FROM PARTICULAR TO POPULAR: FACILITATING EFL MOBILE-SUPPORTED COOPERATIVE READING

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This paper reports the results of an action research-based study that adapted a mobile-supported cooperative reading system into regular English as a foreign language (EFL) classes at one Taiwanese elementary school. The current study was comprised of two stages: adaptation and evaluation. During the adaptation stage, a mobile-supported cooperative EFL reading (MCER) system—chosen because of a report about its effects on enhancing the development of young EFL learners' reading abilities (Lan, Sung, & Chang, 2009)—was tailored to be integrated into a regular elementary EFL curriculum based on the suggestions of experienced elementary EFL teachers. During the evaluation stage, an EFL class learned reading via the support given by the MCER system; quantitative and qualitative data were collected and analyzed to evaluate the effects of the adapted reading system on young EFL learners' reading abilities. The results revealed that the adaptation and use of the MCER system was successful and that it might facilitate the acquisition of reading abilities by young learners if used within EFL classes around the entire school.

Key words: English as a Foreign Language (EFL), Mobile-Supported Cooperative learning (MSCL), Early Reading, Mobile Assisted Language Learning (MALL)

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BACKGROUND

In 2000, the Ministry of Education of Taiwan initiated curricular and instructional reforms (Ministry of Education, 2001), cultivating in its citizens the global perspectives and core competences necessary for modern life. The teaching of English as a foreign language (EFL) is one of the major foci of this reform, as learning English from an early age is expected to help students easily master grammatical rules and acquire near-native pronunciation (Flege, Yeni-Komshian, & Liu, 1999; Wu, Sung, Huang, Yang, & Yang, 2011). A report about a mobile-supported cooperative EFL reading (MCER) system (Lan, Sung, & Chang, 2009) caught the imagination of one principal of a Taipei elementary school, who was eager to help the students in her school improve their English abilities. The idea was to evaluate the feasibility of integrating the MCER system into regular EFL classes in Taiwanese elementary schools.

After consulting with the developer of the MCER system, a two-stage action research project was conducted, focusing on the adaptation and evaluation of the MCER system into this particular Taipei elementary school. During the first stage, several experienced elementary EFL teachers were invited to use and give suggestions for revising the MCER system to meet the requirements of EFL teaching in Taiwanese elementary schools. Then after completing the modifications, a class of elementary EFL students used the MCER system, so researchers could evaluate the effects of the modified system on students' EFL reading abilities. Researchers were also able to measure student attitudes confirming the appropriateness of the adaptation.

LITERATURE REVIEW

The Reality of Taiwanese EFL Education at the Elementary Level

The Ministry of Education of Taiwan is greatly concerned with its students' English abilities, especially students in elementary and high school, and many efforts have been made to improve Taiwanese students' English abilities. Since 2000, the Ministry of Education in Taiwan has implemented curricular and instructional reforms, in which English education has been designated to start from the third grade of elementary school, four years earlier than the previous requirement. In certain locations, English is required from an even younger age; indeed, in the city of Taipei, English is now a required subject from the first grade (Taipei City Government Department of Education, 2000). Despite these mandates, based on the official report of the International English Language Testing System, the English abilities of Taiwanese students were far beneath proficiencies of students in many other Asian countries (Central News Agency, 2011; Chen, 2007).

Several issues might be causing these test results: diversity of student English abilities, high student-teacher ratio, parental social and economic differences, class sizes, and limited learning time available in classrooms (Lan, Chang, & Sung, 2004). A high student-teacher ratio (typically 30-to-1) not only constrains teachers from catering to individuals' needs but also influences instruction. With large EFL class sizes, teacher-centered approaches are frequently used, and EFL students often lack opportunities to use the target language during instructional time (Hwang & Chen, 2011), lowering student motivation and interest in English language learning. In spite of the fact that EFL teachers wish to increase student interest in learning English through the use of language activities like classroom games, such activities are mainly designed for large groups. This privileges language output by higher proficiency students rather than by lower proficiency students. In one example, though lower-level students actively participated in a game activity, they only shouted the word "go" to cheer for their team members, whereas the higher-level ones used the lesson's target words (Lan, in press). Inefficient teaching methodologies and low learning achievements have been shown to decrease students' motivation to learn (Central News Agency, 2011; Chen, 2007). Not surprisingly, English is typically one of the most disliked subjects in Taiwanese schools.

Though we are unaware of studies that address the larger problem of why Taiwanese students dislike English, we have anecdotally observed that the specific problem of varied proficiency levels in a single class mostly results from social and economic inequalities among parents. Typically, students from wealthy families learn English during early childhood and have plenty of opportunities to practice the language outside the classroom; in contrast, students from lower-income families have only 80 minutes in the classroom per week to learn English, and rarely do they have opportunities to use or learn the language outside of school. Consequently, varying levels of student exposure to English challenges teachers when preparing their teaching materials (Lan, Sung, & Chang, 2007). These adverse conditions have been shown to frustrate numerous EFL teachers when assisting low-proficiency students (Chang, 2006). This also increases the frustration of students at beginning levels when they are forced to learn alongside their more advanced classmates. Unfortunately, many students have negative attitudes towards English from early learning experiences and avoid learning English after leaving school at the end of high school (Chang, 2007; Wu, 2004).

One strategy used to face the above problems is to promote learner autonomy and to increase their opportunities for exposure to English. According to Day and Bamford (1998) and Wu et al. (2011), reading ability is important for student academic achievement, particularly for EFL learners with limited exposure to the target language. Students with adequate English reading ability are capable of expanding their vocabulary through independent reading. Therefore, early EFL reading has been attracting increasing attention from EFL teachers, practitioners, and researchers (National Reading Panel, 2000; Taipei City Government Department of Education, 2000, 2012).

Based on descriptions of successful reading programs, socio-constructivist learning approaches are potential strategies for alleviating difficulties with reading and for improving reading skills. These approaches include working in small groups (Foorman & Torgesen, 2001; National Reading Panel, 2000), scaffolding (George & Patrick, 2002; Mathes, Torgesen, & Allor, 2001), and cooperative learning (Ghaith, 2003; Ushioda, 1996). Although numerous studies have supported the effect of these learning strategies on the progress of young children learning to read, most prior study informants have been native speakers of English. The degree to which these strategies can be successfully applied to young EFL learners in Asia—especially in Taiwan, where the EFL teaching environment differs markedly from a first language (L1) reading class—is uncertain. The pedagogical challenges described above, including class size, time constraints, and available resources, hinder most EFL teachers in Asia from applying socio-constructivist learning approaches to reading instruction in traditional EFL classes, though the effectiveness of these strategies in EFL reading have been clearly demonstrated (Lan et al., 2004; Reed, 2002). Also, simply grouping students into small reading groups does not guarantee the effectiveness of the cooperative process (Lan et al., 2007), as some students with lower-level abilities might feel left out the group and may lack of confidence. Hence, more teacher intervention is needed to help small reading groups to proceed with cooperation (Lan, Sung, & Chang, 2006). Without a doubt, both students and teachers need additional support during the cooperative reading process for the successful implementation of socio-constructivist learning in EFL reading. These pedagogical interventions informed the authors throughout the research process of this current study.

Mobile-Supported EFL Reading Studies

Mobile technology potentially offers a feasible approach to removing numerous existing barriers in the implementation of the socio-constructivist approaches in traditional EFL settings (Lan et al., 2007; Lan, Sung, & Chang, 2009). Mobile assisted language learning (MALL) not only provides second language (L2) learners with ubiquitous learning support, immediate feedback, and independent and targeted reading practice, it also helps them achieve advances in social interactivity, context awareness, connectivity, individuality, and immediacy (Attewell & Webster, 2004; Chinnery, 2006; Klopfer, Squire, & Jenkins, 2002; Soloway, Norris, Blumenfeld, Fishman, Krajcik, & Marx, 2001). Moreover, as Kukulska-Hulme and Shield (2008) noted, MALL inspires new ways of learning, as it emphasizes continuity or spontaneity of access and interaction across different contexts of use. MALL also provides a ubiquitous learning that can closely fit learners' learning habits.

Numerous advocates have recommended MALL as a method of providing L2 learners with rich, real time, cooperative, and conversational experiences both inside and outside the classroom. However, research on MALL has mostly focused on speaking (Kukulska-Hulme, 2005), listening (Liu & Chu, 2010), vocabulary (e.g. Huang, Huang, Huang, & Lin, 2012; Sandberg, Maris, & de Geus, 2011; Thornton & Houser, 2005), phrases (e.g. Morita, 2003; Thornton & Houser, 2005), and grammar (Sung, Huang, & Chang, 2006), rather than early EFL reading skills. Furthermore, recent studies of MALL have focused on college students or adults (e.g., Chang & Hsu, 2011; Cui & Wang, 2008), and few have examined how mobile technology benefits the early EFL reading skills of elementary students. Studies that have connected mobile technology and early EFL reading skills includes those of Lan and her colleagues (Lan et al., 2007, 2009), who applied mobile technology to cooperative EFL reading in order to overcome the problems existing in traditional cooperative EFL reading activities. Their research obtained fruitful results and echoed the advances of MALL reported by other researchers (e.g., Attewell & Webster, 2004; Chinnery, 2006) that MALL consistently benefits young EFL learners' reading development, improves EFL learning attitude, and enhances students' cooperative learning skills.

However, even though academic research on MALL has provided cheerful results in relation to the improvement of young EFL learners' performance and motivation, expanding the research agenda to consider elementary EFL curricula has yet to be investigated. As a second gap, the learning materials and activities used in much previous research have been created especially for purposes related to

experimental design; whether these materials and activities were relevant to the regular elementary EFL curricula is not known. In addition, most previous research has used additional lesson time to conduct experimental procedures. Using a specific research procedure integrated within the regular EFL syllabus and time constraints also has not been a priority in previous research.

To successfully integrate the concepts from previous research and the practical limitations of the EFL syllabus in Taiwanese elementary schools, this study asks the following questions:

1. What adaptations should be made to strengthen the MCER system so it better integrates with the existing EFL curriculum, so as to best meet EFL teachers' needs?
2. How does the adapted system benefit reading abilities and attitudes of young Taiwanese EFL learners?

INTEGRATING PREVIOUS ACADEMIC RESEARCH INTO THE REGULAR EFL SYLLABUS

The previously documented success using the MCER system in supporting elementary learners' EFL reading (Lan et al., 2009) inspired this action research project, especially in face of the pedagogical challenges found in most Taiwanese elementary schools by EFL teachers. Nevertheless, this system had to be modified to be more relevant to regular elementary EFL classes and to overcome several identified problems.

To adapt the MCER system, two experienced elementary EFL teachers met with the MCER system developer to describe the advantages and challenges associated with using this system in Taiwanese EFL settings. Both teachers had used the MCER system in a two-week trial; both thought highly of the system's functions, expressing that the system helped learners read cooperatively and that it had a great potential to resolve numerous pedagogical problems they faced. However, because of strict course syllabi stipulated by school administrators, it was difficult for teachers to include this supplementary methodology with their students. Thus, the MCER system needed to be more flexible to allow for the inclusion of teacher-selected reading materials. Moreover, as EFL teachers at Taiwanese elementary schools do not have extended periods of time to prepare extra online materials, it was recommended that the system include a sharing function between all teachers, to encourage more teachers to use the system in their classes. Aligned with the two teachers' feedback mentioned above, a platform for sharing cooperative English reading materials—MCER$^+$—was developed and connected to the original student learning platform—MCER. Accordingly, the teaching materials developing mobile-supported cooperative reading activities in daily EFL classes that were uploaded to MCER$^+$ were automatically transferred to the pool of learning materials on MCER. In order to document the effects of the MCER$^+$ system, a two-stage evaluation was conducted, which is briefly described below.

Stage One: Adaptation

In the adaptation stage, two versions of MCER$^+$—I and II—were adapted based on the experienced EFL teachers' suggestions and comments. The MCER$^+$ I was based on two teachers' feedback as described above. In order to make sure the MCER$^+$ I system met the general EFL teachers' expectations, another eight experienced EFL teachers from different elementary schools in Taipei City were invited to provide feedback about the MCER$^+$ I system. The first iteration of evaluation considered user interfaces and the functions of MCER$^+$ I, and these comments were used to create MCER$^+$ II. The MCER$^+$ II system was again evaluated on its user interfaces and functions. The two iterations of adaption on user interfaces and functions of MCER$^+$ system are briefly described below.

The First Version of MCER$^+$ System (MCER$^+$ I)

Built upon the existing MCER system, which was an original learning platform for elementary EFL learners, the MCER$^+$ I system incorporates three new modules to directly support EFL teachers in their

development of mobile-supported cooperative reading materials. These modules include a material management module, a class management module, and a material sharing management module. The material management module aims at providing EFL teachers with an easy approach to developing online reading materials. Three categories of materials, which together form a learning unit, can be uploaded in this module: sight words, phonetic words, and an article. The second module—the class management module—focuses on helping EFL teachers effectively manage the information of each teaching course, such as the class information (e.g., grades and class sizes), student bio-data, teaching records, assigned learning materials, and teaching schedules, and so forth. The EFL teacher can also use the class management module interface to add or delete a class, assign students and group leaders to different small cooperative learning groups, and set assigned learning activities. Within this module, the teachers can check individual learning records, and also establish assessment criteria to see whether students passed tests. The last module, the material sharing management module, keeps specific information regarding the author, theme, or target users of a learning unit designated via the material management module. The material sharing information can be used as keys for searching in the material sharing management module. Through the material sharing module, EFL teachers can search for suitable articles for their students and can print out materials to be used in conventional EFL settings.

Evaluation of User Interfaces and Functions of MCER$^+$ I

As stated above, eight experienced elementary EFL teachers were invited to assess the MCER$^+$ I platform. Teachers completed two questionnaires, one for the interface appearance of web pages of MCER$^+$ I (Appendix A, Questionnaire 1), and the other for usability which was based on Lund's questionnaire (2001) (Appendix A, Questionnaire 2). The evaluation focused on five dimensions: appearance (color, font size, button name and location, web style, etc.), usefulness, ease of use, ease of learning (while using the system), and satisfaction. During the evaluation, the teachers were first trained to use the MCER$^+$ I system, then they completed the interface evaluation questionnaire considering the individual web pages of all three modules and an overall system evaluation questionnaire. Afterwards the participating teachers had to develop a complete teaching unit and to use the newly developed materials in their EFL classes via MCER$^+$ I. After the usage, they completed the questionnaire of usability. All the questionnaire items used a five-point Likert scale where "1" means strongly disagree and "5" means strongly agree. Table 1 lists the evaluation results.

Table 1. *MCER$^+$ I Survey Results* (n = 8)

Dimensions	Mean	*SD*
Appearance	3.90	.26
Usefulness	3.62	.23
Ease of use	4.04	.31
Ease of learning	3.97	.32
Satisfaction	3.96	.37

All the teachers were broadly satisfied with most of the functions of the MCER$^+$ I; however, some refinements were suggested. According to the participating teachers, the interface required too many steps to upload their teaching materials: a simple upload process was suggested so teachers could integrate the proposed system into their daily EFL classes. Additionally, almost all teachers recommended using larger font sizes for texts. Appearance was also a main concern for these teachers. Some teachers even suggested replacing the original webpage background with a more interesting layout that would attract the attention of elementary EFL learners.

To summarize, MCER$^+$ I offered a potential approach for improving current elementary EFL education in

Taiwan, but still required some modifications. The biggest concern in terms of improving the MCER$^+$ system was to simplify the system's operational procedures to increase these EFL teachers' interest in using it.

The Second Version of the MCER$^+$ System (MCER$^+$ II)

The MCER$^+$ II system incorporated several improvements based on teacher suggestions. First, structured teacher interfaces, including both tree- and map-structures (as shown in Figure 1, left) were provided to facilitate user navigation within the system. Second, several new functions were developed for adding new learning materials to simplify material creation and the uploading process, such as the new interface for editing teaching materials related to sight words (as shown in Figure 1, right). Third, the process of searching for and managing teaching materials was simplified. Figure 2 shows a material management module for a sample unit of learning.

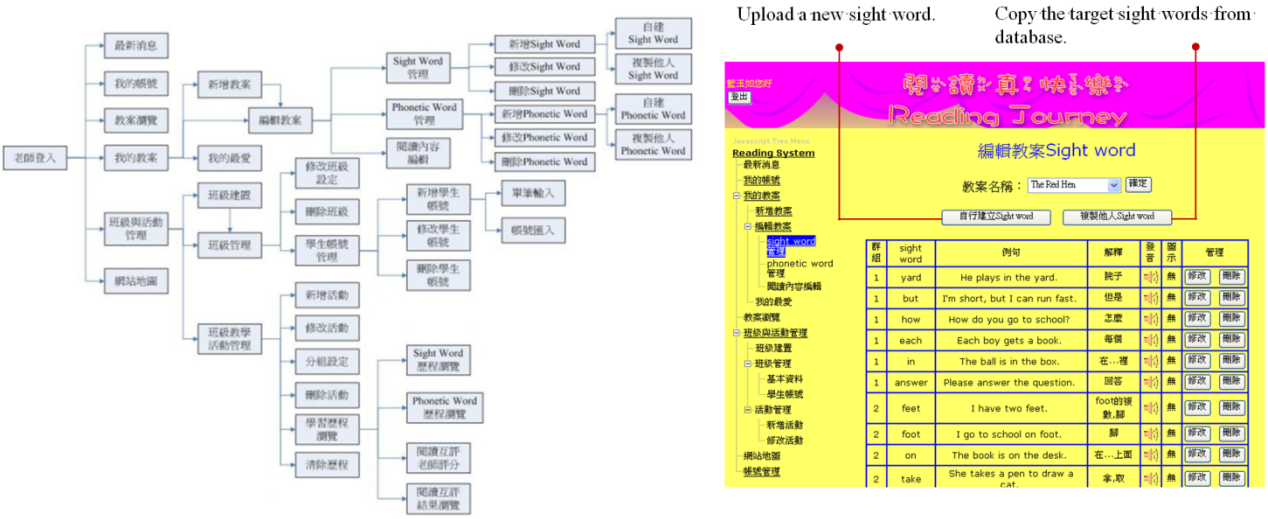

Figure 1. Improvements included within MCER$^+$ II. These include a teacher interface map structure (left), and new functions, such as editing teaching materials related to sight words (right).

Evaluation of User Interfaces and Functions of MCER$^+$ II

All eight EFL teachers who provided suggestions for the creation of MCER$^+$ II were invited to participate in this second evaluation. The evaluation focused on the MCER$^+$ II system interface and functions, and specifically on whether the problems identified earlier were resolved. The same questionnaires were used for this evaluation. Except for two instructors who gave only oral feedback, all other teachers sent back their evaluation results. All teachers expressed their high satisfaction with MCER$^+$ II. Table 2 lists the evaluation results obtained from the six EFL teachers who provided written feedback.

The results obtained in this second survey showed that instructors rated more highly the different dimensions of MCER$^+$ II, particularly the dimension of usefulness. As shown in the third column of Table 2, the means of the different ratings increased across all the dimensions. These results indicated that the system interfaces and functions were aligned with the teachers' specifications and did not require any immediate modification, even though there is room for future improvement in the dimensions "ease of use" and "ease of learning." These results indicated to the researchers that the MCER$^+$ II system could be used with confidence to study the effects of this system on young EFL learners learning to read.

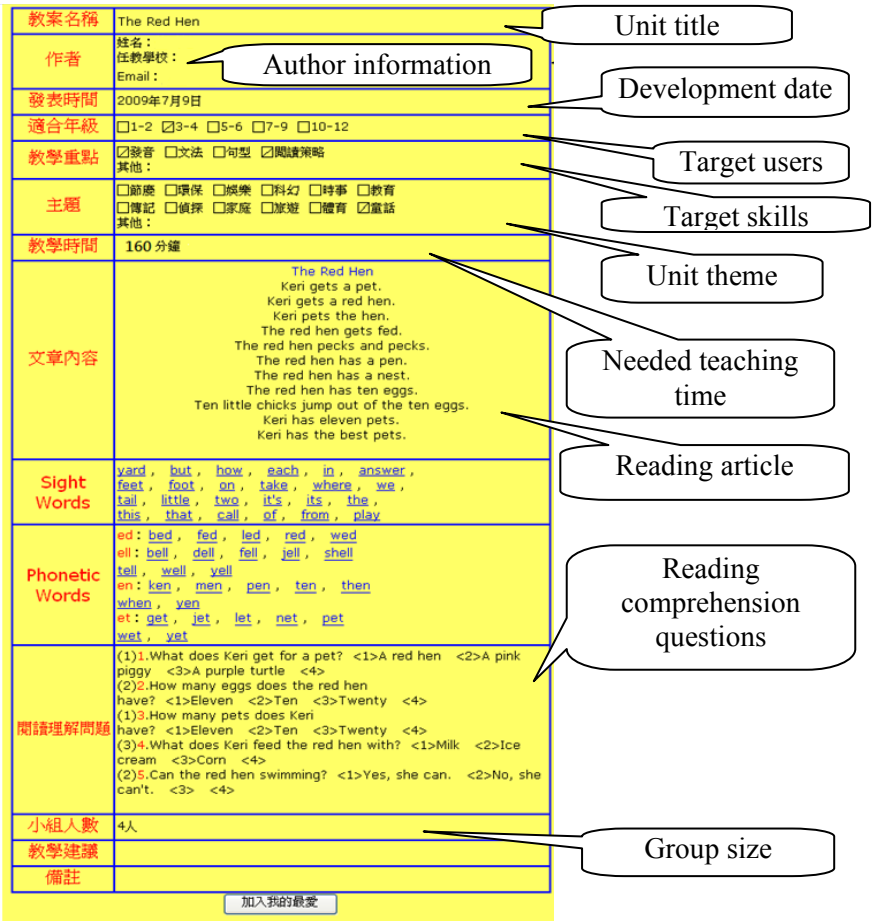

Figure 2. A sample unit of learning material management modules.

Second Stage: Evaluation

Participants

A third grade class of 20 students at one Taiwanese elementary school participated in this study of effects MCER^{+} II on young EFL learners' reading abilities and English learning attitudes. At the beginning of this study—according to the Taipei Municipal Education Department's standards for the elementary school English curriculum (Taipei Municipal Dept. of Education, 2000)—the participants knew the letters of the English alphabet, 30 words, and 20 sentences of basic daily conversation and classroom English. The students in this class were divided into small reading groups, based on their level of English achievement in the previous semester. Each group was comprised of one student with higher-level

Table 2. *MCER+ II Survey Results* (*n* = 6)

Dimensions	Mean	*SD*	Increase over MCER+ I
Appearance	4.50	.30	.60
Usefulness	4.60	.38	.98
Ease of use	4.40	.25	.36
Ease of learning	4.30	.27	.33
Satisfaction	4.50	.36	.54

reading abilities and two or three with lower-level reading abilities. Only data from the 18 students who completed the entire semester were analyzed in this study.

Instruments and Procedure

The participating EFL teachers adapted two units from an EFL textbook used in the elementary school into learning activities and materials for the MCER$^+$ II system. Every student was provided with an Asus EeePad, within which the MCER$^+$ II system was embedded. Additionally, an attitude questionnaire of EFL learning (see Appendix B) and two subtests from the dynamic indicators of basic early literacy skills (DIBELS) (Good & Kaminski, 2002) (phoneme segmentation and nonsense word reading) were administered before the study. For Taiwanese elementary EFL learners, those two early reading skills are crucial for both their spelling and oral reading (Lan, in press). Additionally, both the two subtests were individual tests. While administering the phoneme segmentation test, participants would hear an English word, such as "book," then they were asked to produce all the phonemes included in the word: /b/, /ʊ/, and /k/. Each correctly said phoneme scored one point. In terms of the nonsense word test, participants were shown a paper filled with pseudo English words, such as "cik." Participants were then asked to produce the pseudo words as quickly and correctly as possible. Again, for each correctly produced phoneme, students scored one point. After the pretest, the participants received training on the use of the equipment. Then the two units were taught. Each unit was taught in four 40-minute periods over two weeks. In each 40-minute period, the MCER$^+$ first randomly assigned part of the reading materials to each member of a small group, such as one fourth of target vocabulary or one paragraph of a story. Then everyone learned the assigned materials with the support of MCER$^+$ II. After participants finished their reading tasks, they shared what they had read with other group members. Finally, the whole group cooperatively carried out group projects, such as unscrambling out-of-order paragraphs into a complete story. One week after finishing the four-week experiment, the same questionnaire and reading tests were administered as a post-test.

RESULTS

The young EFL learners showed significant differences in their pre and post test scores on the same early reading ability tests (phoneme segmentation: $t(17) = -3.79$, $p < .05$, effect size = .30; and nonsense word reading: $t(17) = -2.34$, $p < .05$, effect size = .14). Table 3 lists the means and standard deviations for early EFL reading ability scores on the two tests. It was found that the young EFL learners made a greater improvement in phoneme segmentation than nonsense word reading after having had the support of MCER$^+$ II. This phenomenon potentially indicates that there was an absence of the instruction of first skill in Taiwanese elementary EFL settings which has been partially filled by the MCER$^+$ II system. The young EFL learners are able to acquire this skill if they have the appropriate learning opportunities and support.

Table 3. *Pre- and Post-Test Scores for Reading Tests and Learning Attitude Questionnaire*

	Phoneme Segmentation Test		Nonsense Word Reading Test		Early FL Learning Attitude Questionnaire	
	Mean	*SD*	Mean	*SD*	Mean	*SD*
Pretest	11.94	19.47	22.17	30.17	3.11	.58
Posttest	23.61	26.78	59.39	38.38	3.57	.43

Note. $n = 18$.

In addition, the students' attitudes towards learning English were measured during this stage (see Table 3). The participants showed significant differences in attitude towards learning English before and after

this study: $t(10) = -3.75$, $p < .05$, effect size = .29. Additionally, the young EFL learners' more positive attitudes towards English learning after using MCER$^+$ II system are similar to the positive evaluation results obtained from the eight participating EFL teachers during the adaptation stage.

In sum, by participating in this study, teachers developed a more favorable opinion of the MCER$^+$ II system as a method of developing and sharing teaching materials. The efforts made to simplify the operational processes and provide a map of the material development processes in the MCER$^+$ II system were seen by teachers as being improvements, and the MCER$^+$ II was seen as being an easy and useful platform for EFL teachers to develop curricular-based teaching materials. Results obtained in this study also showed that the curricular-based materials and learning activities transformed via the MCER$^+$ II system into mobile supported cooperative learning, cultivating early EFL learners' reading abilities and improving their enthusiasm for English learning. Based on the results obtained from this two-stage action research project, the MCER$^+$ II system was found to be an appropriate platform to be popularized in all the EFL classes at the participating school.

REFLECTIONS AND CONCLUSIONS

A primary goal of Taiwan's National Science Council (NSC, 2005, 2010) has been to enhance the practical value of academic research. In Taiwan there have been numerous investigations relevant to e-learning striving for excellence in teaching and learning (Shih, Feng, & Tsai, 2008), but few successful practical applications designed for regular teaching contexts. This study can be seen as a first step of bridging academic research and practical pedagogical settings.

The current research was inspired by two urgent needs in practical EFL teaching and learning: aiding EFL teachers and enhancing EFL learners' reading abilities. The findings obtained from this study added to the knowledge of both MALL and CALL research. It highlighted the importance of assisting EFL teachers to first prepare young learners for executing individual learning tasks and then put them in small groups to facilitate them to learn by doing and sharing. Furthermore, based on the lessons learned from the two stages of this study, directly introducing technological products (learning systems or advanced devices) to real educational practice will face severe obstacles if project managers do not take into account different educational realities. Thus, end users, including teachers and students, should be invited to be involved from the very beginning stage of a learning system. This shows the increasing impact of design research on educational research, in which the teachers, students, and the researchers work together to develop and evaluate a technological product via an iterative process (Collins, Joseph, & Bielaczyc, 2004).

Based on the system MCER, the present action research project improved the original system's functionality, to create the new system MCER$^+$ II. As described above, purely academic research might be limiting in terms of how much it can actually help improve real-world educational environments. Careful research involving the researchers, teachers, the real users (learners), and multi-stage confirmation is necessary as a first step towards improving education. However, this study is only the beginning. Only eight experienced EFL teachers from Taipei were invited to provide comments and suggestions for adapting the original MCER system to become MCER$^+$ II; there was only one elementary school from Taipei city that participated in evaluating the effect of MCER$^+$. Students in many other regions in Taiwan possess different EFL abilities, and their concerns should be represented in future studies. Furthermore, EFL teachers teaching in different area of Taiwan may need different instructional support. Thus, there is still a need to expand the popularization of MCER$^+$ II to all the EFL classes in Taiwan beyond this single elementary school in Taipei.

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APPENDIX A. Questionnaires for User Interface and Overall Functions of MCER+ System

Questionnaire 1. Interface Evaluation Questionnaire of MCER+ System

System pages	Items	1	2	3	4	5	Suggestions for refining system
an example page 	The interface design is clear for users to understand.						
	The font size and color make reading comfortable.						
	The webpage is easy to navigate.						
	The webpage shows a suitable amount of information.						
	The way of presenting the information is easy to read and to understand.						
	It properly presents the reading comprehension questions.						
	The screen background provides a good fit with the information without disturbing the users' main task.						
	Each link is properly labeled.						
General suggestions for interface improvement							

Note. Each of the system pages is accompanied by this questionnaire.

Questionnaire 2. Usability Questionnaire of MCER+ System

Dimensions	Items	1	2	3	4	5	Suggestions for refining system
Usefulness	It helps me manage the students' personal learning activities in the system.						
	It helps me manage the whole-class learning activities in the system.						
	It helps me understand students' learning process in the system.						
	The data of student's learning process shown in the system help me better understand the student learning outcomes.						
	The system clearly shows student peer assessment in the teacher module and helps me understand the results of the activity.						
Ease of Use	It is easy to add both phonetic words and sight words to the system.						
	It is easy to post the reading comprehension questions.						
	It is easy to enter and organize student data.						
	It is easy to set up and manipulate student learning activities in the system.						
Ease of Learning	It is easy to learn to add both sight words and phonetic words to the system.						
	It is easy to learn to post the reading comprehension questions.						
	It is easy to learn to enter and organize student data.						
	It is easy to learn to set up and manipulate student learning activities in the system.						
Satisfaction	The system provides appropriate sight words.						
	The system provides appropriate phonetic words.						
	The context of the articles are appropriate.						
	The system provides a proper way to set up standards to help students reach goals.						
General suggestions for improvement							

APPENDIX B. Attitude Questionnaire of EFL Learning

Num.	Items	Strongly agree 4	Agree 3	Disagree 2	Strongly disagree 1
1	I like reading English stories.				
2	I like listening to English songs.				
3	I like watching English cartoons or movies.				
4	I like participating in English-related activities, such as English oral reading contests, English drama contests, etc.				
5	I like attending English classes.				
6	I learn very useful knowledge in English classes.				
7	I can understand the sentences I have learned.				
8	I can make a self-introduction in English.				
9	I can use an English dictionary to help me learn English.				
10	I can read English stories; when I encounter new words, I look them up in the dictionary.				
11	I can write out my thoughts in English.				

Note. This is a translation of the questionnaire written in Chinese that was originally administered to this study's young students.

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