablet for language learning has a positive effect on increasing the percentage of time

spent in language learning with mobile technology.

The author joined and participated in most of the activities the participants designed. Some students were quite active in the tablet-created online environment. They frequently used the audio and text chatting in Weixin to tell other participants about their current activities, respond to peers' entries, and discuss coursework. The following is the scripts excerpt of a Weixin audio chat session between two participants and the author:

> Participant 1: Could you give me an evaluation about my presentation today? I really want to know what do you think… think of it.

> Teacher: Hello, Wang Ying, I think your presentation today was quite good, but you seemed a little bit nervous when giving the presentation.

> Participant 2: How about mine?

> Teacher: I think if you could show us more pictures, it would be better. You talked about mountain climbing with the other members of the Fresher Club [an environmental protection group], so maybe you did something special while climbing the mountain, like something related to environmental protection. I think the audience might also be interested in that.

On the micro-blog platform, many students started writing and commenting with the tablet in English (see Figure 2 for examples of such micro-blogs). They all seemed to understand how important it was to create a collaborative learning environment, so micro-blog entries encouraging each other to write in English can often be seen, resulting in more and more English entries and feedback.

Qualitative comments from participants' daily reports also reflected the effectiveness of tablet-enabled interactive and collaborative English learning:

> I downloaded two softwares which Los introduced in our discussion. They are 10000 free-ebook reader and go book. There are many kinds of English books on the Internet and we can make good use of them.

> Today I find some new applications about English. After using the tablet computer for learning English for some time, I do think that my English is better. It's mainly in glossary and how to use English.

> I use it to look up new words in the dictionary and use some time to scan others' Weibo and give some comments.

> Today morning, I spent 0.5 hours to listen to the VOA stories. And afternoon about 6 o'clock, I spent about 1.5 hour in Weixin. So I think today I have got much input. And I also use it to listen English song, I feel so well.

> Today like usual I try some English learning applications. For using much time, I found it's helpful to use tablet computer for English learning.

Cycle 2, Reflect

The revised plan in the second cycle successfully addressed the problems arising from the first cycle. The technical problems the participants encountered were solved by sending them the Q&A document. A collaborative environment for MALL was created to allow for more meaningful interactions, which was vital to language learning. However, student performance on this environment varied. Some were active and contributed a lot to the building of the environment, while others were more reluctant to express themselves in English. Those who played active roles in the MALL interactive environment felt that they benefited a lot, as was noted in the above comments. For the less-active participants, the reasons behind

their reluctance need to be explored further, so as to create a more supportive learning environment for them. This will result in a new cycle of research, which is beyond the scope of this investigation.
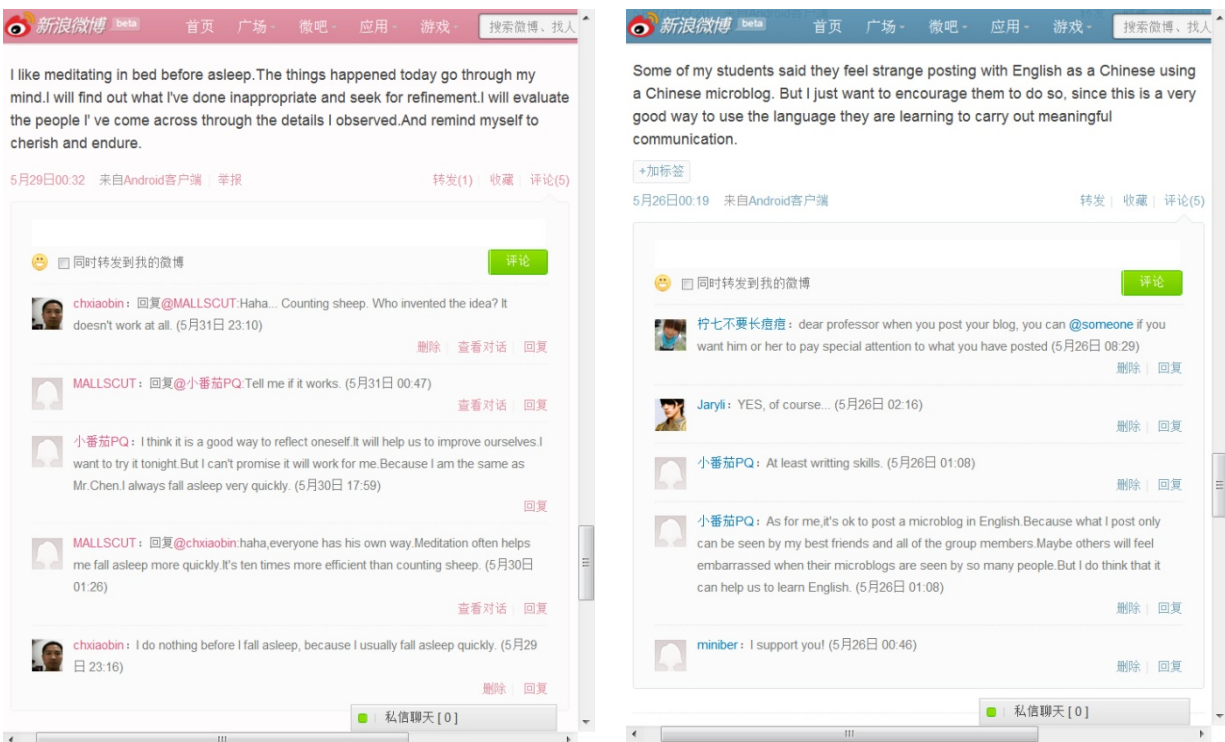

Figure 2. Micro-blogging in English with the Tablet

Attitude Survey on Tablets for Language Learning

Understanding tablet-based MALL is not complete without assessing students' attitudes towards this technology. Sharples (2009) proposed that a useful way to approach the evaluation of MALL technology is to address its usability (will it work?), effectiveness (is it enhancing learning?) and satisfaction (is it liked?). Following Sharples's suggestions and Davis's (1993) Technology Acceptance Model (TAM), an attitude survey questionnaire (Appendix C) was composed to assess students' perceptions of the usability, effectiveness, and satisfaction with the tablets for language learning. The survey, which consisted of 30 statements eliciting student opinions on a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree), was administered after the participants had been using the tablets for four weeks. Mean ratings of each statement are given in Appendix C as well.

In general, participants of the study thought that tablet computers were easy to use, effective for language learning, and they were quite satisfied with the mobile technology to enhance their language learning and performance. These results suggest that tablet computers are a potentially promising tool for MALL.

DISCUSSION

This action research investigated how students used tablet computers for informal language learning and their attitudes towards the new mobile technology. It was found that simply providing students with the mobile device did not result in its effective usage in language learning. Learners need to be properly guided not only technologically, but also methodologically. Some students may have a lack of necessary knowledge and experience to solve problems in the process of adopting new technologies. As a consequence, creating an easily accessible supportive environment in which expert and peer advice can be consulted is vital for MALL. Instructor guidance on how the mobile technology can be better utilized for

language learning in terms of activity design and collaboration is also essential, since students may not be aware of the technological affordances of the new technology, the cognitive underpinnings of language learning or how they could be combined to foster competence. This finding echoes Yu, Sun, and Chang's (2010) argument that it is optimum for the instructor to manifest to the learners a new system's technological affordances, even though their attitude towards new technology is usually positive.

A further finding is that students should be provided with more opportunities to take responsibility for their informal learning outside of the classroom with network-enabled tablets. As they take control of their learning experiences, learners usually develop their own learning strategies (Amer, 2010). Student-designed activities and self-chosen learning topics are more involving than a teacher's assignments, because students usually choose things that interest themselves. These activities can also involve peers for collaborative learning, as was shown in this study. Learner collaboration has been found to contribute to students' sense of ownership and autonomy (Kessler, 2009), because they may feel that their contributions are valued and they also value those of the other group members (Kessler, Bikowski, & Boggs, 2012), the result of which is more contributions and more learning. Learner collaboration was made more prevalent with the help of the highly portable tablet computers. Students reported using them for various collaborative learning activities in different locations, especially where Wi-Fi was available.

Finally, the study found that students' attitudes towards the usability, effectiveness, and satisfaction of tablet computers as a tool for MALL were quite positive, which is similar to what other MALL studies have found (e.g., Başoğlu & Akdemir, 2010; Ozok et al., 2008). This is a good sign for language teachers and MALL practitioners. It indicates that language learners, especially those who grew up as the so-called "digital natives" (Prensky, 2001), are willing to make use of mobile technologies for their studies, opening a whole new world of possibilities for language teaching and learning. Tablets, as well as other mobile technologies await our further exploration to better serve both language teachers and students.

CONCLUSIONS

Participants in this study used tablet computers to learn English in a tablet-enabled interactive and collaborative environment they created. It can be concluded that tablet computers, as well as other mobile technologies, are ideal tools to foster learner autonomy and ubiquitous learning in informal settings, provided that their technological affordances have been carefully studied and clearly manifested to student users, who usually have a positive attitude towards the usability, effectiveness, and satisfaction of mobile technologies as language learning tools, because they are the generation that has grown up using these technologies.

Despite the contributions of this study to MALL, it is not free from limitations and caveats. One of the limitations of the study is its possible lack of generalizability. The investigation was carried out with a limited number of participants. Although the results were revealing and of practical value to the author and his institute, caution must be taken when the results are to be generalized to other settings. This caveat may hold with most action research projects, since this research genre predominantly investigates the practical problems related to a specific language learning issue within a local context.

Another limitation of the study is the absence of further cycles to investigate the issues left unexplored from these research cycles. The Cyclical Model of AR the study adopted is an infinite spiral, with lower level cycles solving problems arising from upper level ones. Due to limited resources, the current study did not explore additional concerns, for example, how to create a more supportive mobile learning environment with tablet computers for students who are less active thus less willing to express themselves in English. The long-term effect of tablet assisted language learning is also an issue that the present study did not investigate but one which is worthy of exploration.

APPENDIX A. **Participant Background Survey**

| Your Name: | Gender: ☐ Male | ☐ Female | Age: |

Mobile: QQ: E-mail: Twitter (Weibo):

1. Do you own a tablet computer? ☐ Yes   ☐ No

   If so:

   1.1 How often do you use it?

   ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 (1 = not very often; 5 = on a daily basis)

   1.2 Have you used a tablet computer before to learn English?

   ☐ No, because _____.

   ☐ Yes, I used it to _____(state the activities you did
   with the tablet).

2. Which of the following mobile technology do you own?

   ☐ Ordinary mobile phone   ☐ Smartphone   ☐ iTouch   ☐ other MP3 player

3. Have you used these mobile devices for learning English?

   ☐ No, because _____.

   ☐ Yes, I used _____ (device) to
   _____(activities).

   3.1 If so, how much do you agree with the following statement?

   Mobile technology is useful for learning a foreign language.

   ☐ Strongly agree, because _____.

   ☐ Agree, because _____.

   ☐ Neither agree nor disagree, because _____.

   ☐ Disagree, because_____.

   ☐ Strongly disagree, because _____.

4. How would you rate your computer skills?

   ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 (1 = novice, 5 = expert)

5. How would you rate your overall English proficiency?

   ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 (1 = beginner, 5 = highly proficient)

APPENDIX B. **Daily Activity Report for the Use of the Tablet Computer**

Participant's Name: Date (MM/DD/YYYY):

1. Did you use the tablet computer today?

   ☐ No   ☐ Yes, I used it for _____ hour(s).

2. Where and for how long did you use the tablet computer today?

   ☐ In the classroom, for _____ hour(s)

   ☐ In the dormitory, for _____ hour(s)

   ☐ In the library, for _____ hour(s)

   ☐ In other places: in _____(place) for _____ hour(s)

3. For what purpose and for how long did you use the tablet computer today?

   ☐ I spent ____ hour(s) **learning English** with the tablet computer.

   ☐ I spent ____ hour(s) **surfing the Internet** with the tablet computer.

   ☐ I spent ____ hour(s) **reading E-books** with the tablet computer.

   ☐ I spent ____ hour(s) **playing games** with the tablet computer.

   ☐ I spent ____ hour(s) **watching movies** with the tablet computer.

   ☐ I spent ____ hour(s) **listening to music** with the tablet computer.

   ☐ I spent ____ hour(s) **doing** _____ with the tablet computer.

4. Please summarize briefly your activities with the tablet today, including when, where, and how you used it to do what, as well as what you have learned from these activities. You can also note the problems you encountered while using the technology.

   _____

   _____

   _____

   _____

APPENDIX C. Tablet Usage for L2 Learning Attitude Survey

Thank you for participating in this project! The questions in this questionnaire concern your perceptions about the usability, effectiveness, and satisfaction of tablet computers for foreign language learning. There are not "right" or "wrong" answers to these questions, so please be honest about your experience and feelings.

Your name: _____

Instructions: Think about how you feel about each of the following statements and circle the numbers that best describe your attitude.

Usability	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	*Mean rating*
1. I find the tablet computer cumbersome to use.	1	2	3	4	5	*2.1*
2. Learning to use the tablet computer is easy for me.	1	2	3	4	5	*4.5*
3. Interacting with the tablet computer is often frustrating.	1	2	3	4	5	*2.5*
4. I find it easy to get the tablet computer to do what I want it to do.	1	2	3	4	5	*3.4*
5. The tablet computer is rigid and inflexible to interact with.	1	2	3	4	5	*2.8*
6. It is easy for me to remember how to perform tasks when using the tablet computer.	1	2	3	4	5	*4.2*
7. Interacting with the tablet computer requires a lot of mental effort.	1	2	3	4	5	*2.3*
8. My interaction with the tablet computer is clear and understandable.	1	2	3	4	5	*3.4*
9. I find it takes a lot of effort to become skillful at using the tablet computer.	1	2	3	4	5	*2.2*
10. Overall, I find the tablet computer easy to use.	1	2	3	4	5	*4.3*
Effectiveness	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	***Mean rating***
11. Using the tablet computer helps me a lot in foreign language learning.	1	2	3	4	5	*3.8*
12. Using the tablet computer gives me greater control over my learning of the foreign language.	1	2	3	4	5	*3.4*
13. The tablet computer enables me to accomplish learning tasks more quickly.	1	2	3	4	5	*4.0*
14. The tablet computer supports critical aspects of my study.	1	2	3	4	5	*3.3*

Effectiveness, continued	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	*Mean rating*
15. Using the tablet computer increases my learning outcomes.	1	2	3	4	5	*3.5*
16. Using the tablet computer improves my foreign language performance.	1	2	3	4	5	*3.2*
17. Using the tablet computer allows me to accomplish more learning tasks than would otherwise be possible.	1	2	3	4	5	*3.7*
18. Using the tablet computer enhances my effectiveness on study.	1	2	3	4	5	*4.0*
19. Using the tablet computer makes it easier to study.	1	2	3	4	5	*4.0*
20. Overall, I find the tablet computer useful in my study.	1	2	3	4	5	*4.0*
Satisfaction	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	*Mean Rating*
21. I find it interesting to use the tablet computer for foreign language learning.	1	2	3	4	5	*4.1*
22. I find it interesting to participate in the project.	1	2	3	4	5	*4.3*
23. I find it interesting to carry out tasks on the tablet computer.	1	2	3	4	5	*3.7*
24. I am willing to continue using tablet computers for foreign language learning.	1	2	3	4	5	*4.2*
25. I am willing to participate in any follow-up research on tablet-assisted language learning.	1	2	3	4	5	*4.2*
26. I am willing to carry out more tasks on tablet computers.	1	2	3	4	5	*3.9*
27. I am happy to have learned more about how to use tablet computer for foreign language learning.	1	2	3	4	5	*4.4*
28. I am willing to learn more about how to better utilize tablet computers to learn a foreign language more effectively.	1	2	3	4	5	*4.3*
29. I am satisfied with the functions offered by the tablet computer.	1	2	3	4	5	*3.7*
30. Overall, I am satisfied with using tablet computers for learning a foreign language.	1	2	3	4	5	*4.1*

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