EMERGING TECHNOLOGIES
Going to the MALL: Mobile Assisted Language Learning

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Introduction

In August 2004, Duke University provided free iPods to its entire freshman class (Belanger, 2005). The next month, a Korean education firm offered free downloadable college entrance exam lectures to students who purchased an iRiver personal multimedia player (Kim, 2004). That October, a financial trading firm in Chicago was reportedly assessing the hand-eye coordination of traders' using GameBoys (Logan, 2004). Yet while such innovative applications abound, the use of technology in education and training is far from new, a fact as true in language classrooms as it is in medical schools.

Practically since their availability, a succession of audiovisual recording devices (e.g., reel-to-reel, VCRs, PCs) has been used to capture language samples, and myriad playback and broadcast devices (e.g., phonographs, radios, televisions) have provided access to authentic speech samples. The espousal of audiolingual theory in the 1950s brought the widespread use of the language laboratory in educational settings (Salaberry, 2001). Influenced by behaviorism, the lab was progressively replaced in the 1960s by drill-based computer-assisted instruction, which decades later was itself surpassed by a more intelligent, interactive and multimedia computer-assisted language learning. The popular acceptance of the Internet in the 1990s advanced the development of computer-mediated communications.

As technologies continue to evolve, so does their propensity to shrink in size. "Other technologies that hold the capacity for language learning include PDAs, multimedia cellular phones, MP3 players, DVD players, and digital dictionaries" (Zhao, 2005, p. 447). Such portable media—referred to in popular and scholarly literature as mobile, wireless, handheld or nomadic—are now social staples. Mobile learning, or m-learning, is a burgeoning subdivision of the e-learning movement, further evidenced by European initiatives such as m-learning and Mobilearn. In this paper, applied fusions of m-learning and language learning follow, after which their benefits and challenges are reviewed.

MALL Applications

As in other technology-enhanced language learning milieu, mobile learning environments might be face-to-face, distance, or online; further, they may be self-paced or calendar-based. Copaert (2004) emphasizes the importance of developing the language learning environment before deciding on the role of mobile technologies and further emphasizes focusing on the learner ahead of the technology. Salaberry (2001) also argues against "technology-driven pedagogy," suggesting that despite their revolutionary status, it is not clear that any modern technology (e.g., television, radio, the PC) has offered the same pedagogical benefits as traditional second language instruction. Beatty (2003) offers a further caveat that "teachers need to be concerned about investing time and money in unproven technology" (p. 72).

Stipulations aside, technologies, mobile or otherwise, can be instrumental in language instruction. Ultimately, though, they are not in and of themselves instructors; rather, they are instructional tools. And the effective use of any tool in language learning requires the thoughtful application of second language pedagogy. Imaginative examples of such applications—using cell phones, personal digital assistants, and portable digital audio players—are illustrated next.

Cell Phones

Since their inception, the dimensions of cell phones have waned as much as their abilities have waxed. Common features of these devices now include Internet access, voice-messaging, SMS text-messaging, cameras, and even video-recording. In language learning, all of these features enable communicative language practice, access to authentic content, and task completion. Though research of such uses is scarce, it is not non-existent.

The use of telephones in distance language learning is not unique to m-learning. Twarog and Pereszlenyi-Pinter (1988) used telephones to provide distant language learners with feedback and assistance. In 1996, instructors at Brigham Young University-Hawaii taught a distance-learning English course from Hawaii to Tonga via telephone and computer (Green, Collier, & Evans, 2001). And Dickey (2001) utilized teleconferencing to teach an English conversation course in South Korea.

One of the first projects using mobile phones in language learning was developed by the Stanford Learning Lab, which explored their use in language learning (Brown, 2001). Specifically, they developed Spanish study programs utilizing both voice and email with mobile phones. These programs included vocabulary practice, quizzes, word and phrase translations, and access to live talking tutors. Their results indicated that mobile phones were effective for quiz delivery if delivered in small chunks; they also indicated that automated voice vocabulary lessons and quizzes had great potential. Their tiny screen sizes were deemed "unsuitable for learning new content but effective for review and practice" (Thornton & Houser, 2002, p. 236). Live tutoring was also effective, but poor audio quality was judged to potentially affect comprehension adversely.

Thornton and Houser (2002; 2003; 2005) also developed several innovative projects using mobile phones to teach English at a Japanese university. One focused on providing vocabulary instruction by SMS. Three times a day, they emailed short mini-lessons to students, sent in discrete chunks so as to be easily readable on the tiny screens. Lessons defined five words per week, recycled previous vocabulary, and used the words in various contexts, including episodic stories. Students were tested biweekly and compared to groups that received identical lessons via the Web and on paper. The authors then explored usability and learning issues. The results indicated that the SMS students learned over twice the number of vocabulary words as the Web students, and that SMS students improved their scores by nearly twice as much as students who had received their lessons on paper. Students' attitudes were also measured. The vast majority preferred the SMS instruction, wished to continue such lessons, and believed it to be a valuable teaching method. The authors theorized that their lessons had been effective due to their having been delivered as push media, which promote frequent rehearsal and spaced study, and utilized recycled vocabulary.

Levy and Kennedy (2005) created a similar program for Italian learners in Australia, sending vocabulary words and idioms, definitions, and example sentences via SMS in a spaced and scheduled pattern of delivery, and requesting feedback in the form of quizzes and follow up questions.

Another program by and Houser (2003) utilized a classroom polling system, EduCALL (inspired by EduClick), to survey students during class in order to determine vocabulary retention. Poll questions were projected, students used their cell phones to surf to the polling software and make their selections, and the tabulations were projected as bar graphs. In this way, students and teachers alike received immediate feedback.

Kiernan and Aizawa (2004) set out to study whether or not mobile phones were useful language learning tools and to explore their use in task-based learning. They argued that second language acquisition is best promoted through the utilization of tasks, which require learners to close some sort of gap, thereby focusing the learner on meaning. In the traditional classroom, however, such activities are easily defeated by the close proximity of students. The use of mobile technologies would be one way to separate learners.

In their study, upper and lower level Japanese university students were placed into three groups: PC email users, mobile phone email users, and mobile phone speaking users (due to cost, this latter group became face-to-face speaking users). Then they were given a pre-test, three narrative tasks, three invitation tasks, and a repeated post-test. While all the face-to-face speaking users completed these tasks in the time provided, only two pairs of PC email users and one pair of mobile phone email users completed the tasks. The face-to-face speaking users had significantly faster performances, and the mobile phone email users had the slowest; however, the latter were not significantly slower than the PC email users. These differences were attributed to relative speed of typing versus speaking, and the relative speed of typing on mobile thumb pads versus keyboards. An interesting side-note was that the fastest mobile phone email user had told the entire story in only a single text-message. In general, fewer words were used by mobile phone email users, yet they were able to communicate effectively. While the upper-level students' performance improved significantly on the post-test, this was likely due to a change in the post-test format for this group (since the pre-test required written translations, but the post–test consisted of multiple choice questions).

Several other free and commercial mobile language learning programs have recently become available: the BBC World Service's Learning English section offers English lessons via SMS in Francophone West Africa and China (Godwin-Jones, 2005); BBC Wales has similarly offered Welsh lessons since 2003 (Andrews, 2003); and an EU-funded initiative known simply as 'm-learning' provides English lessons directed towards non-English speaking young adults. The goal of such programs is to engage new kinds of learners (e.g., young, disabled) in a time and place of their preference (Godwin-Jones, 2005; Kadyte, 2004; Kukulska-Hulme, 2005). Norbrook and Scott (2003) suggest that portability and immediacy, rather than localization, are the essential motivating factors in mobile language learning. Further, lessons are provided in bite-sized format, a fact appealing to busy students (McNicol, 2004). Lessons are typically delivered several times a week or even daily, include translations, and provide options for further context-based applications.

One of the newest technologies with potential application in language learning is moblogging, an amalgam of mobile and weblogging. Mielo (2005) further defines moblogging as using a cell phone or PDA "in the field" to post words and/or pictures to a website (p. 29). Blogs themselves are a recent trend in language teaching. They provide opportunities for language creation (i.e., journaling) and collaborative activities. Moblogs offer the potential to expound these benefits by removing time and place boundaries and adding authentic and personal visual content.

While the applications of cell phones have typically been pedagogic in nature, they have also been used for practical or administrative matters, such as simplified and flexible student-teacher communications (e.g., course updates and reminders) and referrals to related websites and other up-to-date instructional resources (Dias, 2002, Summer/Fall; Levy & Kennedy, 2005).

PDAs

Personal digital assistants (PDAs) are more often associated with m-learning than cell phones. Their use has been integrated into various disciplines within high schools, universities, and medical schools (Carlson, 2002). In language learning, one of its primary functions has been as translator. Software programs such as MobiLearn allege to turn PDAs into 'talking phrasebooks.'

In evaluating the gains of Chinese learners of English using handheld translators, Myers (2000) made numerous observations: the learners repeatedly practiced saying unfamiliar words typed into the machine; they took written notes about new words and phrases learned from the machine; they typed full words into the machine and quickly learned to recognize word stems; they were shown words in context according to the lexical approach; they soon preferred to look up words and phrases from the English side of the translator rather than the Chinese side, indicating an attempt to function in the foreign language;

and they quickly improved their spelling. Despite these benefits, the author promotes the use of a contextual translator only in cases where the target language is similar to the native language.

More elaborate language learning software programs have also been developed for PDAs and the like. Garcia Cabrere (2002) evaluated a business Spanish course developed for smart-phones, encompassing video clips, exercises, and a glossary. Students were reported to be highly motivated and impressed—particularly by the video and multimedia functions—but expressed difficulty in using pointers and virtual keyboards for data entry.

Thornton and Houser (2003) developed an English idiom website, including definitions, illustrative videos and animations, and multiple-choice quizzes, specifically for mobile technologies. In their study, students accessed these web pages using either PDAs or mobile web and video phones, and then evaluated their usability. Scores were generally positive—and similar—for both media, but PDA users rated their video quality higher than the mobile phone users, likely due to larger screen size and higher resolution. All students expressed difficulty with the listening tasks, though the authors note that neither headphones nor earphones were used in the study, and that none of the actors or writers were native English speakers.

Several foreign language courses at the University of Wisconsin, Madison, have also used wireless handheld computers for various classroom activities (Samuels, 2003). An instructor of Norwegian developed web-based grammar and vocabulary exercises to be accessed with the handhelds, allowing her to integrate technology activities into the class without having to move to the program's language lab. Minor problems were reported, including trouble resizing pictures to fit in the small screen and sporadic difficulties with network connections. A French class used the handheld devices for various small group and whole class online chatting. A Latin class used them to access ancient poems, both in text and audio. Difficulties included slow processing time and font limitations.

PDAs offer numerous other uses, including Internet and wireless access, and therefore file-sharing between teachers and students and amongst students themselves. Data is also easily backed up on personal computers. Further, at present, a standard feature of these devices is handwriting recognition. Despite such functionality, Beatty (2003) believes that the future success of PDAs depends in part on their ability to accommodate voice recognition.

iPods

Digital audio files (e.g., MP3s) provide high-quality sound in a compressed format. The portable media players developed to listen to them are also rather compact. Most renowned amongst them is Apple's iPod, the latest version of which not only provides audio functionality but also video. Arguably as popular as the iPod itself are its add-ons (e.g., microphones, speakers) and downloadable software, including language learning programs. iLingo, for example, is a downloadable language translation software, or an electronic phrasebook.

Several other applications of the iPod in language learning have been explored. In the fall of 2004, Duke University provided all incoming freshmen with free 20 gigabyte iPods equipped with voice recorders. Amongst the pilot courses utilizing the players were several language courses, which utilized both their listening and recording capabilities. Students in a Spanish class used iPods to respond to verbal quizzes, submit audio assignments, record audio journals, and receive oral feedback from their instructor. A Turkish class used them to listen to authentic materials such as news, songs, and poems, and to the instructor's vocabulary and translations (Belanger, 2005).

Apple Computer itself has taken to promoting the iPod's educational uses. Available on iPod in the Classroom are lesson plans for the language classroom, as well as success stories. A middle school in Nebraska, for example, is reported to have been using iPods to record speech samples for self and teacher assessment of English language learners.

Students taking distance-learning German and Spanish courses through the United Kingdom's Open University are similarly using digital voice recorders and mini-camcorders to record interviews with other students and locals and to create audiovisual tours (Kukulska-Hulme, 2005). While the goal has been to ultimately upload their works to websites for sharing with other students, web space limitations have made this difficult. An additional problem has been that students were provided with these devices at the start of the course, leaving inadequate time to learn to properly use them.

The iPod has also spawned a new form of media known as podcasting, a portmanteau which combines iPod and broadcasting. While the aforementioned blogs are traditionally text-based, audio blogs or podcasts, are essentially downloadable broadcasts with RSS (really simple syndication) feeds which allow listeners to subscribe. Subscribers to such podcasts automatically receive updates. Once downloaded, audio content can be transferred to a media player. Still in its nascency, podcasting is already widely utilized in language learning, both to access authentic content and to record it. Myriad subscriptions are available to English and other language learners. Lessons in Shona—Zimbabwe's main language—for example, are available for download (Winter, 2005). Englishcaster provides a list of podcasts specifically created for English language learners. Voice of America' Special English programs have also been made available via podcast. And EFL instructor Graham Stanley (2005) has created a podcast itself on the use of podcasts for EFL teachers.

Benefits and Challenges

Mobile technologies clearly offer numerous practical uses in language learning. In many cases, they are readily available. In Japan, for instance, cell phone ownership has been reported to be nearly universal amongst college-aged individuals (Dias, 2002, Spring; Thornton and Houser, 2005). In a recent study of students in higher education in the United States (Kvavik, 2005), 82% owned cell phones. In the same study, however, less than 12% owned PDAs. Even in cases where they must be acquired, mobile technologies are typically less expensive than standard equipment, such as PCs. The portability of mobile media is another benefit. They can be just as easily utilized outside of the classroom as they can in it; learners can study or practice manageable chunks of information in any place on their own time, thereby taking advantage of their convenience. Ultimately, what these benefits indicate is the potential MALL has in expanding social inclusion in language learning.

Notwithstanding its benefits, MALL also poses related challenges. For instance, inherent in the portability of mobile media are reduced screen sizes, limited audiovisual quality, virtual keyboarding and one-finger data entry, and limited power. Further, their availability can be limited. While cell phone ownership may be almost universal for college-aged individuals, this is not true for other populations or media. The costs to educational institutions of purchasing them en masse could be staggering. Nevertheless, Gilgen (2004) has demonstrated the possibilities of developing mobile labs for schools with limited funding. Other potential drawbacks include limited nonverbal communications, limited message lengths, a lack of cultural context, and potentially limited social interaction. While mobile technologies are advancing, their output is quickly moving from verbal to visual, a clear disadvantage for language learning (Colpaert, 2004). Connection problems are also a concern: web-based language learners might choose to limit their online connection times, or they may not have access at all. Still, as a result of this issue, Trifanova, Knapp, Ronchetti, and Gamper (2004) are developing a program which allows learners of web-based German and Italian courses to hoard online content—a process similar to planned caching—so that it can be used during periods of disconnection.

Conclusion

Yamaguchi (2005) recapitulates: "A computer is better than a mobile phone for handling various types of information such as visual, sound, and textual information, but mobile phone is superior to a computer in portability. And some students don't have their own computer" (p. 57). So, while m-learning in general

and MALL in particular have clear challenges and limitations, the paucity of applications and formal research will indubitably proliferate. Colpaert (2004) observes that in the history of CALL, periods of professional development have been followed by periods of amateur development—coincident with periods of hype—by teachers and researchers, and further portends that "if this prevails, the mobile hype will burst out as soon as tools become available allowing teachers and researchers to develop their own mobile applications and tools" (p. 262). Still, humankind is not likely in the immediate future to reach the state of Salmon's (2003) Planet Nomadic, where "terrestrial universities and corporate training facilities have disappeared" (p. 141) and wearable devices "help to pace the learners…through their courses" (p. 142). But it does seem quickly headed for a world where m-learning is a fashionable channel for language study.

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