

What Makes Collaborative Early EFL Reading Effective? A Mobile Dynamic Peer-Assisted Learning System

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ABSTRACT

Collaborative learning is a learning approach in which peer interaction plays a significant role and students work together to accomplish shared goals. It is a widely used approach to increasing the intensity of EFL reading program. However, just heterogeneously placing students in a group and assigning them a group goal does not guarantee that students will involve in effective collaborative learning activities. When working without technological support, some problems in EFL reading group can be detected. We describe how weakness in learning supporting, feedback providing and lack of mobility can be solved with a mobile devices-supported dynamic peer-assisted learning grouping. The study explored EFL students' collaborative behaviors without technological support. In order to overcome the weaknesses found in the non-technological collaborative EFL reading activities, we designed a dynamic peer-assisted learning program in a wireless reading system. Finally, we analyzed students' collaborative behaviors with technological support. The result of our work identify an effective way of using mobile devices to support collaborative EFL reading activities that address the above mentioned weakness.

KEYWORDS

Collaborative learning, EFL reading, peer-assisted learning

1. INTRODUCTION

Due to globalization and internationalization, English has achieved the status as the world's *lingua franca* because of its wide use in academia, business, commerce, and technology (Spolsky & Shohamy, 1999). English learning is a worldwide issue. Besides, because of a growing recognition that reading provides important opportunities for second language (L2) development (Day & Bamford, 1998), this is especially so for learners in an English as foreign language/ English as second language (EFL/ ESL) setting with limited L2 resources (Gehard, 1996), the teaching of English reading has been drawing increasing attention from EFL/ESL teachers and researchers. For educational researchers and practitioner, it is an urgent issue to prevent children from encountering reading difficulties.

An intense intervention program has been viewed as an effective approach to reaching the goal (Clay,

1993; Foorman & Torgesen, 2001; Hiebert, Colt, Catto, & Gury, 1992; Slavin, Madden, Karweit, Dolan, & Wasik, 1992; Taylor, Frye, Short, & Shearer, 1992). In addition, reported research stresses the importance of increasing intensity on an effective reading intervention programs. Collaborative learning has been widely used in English reading program to offer sufficient intensity and learning support because of their sophisticated features such as group members working together and peer-assisted learning. Hartup (1992) has said that children teaching each other (peer-assisted learning) are generally successful in cognitive activities. Greenwood and his colleagues (Greenwood, 1996) also argued that peer-assisted learning benefited students' learning outcomes in reading. According to Foorman and Torgesen (2001) and National Reading Panel (2000), efficient classroom reading instruction with effective small group and one-on-one reading instruction can meet the literacy needs of all children.

Collaborative learning is a learning approach in which peer interaction plays a significant role (Ravenscroft, Buckless, & Hassall, 1999) and students work together to accomplish shared goals (Johnson & Johnson, 1994). While using collaborative learning approaches teachers need to make sure that all students are actively involved in the process working towards a common goal (Artz & Newman, 1990). Five essential components teachers should structure in lessons to guarantee students to collaborate well: positive interdependence, promotive interaction, individual accountability, interpersonal and small-group skills, and group processing (Johnson & Johnson, 1994). Collaborative learning can be implemented in three basic forms: tutoring (peer or cross-age), in which one student teaches another; pairs, in which students work and learn with each other; and small groups of students are teaching and learning together.

Numerous researches confirm the educational effects of collaborative learning on English reading teaching and learning. Ushioda (1996) suggests that collaborative learning can promote students' learning motivation and satisfaction. Based on Slavin' research (1988), collaborative learning methods are considerably more effective than traditional methods in increasing basic achievement outcomes, including performance on standardized tests of reading and language arts, mathematics, social studies, and science. Nichols and Miller (1994) have also found that collaborative learning helps push students involved in group goal pursuit. In addition, according to Ghaith (2003), students' EFL reading achievement and academic self-esteem are improving as well as their feeling of school alienation is decreasing in collaborative learning situation.

Even though collaborative learning has been known as effective teaching methods in EFL reading, most of the studies did not focus on early EFL reading. Does collaborative learning also benefit young EFL learners? And are they able to effectively collaborate with their peers? If yes, how do young EFL learners do small group collaborative EFL reading? If not, what are the weaknesses?

In our work, EFL students' collaborative behaviors without technological support were observed to identify young EFL learners' collaborative behaviors in text reading activities and the actual weaknesses as well. At the same time, we tried to solve the weaknesses with the support of mobile devices. The description of EFL students' collaborative reading without technological support, and the observed results are depicted in Section 2. The weaknesses were solved with the support of mobile devices, its evaluation, and results are shown in Section 3. Finally, the conclusion is drawn in Section 4.

2. COLLABORATIVE EARLY EFL READING ACTIVITIES WITHOUT TECHNOLOGY

To observe young EFL students' collaborative behaviors in text reading activities, find the weaknesses of collaborative EFL reading, and have a frame of comparison to see if these weaknesses were solved by an equivalent activity implemented with mobile devices-supported EFL reading program, an evaluation was performed on one collaborative activity for third graders in early EFL reading.

2.1 Method

In order to understand young EFL students' group reading behaviors (GRB), first we observed children with collaborative EFL reading activities without technological support. Our approach was to watch the videotapes repeatedly, with the focus on how the groups behaved during meaning-based reading activities

described in Section 2.3, i.e. to find weakness in: (a) supporting providing by group members, (b) feedback providing by group members, and (c) collaborative process.

Quantitative and qualitative data was gathered from video data. The RGB of young EFL learners as well as the common weakness for each component were analyzed. For each identified weakness the video was re-analyzed and the frequency of weaknesses occurrence was also calculated.

2.2 Participants

The subjects of the first stage were 26 third-grade students (14 boys and 12 girls) from an elementary school of Taipei, Taiwan. In advance of the treatment, the students were heterogeneously grouped in reading groups based on their English achievement in the second grade. The students whose grade was A were classified as high reading ability students, while those whose grade was B or C were classified as medium reading ability students, and those whose grade was D or Fail were classified as low reading ability students. As a result, there were 7 high-ability, 10 medium-ability, and 9 low-ability students. After heterogeneously grouping students, one student with higher English achievement (we called them group leaders) coupled with two or three ones with lower achievement. Finally, we had 7 reading groups, five groups with 4 members and two with 3 members.

2.3 Description of early EFL reading activities

Five teaching packages were taught in this study. The lesson structure of the teaching materials is based on a balanced foundation: each teaching package consists of both bottom linguistic skill training materials and meaning-based reading texts. The phonics rules plus a set of chosen sight words construct the bottom linguistic skill training module of a teaching package. Based on the bottom linguistic skills in a teaching package, a carefully tailored written text is used as a meaning-based reading material to provide students opportunities to apply their bottom linguistic skills to comprehending a written text.

A teaching package consists of two two-classed activities. In the first two-classed activities, students used printed materials to practice phonological skills (sight words and phonics rules), and the delivering activities were whole class activities and pairs work. Then the students collaboratively did meaning-based reading activities with their group mates in the second two-classed activities. When read the assigned text, students could ask for help from their group mates when they needed.

2.4 Procedure

Before the treatment, students were asked to discuss, conclude and obey the collaborative reading rules by themselves. At the first two-classed activities of each teaching package, the EFL teacher instructed students in sight words and phonics rules. After direct modeling, the EFL teacher led the activities of whole class practice and contest. At the second two-classed activities of each teaching package, the students were asked to sit in groups around a desk during the EFL class time. Then each group was asked to collaboratively do meaning-based reading activities with their group members. Each student read the text followed a step-by-step reading guidance. After they finished with text, they were asked to do peer-assessment activities. Whenever they had problem of reading a word or comprehending the meaning, they could ask for help from their group leader or group members.

2.5 Results

Based on the videotapes analysis, we found that peer-assisted learning behavior existed in such cooperative reading groups. In addition, we found that there were four types of group interactive behavior which we called Ardent, Be-forced, Supervisory, and Wait-on. The Ardent model stands for that the group leaders are willing to help and support their group mates whenever they need it, as well as directly giving guidance when necessary. The Be-forced model means that the group leaders have an oppositional attitude to their group mates. In the Be-forced model, the group leaders are absolutely unwilling to help or support their group

mates except under the pressure given by the EFL teacher. The group leaders in the Supervisory model care about their group mates' learning to read and are willing to support their group mates whenever they required, but the leaders seldom let their group mates read individually and insisted instead that the whole group read or do the worksheets together under the leader's supervision. The group leaders in the Wait-on model are like stand-by helpers and are willing to help their group mates but seldom give help or support or guidance intuitively except when they are asked to do so.

We also found that just heterogeneously placing students in a group and assigning them a group goal does not guarantee that students will involve in effective collaborative learning activities. There were several weaknesses found in students' collaborative processes. The load of each group leader was not balanced in the small-group cooperative reading activities. That is, some of the group leaders were always busy to help their group mates, yet some of them were doing their own text most of the time. As a result, the participants in those groups with busy group leaders may have needed to wait for a while to get their leaders' help (we called it 'postponed support') even though some group leaders were available for providing support (we called it 'invisible helper'). We also found that the medium-ability students were usually asked to read by themselves because their group leaders were always busy in helping their low-ability group mates. Because of lack of real time feedback, those medium-ability students consequently did an unsure reading activity (we called it 'absent feedback'). Teasing and omitting were another problems in small groups; some of the group leaders teased or omitted their group mates because of their slow learning rate (we called it 'ineffective collaborative process'). This caused those students to become more passive while reading and they needed more encouragement from the EFL teacher.

The main weaknesses (postponed support, invisible helper, absent feedback, and ineffective collaborative process) found for the collaborative EFL reading activities, together with their media (μ) and standard deviation (σ) of their frequencies, are shown on Table 1.

Table 1. Weaknesses of collaborative EFL reading activities without technological support

Weaknesses	Frequencies	
	μ	σ
Postponed support	12	3.70
Invisible helper	6.5	1.71
Absent feedback	11.5	4.24
Ineffective collaborative process	9.5	4.57

3. SOLVING WEAKNESSES OF COLLABORATIVE EARLY EFL READING ACTIVITIES WITH MOBILE READING SYSTEM

Focused on the weaknesses found in collaborative reading activity without technological support, we designed equivalent collaborative EFL reading activities oriented to address the weaknesses with technological support. As done for the collaborative EFL reading activities without technological support, we videotaped and observed children working with collaborative EFL reading activities with technological support, the occurrence frequencies found will be counted. In this section, we analyze how computer technology can give a solution to weaknesses in collaborative EFL reading activities; also the mobile devices-supported dynamic peer-assisted learning (MDPAL) model is presented, which technologically supports the described collaborative EFL reading activities in order to address the weaknesses found (Second 2.5).

3.1 Subjects and settings

Similarly to the evaluation of collaborative EFL reading activities, the study for mobile devices-supported activities took place in the same elementary school, during the same period of time, with 26 students (14 boys and 12 girls) in the same grade. The subjects were also heterogeneously grouped in reading groups based on their English achievement in the second grade. The grouping standards were similar to that described in

Second 2.2. There were 6 high-ability, 11 medium-ability, and 9 low-ability students. After grouping students, we had 7 reading groups, five groups with 4 members and two with 3 members, the same grouping result as in Second 2.2.

3.2 The mobile devices-supported dynamic peer-assisted learning model

The MDPAL consists of two modules: phonological skills training module and peer assessment module. The learning flow in MDPAL is shown in Figure 1, and the brief function of each module will be explained in the followings.

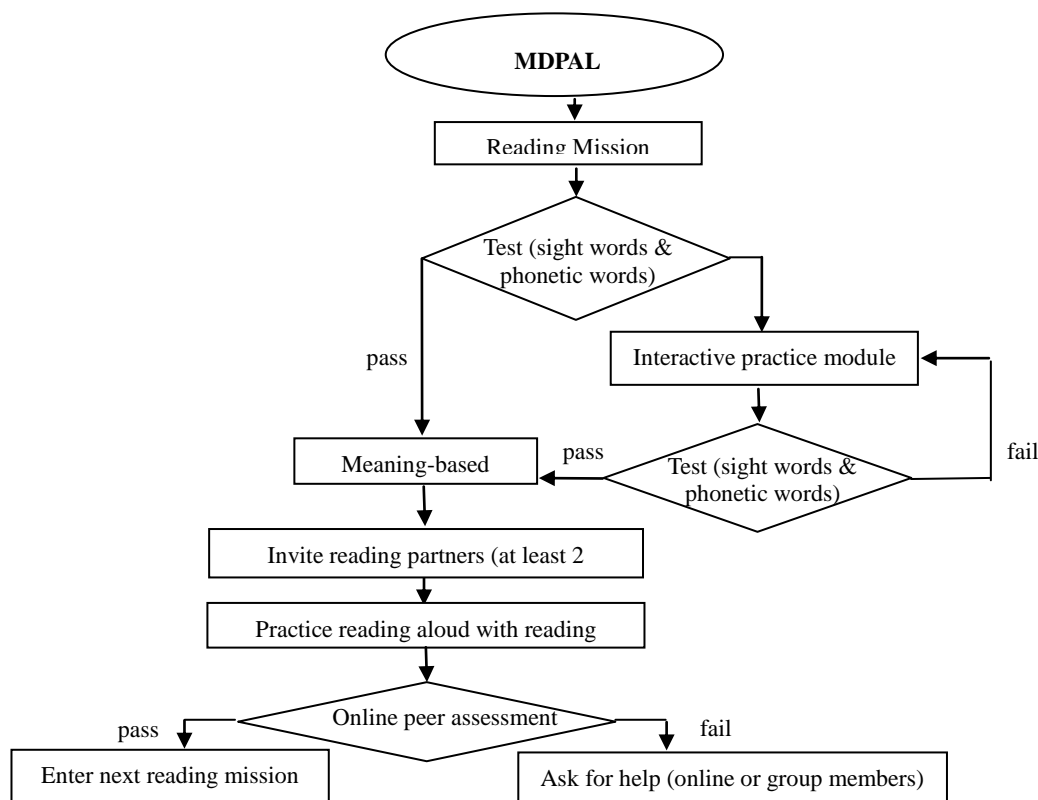


Figure 1. The learning flow in MDPAL system

3.2.1 Phonological skills training module

This module includes two sub modules, sight word and phonetic word. After students login MDPAL, system first assesses students' reading skills (sight words fluency and phonetic words fluency) in turn. If they pass the test, then they can pass forward to the peer assessment module. If they don't, then with the supports of the system they will practice the sight words and phonetic words of each unit until their abilities reach the standard set by the EFL teachers. During the learning processes (practice and test), MDPAL will record each students' learning results and provide them with both real-time feedback and learning supports.

3.2.2 Peer assessment module

After students master the target sight words and phonics rules in each unit, they continue doing meaning-based reading. In this module, MDPAL keeps an online, qualified helper list which is the names of the students have passed the peer assessment process. Students' names can be added in the name list after they pass the online peer assessment. The first five students are asked to read the text to their EFL teacher

and pass online assessment. After the EFL teacher's assessment, their names will be added in the list then they can help their peers do online peer assessment or meaning-based reading.

Generally, after students get into the module, they first read the text individually, whenever they encounter difficulties in text reading or comprehending, they ask for online help via Skype software (a peer-to-peer service software). After they can fluently read and comprehend the text, they will invite two online helpers and then read the text to them. Only when both the two online helpers judge the readers pass the assessment, they can then become a new online helper. If one of the two online helpers judge 'fail', then the readers need to keep reading the text. Figure 2 shows the examples of the learning activities of online peer assessment.

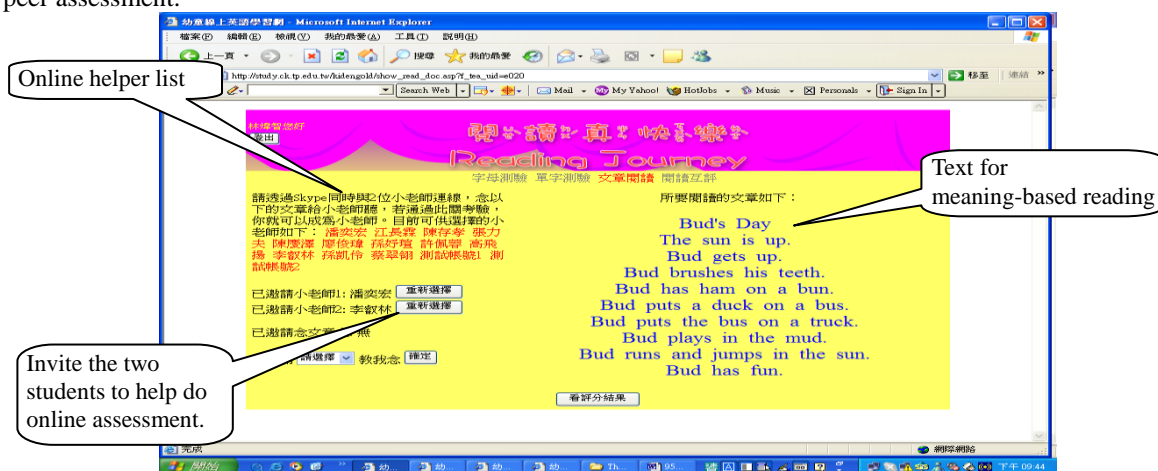


Figure 2. An example of online peer assessment

3.2.3 System Architecture

The MDPAL system adopts a three-tier architecture, as in Figure 3. Both the EFL teacher and each student will be given a Tablet PC with a touch stick. The first tier is responsible for users' on-line practice and test through browser. The modules in the web server of the second tier use database accessing objects to access data from the database server in the third tier. The interactive results between the second and the third tiers will display on the browser in the first tier.

The modules adapt Microsoft asp technique to interactive with the forms in the browser on the client by the objects of request and response. Through database accession and the objects of application and session access memory on the server, MDPAL can provide users the necessary scheme for synchronous practice and test.

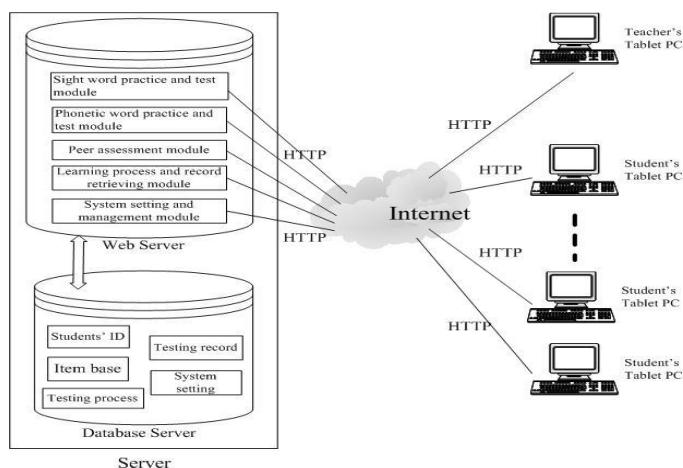


Figure 3. System architecture of CAREER system

3.3 Description of mobile devices-supported dynamic peer-assisted learning group activities

The typical teaching packages and were taught in this study. In the first two-classed activities, the teaching activities are the same as that described in Second 2.3. However, in the second two-classed activities, a Tablet PC with a touch stick was given to each student. Then the students collaboratively did meaning-based reading activities with the support of MDPAL.

3.4 Procedure

The main difference with the collaborative EFL reading activities without technological support was the possibility for the students to take a Tablet PC anywhere in the classroom, and receive help not only from their group mates or group leaders, but also the online helpers. In addition, two or three students dynamically form a learning group via making an online call (by Skype) when do online peer-assessment activity or peer-assisted learning. All the students had the same role, individual activities, and an opportunity to be others' online helper. The observations were targeted to analyze the students' behaviors and the users' behaviors towards other students belonged to different learning groups and towards the machine.

3.5 Results

The evaluation applied to the MDPAL activities, showed that the weaknesses of postponed support, invisible helper, absent feedback, and ineffective collaborative process found in collaborative EFL reading activities without technology, were overcome with the help of the mobile devices (Table 2). Only the usability problem, related to the technological restrictions of the wireless network and technological characteristics of the Tablet PC, were detected. The bandwidth of the wireless network restricted the numbers of the students' online practice and assessment. Consequently, when students did online practice, some of the students could not hear MDPAL said the words clearly (average = 2.33, standard deviation = 1.53). In addition, the number of the students simultaneously talked online (via Skype) was also restricted. Thus, some of the students even did not wait for the learning supports but needed to wait for the connection of the online phone call (average = 2, standard deviation = 1.41). During the treatment, problem was observed (average = 2.86 and standard deviation = 1.95) when using the touch stick to answer the test or select the online helpers.

Table 2. Weaknesses of collaborative EFL reading activities with technological support

Weaknesses	Frequencies	
	μ	σ
Postponed support	1	0.5
Invisible helper	1	0.58
Absent feedback	1	0.00
Ineffective collaborative process	2	0.82

4. CONCLUSION

The evaluation of the non-technological collaborative EFL reading activities helped us to identify those weaknesses of the activity that could be improved with mobile devices support. In addition, the evaluation of the mobile devices-supported EFL reading activities showed that the MDPAL activities overcome the weaknesses detected in the collaborative EFL reading activities without technology. However, technological restrictions of the wireless network and technological characteristics of the devices need the researchers' more attention to overcome the problems to enhance the learning effectiveness in wireless environment.

The use of mobile devices in collaborative EFL reading activities lowered students' stress and benefit students' oral reading to their peers. It also opens a new world of possibilities, where students could do

individual EFL reading activities with anywhere-anytime learning supports and real-time feedback. Without the long-term waiting for help or feedback, the students could learn to read according to their need and pace. Furthermore, the transparent online helpers list not only increases the usability of help resource but also encourage the students to pass the peer assessment process and to become an online helper. The mobile devices-supported EFL reading program is emerging as a portable solution that provides students with adapted-, dynamic support to involve in collaborative EFL reading activities anywhere, anytime.

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