MOBILE ASSISTED LANGUAGE LEARNING: THE RECENT APPLICATIONS OF EMERGING MOBILE TECHNOLOGIES

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Abstract: *The purpose of this paper to describe the rapid developments of smart phone technology and pedagogical application accompanying the process of English learning. Some of the latest research and review has shown that smart phones are contributing significantly to the application of pedagogical process of learning English, which is not limited only to examine the development of smart phone technology itself. Overall, smart phone technology has also been taking part significantly in everyday human life. A discussion of smart phone technology has also been widely known to contribute significantly in the research of Computer Assisted Language Learning (CALL). Many researchers have released their latest report that smart phones contribute positively and effectively at the same time as a support which can improve the quality of English learning process. Challenges and opportunities of smart phone technology has become a matter of everyday discussion.*

Keywords: *smart phone, application technology, English Language Learning*

Abstrak: *Tujuan penulisan makalah ini untuk mendeskripsikan perkembanganyang telah terjadi secara pesat teknologi telepon pintar dan aplikasi pedagogik yang menyertainya dalam proses pembelajaran bahasa Inggris. Beberapa penelitian dan reviu terbaru telah menunjukkan bahwa telepon pintar berkontribusi secara signifikan terhadap aplikasi pedagogik proses pembelajaran bahasa Inggris, dan bukan hanya sebatas meneliti perkembangan teknologi telepon pintar itu sendiri. Secara keseluruhan teknologi telepon pintar juga telah berperan secara signifikant bagi kehidupan manusia sehari-hari. Pembahasan tentang teknologi telepon pintar telah berkontribusi secara significant juga sudah diketahui secara luas di dalam penelitian Computer Assisted Language Learning (CALL). Banyak peneliti telah merilis laporan terbaru mereka bahwa telepon pintar berkontribusi secara positif dan sekaligus efektif sebagai penunjang yang mampu meningkatkan kualitas proses pembelajaran bahasa Inggris. Tantangan dan peluang teknologi telepon pintar sudah menjadi bahan diskusi sehari-hari.*

Kata kunci: *telepon pintar, aplikasi teknologi telepon pintar, dan pembelajaran bahasa Inggris.*

INTRODUCTION

In line with the computer technology development, the debate of whether new literacy is really new seems toassume that the computer technology usage would be normalized in the future (Bax, 2003; Bax & Field, 2000;Chambers & Bax, 2006). Nevertheless, one thing for

sure is that it is still on the continuum towards the finalstage of normalization of CALL. Warschauer (1999) also claims that the use of computers will not be consideredto be a special case but rather as a primary component of language learning and language use. Kern (2006)implies the changing status of CALL, comparing two definitions of CALL from Levy (1997) and Egbert (2005):

> *CALL means the search for and study of applications of the computer in language teaching and learning (Levy, 1997, p. 1)*
> *CALL means learners learning language in any context with, through, and around computer technologies. (Egbert, 2005, p. 4)*

As can be seen in two definitions above, the noticeable changes are 'any context' and 'computer technologies'instead of 'computer'. Presumably, Egbert's definition would try to embrace a broad range of contexts of usingcomputer technologies in language learning. Furthermore, even the meaning of the term 'computer' is notabsolutely free of ambiguity but comprehensive one. She uses 'computer technologies' because the definition ofcomputer has also been changing. Nowadays 'computer', in fact, seems to be too general to refer only to desktopor laptop computers. Recent mobile electronic devices that hold the capacity for language learning (e.g., 3G/4Gsmartphones, tablet PC) have been blurring the learning boundaries between classroom and home, as well asboundaries between the concept of computer and mobile devices. Also those new mobile computing technologiescan presumably change the way we have used computers (Egbert, Akasha, Huff, & Lee, 2011). In this sense,such mobile devices can also be regarded as handheld 'computers' with versatile functionalities.

DISCUSSION

In line with the latest Horizon Report 2012 and 2013 which highlighted the educational potentials of mobile andtablet computing (Johnson et al., 2013; Johnson, Adams, & Cummins, 2012), Mobile assisted language learning(MALL) is a burgeoning subdivision of computer assisted language learning in general. As mobile technologieshas evolved, so have their advanced applications developed for language education. According to the surveyresults conducted by the Pew Research Center's Project for Excellence in Journalism (PEJ) in 2012 (Fox &Duggan, 2012), half of all American adults own either a tablet or a smartphone, which indicates that the usage ofsmart phone and tablet has been skyrocketing for the last a few years. Besides the increase of usage, mobiledevice technology has been drastically developed and transformed in an integrated way. In addition to thetraditional purpose for oral communication via mobile phones, the current multifunctional mobile technologyenable users to access to the Internet ubiquitously for locating and searching information, emailing, readinge-books, and even shopping. The mobility has also enabled learning independent of location and any time evenout of classroom.

Several scholars introduced and reviewed the use of mobile technology and its applications for languageeducation (Chinnery, 2006; Godwin-Jones, 2011; Kukulska-Hulme & Shield, 2007, 2008). Chinnery (2006)comprehensively reviewed empirical research which utilized some of mobile devices including cell

phones,PDAs, and iPods. For example, instructors teach short English lessons by sending them to students' emails viamobile phone (Thornton & Houser, 2005), giving vocabulary instruction via SMS for Italian learners in Australia(Levy & Kennedy, 2005, cited in Chinnery, 2006). Even though Chinnery (2006) reported those above projectswere effective for language learning, the underlying concept of those applications of mobile phone seems to besimilar to the concept of Web 1.0, in that the interaction was not virtually user-centered or –created. Since theterm Web 2.0 was introduced by Tim O'Reilly in 2004, the term, Mobile 2.0, has been used to refer to the mobiletechnology featuring Web 2.0 (Wang & Heffernan, 2009). The essential features of Web 2.0 are user-created andcollaborative content. Likewise, the new approach to MALL would be co-opted from the feature of Web 2.0.Likewise, Kukulska-Hulme and Shield (2007) comprehensively reviewed MALL-related research, emphasizingspeaking and listening domains. They overviewed the research in terms of the types of mobile devices includingmobile phones, tablet PCs, MP3 players, and so on. More recently, Godwin-Jones (2011) explored the currentstate of mobile apps for language learning, adding context aware learning apps using GPS, data storage andsyncing between "cloud" and mobile device. As Godwin-Jones mentioned, the noticeable development of mobilesoftware are vocabulary learning programs and flashcard software. Besides the apps Godwin-Jones exemplifiedin his article, such as eStroke, Pleco, ChinesePod, many other software once operated by Windows or MAC havealso increased their exposure by developing iPhone or Android apps. Supermemo, for example,

is one of thepowerful spaced repetition software (SRS) for vocabulary learning (Godwin-Jones, 2010), which is moreeffective than massed learning (Nation, 2001, 2008) Recently, Supermemo has been equipped with soundrecognition system, and expanded its usability in multiple platforms including PC, smartphones, and e-learningvia website (Yang & Park, 2012). In addition to the vocabulary learning, because of the increasing distributionand use of smartphones enabling wireless Internet connection, the educational applications of smartphones havebeen getting diverse and integrated more and more.

Likewise, recent research or review on mobile assisted language learning tends to focus on more detailedapplications of newly emerging mobile technology, rather than has given a broader point focusing on types ofmobile device itself. In this paper, I thus reviewed recent peer-reviewed research and conference papers between2005 and 2013, which utilized newly emerging and integrated mobile technology. I used the databases (i.e.,EBSCO, Google Scholar, ProQuest, and JSTOR) to select the articles, the selection criteria based on thefollowing topics in previous literature (Chinnery, 2006; Godwin-Jones, 2010, 2011; Johnson et al., 2013;Johnson et al., 2012; Kukulska-Hulme & Shield, 2008): short message service (SMS), instant messages (IM),microblogging (mobileblogging), ambient technology (augmented reality), GPS, and tablet computing.Its pedagogical benefits and challenges are discussed.

Short Message Service (SMS)

The frequent MALL activities using mobile phones seem to employ

SMS (Short Message Service) for languagelearning. Specifically, SMS is one of the cell phone features which enable communicative language practice(Chinnery, 2006). In both studies conducted by Kennedy and Levy (2008) and Levy and Kennedy (2005), thestudents were sent Italian words, idioms, and example sentences via students' mobile phones as SMS messages.Both projects proved the use of SMS in language learning as a successful technique. In addition, almost all ofparticipants showed positive attitude toward receiving text messages. Li and Erben (2007) also reported that theuse of instant messages enabled the language learners to increase their intercultural awareness and criticalthinking skills. Like Thornton and Houser (2005), Lu's (2008) and Zhang et al.'s (2011) studies both conductedsimilar experimental study to investigate the effectiveness of vocabulary learning by using SMS. In Lu (2008),30 high school students were divided into two groups. One group learned English vocabulary via mobile phone,while the other used print materials. The result indicated that mobile users show greater gain in vocabulary thanpaper-based learners. Zhang et al. (2011) also found that the group studying vocabulary via mobile phone SMS text messages retrieved more vocabulary in the posttests than the other group learning through paper material. Inthe same vein, Motallebzadeh and Ganjali (2011) examined the effects of SMS on 40 Iranian EFL learners'performance on vocabulary retention and reading comprehension. The result showed that mobile phone usersoutperformed the control group with regard to both vocabulary and reading comprehension scores.

Microblogging (Mobileblogging)

Microblogging or mobileblogging is a new form of blogging and primarily represent Mobile 2.0 technologies(Ebner, Lienhardt, Rohs, & Meyer, 2010). A microblog can be defined as "a weblog that is restricted to 140characters per post but is enhanced with social networking facilities" (McFedries, 2007, cited in Ebner et al.,2010). Borau, Ullrich, Feng, and Shen (2009) reported the usefulness of microblogging (i.e. Twitter) in EFLlearning context. Borau et al. (2009) argued that the students were encouraged to participate in cross-culturalcommunication and interactions effectively. Moreover, the microblogging enables the EFL learners to producethe language actively and interact in the target language via both the computer and mobile phone platforms.

Hsu, Wang, and Comac (2008) investigated the use of audioblogs in ESL setting. The instructors used theaudioblogs for the management of oral assignments, interaction with learners, and evaluation of learners'performance. The students used the audio recording function of mobile phones to complete the oral assignmentsand they used the audioblog to submit and archive their oral assignments. Hsu et al. (2008) concluded that theintegration of audioblogs plays an important role as a tool for assessing learners' performance outcomes andbuilding mutual interaction between instructors and students.

Comas-Quinn, Mardomingo, and Valentine (2009) conducted a pilot study to investigate how students who studyabroad in Spain construct meaning through informal interaction with target culture via mobile blogging. Theparticipants shared and reflected on their experiences in target culture with other peers by uploading multimedia(i.e.,

pictures, short videos, audio files) they gathered in Spain with mobile devices. Comas-Quinn et al. (2009)concluded that the students' use of mobile blogs promotes interaction and a sense of community in informalsetting.

More recently, Shao (2010) explored the applicability of mobile blogging for Chinese students who were newlycomers in British. The findings indicated that the mobile group blog could help the participants understandauthentic target culture and language use. Moreover, the mobile blogs could serve as a practical tool even for theprospective students in China to build readiness of target language use and confidence in being aware of thetarget culture.

Wishart (2009) conducted a small-scale study to investigate the feasibility of using mobile technology forteacher training. The study illustrated the promising result that the use of blogging could be a successful way ofencouraging and sharing the teacher trainees' reflections on teaching.

Petersen, Divitini, and Chabert (2009) evaluated the use of a mobile blog to facilitate to build a sense ofcommunity in a French class. Petersen et al. found that two split communities of a French class could fostersocial interaction and share their information and feedback with the community, even if the communities werephysically separated. Also the use of mobile blog could make the students feel more included in the communityof French learners.

Ambient Intelligence and Augmented Reality

Cook, Augusto, and Jakkula (2009) defined Ambient Intelligence is a developing technology which means "*thepresence of a digital environment that is sensitive, adaptive, and responsive to the presence of people*" (p. 3).This emerging technology can be applied to MALL. Beaudin, Intille, Tapia, Rockinson, and Morris (2007)reported the use of ubiquitous sensing at home for "context-sensitive microlearning" of vocabulary on a mobiledevice. This is one of examples of language learning integrated with everyday surroundings. Built-in andstick-on sensors detected and responded to the students' interactions with objects such as furniture, appliance athome. Then, the detected interaction presented the audio sound of English and Spanish phrases linked with theuse of those objects.

Augmented reality (AR) is highly integrated mobile learning environment to improve learning outcome andexperience by immersion. Azuma (1997) defined the augmented reality is the application which "allows the userto see the real world, with virtual objects superimposed upon or composited with the real world" (p. 356). Specht,Ternier, and Greller (2011) noted that AR can make a contribution to helping learners "gain a deeperunderstanding, experience embedded learning content in real world overlays, or explore content driven by theircurrent situation or environmental context" (p. 121). Liu, Tan, and Chu (2010) demonstrated the effectiveness ofMALL with use of handheld AR for language learning. Augmented reality allows participants "to experience feelings and emotions as they do in the real world by interacting in a virtual environment" (p. 39). Theyemployed a variant of 2D barcodes (i.e. Quick response code) which can be read by mobile camera. Those QRcodes included the linked information for students so that they explored the map on the mobile phone whilevisiting designated learning

zones by decrypting QR codes. Then the students sent the information to the mainserver for retrieving context-aware learning material wirelessly.

Antona et al. (2010) reported the small-scale but actual application of augmented technology with the use ofmobile computing in foreign language learning environment, which, in particular, aimed to build L2 learners'personalized learning strategies and to support error correction. Most recently, Leonidis et al. (2012) highlightsthe potential for effective use of the ambient intelligence systems for classroom contexts, called 'smartclassroom'. They argue the system, SESIL, provides an augmented reality environment to support L2 readingand writing practices. They also suggested the mobile devices such as mobile phones be considered to be aneffective interface for classroom applications.

Global Positioning System (GPS)

Since the MALL reflects mobile and ubiquitous characteristics, the context and location-aware technology play aspecial role in diverse MALL applications. Recent feature in the smartphones is the function of GlobalPositioning System (GPS). In addition to the original purpose of GPS application to help in finding one's wayand locations, it also can be applied to the language learning outside the classroom. Ogata et al. (2008) tested acomputer-supported mobile learning environment for Japanese language learning. In the process, the foreignstudents taking Intensive Japanese Program were assigned field activities by teacher. Then, they went around thetown to complete tasks. The research shows the applicability of mobile devices with GPS function in languageeducation, in that the

students could integrate the knowledge in classroom and their authentic needs in theiractual daily life.

Tablet Computing

Even though the mobile and portable benefit of small handheld devices (e.g., cell phones, PDAs, iPod, etc.), thepotential challenges of these mobile devices are likely to be their small screen (Carlson, 2002; Chae & Kim,2004; Chinnery, 2006; Venkatesh, Ramesh, & Massey, 2003) and limited memory and data processing speed. Tocover these inconveniences, the use of Tablet PCs has recently been on the rise as the alternative (Godwin-Jones,2011).

Lan, Sung, and Chang (2007) conducted a comparative study to investigate the benefit of using Tablet PCs inEFL context to improve peer collaboration in reading class, compared to the traditional class setting. The resultsindicated the application of Tablet PC to facilitate the collaboration between peers outweighed the potentialweakness hindering students' collaboration process in a traditional setting. Moreover, the utilization of themobile-device-supported peer-assisted learning could reduce EFL learners' anxiety and promote their motivationand confidence.

More recently, Chen (2013) also examined the applicability of using Tablet PC for informal learning of Englishout of classroom setting. As Godwin-Jones (2011) highlighted the vast potentials of using apps by Tablet PCs,Chen's study well illustrated the multifunctional features of Tablet PCs including micro-message, micro-blog,electronic book reader, and so on. For example, the participants were actively engaged in a collaborative learningenvironment by sharing their feedback with each other via micro-

blogs. The study also showed the positiveperceptions the learners had of the effectiveness of using Table PC for language learning.

CONCLUSION

The main goal in this paper has been to provide the review of recent research on MALL applications in terms ofnewly emerging or integrated mobile technologies. Rapidly developing mobile device technology andwidespread ownership of mobile device seem to have an impact on language education, as well as other contextslearning. In conventional application of CALL, most learning environments have been occurred on stationaryPCs. However, now it is transferred to mobile devices, which enable the language learning to be independentfrom any location and time. Both PCs and mobile device application will eventually happen simultaneously. Ascan be seen above examples of MALL applications, multi-functional mobile devices can contribute toward amore comprehensive educational environment for language learners.

According to the research findings reviewed above, it seems hard to confirm that MALL has already been fullyutilized in educational contexts. Nevertheless, one thing for sure is that it is on the continuum towards the newstage of CALL through adopting a variety of emerging mobile technologies. The increasing ownership of mobiledevices among teachers and students might not be directly related to computer technology usage for the purpose of language education, however; it could imply the expanding nature of computer technology use in educationalpurposes. Furthermore, the promising results from the research about the use of mobile technologies forlanguage learning might be

challenging to indicate the prevailing trends of MALL in a definite way due to notonly the fact that the application of MALL highly relies on the general consensus from language teachers andlearners, but also lack of pedagogical framework of MALL. Therefore, the future research on MALL needs toexplore the teachers' and learners' perspective on the use of MALL, in that it would be meaningful to find out'emic' views on the issue from the users in educational context. All of those factors identified from the languageteachers and learners can be viewed as their current obstacles to overcome toward the successful integration ofnew MALL technologies. At the same time, those factors play a role of a series of indicators to see 'where weare' on the continuum to the new stage of MALL.

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