Current Trends in Research on Mobile Phones in Language Learning

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Abstract

This study aimed at examining the major mobile wireless technologies, that is, mobile phones and the possibilities associated with them, currently in use in the educational domains, with an emphasis on language teaching and learning practices. Accordingly, some of the most typical studies using different functions of mobile phones such as e-mail, multimedia capabilities, Wireless Application Protocol (WAP) and SMS in their mobile learning (m-learning) practices are elaborated. Pedagogical implications and considerations in the integration of mobile technologies in language-related practices are considered, too. Potential limitations and barriers to m-learning undertakings are also reported. Finally, in order to further understand where m-learning as the cutting edge of education currently stands, a status quo of m-learning is considered.

1. Preliminary Remarks

The developmental movement of mobile wireless technologies in recent years has paved the way for the further integration and deployment of the cutting-edge technologies as the new frontier for teaching and learning in various educational domains. The feasibility to use "nondesktop" (Fallahkair, Pemberton, & Griffiths, 2005, p. 1) and wireless technologies to support learning and teaching besides the growing popularity and functionality of mobile devices in different educational activities have resulted in the emergence of a new trend in the area of educational research as mobile learning (m-learning). More specifically, with the rapid proliferation of mobile wireless phones, among other mobile devices, and their widespread ownership among different people especially students, new opportunities in the educational environment will emerge consequently. The potential affordances of mobile wireless phones could be exploited in order to revolutionize learners' access to information and remove or lessen the effect of those traditionally inherent problems in the conventional educational settings. Being active, goal-directed, and motivated in the process of learning, L2 learners can control and self-regulate their own learning behaviors by selecting, structuring, and

creating environments that are contributing to successful learning (Pintrich, 1995; Yetkin Ozdemir, 2011, as cited in Salmani-Nodoushan, 2012). In this way, the burden of education is shifted to the individual to pursue his own learning, seek, and access information that is helpful to his language achievement (Gardner, 1963; Zimmerman, 1990, as cited in Salmani-Nodoushan, 2012).

In effect, mobile wireless technology can be regarded as a service harnessed to deliver general and educational content to L2 learners, regardless of location and time. This freedom from the time and place constraints will change m-learning to ubiquitous learning which can occur outside the walls of the conventional classrooms apart from all formal and pedantic restrictions.

There is a large body of research in the literature on m-learning, stressing the use of mobile phones for different pedagogical purposes (e.g., Armatas, Holt, & Rice, 2005; Attewell, 2005; Fozar & Kumar, 2007; Shih & Mills, 2007; Suki & Suki, 2007; Wagner, 2005), among which L2 teaching and learning in the educational domain has not been an exception to the large amount of research and inquiries in the cutting edge m-learning environment.

2. Mobile Phones in Language Learning
There are several language-related experiments in m-learning literature, integrating the recent innovations of mobile phone technologies in their pedagogical practices (e.g., Collins, 2005; Comas-Quinn, Mardomingo, & Valentine, 2009; Hayati, Jalilifar, & Mashhadi, 2013; Kadyte, 2004; Levy & Kennedy, 2005; Nah, White, & Sussex, 2008; Pemberton & Fallahkhair, 2005; Saran, Seferoglu, & Cagiltay 2009; Stockwell, 2007, 2008; Thornton & Houser, 2005; Todd & Tepsuriwong, 2008). These language-related practices, assisted by the recent wireless mobile technologies, prepared the ground for the introduction of a new approach in language teaching circles, that is, mobile assisted language learning (MALL). However, whereas all these breakthroughs are to be considered, a reconceptualization of the precise nature of m-learning is needed in order to assure its success in more realistic educational settings. Wagner (2005) suggests that "the success of mobile learning will ultimately revolve around a mosaic of rich converged experiences" (p. 52). That is, in order to assure the success of the recent wireless mobile technologies in pedagogical practices, they need to be accommodated and used according to the particular settings in which they will operate and the specific functions they can offer.

In order to shed light on what has been done in MALL, some of the most typical studies, using different functions of mobile phones such as e-mail, multimedia capabilities, Wireless Application Protocol (WAP) and Short Message Service (SMS) in their m-learning practices, are elaborated below. It is noteworthy

that such applications and functions are sometimes overlapped in a few m-learning practices.

2.1 Mobile Phone's Mail Affordance in Language Learning

As a typical MALL project, Thornton and Houser (2004, 2005), in an attempt to teach English to 44 EFL Japanese learners in a university setting, used mobile phone's e-mail (push media) in their study. One hundred-word English e-mail vocabulary lessons along with their Japanese equivalents were sent three times a day to the students' mobile phones at scheduled intervals (i.e., 9:00 a.m., 12:00 p.m., and 5:00 p.m.). They presented the vocabulary items in different contexts, hoping to integrate the students' learning experience into their daily routine and also promote elaborative rehearsal. The students' performance was later accessed via a poststudy quiz to examine their progress as a result of the experiment. The results of the first stage of the project indicated the effectiveness of L2 vocabulary lessons via mobile phone e-mail because the learners demonstrated linguistic gains which were promising.

Furthermore, in the second stage of the project, the learning outcomes of those who participated in mobile phone's e-mail vocabulary study were compared with other students' who were using identical materials on paper or the Web (pull media). The results revealed that the students receiving mobile e-mail vocabulary lessons had learned more than their counterparts on paper or the Web (Thornton & Houser, 2005, p. 225). These findings were justified by the researchers on the grounds that those students who were frequently receiving messages on spaced intervals were "prodded" to study the material more often than their counterparts on paper- and/or Web-based groups who were receiving materials only once a week (Thornton & Houser, 2005, p. 217).

In their study on vocabulary learning, Joseph, Binsted, and Suthers (2005, p. 207) proposed a prototype system that empowered the users to enhance their vocabulary learning "by studying word-image paired associates that ha[d] been uploaded to a shared database." Enhancing more collaborative learning, encouraging deep processing as well as a wider range of content modalities were enumerated as intentions for the "PhotoStudy" system proposition (p. 206). To accommodate the different users' preferences and to meet technological restrictions, the PhotoStudy system, which utilized wireless markup languages and Java MIDlets, could run on both wired and wireless mobile devices. For the mobile users of the system, the images were e-mailed to a particular address which could be uploaded using an e-mail interface, whereas an HTML file upload operation was utilized for image upload on the wired devices. A typical study session of the PhotoStudy system displayed an image accompanied by a multiple-choice question in which the user was required to select the most appropriate vocabulary item describing the image.

After choosing the answer, the system provided the user with feedbacks which determined the future course of actions for the next quizzes.

The findings suggested that the words' appearances or structures, as a memorization strategy, were assumed to have a significant bearing on their memorizations, as opposed to their spellings. Nearly all the participants supported the decency of having the PhotoStudy system on their mobile phones. Almost half the participants also were of the opinion that they had studied collaboratively, as they spoke English with their peers and played some roles while learning vocabulary items.

2.2 Using Multimedia Capabilities of Mobile Phones in Language Learning

Designing the Mobile Language Learning System, Kadyte (2004) examined the system for teaching the Finnish grammar and vocabulary lessons by using sound and text. The system had multilingual contents from which the learners could select one single specific language to receive lessons in Finish, when first subscribing to the system. The learners, then, could select between categories such as vocabulary, topics, and milestones to receive information according to the context of the selected item and his or her personal profile. A language learning guide also explained the major grammatical rules in the vocabulary section and presented the correct pronunciation of the language to the learners using mobile headphones.

Emphasizing both the personal and the community attributes of the users operating in a mobile context, Kadyte (2004) also exploited multimedia messages (MMS) and SMS alerts to support information retrieval and direct the learner to tutor support at the time for a face-to-face meeting. The evaluation showed a positive response from the learners and indicated that the use of mobile devices with value-added features could facilitate but not replace conventional learning and also increase students' motivation and interest (Kadyte, 2004, pp. 76-77).

In a symposium of m-learning projects, Obari, Goda, Shimoyama, and Kimura (2008) reported the results of their seven-year project to investigate the potential integration of mobile devices for English education in different settings. The first project explored the efficiency of mobile phones in the Test of English for International Communication (TOEIC) test preparation, compared to that of the personal computers. To this end, a series of vocabulary and grammar drills were developed to be implemented on both platforms to ascertain the effectiveness of each platform for the TOEIC test preparation. According to the statistical analysis, the two groups (i.e., the mobile and computer groups) showed improvements in their performance, and the posttest scores in both groups differed significantly as compared to the pretest results (Obari, et al., 2008).

In the second project, the multimedia capability of mobile phones was exploited to help the students in their watching video news programs. In doing so, several short video clips were developed based upon one video news program that could be watched using two different media, that is, a mobile phone and a computer set. To check the students' progress, two different kinds of tests including the test of vocabulary and comprehension were also conducted during the experiment. The findings suggested that the scores of the mobile group were "higher" than those of the computer group and they showed improvement after one week (Obari, et al., 2008, p. 4).

Using mobile phones to view caption-added video clips was the focus of the third project. To help the less-competent learners understand the contents of the video clips better, some subtitles were incorporated into the video clips, and the learners were encouraged to use their mobile phones to watch the videos. A comprehension test was, then, conducted to ascertain the efficacy of using mobile phones for watching video clips with subtitles. As the evaluation showed, the learners' comprehension of the video clips with captioning enhanced, and it suggested that mobile phones were helpful in watching caption-added video clips (Obari, et al., 2008).

The forth project tried out the potentials of mobile phones for English vocabulary learning. To carry out the experiment, three different types of instructional materials, including an English word with its Japanese translation, an English word with a picture hint and an English word highlighted in a sentence together with its Japanese translation, were developed to be studied on mobile phones. The participants, who were a group of 136 Japanese university students from different disciplines, were supplied with a series of 50 words of each material type for three weeks. As the test scores indicated, there were statistically significant differences between the groups' pretest scores, as compared to their posttest scores (Obari, et al., 2008).

Using the push aspect of mobile technology, Saran, Seferoglu, and Cagiltay (2009) investigated the potential effectiveness of MMS via mobile phones for improving L2 learners' pronunciation of English words. To carry out the study, 24 elementary-level students who were purposefully divided, based on prestudy questionnaire's data, into three different groups were instructed through three different media: mobile phones, printed handouts, and Web pages. All the three groups received identical materials as a supplement to the usual classroom instruction. A total number of 80 English words were compiled so as to be included in the study. The mobile-based group was sent four MMSs, with four words together with their audio-visual representations, on school days in fragmented time-slots with 1 hr time interval, by which each word's pronunciation was taught. The students in

the paper-based group were given the printed version of the four words after the first week lecture meeting in the morning just as the instructor pronounced each word after distributing handouts. The Web-based group could also accessed the same four words distributed on the Internet, via their Internet-connected computers daily at 9:00 am (Saran, et al., 2009). The analyses of the quantitative data such as posttest results suggested that those students who received MMS studied the supplementary materials more often as compared to the students who received the same materials on paper or on the Web. The participants in the mobile group appraised the mobile platform to be "very effective" for learning pronunciation because the repeated study of materials facilitated by mobile phones led to a better learning of the words' pronunciation (p. 108). The findings of poststudy semistructured interviews with the students and a poststudy questionnaire also showed that the students provided positive feedbacks about using MMS via mobile phones for learning pronunciation of English words.

2.2.1 Mobile-Based Multimedia Games for Language Learning

Todd and Tepsuriwong (2008) developed an action reading maze for mobile phones to be used in a communicative paradigm of language learning. Reading mazes are assumed to prompt students' motivations and enhance reading and grammar comprehension skills (Hadley & Stalcup, 2002, as cited in Todd & Tepsuriwong, 2008). Stressing learning over gaming, they designed three mazes using Flash Lite to be downloaded on the mobile phone platform. Each maze consisted of 50 up to 700 pages of contents which were formed based upon the students' preferences. Thai glosses were also given for difficult English words or phrases in order to assist the learners in the comprehension of difficult sentences while playing the game (Todd & Tepsuriwong, 2008).

The results from the interviews and think-aloud protocols revealed that a majority of the participants (i.e., 20 out of 28) rated the games positively. Among the 28 Thai university students as the participants, 21 of them also opined that they had learnt English using the Mobile Mazes software, whereas vocabulary ($N = 19$) and reading ($N = 9$) were the most frequently cited aspects learnt (Todd & Tepsuriwong, 2008). While appreciating the ubiquity and accessibility of mobile phones for language learning, the participants criticized the language used in the games as there was "a lot of text in English" to read while playing (Todd & Tepsuriwong, 2008, p. 11). Technical drawbacks of using mobile phones in language learning games such as small screen size and inconvenient keypad were also among those issues emerged (Todd & Tepsuriwong, 2008).

Similarly, developing a mobile language learning game in a university setting, Fotouhi-Ghazvini, Robison, Earnshaw, and Excell (2009) tried to "simulate the process of implicit vocabulary learning" (p. 22). The MOBO city, as it stands for

Motherboard City, was intended to teach technical English vocabulary items incidentally while engaging students in playing games based upon a technical theme, that is, computer's motherboard components. The theoretical underpinnings behind the MOBO city game was that the learner would acquire the language implicitly, as they were using it to learn the subject matter content, whereas the focus was not directed at language. To carry out the experiment, several mobile language learning games such as crosswords were designed in Java 2 MicroEdition (J2ME) environment.

In the implementation phase of the project, 15 third-year computer engineering students at the University of Qom, Iran, who took part in the study were divided into three groups, each consisting of five students. As for the first group, they were given a reading comprehension passage which they were required to read and understand the material along with its vocabulary items without using a dictionary, whereas the second group was allowed to use the dictionary and memorize a list of vocabulary items used in the passage. The third group, which was the focus of the study, was required to use the MOBO city game on their mobile phones to learn the subject matter content and its associating vocabulary items. As a supplement to the MOBO city package, deliberate vocabulary learning via some word games and dictionaries was also added to the system to aid the students in facing their common vocabulary problems (Fotouhi-Ghazvini, et al., 2009).

To assess how users learned the language, a list of high frequency vocabulary items which all three groups encountered during the experiment was presented and the learners' proficiency in recalling the meanings as well as spellings of vocabulary items was tested. The findings indicated that learners' lack of familiarity with some technical concepts of the motherboard made language learning difficult for them. However, providing a cumulative learning experience in an immersive environment, the MOBO city game assisted learners "greatly" to learn technical vocabulary items as they learned the subject matter well (Fotouhi-Ghazvini, et al., 2009, p. 22).

2.3 Mobile Phone's WAP Function in Language Learning

Furuya, Kimura, and Ohta (2004), in their use of Internet-capable mobile phones for language-related activities, ascertained enhanced test scores. Owing to the "anytime anywhere nature" of m-learning practices, the students' access to the content materials was free from the time and place constraints of the conventional classrooms, and the places the students studied English replaced from intramural settings to different outdoor places. The result also revealed that the students' studying rates increased from once a week to several times a week over the course of the project.

To evaluate the potentials of mobile devices in language learning, Kazi (2005) introduced "an Intelligent Tutoring System (ITS) for vocabulary learning implemented in an m-learning environment" (p. 1). The VocaTest was a Java based client-server application which ran on Java-enabled mobile phones connected to a set of Java Servlets as the program server. A typical quiz session in the VocaTest system began with the students' successful log in into the system. Taking the students' current levels of understanding about the subject matter, the system would select five English words randomly from the server database and made a multiple-choice vocabulary quiz based upon the words. According to the students' performance, the system would send the results into the server for possible updates to tailor to students' needs. The outcomes of this implementation stressed the priority of the ITS approach for spontaneous learning in students' leisure time over other standalone applications, and further supported the need for a careful design of materials for m-learning environments in order to assure their success (Kazi, 2005).

Developing a cross-platform approach, Pemberton and Fallahkhair (2005) as well as Fallahkair, Pemberton, and Griffiths (2005) tried to combine the potential efficiency and effectiveness of Web-enabled mobile phones with interactive television (iTV) to assist advanced ESL learners in their television viewing in different settings. As the learners were watching English language programs, the TV and Mobile Assisted Language Learning Environment (TAMALLE) system provided them with explanatory headings and other onscreen presentations to support their linguistic and cultural understanding of the items encountered during their TV viewing (Pemberton & Fallahkhair, 2005). A personal "learning sphere," which could be accessed via both iTV and mobile phones, also empowered the learners to store newly learned vocabulary items as well as difficult language and cultural items for later practice (Pemberton & Fallahkhair, 2005). The mobile platform could further provide the learners with the summary of each program in order to help them for better comprehension of the items presented.

As a result, Pemberton and Fallahkhair (2005) argued that whereas characteristic features of mobile phones in learning should be welcomed, they are not fully apt to meet the authenticity and interactivity requirements in language learning environments, as compared to iTVs. They maintained that, in contrast, television provided the learners with a rich amount of multimedia and authentic renewable content which were essential in efficient language learning (Pemberton & Fallahkhair, 2005).

Stockwell (2008), in line with Stockwell (2007), studied 75 first-year Japanese students of English at Waseda University to determine their intentions to use mobile platform, as a language learning tool in completing their vocabulary learning activities, whereas the other platform (i.e., desktop computer) was

available. He also tried to compare this readiness with their actual patterns of use as they were carrying out some vocabulary tasks. The course covered during the project intended to help the students with their English listening skills and vocabulary activities. System databases were identical for both the mobile and PC platforms, unless the PC version of the materials could be accessed, provided that Internet access was at hand on stationary locations where PC was placed. In contrast, the mobile version of the database was downloadable everywhere via the Web function of the Internet-capable mobile phone.

The survey results indicated that, despite the low use of mobile phone compared to PC, over two-thirds of the learners rated the system positively and were keen to use mobile phone in their language learning practices in short or long periods. As it was the case for other similar MALL studies (e.g., Thornton & Houser, 2002), such issues as cost of using mobile phone to access the Internet, slow page loading, small screen size, and the inconvenient keypad for language input were raised as obstacles in using mobile platform as a language learning tool (Stockwell, 2008).

Nah, White, and Sussex (2008) investigated the attitudes of Korean EFL learners toward using the Web function of mobile phones to access WAP sites for the purpose of learning listening skills. The outcomes of the study stressed the effectiveness of WAP sites for learning listening skills, as the students studied more often using their mobile phones to access the sites, compared to traditional listening classrooms. Student-centered learning was also enhanced, and the students valued the ubiquitous nature of m-learning activities which empowered them to study anywhere and anytime they felt like studying (Nah, et al., 2008).

2.4 SMS and Language Learning
Sending and receiving text messages, among other functions of mobile phones such as e-mail, WAP, and multimedia capabilities can, among other things, be exploited in mobile (language) learning practices as a reliable and cost-effective strategy. Several researchers in the field of language teaching have investigated the push aspect of SMS messaging as an instructional platform at university level (Cavus & Ibrahim, 2009; Levy & Kennedy, 2005; Li, 2009; Thornton & Houser, 2001). In these studies, SMS has mainly been considered as a medium to teach different language components such as vocabulary and grammar. It is claimed that exposing students to the educational materials at regular spaced time intervals would enhance the learning process (Thornton & Houser, 2001). The evaluation and the analyses of such m-learning projects indicated that the students mostly liked the push aspect of short text messages on their mobile phones, as it promoted regular study and contributed to learning improvement.

Similarly, the value of messaging in vocabulary development at high school level has also been reported (Lu, 2008). Lu exploited the immediacy of SMS to send English vocabulary lessons on the students' mobile phones in a vocational high school in Taiwan. The results showed that the SMS-based group had "greater vocabulary gains" compared to the paper-based group (p. 519). These findings are consistent with Song's (2008) study which integrated SMS into Web-based ESL vocabulary learning for mobile users. As Song (2008) reported, the learners' vocabulary performance increased, and they developed supporting attitudes towards using SMS for vocabulary learning.

Hayati, Jalilifar, and Mashhadi (2013) also capitalized on the push aspect of SMS affordance to deliver byte-sized English-idiom lessons on spaced intervals, vis-à-vis two other modes of instruction (i.e., self-study and contextual learning) to the learners in a private English language institute. Overall, the results revealed that the students receiving short mini-lessons on their mobile phones via SMS were more enthusiastic and learned more than their counterparts on paper or the contextual groups. The students' perceptions and attitudes in the SMS-based group also indicated that they were supporting the m-learning approach and held highly positive views about learning English idioms using the SMS affordance of mobile phones, as it promoted regular study.

Other studies have investigated the flexibility and ubiquity aspects of learning vocabulary using SMS on a large scale (BBC Press Office, 2003). To provide busy learners with an opportunity to learn authentic spoken English on the go, the BBC Worldwide Service sent Chinese English learners daily text messages on their mobile phones including English phrases in a variety of different topics (e.g., sport, business, lifestyle, etc.) together with their Chinese translations (BBC Press Office, 2003). Similar SMS-based language learning activities were also carried out by the BBC World Service's Learning English section in association with English teaching radio programs in French-speaking West African countries (Norbrook & Scott, 2003).

In "The Speak My Speak" project, Markett (2003) investigated the potential use of SMS as a communication tool between mature English L2 learners and their native English instructors. SMS was used to collect the text in the form of a semistructured discussion during class that could then be continued in a more traditional Web-based discussion afterwards. The result indicated that SMS could be regarded as a "feasible and promising" medium in language teaching and learning practices (p. 16). Using SMS promoted learner-teacher interaction and encouraged the students to reflect upon the content of communication and to construct their own content in English.

The comparative feasibility of SMS as a course material reminder has also been examined at the Chinese University of Hong Kong (CUHK; Clarke, Keing, Lam, & McNaught, 2008). To remind the students of the teaching materials and to encourage them to read their daily class notes, a short question regarding the previously taught materials in class was sent daily through an SMS gateway service on students' mobile phones. In order to evaluate the comparative usability of SMS quiz for learning English, other educational platforms such as WebCT, podcast, and e-mail, virtual class were also added to the experiment for delivering daily question, as that of SMS gateway service, to the participants. The findings showed that using SMS quizzing as a course material reminder "was clearly successful and well received" compared to other platforms as 84% of students valued it as "worthwhile" and 83% of them "enjoyed" it (p. 6139).

3. Concluding Remarks

Over the past 10 or so years, the quick movement of mobile wireless technologies, especially mobile phones, in education on the basis of technological advancements in information and communication technologies (ICT) has opened up an extraordinary opportunity to update learning and teaching strategies and to develop students' learning experience in ways quite beyond the constraints of traditional educational paradigms. This, in turn, has led to a proliferation of multifarious research and inquiries in the m-learning domain to realize the fundamentals to the integration of mobile technologies in the field of education, especially language teaching and learning.

In general, the findings of the studies reviewed were suggestive that mobile phones together with their various functions could be considered as a feasible and promising medium for teaching and learning English, particularly teaching grammar, vocabulary, and idioms which are the major candidates for dry presentation, should we not disregard the inherent functional restrictions of technological devices along with the due educational considerations. To be precise, despite the many advantages of mobile phones, in the end, a language class must not be utterly mobile-oriented because this may undermine the teacher's authority who should be the real provider of input and inspiration in class. That is, teacher autonomy is not to be ignored at the price of mere technology use while embarking on ICT-based undertakings. Teachers, as the key agents in the realm of education, are to be empowered to decide judiciously on the *hows*, *whats*, and *whens* of the technology use in their classrooms because their positive attitudes toward ICT implementation in the educational practices may assure its success (Shomoossi, Moinzadeh, & Ketabi, 2007). More importantly, using the technology too often takes away its novelty value and can make it boring.

Besides, the mismatch between existing curricula and ICT-based approaches and equipment may widen the gap for effective implementation of technology in a typical class time frame (Bordbar, 2010, p. 47). On some occasions, a subject matter is better taught through the conventional teaching tools available in the immediate context of the classroom. There will always be times when a piece of chalk can do better than a mobile phone. At other times, you may find that it provides just the right kind of student-teacher interaction that will enliven your class and motivate your students. Therefore, we should not ignore the true value of the conventional classroom learning, whereas the real potential of learning with mobile technologies should be received well (Hayati, 2009).

4. Pedagogical Implications and Considerations

Insights gathered from the comparative technological integration of mobile devices, especially mobile phones along with their different affordances into teaching classrooms of EFL language learning contexts, are considered to have practical implications for the educators and technologists to harness the potential of mobile technologies and design appropriate tasks which promote the widespread use of this platform for language learning on a large scale. Of course, as acknowledged by Luckin, Brewster, Pearce, du Boulay, and Siddons-Corby (2004), in the integration of mobile wireless devices into education, the focus should be on the learning rather than technology, as it is solely a channel through which the learner can communicate with others. That is, the success of technology as an educational tool and/or as a mediating tool in the learning process relies upon the extent to which it is incorporated into a pedagogically grounded framework.

In addition, embarking on a m-learning project necessitates the design of particular activities customized to the needs of students involved in the learning process. As rightly indicated by Allami, Jalilifar, Hashemian, and Shooshtari (2009), the success of a language learning program relies heavily on its "(un)accountability" for the needs of learners both inside and outside the language classroom (p. 125). Accordingly, course designers, first, need to know well the people involved in the learning undertaking. This initial stage of getting to know the participants, their needs, and their levels of language proficiency along with their usage patterns of mobile technologies lay the foundation necessary for m-learning to be a success. In effect, the use of mobile technologies, specifically mobile phones and SMSs, to teach English is, of course, directly dependent on such important factors as the course objectives, the classroom context, the expected degree of mastery of the language, the acceptance of mobile devices as learning tools in students' demographics, the students' financial situations, their proficiency level, and their willingness to participate in such activities.

Furthermore, support for teachers in m-learning undertakings is fundamental, as the nature of most m-learning projects entail the design and even deployment of certain technological as well as infrastructural underpinnings that are beyond the scope of teachers, but educational technologists. Language teacher technology education, as one of the key aspects of language teacher education, empowers language teachers to experiment with the new technology, before being able to use it in their classrooms, in order to facilitate learning and teaching process in situated contexts (Bordbar, 2010). Actually, a proper understanding of the new technology, including mobile devices used and the possibilities associated with them, is needed in order to better design ICT-based tasks and activities.

5. Limitations and Barriers to M-Learning

Several limitations in m-learning domain have often been reported by m-learning practitioners, among which Shudong and Higgins (2005) classified the limitations of mobile phone learning into the psychological, pedagogical, and technical categories. As far as the psychological limitations are concerned, one can say that learners have not yet fully accustomed to mobile phone learning and its revolutionary way of information access. Thus, learners may need time before they psychologically feel ready to engage in m-learning activities. Pedagogically, the true evaluation and follow-up of m-learning results are not easy to track because learners, as the main part of the learning process, are physically mobile. That is to say, it is inevitable that the surrounding environment would interrupt the learning process; as a result, learners may not concentrate all of their attention on learning while on the move (Shudong & Higgins, 2005). The problems identified with the small screen size of mobile phones, low resolution, inconvenient keypad mechanisms, and limited amount of text input are among those technical limitations raised. Thus, due to their technical constraints, we might argue that mobile phones are not suitable to be used for presentation of long passages of texts for reading or to engage students in intensive debates and/or complicated learning activities.

Finally, the cost of using mobile phones on a large scale such as a school setting for replying back the questions or assignments for long periods of time will also be an issue to be apprehensive about, as it often requires heavy subsidization on the part of researchers or participants. Yet, due to their wide potentials of use and application, it seems wise to deduce that mobile application systems could be offered as real alternatives to those high-end ICT based learning strategies, especially in developing countries which could not afford the cost of expensive ICT based technical infrastructure and system development on a large scale (Katz & Yablon, 2009).

6. Status Quo of M-Learning

After all, in order to further understand where m-learning as the cutting edge of education currently stands, a status quo of m-learning is considered. According to Masters (2008), "m-learning is not yet part of the mainstream educational media, and is still struggling to establish itself" (p. 5794). Despite the increased attention to m-learning practices from publications and conferences, as maintained by other scholars, most m-learning practices are small-scale pilot undertakings at a stage before a truly formal recognition by educational institutions as well as their teachers and learners (Traxler, 2004). It is time now to reflect on strategies for a large-scale as well as a sustained deployment of m-learning in educational mainstream. We need to carry out a proper evaluation of our pilots and trials in a variety of learning contexts to assure their success in naturalistic settings.

The need for appropriate theoretical frameworks and underpinnings to direct the design and implementation of m-learning pedagogical practices is also considered to be more fundamental to enhancing learners' experience of their learning than the sheer integration of mobile devices into educational settings. Fishman, Soloway, Krajcik, Marx, and Blumenfeld (2001) argue that a lack of theoretically grounded guidelines poses "a major impediment to the successful use of new technologies" (p. 7). Taylor, Sharples, O'malley, and Vavoula (2006) rationalized the lack of precise m-learning theories due to the fact that most theories of teaching and learning are tailored to be used in customary classroom settings, mediated by a trained teacher, and not particularly in m-learning environments. Therefore, a key challenge for m-learning practitioners at this time is to develop m-learning theoretical perspectives well suited to the revolutionary ways of accessing information-on-the-go, simply because learners are mobile.

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