

Contextualizing a MALL: Practice Design and Evaluation

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ABSTRACT

Mobile technologies have been successfully implemented in language learning, and have supported various innovative designs. However, many of these designs require considerable technical knowledge and support that are beyond the workload capacity of most language teachers. This paper discusses a study using an over-the-market mobile device combined with a task-based approach to design a contextualized mobile assisted language learning (MALL) practice. Meanwhile, a small-scale study was conducted to evaluate the effects of the proposed practice. The results provide evidence suggesting that contextualizing MALL practice can improve language learning and related attitudes for learners. The primary goal of this study is to demonstrate an affordable MALL design for language teachers. The study serves as a reference for teachers in developing this new type of MALL practice to motivate students and enrich language learning.

Keywords

MALL, Learning context, Task-based learning, EFL

Introduction

Many see mobile learning as the next generation of learning (Sharples, 2000). Mobile technologies applied to language learning include PDAs, multimedia cellular phones, MP3 players, and digital dictionaries (Zhao, 2005). The appeal and benefits of these mobile or handheld devices supporting mobile assisted language learning (MALL) appear to be their portability, the ability to play and record audio, and cost efficiency as compared to that of a laptop or desktop PC (Wishart, 2008). Some researchers claim that the portability and accessibility of mobile devices can allow language learners to access learning materials and to communicate with teachers and peers with less time and space constraints (Chinnery, 2006; Nah et al., 2008; Rosell-Aguilar, 2007).

As communication has always been a central pillar of language learning, the technical aspect of communicative mobile technology has become increasingly able to support communication pedagogy in recent years. Specifically, MALLs support language learning in different language areas such as vocabulary learning (Cavus & Ibrahim, 2009) as well as pronunciation practice (Ducate & Lomicka, 2009). Some researchers have also drawn attention to the four language skills; for example, writing ability (Morita, 2003), and English listening skills (Edirisingha et al., 2007). These studies have adopted the wireless delivery mechanism of SMS and handheld functionalities of video and audio recording, as well as the playback of mobile devices to help learners practice specific types of second language skills. In general, these adopted applications, because of the mature development of wireless technology and ICT devices, do not require much technical support, aside from uses in business domains. Language learning in respect to MALL focuses on practicing specific elements of knowledge and skills rather than using language merely as a means of communication.

Another area of MALL studies has explored the advantages of mobile technologies. These features include personal, situated, authentic, spontaneous, informal, and continuous access, as well as unhindered interaction across diverse contexts (Kukulska-Hume, 2009). For example, previous studies have examined a mobile peer-assisted learning system for a collaborative early English as a Foreign Language (EFL) reading program (Lan et al., 2007), a personalized intelligent m-learning system for supporting effective English reading (Chen & Hsu, 2008), and several theme-based m-learning activities improving contextual language learning experiences (Tan & Liu, 2004). MALL designs in these studies have emphasized innovative learning features of mobile devices, but all of them must customize mobile technologies. Although these researchers have proposed advanced MALLs, their designs and implementations require too much technical knowledge and too many demands that are not affordable for most language teachers. To apply MALL to real pedagogic situations, the main purpose of this study is to explore how teachers can adopt mobile technologies without too much technical burden, while enhancing target language acquisition to motivate learners.

Because communication in a target language is crucial to second language acquisition, language teachers must provide learners purposeful contexts where they can engage in authentic interaction. Among various versions of communicative language teaching, task-based instruction has become a concrete realization for developing target language through meaningful communication (Littlewood, 2004). With the communicative applications of advanced mobile technologies, mobile devices thus provide a platform for various communicative tasks. This study employed mobile technologies to design task-based language instruction, whose design and implementation must be affordable to language teachers. The instructional design used mobile technologies to support MALL in technically simple ways associated with sophisticated pedagogies. In this study, technology used in a simple way means that the technology itself is well developed and technically supported by the business domain; therefore, its incorporation into MALL does not require much technical knowledge or support from a language teacher. As the design is explored from the perspective of pedagogy instead of the functions of technology, this study asserts that the technical features of mobile technologies be aligned with the characteristics of the subject domain, EFL. The primary goal of the study is to explore how MALL can be designed in a manner that is technically simple for teachers and pedagogically motivating for students.

Literature review

According to Pica (2008), task-based instruction involves “activities that engages language learners in meaningful, goal-oriented communication to solve problems, complete projects, and reach decisions” (p.71). Based on the theoretical underpinnings of task-based language teaching, various tasks have been designed and their effects have been explored (Shehadeh, 2005). Research on the interaction hypothesis focused on the effect of the negotiation of meaning (Mackey, 1999). Research regarding output hypothesis examined the variables which affect learners in producing language output (Swain, 2000). The cognitive perspective emphasizes on what aspects of task can promote language fluency, accuracy, or complexity in language learners (Ellis, 2000). The socio-cultural position looks at how learners’ individual differences affect their task performance (Shehadeh, 2005). While these studies have analyzed the variables of tasks and explored their effects systematically, the issue of creating a favorable context for authentic communicative tasks to occur has been seldom discussed. Although context has been recognized as an integral factor in language teaching, serious attempts to provide students with natural contexts that prompt communication have been lacking. Widdowson (1998) indicated that contextual conditions must be authenticated by the learners, which occasionally requires some type of pedagogic artifice. Mobile technology seems to be an aid for teachers to make the target tasks learners are supposed to perform closer towards reality.

Advanced mobile technologies provide a wealth of ideas and strategies to enhance the design and implementation of foreign language teaching and learning. One line of study has employed mobile technologies to deliver content necessary for enhancing language learning. These include supporting vocabulary learning (Lu, 2008), advancing reading comprehension ability (Chen & Hsu, 2008), enhancing writing ability (Morita, 2003), improving English listening (Nah et al., 2008), and practicing pronunciation (Godwin-Jones, 2008). However, language learning context has not been a major concern for these studies. Another line of research has elaborated the features of mobile technology regarding MALL design in a context-aware manner. For example, previous studies have proposed a personalized mobile English vocabulary learning system for recommending appropriate English vocabulary materials to learners (Chen & Chung, 2008), and a mobile intelligent tutoring system with learners’ location awareness supporting language learning (Cui & Bull, 2005). Context is an essential issue of these studies, but it has been discussed more from the adaptive perspective rather than the facilitative perspective. With regard of using task design with mobile technology, Kiernan and Aizawa (2004) evaluate the use of mobile phones as tools for university students English learning and suggest that mobile phones should be a language learning tool worthy of further investigation.

Proposed design and related theories

Based on second language acquisition theories, the goal of task-based approaches is to engage students in interactions to facilitate second language development. Therefore, the employment of mobile technologies to design tasks must emphasize the potential of mobile technology to promote social interaction. This study considered Long’s (2000) proposed steps for designing task-based language teaching. The first step is to identify target tasks based on learner needs and language proficiency. The target tasks were thereby classified into task types. Finally, pedagogic

tasks were developed from task types. The potential relevance of mobile technologies was identified to map the individual task. In other words, the characteristics of the pedagogic tasks were designed by ready-to-use mobile technologies to amplify the communicative aspects of the interactions. As shown in the design, mobile technologies were neither considered nor applied until the types of tasks had been decided.

This study proposes three major MALL designs that are technically affordable for a language teacher and facilitate authentic language communication. The first design involves creating task authenticity. The second design entails providing the co-existence of social and digital participation. The third design involves providing dynamics of communicative mediations. Simple technologies are employed to construct the tasks. For creating files as the instructional materials, teachers use popular software, such as Photoshop to edit photos as well as pictures, and Goldwave to create audio files. As the communicative tasks are enacted, teachers use the applications of software in the mobile device to engage the task, which include the internet access, calling, MMS, SMS text-messaging, and MSN.

With regard to task authenticity, Schank and Kass (1996) revealed that, when students try to accomplish task goals within authentic contexts, they tend to be highly motivated to learn. The focus of authenticity here, following the view of Barab et al. (2000), is not on the task itself, but on the real communication that occurs among learners. Authenticity lies in the dynamic interactions among the learner, the task, and the environment.

For creating task authenticity, inspired by the mixed-reality in mobile learning, mobile device and contextual objects around students are used together to provide task-related information for guiding and fostering students' real communication. An authentic context is required for learners to perform an authentic task because anchoring the task in a meaningful and realistic context is vital. The context includes the location, identities people and objects nearby, and environment around those objects. For bridging the gap created by the digital information and reality, learners are stimulated to produce language output. This design should support the output hypothesis. That is, based on understanding of authentic artifacts, acquired digital information, and peer assistance as input, students are assisted to exercise language skills and ask for further clues while having collaborative discussions as output.

As for the technological design, instead of using sensing technology such as radio frequency identification (RFID), this study is stimulated by Chinnery's (2006) discussion about moblogging. Moblogging uses a cell phone or PDA in the field to post words or pictures to a website, and offers the potential to add authentic and personal visual content. This study proposes the opposite, using pre-scripted tasks for specific contexts in which students must rely on both mobile devices and the contexts to complete the tasks. While working on the task, the contexts and digital information in the mobile device form a mixed-reality or augmented reality MALL. The technical requirements are only the store and display of multimedia information in the mobile devices, as well as their communicative functional operations for voice call and messaging; all of which should be technically affordable for most language teachers.

For providing the co-existence of social and digital participation, mobile devices contain two distinct types of participation, which occur simultaneously in the same place. When students are engaged in a task, they can experience normal social participation within their group. They can also send and receive digital information from other people in or outside of their group. These two types of participation regarding the mobile learning features of social co-existence and digital participation can stimulate students' emotional expressions and corresponding social language.

The proposed design requires learners to acquire the instructions for their task through the digital information. While they are collaborating with each other to achieve this goal, they can use the mobile device to inquire about or provide information. After gathering information for their assigned task, the group members must exchange and synthesize the information to work out the task. As a group, they must not only use target language to communicate with each other for collaboratively finishing the task, but must also gather any necessary and specific information, such as feedback or help from their instructors. As collaboration is viewed as elemental to task-based instruction, students may encounter the challenges of role distribution, low motivation or even futility. Instructors can perform monitoring or scaffolding as needed to keep the momentum of the task.

This type of co-existence of participation is somewhat distinct from that of science learning, for example, the spread of disease (Zurita & Nussbaum, 2004), in which students' social interaction is used to represent the science

curriculum to be learned. In language learning, the interaction hypothesis emphasizes the interaction between learners for acquiring a second language (Mackey, 1999). The co-existence of social participation and information serve as a platform on which students can practice social-linguistic expressions and create the needs of interaction between learners and other speakers.

For providing dynamics of communicative mediations, the mobile device is used as a mediator to facilitate output and promote interaction among students and teachers. The common features of mobile devices include internet access, voice-messaging, SMS text-messaging, and MSN. Hence, the communication can be in spoken or written forms, which may require learners to use their reading, writing, listening, or speaking skills according to the nature of the task. In addition, mediated communication also allows both asynchronous and synchronous communication. These forms of communication can be viewed as task characteristics from the cognitive approach (Ellis, 2000) and can affect learner performance.

The aforementioned designs stress that English is a language for communication, not just an object of academic interest or merely a key to passing examinations. The proposed design integrates MALL into task-based language learning by emphasizing the communicative nature of mobile devices and their capability for contextual use facilitated by their portability and accessibility.

A sample practice design

The mobile device

The mobile device chosen for this study has dimensions of 120x70x20 mm and five features advocated by the vendor: mobile MSN with full keyboard input, POP3 email, Internet browsing and RSS news feeds, MP3 player, and basic mobile phone functions of voice and SMS. These features form a comprehensive, communicative functionality, that is, listening, speaking, reading, and writing, supporting this study's proposed MALL.

The operation of the mobile device to perform the task has been evaluated to be affordable for the learners. This is critical because the mobile device is viewed as an interaction platform for learners to handle both their language input and output, and it should not require too much effort to use. If a device requires too much demand of attention for its operation, less attention can be devoted to the learning it supports.

Three phases of the task

A three-phase task framework is proposed. The first and third phases are intended for the classroom as pre- and post-task learning; and the second phase is the main task. The aim of such design is to begin with the preparation for the task in the classroom, followed by communicative language practice in the field. The field visit is then followed by a reflection in the classroom with presentation and sharing of what the students have learned. Three phases form a combination of two modes of instructions (face-to-face and MALL) and help students experience language learning and usage in varied contexts. The main task is conducted at the Lin Family Mansion and Garden in Taiwan. This field was chosen because each building in the garden has particular features and routes that are like a maze. Additionally, the area is large enough so that teams will not interfere with one another when performing their tasks.

Pre-task phase

The pre-task involves introducing the task with three functions. These include motivating the learners to perform the task; preparing the learners to perform the task; and providing clear instructions on how the task should or can be performed (Gorp & Bogaert, 2006). The linguistic content required to perform the task is introduced for learners to recall or learn. The vocabulary and sentence structures are from the Nine-Year Integrated Curriculum published by the Ministry of Education in Taiwan. Both vocabulary and structures are selected based on their relevance to the task. In addition, ten new vocabulary words relevant to the task are also taught.

The mobile devices are used as classroom response systems to offer personal interactions with language learning

experiences in this phase. Moreover, because the mobile devices are going to be integral in scaffolding students' task performance, participants are shown where they can find the referential materials in the mobile devices. The use of mobile devices in this phase entails students performing the simplified task and motivating them because these learning activities, such as using the mobile device to present learning material and communicate with the instructor one-on-one, are novel to them. The scenario regarding the task is presented in a film clip to show the students what they must do to complete the next task.

Regarding mobile device operation, because not every student is familiar with the use of mobile devices, introduction of and practice using the mobile device functions are necessary. Therefore, activities in this phase are designed by combining the linguistic content (input) and the functions of the mobile device. For instance, students learn to open a music file to listen to a song and use the mobile function of messaging to send answers to the instructor.

Main task phase

This phase is designed to generate authentic interaction, discussion, and negotiation among language learners. Three or four participants are formed in one group with a foreign agent. Students are assigned to various roles with different job contents. The jobs are distributed according to the mode of communication, a caller, an SMS reporter, an MSN reporter, and a secretary for recording and requesting help. Participants must cooperate with team members and must be able to understand the described task by listening to or reading the English instructions. They must then formulate responses in English either in spoken or written form. For instance, they must create their own sentences to describe the differences in a room compared to the picture file shown in the mobile device.

The task is designed as a problem-solving task. The learners are told that a burglary has been committed at the Lin Family Mansion and Garden. Because this burglary might be related to many other museum burglaries in other countries, an international organization is here in Taiwan to help the police find the suspect, but these agents only communicate in English. Some evidence has been collected by the police. The task for the students involves using this evidence to help the agents solve the crime and identify the suspect. Students must accomplish six task assignments. All evidence is designed according to particular context of different locations in the Garden. Participants are able to use mobile phones to access multimedia content linked to specific information for the task at different locations. As players report the accomplishment of a task, information about the introduction of a new task assignment is delivered to their devices for moving to different locations. They must use this information to progress in the game. Related picture files and sound files are pre-saved in the mobile device. The tasks require various language forms and mobile device skills and should be performed as a team, which can prompt learners to cooperate with each other to solve problems. After completing all six assignments, students must synthesize the results from each task and identify who the burglar is. For communicating with headquarters, the mobile device is used as a communicative tool as well as a supporting aid for teachers to send guidance and feedback to the learners. The six-task assignment, the sentence structures and language skills students might use are listed in Table 1.

Table 1. Six task assignments

Task	Task Description	Mobile Technology	Language Skills
Spot the differences	A picture of a portrait has been found. The police are wondering whether the suspect might have switched the portrait. Open the picture file with the title portrait. You need to locate the portrait and find the differences between the one you find and the one in the picture file.	Use MSN to report	Reading / Writing
Interview the witness	A foreigner was found in the pavilion near the pond. The police doubt she might be the witness in the crime scene. You need to interview her to get her personal information.	Call the headquarters to report	Listening / Speaking
Seek the source of sound	A janitor heard some strange sounds last night. Luckily, she used her cell phone to record the strange sound. Open the music file. You need to	Call the headquarters to report.	Listening / Speaking

	help the police to find out where the sound came from and any other clues in the recording.		
Locate the place	A map has been found. The police suspect that it shows the area where the burglar got into the Garden. Open the picture file with the title map and find where it is.	Use SMS to report.	Reading / Writing
Decode	A scenic spot stamp with two numbers (4, 6) was found on the left arm of one suspect. Open the picture file with the title stamp. Find out the meaning of the codes.	Use SMS to report.	Reading / Writing
Check the items	Some items seemed to have been stolen. Go to check the objects in the room and describe the items to the police.	Use MSN to report.	Reading / Writing

The mobile device in this study is embedded with a variety of tasks, aimed at enhancing interactivity and engaging learners in using their English. Tasks are all centered on information gaps, problem-solving gaps, and reasoning gap, based on a burglary scenario. By employing the MALL design, the mixed reality is used to create the task. Considering the task “Spot the differences” as an example, the learners would see a digital photo of a portrait with several changes made on their mobile device and would compare it with the actual one in reality. As for the task “Decode” is regarded as complex for the learners, and the design of co-existence of social and digital participation is used. During the task, learners must interact with each other for discussion; meanwhile, the learners must keep connection with the person at headquarters using the mobile device to check if there are more clues for them to solve the problem. The dynamics of mediators are explored in the various tasks. Considering the task “Check the items” for example, the learners must report by MSN because they must describe the items in detail. In addition, the location is a study room; learners are told that MSN is the more effective way to communicate in this situation.

By actively solving the burglar case, learners need to use integrated language skills, collaborate with team members, interact with the instructor in headquarters. With the tasks embedded in the scenario, the goal of the task for students may be to find the real burglar, but the real purpose of the task is to engage learners in generating authentic communication. For instance, in the task ‘Seek the source of sound,’ students need to read a story of the janitor about what happened to her the night before and listen to a recording. According to the clues, students discuss with each other. As they find out the place, they need to report to headquarters by calling. Students need to integrate their reading, listening, speaking skills to accomplish the task.

Post-task phase

The post task helps students review and compare what they have learned in the pre-task and what they used during the task. The mobile device, hence, is integral in presenting the materials and connecting the two phases. Tasks are designed to create an environment in which learners are allowed to experiment with language, use language functionally, and make mistakes while doing so. A post-task aims at a verbal and interactive reconstruction of the process of task performance (Gorp & Bogaert, 2006). If learners encounter some communicative problems during the task, these problems create a “need to know” situation. Because learners’ answers are delivered through the mobile device, their various answers have been recorded and are presented in this phase. The instructor in this phase collects as well as shows the various responses to the learners for them to compare and reflect.

Evaluation

The instruments

Proficiency test

A pre- and post-test is conducted to assess the learners’ English proficiency. The test consists of two sections, involving vocabulary and sentence structures. Twenty items are in each section. The test items are task-relevant vocabulary and sentence structures. A pre-test is designed and administered to assess learner proficiency. The same

test is administered again right after the activity to evaluate their learning performance.

Attitude toward the design

Because learners' attitudes regarding their learning situations greatly affect their learning achievement (Gardner, 2000; Nah et al., 2008), this study evaluated how participants reacted to or felt about this design. In addition, this evaluation was intended to be comprehensive, because it is the first type of such learning in the field of MALL.

The pre-activity surveys included students' attitudes toward English learning in general and English learning through mobile devices. A post-activity survey investigated learners' attitudes toward the proposed learning activity. Their responses were evaluated based on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree".

Participants

The 35 participants, 21 boys and 14 girls, were sixth graders at the time of this study and had been learning English for three years with 80 minutes of structured English per week. Participants were grouped into 11 teams, that is, each team contained three or four members. The grouping was heterogeneous based according to the pre-test scores of the learners. None of these children had experience using mobile phones to learn English. However, 10 of the 35 students had experience using computers to learn English.

Results

Observation

The observations data included two snap shots of team activities. The purpose was to provide direct evidence about how participants performed their tasks, and to triangulate the quantitative data. In Figure 1, the female student is calling the help center to obtain further assistance regarding her group's task in that location. Meanwhile, the other two students are interviewing the woman (played by an instructor) with white hair, seated on the left. The task the participants were trying to accomplish involved asking the lady about the burglary, particularly, inquiring about any suspicious people she might have seen the previous night. One of the participants is calling headquarters to obtain required questions and reiterate the questions to her team members. They then needed to call headquarters and give them the answers. The mobile device is used as a tool for communication. Participants could not have face-to-face communication with the instructor; therefore, authentic English output needed to be produced.



Figure 1. Interviewing the witness

The participants in Figure 2 are reading a message displayed on the mobile device, trying to figure out the clues provided for that specific location. Meanwhile, one of the participants is pointing to the text while talking with the other teammates. Viewing language learning as a social practice, and it is assumed that language learning is most effectively served by collaboration. Collaboration among participants in this study involved identifying some linguistic problems and performing a task. Moreover, through their collaboration, participants produced output to report to headquarters. The pedagogical use of this mobile device capability included the co-existence of social and

digital participation. Through participants' collaboration, they could reveal the content of learning and construct knowledge in the realm of social experience.



Figure 2. Reading the message

Quantitative results

On the proficiency test, the score for all correct answers was 20 for vocabulary and 20 for grammar. According to the results shown in Table 2, the students' English proficiency was not high (average=4.03 & 6.83 for vocabulary and grammar, respectively). In pre- and post-testing by the t-test, a significant improvement appeared in both vocabulary and grammar ($t = -6.73$, $df = 34$, $P = 0.000$; $t = -2.71$, $df = 34$, $P = 0.010$). The results confirmed that these students had developed their English from the task, and made significant improvements. Some people may argue that this improvement was temporary because the test was held immediately after the activity; however, this study showed that the proposed design could enable students to learn.

Table 2. Learning performance test result (pre- and post-activity)

		Mean	Std.
Vocabulary	Pre-test	4.03	2.89
	Post-test	7.80	4.28
Grammar	Pre-test	6.83	4.00
	Post-test	8.34	4.47

The following table summarizes students' responses to the questions about their attitudes, focusing on six aspects: enjoyment, interest, usefulness, effort, appropriateness of learning content, and intention to learn, which are listed as items 1 to 6, in Table 3. The responses ranged from their general attitude towards English learning, their impressions of using mobile devices to learn English and their perceptions of learning English through the tasks in this study. These results are compared in Table 3.

Table 3. Attitude toward learning English in three aspects

Question	General impression		Impression of using mobile device		Task in the study	
	Mean	Std.	Mean	Std.	Mean	Std.
1 I enjoy learning English.	3.06	1.06	2.83	0.86	3.51	0.98
2 I am interested in learning English.	3.11	0.87	2.94	0.77	3.77	0.97
3 Learning English is useful to me.	3.97	0.86	3.23	0.81	3.89	0.87
4 I make lots of effort to learn English.	2.69	1.02	2.77	0.91	3.14	1.19
5 The learning content of English is appropriate to my level.	3.51	0.89	3.09	0.82	3.77	0.81
6 I want to learn English.	3.14	0.97	2.91	0.92	3.86	0.97

The collected data were analyzed with SPSS, and yielded a Cronbach's Alpha coefficient of 0.854, satisfying the requirement of survey reliability. The paired sample test for significance between students' attitudes toward English learning in general and toward the English learning task in this study are shown in items 1, 2, 4, and 6; reaching significance at $p = 0.019, 0.000, 0.024,$ and 0.001 . That is, items of enjoyment, interest, effort, and willingness to learn English improved significantly. In addition, the paired sample test between attitudes toward using mobile devices to learn English and toward the English learning tasks in this study are shown in items 1, 2, 3, 5, and 6; reaching significance at $p = 0.002, 0.000, 0.000, 0.001,$ and 0.000 .

Discussion

The purpose of the study was to explore the potential of mobile devices in offering advanced MALL while being technically applicable and economically affordable to language teachers. In addition, three MALL design principles and a sample practice were proposed and evaluated. The evaluation results show that, after performing the learning task, learner performance on the post-test was significantly higher than the pre-test. The MALL task can be deemed to have achieved its goal because learner's English proficiency improved at a significant level.

This study also elucidated multiple aspects of MALL in addition to the aspects of portability and connectivity. The aspect of design was further advanced to recognize the importance of social linguistics and pragmatic usage by practicing language in authentic task-related contexts. The mobile device is an aid for creating more opportunities for communicative output, in addition to facilitating face-to-face interaction. Such design not only supports learners to have both social and digital participation in a real environment, but also confirms the interaction hypothesis and the output hypothesis in task learning. The present study echoes many researchers' call that the design should focus on pedagogy, instead of technology, and advances the design in thinking how technology can fulfill the requirement of each knowledge field (Ting, 2010). The proposed design harmonizes the way languages are practiced with what SLA research has revealed about how they are learned; that is, understanding and practice.

This study provides an alternative solution in mobile language learning. The solution goes beyond the learning content representation types addressed by Chen, Hsieh, and Kinshuk (2008) or the context-aware content in terms of screen size and network bandwidth (Huang et al., 2008). That is, the scope of curriculum selection and instructional design is not limited to digital material within the screen of a mobile device. The scope of context becomes wider (Huang et al., 2008) and includes tasks, ambient objects, resources, peers, and a mobile device, together forming a contextualized task-based MALL. Moreover, the design is an original type of context-aware in mobile learning. Current context-aware systems (Cheverst et al., 2002; El-Bishouty et al., 2007; Liu et al., 2009) employ sophisticated technology, RFID, or QR codes to technologically synthesize digital information with the artifacts around the learners to provide context-related learning content. This study, in the field of MALL, used a deliberately designed task to synthesize the digital information and learners' surrounding artifacts.

With regard to the issue of innovation, the mobile device is a simple communicative device without pre-crafted design for language learning, in contrast to a tailored device or even a specific system for supporting a unique learning practice. This may refer to Mulholland et al. (2005) who advocated for the spotlight browsing of web resource archives. They argued that a pre-crafted web site may require an excessive amount of effort to construct and then only provide a particular perspective on the content. By contrast, a simple database-driven site provides access to the content but little or no conceptual structure to guide its exploration. This study, therefore, added that, by employing simple mobile devices, teachers should have less technical burdens and more pedagogical discretion for designing motivating interactions among students. Such findings have been verified in this study.

Finally, the use of the proposed device involves recognizing the rapid development of commercial technology. Additionally, the device is moving us into a new era of mobile computing, promising greater variety in applications, highly improved usability, and accelerated networking; for example, the Google-led Android phone and WiMax high speed wireless network (Godwin-Jones, 2008). What this trend implies for MALL is the proposed design concept that uses advanced and mobile technology that can be sophisticated in pedagogy and simple in implementation. The sophistication means that the numerous communicative functionalities of mobile devices provide rich pedagogical design opportunities for language teachers to tailor their versatile learning activities, whose implementations are technically simple for teachers.

Limitation and further study

This study conducted a single experiment to evaluate the proposed design, aiming at the technical applicability of the system design. As the purpose of the study was to demonstrate how teachers can employ MALL by adding elements into tasks to enhance context authenticity, the sample design for evaluation is not large. The results cannot be generalized to other populations. In addition, as the results indicate that the whole design seemed to enhance learners' proficiency and attitudes, the variables may need to be more clearly identified by comparing with a control group for further insights. In addition to students' responses toward the proposed learning practice, participating teachers' responses and their acceptance of such practice design in future teaching are required to gauge affordability. Moreover, as mobile devices advance, more peripheral equipment is added to the devices, for example, digital cameras, RFID readers, and QR code capability. These technologies may offer teachers' more opportunities to design versatile motivating task activities in technically applicable ways as pursued in this study. Further study can explore and synthesize these contemporary technologies to provide an updated design sample.

Conclusion

This paper integrates the mobile device in a task-based language learning program. Drawing theoretical frameworks of second language acquisition, using teaching approaches based on task-based instruction and applying mobile technologies, a contextualized MALL was designed. This study went beyond the traditional views of mobile technology from the aspects of portability and connectivity, and adopted mobile technology as a communicative infrastructure tool without much technical effort or specialty required. Moreover, the communicative aspect of the mobile device was applied to create a motivating task within authentic contexts to support and engage students in language learning and practice. Through a practical design with implementation and evaluation, evidence shows that the participants' improved in language skills and, more importantly, improved attitudes toward language learning. Such benefits are attributed to the coherent integration of mobile technologies with the curricula, the contexts, and the pedagogies synthesized to make task-based language learning practice original and successful.

References

- Barab, S. A., Squire, K. D., & Dueber, W. (2000). A co-evolutionary model for supporting the emergence of authenticity. *Educational Technology Research and Development, 48* (2), 37-62.
- Cavus, N., & Ibrahim, D. (2009). M-learning: An experiment in using SMS to support learning new English language words. *British Journal of Educational Technology, 40*(1), 78-91.
- Chen, C. M., & Chung, C. J. (2008). Personalized mobile English vocabulary learning system based on item response theory and learning memory cycle. *Computers & Education, 51*(2), 624-645.
- Chen, C. M., & Hsu, S. H. (2008). Personalized intelligent mobile learning system for supporting effective English learning. *Educational Technology & Society, 11*(3), 153-180.
- Chen, N. S., Hsieh, S. W., & Kinshuk, (2008). Effects of short-term memory and content representation type on mobile language learning. *Language Learning & Technology, 12*(3), 93-113.
- Cheverst, K., Mitchell, K., & Davies, N. (2002). The role of adaptive hypermedia in a context-aware tourist guide, Association for Computing Machinery. *Communications of the ACM, 45*(5), 47-51.
- Chinnery, G. M. (2006). Emerging technologies - Going to the MALL: Mobile assisted language learning. *Language Learning and Technology, 10*(1), 9-16.
- Cui, Y., & Bull, S. (2005). Context and learner modelling for the mobile foreign language learner. *System, 33*(2), 353-367.
- Ducate, L., & Lomicka, L. (2009). Podcasting: An effective tool for honing language students' pronunciation? *Language Learning & Technology, 13*(3), 66-86.
- Edirisingha, P., Rizzi, C., Nie, M. & Rothwell, L. (2007). Podcasting to provide teaching and learning support for an undergraduate module on English language and communication. *Turkish Online Journal of Distance Education, 8*(3), 87-107.
- El-Bishouty, M. M., Ogata, H., & Yano, Y. (2007). PERKAM: Personalized knowledge awareness map for computer supported ubiquitous learning. *Educational Technology & Society, 10* (3), 122-134.
- Ellis, R. (2000). Task-based research and language pedagogy. *Language Teaching Research, 4*(3), 193-220.

- Gorp, K. V., & Bogaert, N. (2006). Developing language tasks for primary and secondary education. In K. V. Branden (Ed.), *Task-based Language Education: From Theory to Practice* (pp. 76-105). Cambridge: Cambridge University Press.
- Gardner, R. C. (2000). Correlation, causation, motivation, and second language acquisition. *Canadian Psychology*, 41(1), 10-24.
- Godwin-Jones, R. (2008). Emerging technologies - Mobile-computing trends: Lighter, faster, smarter. *Language Learning & Technology*, 12(3), 3-9.
- Huang, Y. M., Kuo, Y. H., Lin, Y. T., & Cheng, S. C. (2008). Toward interactive mobile synchronous learning environment with context-awareness service. *Computers & Education*, 51(3), 1205-1226.
- Kiernan, P. J., & Aizawa, K. (2004). Cell phones in task based learning - Are cell phones useful language learning tools? *ReCALL*, 16(1), 71-84.
- Kukulka-Hulme, A. (2009). Will mobile learning change language learning? *ReCALL*, 21(2), 157-165.
- Lan, Y. J., Sung, Y. T., & Chang, K. E. (2007). A Mobile-Device-Supported Peer-Assisted Learning System for Collaborative Early EFL Reading. *Language Learning & Technology*, 11(3), 130-151.
- Littlewood, W. (2004). The task-based approach: some questions and suggestions. *ELT Journal*, 58(4), 319-326.
- Liu, T. Y., Tan, T. H., & Chu, Y. L. (2009). Outdoor natural science learning with an RFID-supported immersive ubiquitous learning environment. *Educational Technology & Society*, 12(4), 161-175.
- Long, M. H. (2000). Focus on form in task-based language teaching. In R. D. Lambert & E. G. Shohamy (Eds.), *Language policy and pedagogy* (pp. 179-192). Philadelphia: John Benjamins.
- Lu, M. (2008). Effectiveness of vocabulary learning via mobile phone. *Journal of Computer Assisted Learning*, 24(6), 515-525.
- Mackey, A. (1999). Input, interaction and second language development: an empirical study of question formation in ESL. *Studies in second language acquisition*, 21(4), 557-589.
- Nah, K. C., White, P., & Sussex, R. (2008). The potential of using a mobile phone to access the Internet for learning EFL listening skills within a Korean context. *ReCALL*, 20(2), 331-347.
- Morita, M. (2003). The Mobile-based Learning (MBL) in Japan. *Proceedings of the First Conference on Creating, Connecting and Collaborating through Computing*. Retrieved July 18, 2010, from <http://csdl2.computer.org/comp/proceedings/c5/2003/1975/00/19750128.pdf>
- Mulholland, P., Collins, T., & Zdrahal, Z (2005). Spotlight browsing of resource archives. In S. Reich & M. Tzagarakis (Eds.), *Proceedings of the sixteenth ACM conference on Hypertext and hypermedia* (pp. 23 – 31). New York: ACM.
- Pica, T. (2008). Task-based instruction. In N. V. Deussen-Scholl & N. H. Hornberger (Eds.). *Encyclopedia of Language and Education* (pp.71-82). Springer Science: Business Media LLC.
- Rosell-Aguilar, F. (2007). *Top of the Pods - In Search of a Podcasting "Podagogy" for Language Learning*. *Computer Assisted Language Learning*, 20(5), 471-492.
- Schank, R., & Kass, A. (1996). A Good-Based Scenario for High School Students. *Communications of the ACM* 39(4), 28-29.
- Sharples, M. (2000). The design of personal mobile technologies for lifelong learning. *Computers & Education*, 34(3), 177-193.
- Shehadeh, A. (2005). Task-based language learning and teaching: Theories and applications. In C. Edwards & J. Willis (Eds.), *Teachers exploring tasks in English language teaching* (pp. 13-30). Basingstoke: Palgrave Macmillan.
- Swain, M. (2000). The output hypothesis and beyond: Mediating acquisition through collaborative dialogue. In J. P. Lantolf (Ed.), *Sociocultural theory and second language learning* (pp. 97-114). Oxford: Oxford University Press.
- Tan, T. H. & Liu, T. Y. (2004). The Mobile-Based Interactive Learning Environment (MOBILE) and a case study for assisting elementary school English learning. In Kinshuk et al. (Eds.), *Proceedings of the IEEE International Conference on Advanced Learning Technologies* (pp. 530-534). Los Alamitos, CA: IEEE Computer Society.
- Ting, Y. L. (2010). Using mainstream gam to teach technology through an interest framework. *Educational Technology & Society*, 13(2), 141-152.
- Widdowson, H. G. (1998). Context, Community, and Authentic Language. *TESOL Quarterly*, 32(4), 705-716.
- Wishart, J. (2008). Challenges faced by modern foreign language teacher trainees in using handheld pocket PCs (Personal Digital Assistants) to support their teaching and learning. *ReCALL*, 20(3), 348-360.
- Zhao, Y. (2005). The future of research in technology and second language education. In Y. Zhao (Ed.), *Research in technology and second language learning: Developments and directions* (pp. 445-457). Greenwich, CT: Information Age Publishing, Inc.
- Zurita, G., & Nussbaum, M. (2004). A constructivist mobile learning environment supported by a wireless handheld network. *Journal of Computer Assisted Learning*, 20(4), 235-243.