Mobile Seamless Technology Enhanced CSL Oral Communication

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ABSTRACT

The current study aimed at investigating how mobile seamless technology can be used to enhance the pragmatic competence of learners of Chinese as a second language (CSL). 34 overseas CSL learners participated in this study. They were randomly assigned into two groups: the classroom group, executing language tasks in fake contexts in a traditional classroom; and the real-world group, executing identical tasks in real world with the support provided by a mobile seamless learning platform (MOSE). All the CSL learners were asked to make a plan of receiving a friend abroad after collecting the information about the shops or stores in the neighborhood of the campus. Both quantitative (Mandarin communication performance test) and qualitative data (videos recorded during the learning process) were collected and analyzed in this 4-week study. The analytical results show that both groups made significant improvements in the test-based Mandarin communication performance. However, according to the qualitative data, the CSL learners in the real-world group made significantly fewer errors when executing language tasks than did those in the classroom group. Furthermore, they did not depend on their first language to communicate with the people they visited in the real world and they had more peer cooperation with the support provided by the MOSE platform compared with those in the classroom group.

Introduction

Being able to use a foreign/second language (FL/L2) appropriately is an essential component in evaluating the success of FL/L2 education. Pragmatic competence referring to the ability to use language appropriately in different social situations, thus, should be considered in FL/L2 teaching, as described in The Common European Framework of Reference for Languages (Council of Europe, 2001) and the proficiency guidelines developed by the American Council on the Teaching of Foreign Languages (Swender et al., 2012).

In order to develop the pragmatic competence in the target language, some approaches have been suggested and adopted in FL/L2 education. Among them, context-based language learning is heavily highlighted by FL/L2 researchers and educators (Serrano, Llanes, & Tragant, 2011). Context-based instruction has a foundation on the sociocultural theory of second language acquisition (SLA) which emphasizes the integrated nature of learner. Moreover, social context elements in the learning process (Eun & Lim, 2009) include the contexts and the interaction mediate language learning, and thus they play an important role in the SLA process (Ellis, 2008). According to the perspective of sociocultural SLA, immersing in an authentic context is important for L2 learning (Lan, 2014) because an L2 cannot be acquired merely via context-reduced practicing by rote. L2 learning which emphasizes the importance of learners using the target language in an authentically immersive environment befits L2 learners' oral performance and forms accuracy (Lan, Kan, Hsiao, Yang, & Chang, 2013). The evidence obtained from brain-related research also supports context-immersive learning for L2 acquisition (Zinser & Li, 2012).

As Mandarin Chinese learning has become popular globally over recent years (Ramzy, 2006), many people have traveled to such countries as China, Taiwan, and Singapore, in which Mandarin Chinese is the dominant or primary language, in order to acquire the language. Taiwan has been one of the most popular countries for learners of Chinese as a second language (CSL), and especially for overseas Chinese students from around the world because the Chinese tradition and culture has been preserved on this Asia Pacific Island (Lan, 2014). How we could meet the learning needs of those overseas Chinese students in appropriately using Mandarin in real-life occasions, consequently, becomes a challenge to Mandarin training institutes (Lan, Lin, & Tsai, 2014). To take up the challenge and to consider the importance of contexts for SLA, context-based real-life language tasks are usually included in the

course program of Mandarin Chinese in addition to in-class Mandarin language skill instructions to provide CSL learners with diverse experiences in exploring Mandarin Chinese (Lan, Lin, & Tsai, 2014).

A language task is something that people do in their everyday lives (Long, 1985), in which the settings and the conditions under which the task takes place are two essential elements (Nunan, 1989). The two elements referring the authentic contexts and the social interaction, as described above, both are essential in the SLA process (Ellis, 2008). Obviously, real life contexts should be first constructed for CSL learners, and then learners should practice using the learned language in social interaction. However, the two issues described below should be dealt with if successful real-life context-based language learning is anticipated. (1) It is uneasy for CSL teachers in traditional classrooms to create authentic contexts for learners to immerse themselves into the situations and carry out language tasks (Yue, 2009). The lack of similar real life contexts does not only lower CSL learners' performance but also their motivation (Lan, Lin, Kao, Chang, Sung, & Liu, 2015). (2) While carrying out language tasks, especially in real world, some obstacles are encountered by CSL learners, including the insufficient pragmatic competence for having appropriate social communication (Lan, Lin, & Tsai, 2014) and the low motivation in using Mandarin Chinese in daily interaction rather than using their first language (Edge, Searle, Chiu, Zhao, & Landay, 2011).

The above-mentioned obstacles encountered by both the CSL learners and teachers inspire the applications of mobile seamless technology into CSL learning (e.g., Chen, Seow, So, Toh, & Looi, 2010; Edge et al., 2011; Liu, Sunaoka, & Urano, 2005; Wong, Chin, Tan, & Liu, 2010). Recently, mobile seamless technology has attracted FL/L2 researchers and educators because of its potential in integrating the contexts in real world into language learning and teaching (e.g., Wong, 2012). This paper, therefore, focuses on bridging the in- and out of classroom via mobile seamless technology to provide CSL learners with authentic and real contexts in their language learning. Relevant literature about mobile seamless technology used for FL/L2 learning is briefly described below.

Review of mobile seamless technology for FL/L2 learning

Mobile seamless learning, compared with general mobile learning, emphasizes more on the transparency of the barriers among different learning contexts than the use of personal mobile devices as a mediator to do individual learning (Milrad, Wong, Sharples, Hwang, Looi, & Ogata, 2013). Through mobile seamless learning, learners can easily and quickly switch from one scenario to another, such as between in and out of the school or between formal and informal learning contexts without any interruptions caused by context/scenario transformation (Wong, 2012). In addition to applying seamless technology to expand learning opportunities (Huang, Kuo, Lin, & Cheng, 2008; Wei, 2012), seamless learning has also developed a good reputation for addressing some of the problems that have long existed in traditional FL/L2 language learning. One example is that teachers often use second-hand experience that places a limit to the classroom environment (Uosaki, Ogata, Sugimoto, Li, & Hou, 2012). The successful application of seamless technology in learning English as a foreign language (EFL) (e.g., Uosaki et al., 2012) also attracts the attentions of researchers of CFL/CSL, even though the volume of the related literature is still small. For example, Edge and colleagues (Edge et al., 2011) developed a mobile learning platform to enable CSL learners to access location-based Mandarin learning materials. Step by step, CSL learners used this platform to learn the most frequently used Mandarin sentences pertaining to their current situation. Liu and colleagues (Liu et al., 2005) provided Japanese students with corpus-based drill and testing systems to learn Chinese by using a phone or a PDA. According to preliminary evaluation conducted by Liu et al. (2005), the corpus-based Chinese learning system not only successfully promoted Japanese students' motivation of learning Chinese but also benefited their pre- and review results. Comparing with the studies conducted by Edge et al. (2011) and Liu et al. (2005), Wong and colleagues (2010) asked elementary-school CSL students in Singapore to create their own learning materials of Chinese idioms via mobile phones rather than using the ready-to-use embedded materials, as those mentioned in the two studies above. The elementary-school students in Wong et al.'s (2010) study took pictures from the real world after school to illustrate the idioms they learned in their Chinese classes. Next, they uploaded them to the class-shared wiki page and some sentences to explain the meanings of the pictures they had uploaded. Through analyzing students' meaning making process, Wong et al. (2010) concluded that seamless language learning has the potential of transforming language learning in the class into an authentic learning experience.

Although the above-mentioned studies either assisted CSL/CFL learners learning Chinese on the move (e.g., Edge et al., 2011) or bridged the gap between the in-classroom and real-world contexts (Wong et al., 2010), none of them investigated how seamless learning enhances CSL learners' pragmatically oral communication skills which are

definitely important to their daily lives. Since the real communicative occasions are often different from the pre-embedded learning materials, the promising characteristics of general seamless learning systems that simply promise an easy and quick switch among scenarios/contexts are not enough for CSL learners to carry out socially real-world interaction. Obviously, providing them with timely and context-fitted support is also important as well. Although Chen and her colleagues (Chen et al., 2010) mentioned a number of approaches to and the potential of connecting in- and out-of-classroom via using mobile seamless technology in Chinese learning, only suggestions, rather than any practical findings or evidence were proposed in their reports.

To add to the knowledge pool of the potential of seamless learning for enhancing CSL learners' pragmatic competences, as well as to solve the heritage problems caused by de-contextual teaching approaches existing in traditional CSL classrooms, the purposes of the study are (1) to bridge the learning in- and out of the classroom, and (2) to confirm the effects of learning Mandarin Chinese in real life contexts on CSL learners' pragmatic competences through mobile seamless learning.

Three research questions are dealt with to reach the purposes of this study:
- What are the differences in the effects on CSL learners' test-based oral communication performances between different learning contexts (conventional classroom learning vs. mobile seamless learning)?
- What are the differences in the effects on CSL learners' social-interaction skills between different learning contexts (conventional classroom learning vs. mobile seamless learning)?
- What are the differences in the effects on CSL learners' usages of communication strategies in social interaction between different learning contexts (conventional classroom learning vs. mobile seamless learning)?

Methodology

Participants

34 overseas CSL beginners participated in this study (28 were from Thailand; 3 were from Canada; 2 were from USA; and 1 was from Brazil). They were randomly assigned into two groups, the conventional classroom group and the mobile seamless group. Consequently, 18 were assigned to the mobile seamless group (mean age = 20.00 years, SD = 1.25 years, range = 18 – 23 years) and 16 to the conventional classroom group (mean age = 19.44 years, SD = 1.38 years, range = 17 – 22 years). Although the numbers of the participants in each group were not the same, there was no difference in age ($F = 1.554$, $p > .05$) between the two groups. Additionally, because all the participants were beginners and were randomly assigned into the two groups, the participants' Mandarin Chinese abilities between the two groups were considered the same.

Research design

A mixed research design (Creswell, 2003) was adopted in this study in which both qualitative and quantitative data were collected and analyzed because CSL learners' pragmatic competences cannot be confirmed solely by the traditional test items without observing how the CSL learners use the target language in social interaction. For the quantitative data, participants' test-based Chinese oral communicative performances were evaluated via both pre- and posttests. On the other hand, the processes of carrying out tasks by the two groups were recorded and analyzed according to a video coding scheme which focuses on identifying CSL learners' communication strategy as the qualitative data. The coding scheme will be described in the section of "Video coding scheme." Additionally, the quantitative data were analyzed via a two-way mixed design ANOVA (group: classroom vs. mobile seamless; test: pre- vs. posttest), while the content analysis was adopted to analyze the qualitative data.

Instruments

MObile SEeamless (MOSE) learning platform

The mobile seamless platform used in this study, "MOSE," was developed by the authors. According to the sociocultural SLA theory, the social context and interaction are essential to the SLA process (Ellis, 2008; Lantolf,

2005). The main functions of the mobile seamless learning platform (MOSE) are (1) to bridge the learning that occurs inside and outside the classroom by providing CSL learners with opportunities for what have been learned in the classroom to be used at some occasions out of the classrooms; (2) to provide timely support needed in socially real-world communication; and (3) to record and share learners' exploring experiences with their peers. The above-described functions of the MOSE are implemented by the technologies of location-based-service and quick response (QR) code. Simply put, the MOSE allows CSL learners to access the learning materials fitting the contexts where they visit. In addition, they can further access any ready-to-learn materials via a QR code scanner installed in their mobile devices (e.g., a smart phone or an iPad). While exploring a real-world context, CSL users can also upload any materials, such as pictures and texts to the MOSE to share them with their peers. Figures 1 and 2 show the examples of context-fitted materials provided by the MOSE when the attending CSL learners were carrying out the assigned tasks; while Figure 3 shows what CSL learners uploaded to the MOSE according to the mission requests when they visited a nearby shop.

Figure 1. Left: locations visited ("learning spots") with learning materials; Right: learning materials for learners exploring one representative building (the Commons) in the campus

Figure 2. The context-fitted materials needed for CSL learners to carry out the assigned mission when they visit an attar shop close to the campus
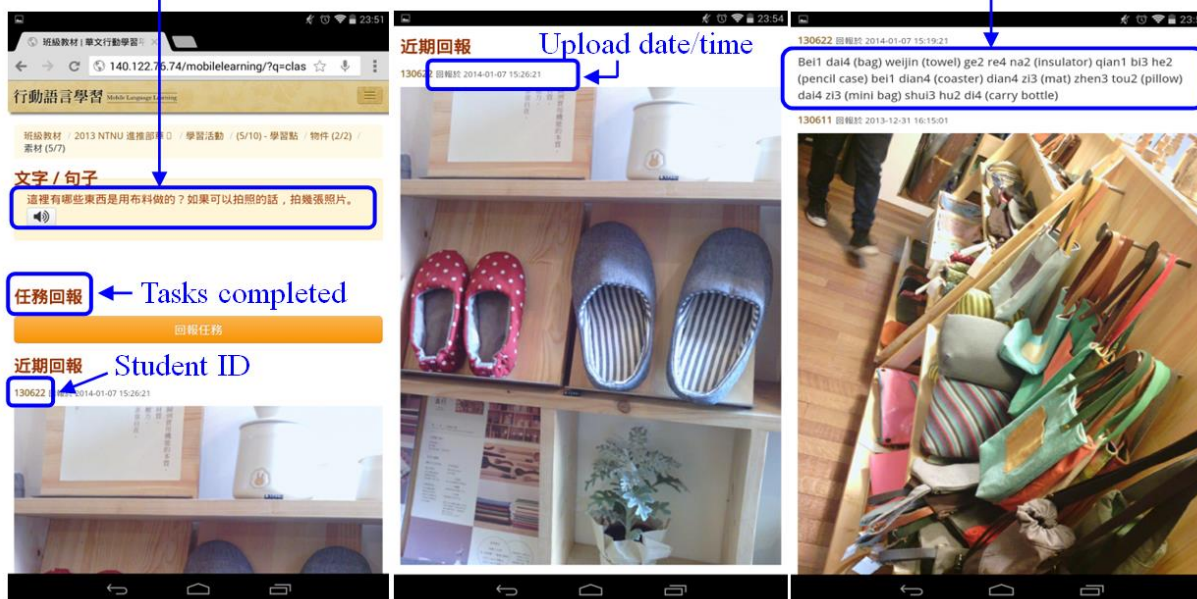
Figure 3. Screenshots of information collection and sharing, showing the mission assigned by the teacher (left), photographs of fabric-made objects taken by student #130622 (center and right), and the information shared by student #130622 (right)

Language task

One language task, "Receiving a friend from abroad," was developed and used in this study. The goal of this task is to collect needed information for making a plan to receive a friend coming from other countries. All the participants were asked to carry out this task by (1) exploring the neighborhood of the campus, (2) collecting the needed information for arranging a 7-day tour, including daily and unexpected activities, and (3) scheduling a visit plan by deciding the must-visit spots (such as a bakery, shops, or restaurants). To help the CSL learners successfully accomplish this mission, the needed key words and sentences were taught before their mission started. Appendix A shows the identical learning materials for the two groups, while Appendix B shows the paper-based materials used by the CSL learners who role-played as the owners and the customers in the classroom context. Additionally, the information listed in the paper-based materials is real, existing in the real world. Therefore, although the CSL learners in the conventional classroom group did not visit the real spots, they could collect the needed information for accomplishing the assigned tasks. In contrast, the CSL learners in the MOSE group would use the learned words and sentences listed in Appendix A to interact with the real owners of the stores or restaurants visited in the real world. When they encountered problems or needed help in the real-world social interaction, the CSL learners in the MOSE group could reach the support by accessing the MOSE.

Mandarin communication performance test

The mandarin communication performance test (hereafter referred to as the Mandarin test) focuses on communication skills. Thus, both the test items and answer options were delivered aurally; no printed texts were shown to the participants. All the participants were first asked to listen to the questions and 3 options carefully and then choose the correct answer to each question. The following is one example of the items in the performance test.

Question: (Aural) 哪一種商品最受歡迎? (Which product sells the best?)

Option 1: (Aural) 你當然受歡迎了。(You are definitely popular.)

Option 2: (Aural) 每一種都賣得很好。(All the products sell well.)

Option 3: (Aural) 那個穿紅衣服的女生。(It is the girl in a red T-shirt.)

Video coding scheme

The video coding scheme used in this study includes 4 dimensions: completion of the conversation goals, unexpected conversation, appropriateness between the contexts and the used words, and the strategies used (see Appendix C). Additionally, the communication strategy coding scheme follows the structure proposed by Oxford (1990). While coding a video, the encoder counted and recorded the frequency of each target behavior or conversation on the scheme.

Procedure

This study lasted 4 weeks, 3 hours a week, from May 9th to 27th, 2014. The pretest of the Mandarin test was administered followed by the traditionally classroom-based instructions of the basic Chinese words and sentences needed in carrying out the language tasks in the first week. Then, in the second and third weeks, students had to accomplish the language task, "receiving a friend from abroad."

The task mission assigned to the two groups was identical as described in the section of instruments: to explore the campus neighborhood and collect information of certain spots that might be visited while receiving their friends. The difference in carrying out the language task is the contexts they explored. The participants in the conventional classroom group (hereafter referred to as the classroom group) role-played as customers and the owners or the waiters of the spots visited. As an owner or a waiter, the student would use the poster (see Appendix B-1) to show the customers what type of business s/he was running. S/he also needed to answer the customers' questions according to the information listed on the information cards (see Appendix B-1). On the other hand, as a customer, the student had to ask the waiters or the owners of the visited spots proper questions chosen from what are listed on the worksheet (see Appendix B-2) to collect the information needed. In contrast, the participants in the mobile seamless group (hereafter referred to as the MOSE group) explored the neighborhood of the campus and visited the target spots to collect the information needed by asking the real waiters or the owners appropriate questions. With their smart phones or iPads, they could access the MOSE anytime to obtain timely support, if encountering any problems about not knowing how or what to ask or about the lack of the knowledge about the visiting spots. They could also take pictures or record the needed information and upload them to the MOSE to share them with their peers.

Having explored and collected the information, they had to schedule a receiving plan with their peers. Finally, in the fourth week, the identical Mandarin test was administered as the posttest. Furthermore, in order to investigate how CSL learners interacted with one another, the processes of carrying out the language tasks in the two groups were video-recorded.

Results

To evaluate how the learning affected overseas CSL learners' both oral communication performance and pragmatic interaction between different groups, both quantitative (the scores of the performance test) and qualitative data (the video data) were collected and analyzed. The results are described below.

Comparison of learning gains on test-based mandarin communication performance

Table 1 lists the descriptive statistics of the scores of the two groups at pre- and posttest, while Table 2 is the summary of the analysis results of two-way mixed design ANOVA. According to the data listed in Table 2, there was neither significant interaction between group and test, $F(1, 1) = .115$, $p > .05$; nor the group effect, $F(1, 1) = .014$, $p > .05$. However, the test effect reached a significant level [$F(1, 1) = 376.927$, $p < .001$], indicating that both groups made significant improvements at posttest of the Mandarin communication performance. The results of the main effect analysis are as follows: classroom: $F(1, 1) = 67.052$, $p < .001$; MOSE: $F(1, 1) = 76.281$, $p < .001$. These results indicate that the improvement made by the MOSE group is larger than that made by the conventional classroom group, although the difference in the improvement between the two groups was not significant.

Table 1. Descriptive statistics of the Mandarin test

Test	Classroom ($N = 16$)		MOSE ($N = 18$)	
	M	*SD*	*M*	*SD*
Pretest	5.31	2.80	5.61	2.40
Posttest	15.44	4.08	15.39	4.10

Table 2. The analysis results of two-way mixed design ANOVA

Source	*SS*	*df*	*MS*	*F*	*p*
Group	.265	1	.265	.014	.907
Test	1677.687	1	1677.687	376.927	.000***
Group*Test	.511	1	.511	.115	.737
Errors					
SS_{BS}	609.500	32	19.047		
SS_{WS}	142.431	32	4.451		
Total		67			

Note. ***$p < .001$.

Comparison of oral communication process via video data analysis

The task executing processes of the two groups were recorded via digital cameras and were analyzed. The collected video data were coded according to 4 dimensions as shown in Appendix C by two encoders who received training on coding the videos. The Kappa coefficient of agreement of the results from the two encoders was .674 ($p < .001$), indicating that the inter-encoder agreement reaches a substantial level.

Regarding the completion rate of the communication goals, both groups successfully completed all the assigned tasks, showing no differences. However, the big differences between the two groups are in the dimensions of the unexpected conversations, the context fitness, and the communication strategy usage. For the unexpected conversations, it was found that this kind of conversation was caused by different occasions, including error questioning or answering, task executing, and friendship expressing. This first occasion, error questioning or answering, was observed when the CSL learners made errors and sequentially the dialogue went beyond what was taught in classes.

Table 3 lists the frequencies of the unexpected conversations found in the two groups. The Chi-square analysis result reveals that the difference between the two groups is significant [$\chi^2_{(1,2)} = 27.239$, $p < .001$]. It was also found that in the MOSE group, most of the unexpected conversations were found when CSL learners executed the assigned missions, while most of what happened in the classroom group was caused by errors made by the CSL learners. As a result, with the support provided by the MOSE, the CSL learners made significantly fewer errors when executing the assigned tasks than did those in the other group.

Table 3. The frequency and chi-square test of the unexpected conversations in the two groups

Contexts	Error questioning	Task executing	Social interacting
Classroom	10	1	0
MOSE	1	19	5

It was also found that most of the unexpected conversations identified in the MOSE group happened when they were executing the assigned tasks. Additionally, in order to begin a conversation or show appreciation to the interlocutors in real world, some dialogue expressing friendship or kindness was also identified in the MOSE group, the type of unexpected conversations not found in the classroom group.

With regard to the context fitness, the video data also depicted that most of the CSL learners in the classroom group usually asked all the questions listed on the learning material (Appendix A) without taking the appropriateness between the questions and the visited spots into consideration. In contrast, fewer the same type of errors were found in the MOSE group, although sometimes they were confused due to the lack of the knowledge of a specific store in Taiwan. Actually, only one was identified, as listed below in Table 4.

Table 4 lists the frequency of both appropriate and inappropriate conversations found in the two groups. Although the CSL learners in the MOSE group also asked inappropriate questions as their peers in the other group did, it happened only once. Furthermore, the Chi-square analysis also reveals the significant difference in having inappropriate conversations between the two groups [$\chi^2_{(1,1)} = 15.834$, $p < .001$].

Table 4. The frequency of the context-fitness conversation happened in the two groups

Contexts	Fitness	Non-fitness
Classroom	17	15
MOSE	30	1

The current paper now moves on to discussing the communication strategies used by the CSL learners. Interestingly, only two main categories of the communication strategies are identified, compensation and social strategies as listed in Table 5. Additionally, 4 strategies belong to the former category and 2 belong to the latter one. The Chi-square analysis shows that the strategies used by the CSL learners between the two groups are significantly different [$\chi^2_{(1,5)} = 28.136$, $p < .001$].

Table 5. The used frequencies of conversation strategies in the two groups

Communication strategies	Compensation strategies				Social strategies	
	Language switching	Using mother language	Non-verbal	Circumlocution	Asking Questions/ confirmation	Cooperating with others
Classroom	0	13	11	0	17	5
MOSE	3	0	9	2	28	20

As listed in Table 5, the strategy most commonly used by the CSL learners in the classroom group was confirmation, a social strategy done by repeating what they heard. It is also found that it was easy for them to use their first language (L1) or non-verbal strategy (body language in this study) to communicate with each other. Besides, few of them in the classroom group tried to cooperate with their peers to execute the assigned tasks. In contrast, in the MOSE group, although the CSL learners also used the strategy of confirmation by repeating what they heard from the real shop owners, they tended to cooperate with peers to complete the assigned tasks.

Discussion

Three issues about the effects of using mobile seamless learning on the learning gains of CSL learners are investigated: test-based oral communication performance, social-interaction skills, and the usages of communication strategies. A brief discussion about the three issues based on the analytical results of this study is described below.

Regarding the learning gains in terms of the test-based results, all the participants with or without the MOSE when executing the assigned tasks made significant improvements (see Tables 1 and 2). The positive results confirm the effects of context-based learning on FL/L2 oral performances as argued by numerous pieces of research on contextual influence on L2 learning (e.g., Jung, 2002; Kasper & Schmidt, 1996; Serrano, Llanes, & Tragant, 2011). However, a deeper exploration of the effects of mobile seamless learning on CSL learners' pragmatic competency

should not be hesitated because of the similar improvements made by the CSL learners in the two groups according to the test-based results. As Solano-Flores and Trumbull (2003) suggested, examining a language should take the context factor into account. We further analyzed the video data to see the possible differences in learning gains of CSL pragmatic competency between the two groups. Prospectively, the processes of the task execution of the MOSE group significantly differed from those of the classroom group by three aspects: the unexpected conversations, the context fitness, and the usage of communication strategies.

Regarding the unexpected conversations, the participants in the real world context encountered significantly more of this kind of conversations than those in the classroom (Table 3) did. It is worthy of notice that more unexpected conversations do not mean more errors made. As seen in Table 3, more errors were made by the participants of the classroom group than those done by the other group. It depicts that the MOSE system successfully lowered the error rate happened in social conversation of the CSL learners. Furthermore, although the MOSE group had to deal with more unexpected conversations, they accomplished the assigned goals via social interaction as successfully as the classroom group did. This finding is in line with the results of related studies of mobile assisted language learning that mobile learning significantly improved FL/L2 learners' FL performances (e.g., Lan, Lin, & Tsai, 2014; Liu & Chu, 2010).

Additionally, the data in Table 4 also support the information conveyed in Table 3: the context fitness ration of social communication is significantly higher in the MOSE group than that in the classroom group. Almost all the CSL learners in the classroom group simply read all the sentences listed on the worksheet and the information cards without carefully considering the appropriateness of the visited spots. In contrast, the MOSE group was able to distinguish the differences among the visited spots and consequently used the appropriate questions to ask the native Chinese speakers (the shop owners). The differences in choosing dialogue sentences which were taught before carrying out the assigned tasks between the two groups are similar to the findings of Lafford's (1995) study. However, the aim of Lafford's study was to compare the differences between a study abroad context and a study at home. She found that the students studying Spanish-abroad outperformed those studying at home. Interestingly, all the participants of the current study were studying Chinese-abroad. As Lan (2014) mentioned, the low oral communication competency is a general problem encountered by most of the long-staying overseas CSL students in Taiwan. The study-abroad period of the participants of this study was much shorter than that of the participants of Lan's (2014) study, 6 weeks versus 1 year. Thus, it is possible that all the participants would have the same problems in social conversations. The significantly appropriate usage of Chinese in social conversations by the MOSE group, therefore, approves the effects of the MOSE system on enhancing CSL learners' pragmatic competency in social conversation.

The arguments provided above are re-approved when the discussion switches to the communication strategies used by the CSL learners. Table 5 shows that the communication strategies used by the CSL learners in the two groups are significantly different. Results show that the CSL learners in the classroom tended to use their L1 to continue conversations when they were stuck, an act not found in the MOSE group. Although the real world context could provide the CSL learners with opportunities for immediate contact with members of the target language community which is proved to be one of the main factors facilitating the SLA (e.g., Jung, 2002), the degree of activity involvement of the L2 learners is also an important factor that might influence L2 learners' SLA. Additionally, according to the study of Yashima and Zenuk-Nishide (2008), an imagined context could also benefit the SLA of FL/L2 learners if they are fully involved in the learning activities. Thus, with the MOSE system, CSL learners' motivation of involving in social conversation in Mandarin Chinese was obviously promoted. This method solves the problems pointed out by Lan (2014) that due to the lack of motivation of speaking Mandarin Chinese, most of the overseas Chinese students tend to associate with other students from the same country of origin outside the classrooms and speak their common L1 outside the classrooms.

Interestingly, twice of circumlocution usage was identified in the MOSE group (see Table 5). The richer usage of communication strategies might be caused by the more unexpected conversations encountered in the MOSE group. However, the results show that the willingness of and the efforts made on continuing social conversations in the MOSE group are more obvious than those of the classroom group. Besides, although both groups used the repeat strategy in the social conversation, the purposes were different. It was found that in most of the occasions, the repetitions of words or sentences by the classroom group were just "repeats," while the repetitions by the MOSE group were used to confirm the meaning and clarify the ambiguous situations. In addition, the inter-peer cooperation happened much more often in the MOSE group than that in the classroom group did, although all the CSL learners in

the latter group were in the same location. By checking the information uploaded to the MOSE system by the CSL learners (see Figure 3), it was found that the CSL learners in the MOSE group were highly involved in the activities guided by the MOSE system and they fervently collected and shared the needed information to accomplish the assigned mission. The findings are in line with the study of Liu and Chu (2010). The high involvement is the key factor, suggested by Yashima and Zenuk-Nishide (2008), that benefits FL/L2 learners' SLA, regardless of the learning contexts being abroad or at home. Thus, the MOSE system appears to have successfully promoted the involvement and practice efficiency of the CSL learners in the social conversations, and consequently benefited their learning gains after the treatment.

By synthesizing the findings obtained from this study, we argue that being immersed in survival-oriented contexts inspires FL/L2 learners to actively involve social interaction in the target language, while providing timely support assists them in successfully conquering the obstacles they usually encounter and sequentially reaching the goals of having a conversation and promoting their motivation of having social interaction with native speakers.

Conclusion and limitation

Contextual influence on FL/L2 learning has been an important issue in SLA. It affects the SLA of learners of cross-aged (Kasper & Schmidt, 1996) and of different target languages (Jung, 2002; Lafford, 1995; Lan, 2014; Lan, Fang, Legault, & Li, 2015). The learning contexts also influence learners' transferability of (Takahashi, 1993) and the amount of transfer (Takahashi & Beebe, 1987) of FL/L2 learning. As Jung (2002) argued, pragmatic competency can be only evaluated in meaningful and authentic interactions. Thus, it is uneasy to confirm CSL learners' pragmatic competency only via traditional performance tests. Consequently, the development of a new paradigm of FL/L2 assessment should be emphasized in FL/L2 research by researchers and educators. Additionally, the context factor should be also considered when designing a learning program for various contexts, including studying-abroad versus at home country or a long-term versus short-term program.

Furthermore, as the evidence obtained from the current study approves that CSL learners' active involvement plays an important role in the success of social communication in Mandarin Chinese, both a careful design of learning tasks and timely support should be included in any Mandarin Chinese learning programs. Based on the findings of this study, mobile seamless learning (like the proposed MOSE system in this study) depicts to be a good solution to successfully providing the CSL learners with timely support and effectively inspiring them to actively involve themselves in executing learning tasks.

Despite the positive findings obtained from the current study, the short period of treatment of this study hinders its absolute inference to possible effects on CSL learning in a longitudinal study. A longer period of treatment is anticipated in the future to further confirm the effects of the MOSE system on CSL learners' pragmatic competency. Besides, only the communication process and the test-based performance of Mandarin Chinese, but not the tone of Mandarin Chinese, the complexity of word and sentences usages, and the fluency of social communication, are evaluated in this study. A deeper investigation on using mobile seamless learning for the SLA process of Mandarin Chinese, from phonetic system, words, sentence, social communication, to culture aspects, is needed to bridge the gap of the knowledge pool between English and Chinese as foreign/second languages.

In sum, the current study not only approves the value of mobile seamless language learning, but also provides a deeper understanding of the effects of technology-supported learning in real world on CSL learners' pragmatic competency.

Acknowledgements

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Appendix A. The learning materials: Basic words and sentences

1. Key words

中式早餐店 zhōngshì zǎocān diàn (Chinese breakfast store), 麵包店 miànbāo diàn (bakery)
服裝店 fúzhuāng diàn (apparel store), 眼科診所 yǎnkē zhěnsuǒ (eye clinic), 郵局 yóujú (post office), 中餐廳 zhōng canting (Chinese restaurant), 水果店 shuǐguǒ diàn (fruit store)
皮鞋店 píxié diàn (shoe store), 理髮廳 lǐfà tīng (hair salon), 圖書館 túshū guǎn (library)
速食店 sùshí diàn (fast-food restaurant), 超級市場 chāojí shìchǎng (super market)
眼鏡行 yǎnjìng háng (eyeglasses store), 咖啡廳 kāfēi tīng (coffee house), 飲料店 yǐnliào diàn (beverage stalls), 冰店 bīng diàn (ice shop), 藥妝店 yào zhuāng diàn (drug store)
毛筆店 máobǐ diàn (brush shop), 咖啡 kāfēi (coffee), 茶 chá (tea), 蛋糕 dàngāo (cake), 餅乾 ǐnggān (cookie), 素食 sùshí (vegetarian food), 中國菜 zhōngguó cài (Chinese food), 烤雞 kǎojī (BBQ chicken), 果汁 guǒzhī (juice), 冰 bīng (ice), 早餐 zǎocān (breakfast)

2. Sentences

(1) 請問 (你們)什麼時候開門/休息/公休？
(What is your opening time/When is the break time/day off?)

(2) 請問 **(你們的)** 營業時間是什麼時候？
(What are your business hours?)

(3) 請問可以訂位/刷卡/拍照嗎？
(May I make a reservation/pay by card/take photos?)

(4) 請問有素食嗎？
(Do you provide vegetarian dishes?)

(5) 請問哪裡有早餐店/麵包店…？
(Are there any breakfast store/bakery…?)

(6) 請問最低消費是多少？
(What is the minimum spend?)

(7) 請問用餐時間有多久？
 (How long is the meal time?)

(8) 請問不吃豬肉/不吃牛肉/吃素的人可以買 / 點什麼？
(What can those who don't eat pork/beef/vegetarian order?)

Appendix B. Examples of the paper-based materials used by the classroom context group

1. Poster and information cards used by the waiter of the restaurant

Restaurant
餐廳
cāntīng

Restaurant
餐廳
cāntīng

11:00
|
21:00

週一 zhōu yī
|
週日 zhōu rì

$120 ↑

2 HR ↓

Coffee
咖啡
kāfēi

Cake
蛋糕
dàngāo

Vegetarian Food
素食
sùshí

BBQ Chicken
烤雞
kǎojī

2. Worksheet used by the customers

【活動】待客任務
洪小姐想去麵包店、飲料店、眼鏡行、超級市場、眼科診所、藥妝店。

商店 Store						
開門 Open						
休息 Close						
公休 Day off						
訂位 Reserve						
刷卡 Credit card						
拍照 Take Photo						
素食 Vegetarian diet						
最低消費 Min. charge						
用餐時間 Meal Time						

Appendix C. Video coding scheme

Codes	Meaning
Completion of the communication goals	According to what students initiated (purpose) and whether the conversation goal/purpose was reached. If yes, count 1, or else count 0.
Unexpected conversation	According to what was taught before taking the mission, if the words/sentences used in the conversation were not among the materials taught, count 1, or else count 0.
Context fitness	According the visited stores or shops, if the conversation fits the context, count 1, or else count 0.
Communication strategies	Observe what strategies the student adopted to continue the conversation when the conversation was stuck. The strategy coding scheme used is based on Oxford's study (Oxford, 1990: pp. 59, 69, 91, 136). Each usage of the communication strategies counts 1