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The Effects of Reading Strategy Instruction via Electronic Storybooks on EFL Young Readers' Reading Performance

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Abstract

The prevalence of web-based applications and the use of multimedia in school make learning and teaching through the Internet a popular method in education (Ferdig, 2005). To keep in line with the trend, the purpose of the study was to explore the effects of reading strategy instruction via electronic storybooks on EFL elementary school students' reading comprehension, their strategy use and their viewpoints toward electronic storybooks-based reading strategy instruction. Fifty-seven Taiwanese EFL fourth graders from two intact classes were chosen, and assigned as an experimental group and a control group. The experimental group received a ten-week reading strategy instruction whereas the control group did not engage in any strategy training. The experimental group were taught seven reading strategies, which were practiced in small groups. The instruments included one STYLE proficiency test, five reading comprehension tests, and questionnaires of strategy use and an attitude questionnaire toward e-books based reading strategy instruction. Results indicated that after reading strategy instruction, the experimental group performed better than the control group in story comprehension, but without significance. However, they significantly outperformed the control group in strategy use. Also, the experimental group had positive attitude toward e-books based reading strategy instruction. Pedagogical implications were provided.

Key words: Electronic storybooks, Reading strategy instruction, Reading Strategy Use, Reading comprehension

Introduction

With the advance of modern technology, web environments offer possibilities to combine visual, verbal and auditory modes in multimedia presentations. The effectiveness of these capabilities available to L2 learner via multimedia has been the focus of modern technology. Therefore, the channels of learning are not limited to printed material, but extended to other modes of multimedia. Children may be exposed to books not only through parents' and teachers' printed storybooks reading, but also through the reading of electronic storybooks (e-books) which are available on the internet or on CD-ROMs (Korat, 2010).

As a valuable tool in educational settings, e-books have been widely used in classroom literacy learning in early school years (Ertem, 2010), and provide forms of comprehensible input. With the integration of texts, graphics, sound effects, animations, music and other multimedia components, they bring support to the story line (Chen, Ferdig, & Wood, 2003; Ertem, 2010) so that children can easily grasp the meaning of stories. Researchers showed that e-books not only enhanced students' reading comprehension but also developed their positive attitudes toward reading (Korat, 2010; Lin, 2010).

Even though there are positive effects of e-books reading on learners' reading comprehension, many students still struggle with reading due to the lack of efficient reading strategy use. In traditional reading instruction, teachers often spend most of the class time explaining the texts by centering on vocabulary teaching and grammar exercises, and seldom teach strategies directly in class. Students did not learn how to use various strategies to actively interact with the text (Deng, 2009; Lau, 2006). Furthermore, due to their low level of reading strategy knowledge and lacked of metacognitive control, they often select ineffective and inefficient strategies with little strategic intent (Yang, 2010).

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In order to remedy the flaws, many strategy instruction practitioners advocated the implementation of reading strategy. The results showed that strategy instruction was a powerful approach to foster reading comprehension (Chamot, Barnhardt, El-Dinary, & Robbins, 1999; Cohen, 1998; Dole, Duffy, Roehler, & Pearson, 1991; Paris, Wasik, & Turner, 1991; Pressley, Goodchild, Fleet, Zajchowski, & Evans, 1989), increase students' autonomy in language learning and enhance learners' language proficiency (Green & Oxford, 1995; Griffiths, 2003), and strategy use for L1 English-speaking students (Bereiter & Bird, 1985; Palincsar & Brown, 1984), and for L2 learners (Hsiao, 2011, Luo, 2009). For instance, Bereiter and Bird in the L1 contexts (1985) using four strategies like restatement, re-reading, demanding relationship, and problem formulation, conducted a study to compare the effects of two types of instruction: "modeling-plus-explanation" and modeling. The "modeling-plus-explanation" instruction included an explanation of situations in which the four strategies could be used as well as the modeling of these strategies. Results showed that the experimental group receiving modeling and explanation performed significantly better on the comprehension post-test than the control group receiving only modeling.

Hsiao (2011) explored the effects of reading strategies instruction on Taiwanese junior high school students' reading comprehension in testing situations. It was found that participants became better in their awareness of reading as well as their reading ability, and the effective strategy use improved significantly after the reading strategy instruction. Also, participants held positive views toward the reading strategy instruction. The study suggested that instructors incorporate reading strategy instruction in normal English curriculum.

Moreover, the effectiveness of reading strategy instruction was also reported for EFL low proficient learners. Luo (2009) investigated the effects of reading strategy instruction, implemented with inferring and story grammar strategies, to help improve low-achievers' reading performance and reading strategies usage. It was found that the low-achievers had positive attitudes toward the reading strategies instruction concerning vocabulary knowledge, reading strategies usage, self-confidence, English test scores, and reading behavior. The results of this study also indicated the effectiveness of the reading strategies instruction in enhancing the low-achievers' reading performance, reading strategies usage, as well as learning motives.

Previous studies on multimedia have mostly focused on the comparison of the differences between the presentation form of electronic storybooks and printed storybooks. Limited research has been conducted to explore the specific effects of using e-books as digital teaching materials in reading strategy instruction for young EFL learners (Deng, 2009). In addition, early intervention research usually focused on the effects of teaching a single comprehension strategy, such as question, generation, mental imagery, or summarization, taught in controlled experiments. Relatively little is known about the issue of how multiple strategies can, and should, be combined in comprehension instruction (Guthrie, Wigfield, Barbosa, Perencevich, Taboada, & Davis, 2004). Therefore, in order to fill in the gap, this present study aims to explore the effects of reading strategy instruction via electronic storybooks on EFL elementary school students' reading comprehension, students' strategy use and their attitudes toward reading strategy instruction. In view of the preceding research purpose, three research questions to be addressed in this study are as follows:

1. What are the effects of reading strategy instruction via electronic storybooks on EFL elementary school students' reading comprehension?
2. What are the effects of reading strategy instruction via electronic storybooks on EFL elementary school students' strategy use?
3. What are Taiwanese EFL elementary school students' attitudes toward reading strategy instruction via electronic storybooks?

Literature Review

Studies of Reading Strategy Instruction

The goal of primary school education is to educate learners to achieve successful reading comprehension, which provides the basis for a substantial amount of learning in school education. In order to reach this goal, many reading studies have been undertaken to search for effective ways to foster children's comprehension (National Reading Panel [NRP], 2000). Among the various approaches used to increase L2 learners' comprehension, successful use of reading strategies has been recognized as an effective way to help increase reading comprehension (Karami, 2008).

Good reading strategy use constitutes a key to successful reading comprehension. It can help increase students' autonomy in language learning, in improving their language proficiency and reading comprehension (Green & Oxford, 1995; Griffiths, 2003). A number of researchers have advocated the employment of reading strategy instruction to facilitate students' reading comprehension, reading proficiency, strategy use, and develop positive attitudes toward reading (e.g., Chamot et al., 1999; Cohen, 1998). For instance, Song (1998) investigated the impact of strategy training on the reading ability of EFL university students. Results showed that the reading strategy training improved EFL college students' reading proficiency. The amount of gains made by the low and the intermediate reading proficiency group was also found to be significantly greater than that made by the high proficiency reading group. Finally, the students' ability of grasping main ideas and of making inferences from given passages was significantly enhanced. These findings suggested that strategies could be taught, which helped EFL tertiary students improve their reading comprehension ability.

Lim (2009) investigated the impact of strategy training on the reading abilities of EFL high school students. The study also aimed to obtain answers for the differential effect of the strategy training on students' reading proficiency level. Research findings showed that the reading strategy training improved EFL high school students' reading proficiency. Specifically, intermediate and high proficiency readers benefited more from the training than low readers. The study implied that reading was a high-order skill which could be automatized when the provision of sufficient linguistic input and strategy training was accessible.

Sporer, Brunstein, and Kieschke (2009) investigated the effects of three different forms of strategy instruction (i.e., reciprocal teaching, instructor-guided teaching and traditional instruction) on 210 elementary-school students' reading comprehension. It was found that at both the post- and follow-up test after the intervention, students attained higher scores on an experimenter-developed task of reading comprehension and strategy use than the control group who received traditional instruction. Furthermore, students who practiced reciprocal teaching in small groups outperformed students in instructor-guided and traditional instruction groups on a standardized reading comprehension test. The results of study corroborate the view that explicit instruction of multiple reading strategies was a feasible tool to enhance students' reading comprehension and strategy use and that third- to sixth-graders benefited most from explicit reading instruction supplemented with practice in small groups' reciprocal teaching activities.

Cotterall (1990) replicated Palincsar and Brown's (1984) study in the L1 context to analyze the effects of metacognitive strategy in reading instruction on four Japanese and Iranian ESL learners in L2 context. The findings indicated that the L2 learners benefited from the strategy instruction in their strategy use and reading comprehension. Nevertheless, a review of these studies showed that they mostly focused on the presentation form of printed storybooks, while use of electronic reading materials, a digitized form of multimedia, in reading strategy instruction were seldom explored.

E-Books and Reading Strategy Instruction

E-book is a digitized form of a book, and usually includes multimedia effects, such as written text, oral reading, oral discourse, music, sound effects, and animations. The oral reading of the text by the narrator, accompanied with the highlighted text, can provide the users insights into the nature of the written text by allowing the readers to conveniently follow the written words, phrases, or passages which are being read out to them. Electronic storybooks are designed to integrate texts, graphics, sound effects, animations, music and other multimedia components in order to bring support to the story line (Chen et al., 2003; Ertem, 2010). They can help children develop visual recognition and enhance story comprehension with rich context in the reading process (Ertem, 2010). In addition, multimedia features of e-books not only support processing and memory, but also develop readers' positive attitudes toward reading because their formats are more engaging, interesting, more enjoyable, and motivating to readers (Ertem, 2010; Korat, 2010; Park & Kim, 2011).

Because of the usefulness of e-books, many educators and researchers believe that the lively and attractive features of e-books and e-storybooks might present a useful means for supporting young children's literacy and language development (de Jong & Bus, 2003; Lefever-Davis & Pearman, 2005) based on the premise that the e-book type of software provides a more authentic reading experience rather than the more traditional drill or exercise method of fostering literacy (Ertem, 2010; McKenna, Reinking, Labbo & Kieffer, 1999; Korat, 2010). Also, reading storybooks to young children is regarded as an important activity that fosters young learners' literacy development and helps them develop positive attitudes toward foreign language learning (Ellis & Brewster, 1991; Krashen, 1981; Korat, 2010).

For instance, Korat (2010) investigated the effectiveness of an electronic book designed to support kindergarteners' and the first graders' vocabulary, story comprehension and word reading development. The results showed that the use of e-books increases students' reading comprehension, and the word knowledge. Also, children evaluated this e-book reading experiences as enjoyable and fruitful.

Ertem (2010) compared and explored the effects of the medium of storybooks presentations on struggling readers' reading comprehension. Each student was randomly assigned with one of three conditions: (1) computer presentation of storybooks with animation; (2) computer presentation of storybooks without animation; and (3) traditional print storybooks. The results of statistical analysis indicated that there was significant difference in the students' comprehension scores. When the student controlled the animation functions of electronic storybooks, the animated illustrations were shown to result in significantly higher improvement of comprehension scores, both in terms of the students' ability to retrieve information and to make inferences from the stories. The results of the research also indicated that electronic storybooks can improve reading comprehension and can be beneficial for struggling readers.

Although numerous studies have reported the encouraging findings of e-books, few studies focused on the effects of using e-books as teaching materials in reading strategy instruction. Specifically, few researchers implicitly linked the missing relationship among e-books, young readers, and reading strategy instruction by demonstrating that e-books could be applied in reading strategy instruction for young readers.

Therefore, in order to fill in the gap, this present study aims to explore the effects of reading strategy instruction via electronic storybooks on EFL elementary school students' reading comprehension, students' strategy use and their attitudes toward reading strategy instruction. Reading strategy instruction used in this study is based on a three-phase approach (i.e., pre-reading, reading, post-reading) proposed by many scholars (Brown, Pressley, Van Meter, & Schuder, 1996; Chen, 2009; Easterling-Adams, 2009; Houtveen & van de Grift, 2007; Pesa & Somers, 2007; Saricoban, 2002; Texas Education Agency, 2000).

Method

Research Design and Procedure

The study employed a quasi-experimental design to investigate the effects of E-Book based reading strategy instruction on EFL elementary school students' reading comprehension, and strategy use and attitudes toward reading strategy instruction. In terms of the research procedure, the study was conducted from October in 2011 to January in 2012. Two intact classes taught by the researcher herself were assigned into an experimental and a control group. The experimental group received reading strategy instruction integrated with e-book whereas the control group did not engage in any strategy instruction in their e-book reading.

In order to make sure that the two groups were similar in their English reading proficiency and their strategy use before the intervention, all participants in the two classes took the reading proficiency pretest and the strategy use questionnaire before the experiment. In the formal study, the experimental group received a training program for 10 weeks. After the training program, posttests on their reading comprehension, and strategy use questionnaires were given to the participants so as to compare the results in the pre- and post-tests. Finally, the quantitative data obtained were analyzed through statistics by using SPSS 17.

Participants

The participants were 57 Taiwanese EFL fourth graders from two intact classes in one elementary school. They both received instruction from the same teacher so that the instructor variable could be eliminated. The experimental group consisted of 28 students, with 14 males and 14 females, while the control group included 29 students, with 15 males and 14 females. Students' average age was about 10, and all of the participants have learned English as a required subject since the third grade. Therefore, they had at least 1 year of English learning at school.

In order to exclude the possibility that the participants' English reading proficiency may influence the results of the study, all participants in the two classes took a pretest before the experiment to ensure the homogeneity in reading proficiency. The pretest was adopted from a commercial English proficiency test-STYLE (Saxoncourt Tests for Young Learners of English). An independent-sample t-test using SPSS 17 was performed to examine

if there was any difference in the proficiency test between the two groups. The two classes did not yield any significant difference ($t = .309, p > .05$), indicating that the participants in both groups were homogeneous and were at similar English reading proficiency level.

Reading Materials for Both Groups

The control group and the experimental groups read the same set of e-books. The experimental group, however, received an additional training on reading strategy instruction. The reading materials were from an on-line English learning website e-yep, which provided numerous English songs and English stories. The five stories chosen from the website e-yep were Wake up, Nancy!, Where's My Pencil?, Dinner Time for Pam & Bob, Bob Goes to the Dentist, and Clown School. The stories on the websites were assessed and analyzed by the electronic storybook selection criteria suggested by Shamir and Korat (2006). The on-line storybooks were chosen as teaching materials in this study because they met the following criteria: (1) clear story structure, (2) reading options (forward and backward buttons), (3) technical features (animation and sound). The five e-books used as teaching materials for the experimental group were the same as those used for the control group.

Training Program for the Experimental Group

Through the use of the electronic storybooks reading materials, the experimental group received 10-week reading strategy instruction from November, 2011 to January, 2012 with one period of class each week and 40 minutes per period. The procedure for the strategy instruction was divided into three phases: pre-reading, reading and post-reading.

In the pre-reading phase, prediction and the activation of learners' background knowledge were the two strategies introduced in this phase. The teacher asked the students to read the story title and pictures on cover page, and then the students had to predict which characters they would see and what would happen in the story. The students were required to share their experiences so that their background knowledge could be activated to facilitate their story predictions.

In the reading phase, inferring was the focus of strategy instruction. The teacher and the students browsed the story page by page. Students were encouraged to infer the meaning of unknown words based on the context, illustrations, or word structures. They were also asked to infer the story content and story ending from their prior knowledge, experience and clues.

In the post-reading phase, strategies like questioning, generation and question answering, identifying story structure, and summarizing. The students asked questions about the story that they didn't understand and the teacher asked the students questions about the story structure including who the characters were, when the story took place, where the story took place, what happened, why happened, and how the characters solved the problem. Finally, they were asked to summarize the main idea of the story. After each instruction of the story, the students took an immediate story comprehension posttest.

Training Program for the Control Group

The control group received electronic storybook reading program without any reading strategy instruction. In pre-reading phase, the teacher presented new words and sentence patterns with pictures through Power Point for students before reading the story. Students followed the teacher and read the new words and sentences patterns aloud. While reading, the teacher browsed the story page by page and explained the content of the story for the students. Students read the story aloud together and reviewed the story by role play in post-reading phase. After each instruction, the students took an immediate story comprehension posttest, and the content of which was the same as that taken by the experimental group.

Instruments

The instruments used in the study included one Style reading proficiency test, five immediate reading comprehension posttests, strategy use questionnaires and attitude toward e-books based reading strategy instruction questionnaire. The descriptions of each instrument were illustrated in the following sections.

Reading Proficiency Tests

STYLE (Saxoncourt Tests for Young Learners of English) is an international proficiency test for children. There are 6 levels in STYLE, suitable for students of approximately 6 to 12 years of age, or those attending Primary (Elementary) school and the first year of Secondary (Junior High) school. According to the English proficiency level criteria of STYLE, Level 1 is for learners who have studied English for at least one year, which is suitable for the participants in this study. Because the purpose of the tests were to measure the participants' reading proficiency, the total 18 items used in each test were adopted from the reading part of the STYLE Level 1, with 6 items in each part. One STYLE reading proficiency test was administered to evaluate the participants' proficiency before the 10-week training period.

The test contained three parts. Questions in Part A were designed to ask students to read the sentences and choose the right pictures that corresponded to the sentences. Questions in Part B were designed to instruct students to read the picture descriptions and mark sentences right or wrong according to the picture. Questions in Part C were designed to ask students to match the answer sentences with the question sentences. The maximum score for the three parts was 90 points, with 30 points for each part and 5 points for each item. The Cronbach alpha values of reading proficiency pretest and reading proficiency posttest were .87 and .90, respectively, suggesting the reliability of these instruments could be accepted.

Reading Comprehension Tests

The five reading comprehension tests were designed by the researcher, and were provided for both groups after each story's instruction. The goal of these immediate posttests was to measure participants' reading comprehension about the stories. Each test included three parts. Part 1 contained four matching questions, and students were asked to match vocabulary with correct pictures. Part 2 contained four true-or-false comprehension questions. Part 3 contained four comprehension multiple-choice questions. The score of each item was 5 and the total score was 60.

Five reading comprehension tests were used to investigate the comprehension of the participants. The test contained four matching questions, four true-or-false comprehension questions and four comprehension multiple-choice questions. The score of each item was 5 and the total score was 60. The Cronbach's alpha values of the five tests were all higher than 0.80 with α values 0.83, 0.87, 0.89, 0.92, and 0.91 respectively. It indicated the tests were reliable.

Strategy Use Questionnaires

A 16-item strategy use questionnaire was implemented before and after the intervention in order to discover participants' opinions toward e-books based reading strategy instruction. The participants were asked to self-report their strategy use in a five-point Likert scale ranging from 1 "never true of me" to 5 "always true of me." The Cronbach alpha value of strategy use questionnaire was 0.91, representing the feasible reliability of the instruments.

Attitude Questionnaires

After the intervention, participants in the experimental group were also asked to complete the attitude questionnaire. It contained 5 items designed to investigate participants' attitudes toward electronic storybook reading strategy instruction after the intervention. The participants were required to rate the items to the extent that they agree or disagree with the statement by using the five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". The Cronbach alpha values of strategy use questionnaire and attitude questionnaire were .908 and .775, respectively, representing the reliability of these instruments were feasible.

Data Analysis

The data collected in this study included one Style reading proficiency test, five immediate reading comprehension posttests, strategy use and attitude questionnaires. The computer software package SPSS 17.0

for windows was used to analyze the data. Independent-samples t-tests were conducted to see if there were any significant between-group differences, while paired-samples t-tests were conducted to see if there were any significant within-group differences in the outcome measures.

Results and Discussion

In this section, the results of the statistical analysis were presented to answer the three research questions of the study.

Results of Research Question 1

1: What are the effects of reading strategy instruction integrated with e-book on EFL elementary school students' reading comprehension?

As shown in Table 1, the results indicated that although the mean scores of experimental group were higher than those of the control group in all of the reading comprehension tests, there were no significant between-group differences in overall performance of reading comprehension test. Nevertheless, among the tests, the experimental group (EG) statistically outperformed the control group (CG) in reading comprehension test 3 ($t = 2.570$, $p < .05$) and test 4 ($t = 2.382$, $p < .05$), but not in reading comprehension test 1, 2, 5.

Table 1. Between-group comparison for the reading comprehension posttest

| Measure | The experimental group (n=28) | | The control group (n=29) | | <i>t</i> | <i>p</i> |
|---------------------|----------------------------------|-----------|-----------------------------|-----------|----------|----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | |
| Test 1 | 43.93 | 14.17 | 40.52 | 14.78 | .889 | .378 |
| Test 2 | 44.29 | 13.79 | 38.45 | 13.50 | 1.615 | .112 |
| Test 3 | 50.89 | 9.53 | 41.38 | 17.42 | 2.570 | .014* |
| Test 4 | 49.64 | 7.81 | 42.93 | 12.92 | 2.382 | .021* |
| Test 5 | 45.36 | 13.67 | 44.83 | 11.30 | .160 | .874 |
| Overall performance | 46.88 | 9.06 | 42.01 | 11.49 | 1.77 | .082 |

Note: Maximum score = 60; * $p < .05$

Though evidence from many other studies indicated that the intervention with strategic approaches enhanced students' reading comprehension effectively (Chamot et al., 1999; Cohen, 1998; Deng, 2009; Hsiao, 2011), the results of this study did not lend full support to the findings of previous research. The failure to achieve statistical differences in the 3 tests may be due to the following reasons. Firstly, many unknown words appeared in the texts of the electronic storybooks, and each story was taught only for two periods of classes. Therefore, young readers were unable to learn those unfamiliar new words effectively within the instructional period to lead to significant improvement. Secondly, compared with these young readers' textbooks, which were composed of short and simple dialogues, the three electronic storybooks were longer than their textbooks. Thus, it is possible that though reading strategy instruction integrated with e-book helped improve reading comprehension in the experimental group, the familiarity of the vocabulary, the length of texts, and text difficulty may be possible sources resulting in the insignificance of the improvement in reading comprehension.

Results of Research Question 2

2. What are the effects of reading strategy instruction via electronic storybooks on EFL elementary school students' strategy use?

The data collected from both groups' reading strategy use were calculated and analyzed statistically with independent-samples and paired-samples t-test.

In terms of the between-group comparison of their reading strategy use (see Table 2), independent-sample t-tests showed that there was no significant difference in the pretest overall and in any category. However, there was significant increase on the posttests in their overall strategy use, and in the categories of *Predicting*, *Inferring*, and *Identifying of strategy use*, but not in *Monitoring comprehension*, between EG and CG. Possible reason may be for the reason that monitoring comprehension is a higher-order strategy, which might require more strategy training. Generally speaking, reading strategy instruction integrated with e-book did help significantly increase EFL elementary school students' strategy use in this study.

Table 2. Between-group comparison of strategy use

| Construct | | <i>M</i> (EG) | <i>M</i> (CG) | <i>t</i> | <i>p</i> |
|--------------------------|----------|------------------|------------------|----------|----------|
| Predicting | pretest | 3.14 | 2.72 | 1.522 | .134 |
| | posttest | 3.52 | 2.99 | 2.337 | .023* |
| Inferring | pretest | 2.87 | 2.65 | .782 | .438 |
| | posttest | 3.11 | 2.60 | 2.025 | .048* |
| Identifying main ideas | pretest | 2.69 | 2.59 | .411 | .683 |
| | posttest | 3.09 | 2.53 | 2.327 | .024* |
| Monitoring comprehension | pretest | 2.61 | 2.55 | .202 | .840 |
| | posttest | 3.13 | 2.74 | 1.189 | .240 |
| Overall Performance | pretest | 2.81 | 2.63 | .821 | .415 |
| | posttest | 3.18 | 2.66 | 2.396 | .020* |

Note: * $p < .05$

For within-group comparison of their reading strategy use, the treatment effects between the pretest and the posttest for the experimental group and the control group were examined by paired-samples t-tests. The results indicated that the experimental group had a significantly improvement between the pretest and the posttest in overall strategy use and in all constructs, except in the construct of *Inferring* (see Table 3). This implied that for the experimental group, strategy instruction was more effective in improving the 3 strategies compared with *Inferring* strategy. On the other hand, the control group did not make significant increase between the pretest and the posttest in overall strategy use and in all constructs, except in the construct of *Predicting*. It seemed that only via e-books story reading, without further strategy instruction, the control group could still improve their *Predicting* strategy, but not other strategies. Generally speaking, based on the findings, we could find that reading strategy instruction integrated with e-book positively affected EFL elementary school students' strategy use. The findings were consistent with previous studies (Hsiao, 2011; Luo, 2009), which also showed the positive effects of reading strategy instruction. The participants increased their overall use of the reading strategies, and have learned to apply the target strategies after the instruction.

Table 3. Within-group comparison of strategy use

| Construct | | <i>M</i> (pretest) | <i>M</i> (posttest) | <i>t</i> | <i>p</i> |
|--------------------------|----|-----------------------|------------------------|----------|----------|
| Predicting | EG | 3.14 | 3.52 | 2.308 | .029* |
| | CG | 2.72 | 2.99 | 2.110 | .044* |
| Inferring | EG | 2.87 | 3.11 | 1.324 | .197 |
| | CG | 2.65 | 2.60 | .372 | .712 |
| Identifying main ideas | EG | 2.69 | 3.09 | 3.110 | .004** |
| | CG | 2.59 | 2.53 | .538 | .595 |
| Monitoring comprehension | EG | 2.61 | 3.13 | 2.611 | .015* |
| | CG | 2.55 | 2.74 | .813 | .423 |
| Overall Performance | EG | 2.81 | 3.18 | 4.811 | .000*** |
| | CG | 2.63 | 2.66 | .423 | .675 |

Note: *** $p < .001$; ** $p < .01$; * $p < .05$

Results of Research Question 3

3. What are Taiwanese EFL elementary school students' attitudes toward reading strategy instruction?

After training, the experimental group completed the attitude questionnaire, intended to tap their viewpoints toward the reading strategy instruction via electronic story books. As shown in Table 4, the participants had positive attitudes toward reading strategy instruction, with the average mean of 3.8, higher than the neutral level of 3.00. The highest mean fell in item 3 "I think reading strategy instruction via electronic story books increase my reading ability", followed by item 2 "I think reading strategy instruction via electronic story books arouse my interests of learning English.", and item 1 "I think reading strategy instruction via electronic story books help me comprehend the story better." The lowest mean was found in item 5 "I hope that teacher will implement reading strategy instruction via electronic story books in their English class." In sum, we could observe that the students generally held positive attitudes toward e-books based reading strategy instruction.

The results were in consistence with the findings of Hsiao (2011) and Deng (2009), which reported that L2 learners were more motivated toward English reading and displayed preference for more electronic storybooks based reading strategy instructions in English classes. Also, most of the participants acknowledged the importance of the reading strategies in story reading, which they could apply in new story reading.

Table 4. The experiment group's responses in attitude questionnaire

| Item Descriptions | The experimental group (<i>n</i> = 28) | |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------|
| | <i>Mean</i> | <i>SD</i> |
| 1. I think reading strategy instruction via electronic story books help me comprehend the story better. | 3.75 | 1.08 |
| 2. I think reading strategy instruction via electronic story books arouse my interests of learning English. | 3.96 | 0.96 |
| 3. I think reading strategy instruction via electronic story books increase my reading ability. | 4.11 | 0.96 |
| 4. I feel more confident in reading story after reading strategy instruction via electronic story books | 3.64 | 0.83 |
| 5. I hope that teacher will implement reading strategy instruction via electronic story books in their English class | 3.54 | 1.35 |
| Total | 3.8 | 0.76 |

Conclusion

Based on the result of the present study, it was found that after reading strategy instruction, the experimental group performed better than the control group in story comprehension, but without significance. However, they significantly outperformed the control group in strategy use. Also, the experimental group had positive attitude toward e-books based reading strategy instruction. Some pedagogical implications can be drawn as follows. First of all, electronic storybooks in a digitized form had multimedia effects like written text, oral reading, oral discourse, music, sound effects, and animations. The text orally read by the narrator and accompanied by the highlighted text helped the readers conveniently understand the written words, phrases, or passages. The effect could potentially enhance the reader's knowledge of the text by adding information that did not appear in the original text. Because of the useful e-books rather than less authentic reading in printed pages, they might help children's literacy and language development (McKenna, Reinking, Labbo & Kieffer, 1999; de Jong & Bus, 2003; Lefever-Davis & Pearman, 2005). Therefore, applying more multimedia in L2 language learning could help develop children's literacy and language development (McKenna, Reinking, Labbo & Kieffer, 1999; de Jong & Bus, 2003; Lefever-Davis & Pearman, 2005).

Secondly, traditional reading instruction centers on vocabulary teaching and grammar exercises. Teachers often spent most of the time in text explanation and seldom taught strategies in class; students did not learn how to apply various strategies actively in the text reading (Deng, 2009; Lau, 2006a). Although it is hard to change the English learning environment in short time, the results of the present study revealed that effective reading strategies incorporated with appropriate electronic storybooks could help EFL young readers build up better reading strategies use. In addition, the well use of strategies not only assisted learners in promoting their own

strategy use in language learning but also has potential reading comprehension to foster students' autonomy in language learning (Green & Oxford, 1995; Griffiths, 2003).

Another pedagogical implication derived from the present study concerns the students' attitude. The result indicated that participants showed positive attitudes toward electronic storybooks based reading strategy instruction. With the lively and attractive features of the e-book, it was regarded as a possible mean for supporting young children's literacy development and developing positive attitudes toward foreign language learning (Korat & Shamir, 2008). Therefore, it was suggested that EFL teachers provide technological educational tool such as electronic storybooks for their students. Besides, students should know what reading strategies were and how to apply them because reading could be more meaningful and efficient if reading strategies were used. Once the students gained the confidence and became interested in reading process, they could be more willing to learn.

Despite some valuable findings of the present study for the possibilities of integrating electronic storybooks in strategy based instructions, there are several limitations. The first limitation of the study was the small sample size. There were only fifty-seven students chosen from an elementary school. The findings may not be generalized to other EFL elementary school population. Therefore, a larger sample of elementary school students could be recruited in future L2 studies to validate the outcomes of this study.

Another limitation is related to the teaching time of this study. Although there were significant changes between pretests and posttests of reading strategy use, a ten-week intervention was not sufficient to guarantee significant reading comprehension improvement, and could not ensure that students will really consolidate their reading strategy in their future reading and develop lifelong reading habits. Thus, in future studies, the instructional period could be implemented with longer duration in consideration of L2 learners' proficiency levels.

The third constraint was the self-rated nature of the questionnaire. The results from the questionnaires might not reflect the students' real psychological status toward e-books reading strategy instruction. The participants may dishonestly respond to the questionnaire based on the teacher's expectation. Therefore, in future research, both quantitative and qualitative methods such as interviews, classroom observations, or tape recordings could be employed to gather a more complete profile of participants' English reading attitude. Such enriched and triangulated data could facilitate to interpret the results more validly and reliably.

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