國立政治大學英國語文學系碩士在職專班碩士論文

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電子繪本教學對國小英語補救教學學生認字表現之成效

The Effects of Electronic Storybook Instruction on the English Word Recognition Performance of Elementary School Students in Remedial Instruction

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中華民國 99 年 7 月

July, 2010

THE EFFECTS OF ELECTRONIC STORYBOOK INSTRUCTION ON THE ENGLISH WORD RECOGNITION PERFORMANCE OF ELEMENTARY SCHOOL STUDENTS IN REMEDIAL INSTRUCTION

As Master Thesis
Presented to
Department of English,

National Chengchi University

In Partial Fulfillment
of the Requirements for the Degree of
Master of Arts

by
Yi-ju Tsai
July, 2010

Acknowledgements

I would like to express my greatest gratitude to many people for their advice, encouragement, and support. It would not have been possible to complete this thesis without their assistance.

I am sincerely thankful to my advisor, Prof. Ming-chung Yu, for his inspiring guidance, insightful suggestions, and precious time. His kindness and patience gave me strength during the difficult process of writing this thesis. My heartfelt appreciation is extended to the committee members, Chin-ching Peng and Chi-yee Lin, who provided me with valuable comments and professional suggestions.

I am also grateful to my colleagues, Ju-wen Lee, Rong-hui Su, Ya-zhu Zeng, Min-ci Yang, You-jheng Chen, Pei-jing Wu, Wan-jhen Jhang, and Pei-jhen Yang, for their assistance and encouragement. They always cheer me up when I feel frustrated.

I would like to give heartfelt thankfulness to my lovely graduate classmates, Teresa, Vicky, Jessie, and Eva, who were generous to share their experiences in thesis writing with me. I deeply appreciate my friends, Chin-yuan Liu and Wei-cherng Liao, for giving me suggestions and sparing no efforts to help me revise the thesis. Their friendship was very precious during my graduate life. With their assistance, I completed this study successfully and smoothly.

Additionally, I would like to deliver my thanks to Fan-hsuan Hsu and his family for their company through many difficult times. They take good care of me and show consideration for me all the time. Without their spiritual support, I would not have been able to complete this thesis.

Finally, I want to express my hearty appreciation to my beloved family for their love and constant support. Without their encouragement, everything seemed difficult to me. Their patience and thoughtfulness made this thesis completed.

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中文摘要

本研究在探討英語電子繪本教學對於國小學生在認字表現以及學習態度的影響。此研究以 54 位來自台中市四年級英語低成就的小學生為研究對象，他們分別來自 7 個不同的班級，這 54 位學生被分成實驗組跟對照組，兩組無論在數量、性別、背景以及認字表現上皆相似。實驗組實施電子繪本教學而對照組則實施紙本繪本教學，每週上課一次，經過 16 週的教學後，兩組皆進行認字表現測驗及施以英語學習態度問卷。蒐集測驗及問卷所得的資料以獨立樣本 t 檢定及相對樣本 t 檢定來進行統計分析，研究結果顯示實驗組及對照組在認字表現及學習態度皆有顯著差異，電子繪本組在認字表現測驗成績比紙本繪本組好，而且英語低成就學生在電子繪本教學後，學習態度有正向的改變。希望實驗的結果能幫助老師提升學生的認字能力並且廣泛推行英語電子繪本教學。最後，研究者根據實驗的結果，對未來研究方向提出一些建議。

Abstract

This study investigated the effects of the electronic storybook instruction on the word recognition performance of elementary school students. Additionally, the effects of the electronic storybook instruction on students' English learning attitudes were explored. Fifty four fourth-grade underachievers selected from seven classes at an elementary school in Taichung City were the participants of this study. The participants were divided into two groups and they were matched based on the numbers, gender, background, and word recognition performance. The control group received picture book instruction, while the experimental group took electronic storybook instruction once a week. The Word Recognition Test and Learning Attitude Questionnaire were administered to both groups after the 16-week instruction. The data collected from pre-test, post-test, pre-questionnaire, and post-questionnaire were analyzed by an independent samples *t* test and a paired samples *t* test. The results showed there were significant differences between the two groups in their word recognition performance and English learning attitudes. The results presented that the underachievers receiving electronic storybook instruction performed significantly better than those who received picture book instruction on word recognition performance. Moreover, it was found that electronic storybook instruction positively changed the underachievers' English learning attitudes. It is hoped that the findings will help teachers improve students' word recognition ability and promote the widely adoption of electronic storybooks. Based on the findings of this study, some suggestions for the future research were offered at last.

Keywords: e-books, word recognition, English learning attitudes, underachievers, remedial instruction

CHAPTER 1

INTRODUCTION

This study used electronic storybooks as teaching materials in order to help underachievers learn English more efficiently. This chapter consists of four sections and provides an overall introduction of this study. First, it presents the background information and motivation of the study. Second, the relevant literature is reviewed and the purpose of this study is stated. Third, the significance of the study is described in detail. At last, the organization of the study is demonstrated in this chapter.

Background and Motivation

Nowadays, English is believed to be an important key to open a window to the world. Therefore, the importance of English teaching is strongly emphasized. In 2005, the Ministry of Education (MOE) required all the elementary school students to learn English from the third grade; two periods of English classes per week were required. In order to promote students' English learning, currently, English courses have been implemented starting from the second grade at elementary schools in Taichung City. Nevertheless, teachers have been challenged in teaching students with different English proficiency simultaneously. Seventy-six percent of the elementary school teachers in Taiwan perceived the proficiency gap among students and this gap made English teaching more difficult (Lin, 2001). Students' English proficiency is heterogeneous in one class, so it is hard for teachers to meet every student's need for all levels. Since most students already took English courses at cram schools before entering elementary schools, those who have not had any English training could be classified as underachievers in class (Chen, 2004). Low achievers do not have interests and are in lack of motivation in learning English. According to the United

Daily News in March 2009, it is believed that the earlier students learn English, the earlier they give up. In view of this, it is imperative to implement remedial instruction to enhance underachievers' English learning and to arouse their interest in English.

It is necessary for teachers to select various materials to meet underachievers' needs and attract their attention. Most investigators agreed that picture books are appropriate and interesting for students to learn English. Sheu (2008) addressed three educational values of using picture books perceived by English teachers in Taiwan: (a) the linguistic value, (b) the value of the story, and (c) the value of the picture. Furthermore, Wu (2005) indicated that using English picture books as teaching materials in remedial instruction could enhance students' motivation, increase their comprehension, lower their anxiety, build up their confidence, and improve their vocabulary learning. Since there are many benefits of picture books, English teachers can make good use of them in English remedial programs. With the advance of technology, there are many valuable resources that can be integrated into English teaching. Internet resources and multimedia, appropriately used, can provide authentic materials for English learning, increase students' motivation, and have positive influence on students' achievement (Chen, 2004; Lin, 2008). Electronic storybooks might be good materials for teachers to choose in remedial instruction. Higgins and Cooks (1999) supported that electronic storybooks have the same words and illustrations as picture books, but they have additional features that are not available in picture books. Sound effects accompanying the narration, animations, pronunciation of individual words, and colorful pictures in electronic storybooks have a powerful motivating force to capture students' attention and enhance their vocabulary development (Grant, 2004; Higgins & Cooks, 1999; Matthew, 1995). As a result, electronic storybook is a promising tool to use at elementary schools.

Purpose of the Study

Previous studies mostly compared the effects of electronic storybooks with those of picture books on students' reading comprehension (Greenlee-Moore & Smith, 1996; Matthew, 1997; Standish, 1992). However, only a number of researchers have reported the influence of electronic storybooks on elementary school students' vocabulary learning (Doty, Popplewell, & Byers, 2001; Lefever-Davis & Pearman, 2006). Even fewer researchers focused on the effects of electronic storybooks on students' word recognition performance in remedial instruction (Liu, 2005).

Many researchers regarded electronic storybooks as valuable resources for teachers to use. The animations, sound effects, and colorful pictures of electronic storybooks could attract underachievers' attention and help them understand the meaning of the word in the story (Higgins & Cocks, 1999; Lefever-Davis & Pearman, 2006; Lin, 2009). Additionally, the oral reading fuction of electronic storybooks could provide an accurate model for underachievers to imitate (Lefever-Davis & Pearman, 2006). Nevertheless, not all investigators agreed that the oral reading function and animations of electronic storybooks are beneficial to these learners. Lewin (1996) and Mckenna (1998) proposed that overly depending on the use of computer pronunciation might hinder children's development to decode words. Besides, Trushell et al. (2003) and Yang (2005) argued that animations of electronic storybooks could distract students' attention from the meaning of the story.

There is no sufficient research about the effects of electronic storybooks on students' word recognition performance and there is a conflict among investigators of previous studies over the benefits of electronic storybooks. Therefore, the researcher attempted to investigate the effects of electronic storybook instruction on elementary school students' word recognition performance in remedial instruction. In addition, the influence of electronic storybook instruction on students' attitudes should be

further explored because attitudes have a great impact on students' learning. Nevertheless, only few studies examined the effects of electronic storybooks on students' attitudes (Lin, 2009; Liu, 2005). The researcher conducted this study to see if there were attitudinal changes in students' English learning. The two research questions of this study are listed as follows.

1. Is there any significant difference in underachievers' word recognition performance and/ or English learning attitudes between the electronic storybook group and the picture book group?
2. Does electronic storybook instruction change underachievers' attitudes toward learning English?

Significance of the Study

Since the implementation of Nine-Year Integrated Curriculum in Taiwan, English education has been extended to the third grade at elementary schools. For most elementary school teachers, it has been an enormous challenge to teach students of different levels in one class and to make underachievers more interested in learning English. Consequently, it is necessary for teachers to conduct remedial instruction.

This study investigated the influence of electronic storybook instruction on the word recognition performance and learning attitudes of the fourth-grade underachievers. The findings may provide some useful insights for teachers that electronic storybooks can be valuable resources for underachievers in recognizing words. The results might give teachers suggestions that they could adopt various materials to enhance students' learning motivation and meet the needs of students. Furthermore, the findings might benefit teachers to gain a deeper insight into the importance of word recognition ability to low achievers. The results of this study might also inspire textbook editors or publishers to provide electronic storybooks as supplementary materials for teachers to use in class.

Organization of the Study

This study consists of six chapters. Chapter One presents motivation, the purpose of the study, the significance of the study, and the organization of the study. Chapter Two reviews relevant studies, including the importance of vocabulary learning, electronic storybooks, picture books, word recognition, remedial instruction, and English learning attitudes. The method and procedure of this study are presented. The results and findings of the study are shown in Chapter Four and discussed in detail in Chapter Five. The last chapter provides some pedagogical implications for English teachers and offers suggestions for the future studies to rectify the limitations of this study as well.

CHAPTER 2

LITERATURE REVIEW

The study aims to compare the effects of electronic storybooks with those of picture books on fourth graders' English word recognition performance and learning attitudes in remedial instruction. This chapter presents relevant literature in six sections: The first section describes the importance of vocabulary learning. Section two reviews studies related to picture books and vocabulary learning. Section three elaborates on studies concerning electronic storybooks and vocabulary learning. Section four reviews literature about word recognition. Section five explores remedial instruction focusing on vocabulary learning in Taiwan and the last section deals with English learning attitudes.

Importance of Vocabulary Learning

Vocabulary acquisition plays a vital role in English teaching and it is essential to language learning. The importance of vocabulary is now more widely recognized, compared with the case 40 years ago (Graves, 2009). Many scholars have claimed that vocabulary has a great influence in one's language proficiency in the four language skills (Coady, 1979; Laufer, 1997; Ridway, 1997). These studies have shown that vocabulary knowledge and language proficiency are closely related.

Vocabulary knowledge is one of the most important indicators of verbal ability (Sternberg, 1987). Vocabulary specialists agreed that vocabulary is at the heart of communicative competence, the ability to communicate properly and successfully (Coady & Huckin, 1997). Without vocabulary, it is impossible to communicate with others and then conversation will be disjointed. Wilkins (1972) declared that "Without grammar, there is very little can be conveyed; but without vocabulary, there is nothing can be conveyed (p.111)." You can say anything with words, but you can say very

little with grammar. Provided that children are lack of useful vocabulary, it will be hard for them to express their own opinions and speak fluently. Since vocabulary problems can interfere with communication, children have to learn more words and expressions. If children want to have great improvement in learning English, they have to spend time learning vocabulary. In view of this, it is necessary for teachers to underline the importance of vocabulary instruction and help students enlarge their vocabulary.

There is a strong relationship between vocabulary and reading comprehension. It has been shown that students' level of vocabulary knowledge is a significant predictor of reading fluency and reading comprehension for English learners (Grabe, 1991). It is obvious that reading comprehension depends on understanding speech, which relies on understanding the meanings of words (Bloom, 2000). Davis (1994) also advocated that word knowledge is crucial to reading comprehension. If students learn more words, they will understand the text better. It is impossible for children to comprehend the text without knowing what the words mean. Lacking of vocabulary will become a major obstacle for students to read. Therefore, teachers should place strong emphasis on vocabulary instruction. Since vocabulary knowledge is fundamental to reading comprehension, teachers have to know what kind of vocabulary instruction is effective in improving reading comprehension. Mason and Au (1986) stated that it is necessary to provide a meaningful context for children to learn vocabulary. Students can learn vocabulary more efficiently if they encounter new words repeatedly in a meaningful context. What teachers have to do first is to realize what students' difficulty is in learning new words. Moreover, teachers have to provide various materials such as storybooks or online English resources and design suitable programs for children to learn vocabulary successfully and effectively.

Picture Books and Vocabulary Learning

Some studies have proved that children's language learning has much to do with children's literature experience (Cullinan, 1989; Wu, 2005). This section explains what picture books are, describes their values, and specifies their benefits on vocabulary learning.

Picture Books

Picture books, also called picture story books or storybooks, refer to books that convey information or tell stories through pictures and texts (Strasser & Seplocha, 2007). A picture book is a book in which the pictures are as important as the words or even more important than the words. In picture books, there are illustrations on every page with little text. Pictures which help readers understand the concept of the story play a significant role in picture books. Nevertheless, both the picture and the text are important because "neither of them is completely effective without each other" (Norton, 1999, p.214). The story line is short, the concept of the story is simple, the text is direct, and the illustrations are consistent with the text in picture books (Jalongo, 2004). The illustrations in the picture books can be photographers, collage, paintings, as well as drawings (Strasser & Seplocha, 2007) that can stimulate children's imagination and bring them to enter the imagining world.

There are various types of picture books, inclusive of toy books, alphabet books, counting books, interactive books, picture storybooks, wordless books, pattern books, concept books, easy-to-read books, and so forth (Lynch-Brown & Tomlinson, 1999). According to the format, Glazer (1997) classified children's books into different types such as toy books, board books, picture books, wordless picture books, chapter books, illustrated books, and junior novels. The format refers to the physical appearance, organization or layout of the book such as size, shape, style, binding, quality of paper, margins, design, etc. A good format will make the book more attractive and

successful.

Liao (1999) categorized picture books into three types: alphabet books, predictable books, and easy-to-read books. The alphabet book provides children with a meaningful context to learn the 26 English letters. Children can learn the English alphabet in a vivid and interesting way through stories. Since the letters in the stories are colorful, lively, and personified, learning the alphabet is no longer abstract or boring. *Chicka Chicka Boom Boom*, *Dr. Seuss's ABC* and *Alphabet Ice Cream* are examples of alphabet books. As for predictable books and easy-to-read books, they can not be clearly distinguished. Lynch-Brown and Tomlinson's (1999) did not include predictable books in the types of picture books. Liao (1999) stated that the language and sentence patterns in predictable books are more complicated than those in easy-to-read books. Many predictable books make good use of rhyme to develop children's English language skills (Linse, 2007). Predictable books provide repetitive and predictable sentence patterns for children to read and memorize the stories more easily. In addition, the patterns of predictable books are continuous and cumulative (Du, 2006). The stories, *Brown Bear, Brown Bear, What do you see*, *The Very Hungry Caterpillar,* and *Goodnight Moon* are of this kind. Easy-to-read picture books contain repetitive language and predictable patterns as predictable books, but the sentence patterned are not continuous or cumulative. Picture books that introduce numbers, animals, or body parts are the examples of easy-to-read books (Du, 2006).

The stories except *Farm Animals* adopted by the researcher in the present study are classified as easy-to-read books. The four stories contain simple language and repetitive sentence patterns, but they are not continuous or cumulative. *Farm Animals* is a predictable book because the sentence patterns of the story are not only repetitive but also continuous. The table below lists the examples of repetitive language in the five stories. They are good materials for children to read and promote their language

development.

Table 2.1 Examples of Repetitive Language

Book Title	Repetitive Language
Monsters	*A* big *monster, a* little *monster.* *A* tall *monster, a* short *monster.* *A* thin *monster, a* fat *monster.*
I Can	*A* kangaroo *can* jump. *And I can* jump, *too.* *A* polar bear *can* swim. *And I can* swim, *too.* *A* cat *can* climb *trees. And I can* climb, *too.*
My Family	*This is my* father. *What is* he *doing?* *This is my* mother. *What is* she *doing?* *This is my* brother. *What is* he *doing?*
Five Senses	*I can* see *with my* eyes. *I can* smell *with my* nose. *I can* hear *with my* ears.
Farm Animals	Rooster, rooster, *what do you see?* *I see* a big cow *looking at me.* Big cow, big cow, *what do you see?* *I see* a hungry pig *looking at me.* Hungry pig, hungry pig *what do you see?* *I see* a brown horse *looking at me.*

The Values of Picture Books

There are many advantages of picture books in promoting children's language learning. Many studies have shown that children's language development is enhanced by the exposure to children's literature. Accordingly, the use of picture books as teaching materials is more and more popular. Picture books provide children a meaningful and memorable context instead of boring and mechanical language learning. The values of picture books demonstrated by previous studies are described as follows:

Providing Authentic Materials

Wu (2005) expressed that picture books that are authentic materials can offer children a real and meaningful context to learn a language. The theme and content of the picture books are always related to children's life experiences. Picture books can help children experience the world where they live. Take the story *No, David* for example. It describes a naughty boy who makes troubles all the time and his mom always says "No, David!" When children read this book, they might take themselves as the character in the story because they have the same kind of experience in their daily life. Picture books have the function of connecting experiences from home and family to stories (Strasser & Seplocha, 2007). Through reading picture books, children can learn how to solve the problems, learn how to treat people around them, and learn to care about the society. All in all, picture books are one of the most important authentic materials in learning English.

Facilitating Language Development

Cullinan (1989) pointed out that children's literature can not only enhance their own language learning but also accelerate their second or foreign language development. Sheu (2008) proposed the linguistic values of using picture books perceived by the teachers in Taiwan. Most of the teachers maintained that picture books can be used to help students review words and sentences that they have learned in the textbook in a meaningful context (Sheu, 2008). Littlewood (1981) further claimed that learners should be exposed to different kinds of situations to know how to use the language to express its meaning. Picture books provide different kinds of situations, so that students can learn how a word is used in different circumstances. Additionally, pictures or illustrations of the stories can increase students' comprehension of the story and promote language learning. Sheu (2008) maintained that the illustrations of the picture books could be a learning aid to facilitate students'

English learning. When students look at the picture, they have an impression of the meaning of the word. Therefore, they can recall the word easily. Goodman (1986) advocated that children should learn a language in a meaningful, natural, and authentic context. Picture books provide a comprehensible input, so children can develop language skills naturally through picture books. Through listening to stories, children's oral and written abilities could be enhanced (Strickland & Morrow, 1989). In short, picture books are valuable resources to accelerate children's language development.

Enhancing Learning Motivation and Interests

Picture books can arouse students' interest and enhance their motivation in learning English. Sheu (2008) proposed the values of stories in the picture books and pointed out that a good story could attract students and motivate them to learn English. The content of the story is important and it is good to have a dramatic ending that is out of children's expectation (Sheu, 2008). Children are easily fascinated by good stories; therefore, they would like to hear them numerous times. Besides, with powerful and vivid illustrations, picture books are able to hold children's attention and encourage them to learn English. Picture books also provide pleasure for children when reading. Chien and Huang (2002) claimed that "the repetitious structures and the element of fun in the story invariably make reading easy and are intrinsically motivating for young learners (p. 265)." In sum, picture book plays a significant role in entertaining children and motivating them to learn English.

Stimulating Imagination and Creativity

Pictures in the picture books can stimulate children's imagination and improve their creativity (Hsu, 2005; Sheu, 2008; Wu, 2005). Through pictures, children seem to enter a different world and they can experience everything never happened in their real life. Picture books can help children accept different lifestyles and liberate them

from their own perception of the world. Lee (1998) proposed that picture books help children escape from the limits of the physical world. Cho and Kim (1999) also asserted that good picture books have a power to expand children's imagination, stir their senses, stimulate their creativity, and help them to visualize new concepts. Picture books are always full of magic elements that can solve difficult problems creatively and easily. Through picture books, children can exercise their imagination and expand their perspective of the world. In view of this, teachers have to enhance children's creative potential and give them chances to create their own interpretation.

Enriching Cultural Knowledge

Through reading picture books, children can understand cultural differences, enrich cultural knowledge, and learn to respect other cultures. According to Kress and Van Leeuwen (1996), picture books could help to increase understanding of other cultures and encourage tolerance of different viewpoints. Picture books offer excellent opportunities for children to raise their cultural awareness and allow children to accept interpretation different from their own opinions (Oster, 1989). Since many picture books introduce festivals of different countries, they give children an insight into various cultures and offer children chances to learn to be tolerant of different viewpoints. Picture books are good resources for teachers to enrich children's cultural knowledge and to develop children's critical thinking. Teachers should teach children to appreciate other cultures and view things from different angles.

Lowering Anxiety

Since picture books are interesting and entertaining, they can help children release their emotions and lower their anxiety in language learning. Krashen (1980) proposed the theory of the affective filter hypothesis and he found that students could learn better in low-anxiety situations. Picture books not only provide pleasure but also build up confidence. Through reading picture books, children can forget the burden of

learning. Besides, they are fascinated by the plots of the story and enjoy themselves in reading. Since it is more effective for children to learn in a low-anxiety environment, teachers should make good use of picture books to promote children's language learning.

Developing Reading Habits

Picture books can enhance children's motivation to read willingly and thus develop children's reading habits (Hsu, 2005; Tomlinson & Lynch-Brown, 1999). Huck, et al. (1997) advocated that children's reading habits and could be developed through the process of reading picture books aloud to them. Every child enjoys listening to stories, so teachers can help them develop good reading habits by reading stories aloud to them.

Benefits of Picture Books on Vocabulary Learning

Many studies have proved the effects of stories on vocabulary acquisition (Cameron, 2001; Elley, 1989; Jenkins et al., 1984; Nagy et al., 1985; 1987; Robbins & Ehri, 1994). Effective vocabulary instruction through picture books can enhance students' vocabulary learning. Since children learn words better in a meaningful context, it is effective for them to build vocabulary through picture books. Additionally, teachers should relate the words to students' familiar concepts by building on their prior knowledge and providing chances for students to use new vocabulary to describe their life experiences (Nagy, 1988).

Picture books containing repetitive words and sentence patterns are beneficial to promote students' vocabulary learning. When words occur many times in a storybook, children's vocabulary learning would be facilitated (Elley, 1989; Justice, Meier, & Walpole, 2005). The number of times a word occurs in a story has a lot to do with the possibility that children learn that word. As a result, teachers should choose picture books with words and sentence patterns that are full of repetition. Children's

vocabulary learning is regarded as a gradual process, so it is important for children to be exposed to new words through repeated reading of picture books.

Hargrave and Senechal (2000) confirmed that children's language development is further enhanced when teachers read a story to children with the explanation of specific words, dialogues about the new words and questions about the story. These activities make students involved when the teacher tells the story, and thus students' vocabulary learning is facilitated. Children gain more vocabulary with the explanation of the meaning of a word by teachers when listening to stories (Brett, Rothlein, & Hurley, 1996; Elley, 1989). Students can learn new vocabulary easily with a brief explanation of new words by teachers as they encounter these words in the stories. Generally speaking, vocabulary gains are greatest as the meanings of words are directly discussed or deeply processed (Dickinson, 1984; Elley, 1989).

Different types of interaction during storybook reading may have different effects on the acquisition of children's receptive and expressive vocabulary. Senechal (1997) discovered that answering questions during storybook reading is more helpful to the acquisition of children's expressive vocabulary than their receptive vocabulary, while listening to storybooks increases the acquisition of both expressive and receptive vocabulary. Teachers need to understand that children need more than one exposure to a storybook to learn new words, so the teachers can ask simple questions and provide interactive opportunities for children to actively participate during the storybook reading (Senechal et al., 1995).

There are many benefits of picture books in promoting children's vocabulary learning. Picture books can provide a low-cost and authentic activity for children's vocabulary development. In view of this, if teachers can make good use of picture books in English teaching and provide effective instruction during storybook reading, students' vocabulary learning will be accelerated.

Electronic Storybooks and Vocabulary Learning

Several studies have proved that electronic storybooks with features such as colorful pictures, animations, sound effects, highlighting function, etc. can enhance students' vocabulary learning (Grant, 2004; Lin, 2009; Mckenna, 1998). Recently, electronic storybooks, a form of multimedia software, become very popular among teachers and students. This section introduces electronics storybooks first and then describes the values of electronic storybooks. At last, the benefits of electronic storybooks on vocabulary learning are specified in detail.

Electronic Storybooks

Electronic storybook (ES), also known as CD-ROM storybook, e-book, or animated storybook, presents stories with text, illustrations, sound, audio, video, graphics, and animations where book character talks and settings come alive (Lefever-Davis & Pearman, 2006; Shamir & Korat, 2006). Technologies have dramatically changed the format and presentation of the stories in their look and feel to electronic storybooks. Chen (2002) pointed out three features of the electronic storybook: (a) the text, sound, audio, video, graphic, and animation are used to present the plot of the story, (b) it is interactive, and (c) the content of the story is both educational and entertaining. However, there is not one simple definition of what makes an ES. Technologies with simple interaction such as cartoon videos with sound effects and animations are at one hand of the scale; at the other end of the scale are the more advanced products that imitate the human experience of storytelling (Chen, Ferdig, & Wood, 2003).

There are various types and diverse formats of electronic storybooks; they vary according to the quality of presentation, medium of delivery, ease of use, educational value, and so on (Chen, Ferdig, & Wood, 2003). Chen, Ferdig, and Wood (2003)

categorized ESs into four types in light of various features from simple to complex, including interactive toys and games, educational CD-ROMs, web-based storybooks, and story-sharing tools.

Interactive Toys and Games

This category of ESs includes interactive toys and games that tell children stories, help them learn how to tell stories, and develop their story-creating abilities. The main characteristics of this category contain game-access learning, the interaction between the user, the electronic medium, real-world simulations, non-linear user control, feedback-based programs, etc. Oravec (2001) has demonstrated that interactive games and toys could be important to children's education and could change the way children think and behave.

Educational CD-ROMs

This type of ES exists exclusively on CDs in a closed environment. Educational CD-ROMs combine content with music, sound, movies, audio-video clips, graphics, animations, slide shows, and hypermedia without using hyperlinks to the Internet's websites. Educational CD-ROMs, involving the learner in the simulated environment on the CD, focus on delivering knowledge or training in some specific topic. CD-ROM talking book, which is the electronic version of stories, is an example of this category. CD-ROM talking books, integrating music, sound, animations, and other digital media, are interactive. Learners can have the text re-read for them and hear the pronunciation of the words when they see animations. Several studies indicated that CD-ROM storybooks could improve students' comprehension and motivate students to read (Doty, Popplewell, & Byers, 2001; Matthew, 1997). Besides, CD-ROM storybooks provide learners with immediate support and allow them to focus on the meaning rather than to decode words (Doty, Popplewell, & Byers, 2001).

Web-based ESs

Web-based Electronic Storybooks, which are online resources, can be divided into three sub-categories from the simple to the integrated version.

1. One dimensional ES

One dimensional ES use hypertext on the Internet for readers to browse the stories online with the application of the mouse and keyboard. This type of ES contains text illustrations, graphics, linear links, story plot, but this ES does not include the elements such as animations or audio. However, this type of ES adds many links or resources for learners to visit.

2. Multi-dimensional ES

This type of ES includes symbolic graphics, musical background, and simple animations that can attract children's attention. The simple animations of this ES can make still pictures become dynamic. This type of ES lacks vocal storytelling, the audio of this ES is used as background music that involves readers in the mood of the story and helps them gain deeper meaning.

3. Hypermedia ES

Hypermedia ES owns the features of one-dimensional and multi-dimensional ES. This ES contains storytelling items and integrates graphics, animations, videos, and audio. The audio in this ES includes not only background music but also spoken word and supporting sounds that create the mood or setting of the story. All these features of the hypermedia ES are connected to tell a rich and multi-sensory story.

Story-sharing tools

In this category, it focuses on the sharing of students' created storybooks through the web instead of existing stories. These ESs offer readers opportunities to interact with others, write stories from prompts being provided, and read stories written by others online. This category contains stories created by users in the virtual

internet and provides ample opportunities for creativity. The main characteristics of this ES include user control, an open-ended environment on the Internet, non-linear story playing, self-expression, feedback programs, and so forth. This type of ES provides children with chances to write online that makes children become meta-cognitive about their writing (Strassman & D'Amore, 2002).

Zeng (2004) divided electronic storybooks into two types according to the ways to read, including interactive ES and non-interactive ES.

1. Interactive ES

The content of the story in this ES is the same as that in the printed books. A series of games are designed in this ES and a brief animation related to the word is displayed when the user clicks the word. It offers different plots of the stories for users to choose instead of linear modes.

2. Non-interactive ES

This type of ES adopts linear user control when reading. The plot of the story is played in order, but users can stop at any scene they like. The ending of the story is fixed and can not be changed.

The electronic storybooks used in the present study are free online resources from the website *Kizclub*. The researcher chose the five electronic storybooks, evaluated as level one, for the participants of this study. On the average, a sentence is at each page, and the sentence pattern is repetitive. The five electronic storybooks show the text with illustrations and animations. Additionally, the story character models fluent reading and highlights the words as she works through the text. Readers can hear the sentence read again and again if they click on the sound button. Furthermore, they have to click the right arrow button in order to move to the next page. Of course, they can move back to the previous page by clicking the left arrow button. The five electronic storybooks are web-based ESs because they are online

resources. They are hypermedia ES since they contain animations, graphics, and vocal story telling. Moreover, they are non-interactive ES because readers can not choose the plots of the story. The ending of the five stories is fixed. The electronic storybooks used in this study are basic and helpful to underachievers in English learning.

The Values of Electronic Storybooks

There are many advantages of electronic storybooks and they are seen as valuable tools in educational settings (Liu, 2005; Yang, 2005). The values of electronic storybooks proposed by previous studies are listed as follows.

Promoting Reading Comprehension

Many researchers have investigated the impact of electronic storybooks on reading comprehension (Doty, Popplewell, & Byers, 2001; Greenlee-Moore & Smith, 1996; Higgins & Hess, 1998; Matthew, 1997). Lefever-Davis and Pearman (2006) advocated that electronic storybooks build the story setting through animated graphics and sound effects that express the mood and events of the story, so students' comprehension can be fostered. Sound effects that put the readers in the setting and suggest the upcoming events can promote students' reading comprehension. Reading aloud by the computer can help children remove the burden of decoding words; therefore, fluent reading is not interrupted and the meaning of the story is maintained (Mckenna, 1998). It is well-known that sight word acquisition is crucial to reading fluency. Repeated reading of electronic storybooks can result in gains in sight word acquisition and develop reading fluency (Mckenna, 1998). If children can recognize the words automatically, their reading rate will be increased and they can understand the meaning of the text easily.

Motivating Students to Read

Many studies have shown that the animations and sound effects of electronic

storybooks can arouse students' interests and enhance their motivation in language learning. The animations of electronic storybooks can make the flat images alive and attract children's attention (Chen, Ferdig, & Wood, 2003). The animations also provide an entertaining value for students to read joyfully. The sound effects, animations, and other features of electronic storybooks add pleasure and increase motivation for children to explore the story (Shamir & Korat, 2006). Lefever-Davis and Pearman (2006) further indicated that animated storybooks can not only prolong students' attention and engagement with texts but also motivate students to read through the use of animations. In addition, some electronic storybooks use different voices for each character, and this makes reading more interesting. Since children like role playing, electronic storybooks can increase students' learning motivation by modeling the voices of characters in the story. In sum, the additional features such as animations and sound effects that are not available in traditional picture books can motivate students to read and increase their reading enthusiasm.

Increasing Self-efficacy

Students can have the electronic storybooks read aloud to them several times without requiring the patience of teachers or adults so as to increase feelings of self-efficacy (McNabb, 1998). Since electronic storybooks are able to provide immediate assistance to children, teachers or adults can remove the burden of providing instant attention to children (Doty, Popplewell, & Byers, 2001). Even though the assistance from teachers or parents is not available, students can imitate the computer to read and engage in repeated reading through ESs. Readers can select which word or sentence they need support and rehearse the computer pronunciation without embarrassment. Besides, they can control the pace of reading. Readers can self-select where to pause when they can not understand the meaning of the text while reading. In view of this, students can become more confident and self-reliant in

English learning through the use of electronic storybooks.

Enhancing Oral Ability

Johnston (1995) provided evidence that children's verbal abilities were enhanced through electronic storybooks. These devices include auditory features that can automatically read aloud the story and provide an accurate model for children to mimic. Children can listen to the pronunciation of words spoken by the computer and then follow it to read. Children need sufficient listening input before they are ready to speak. Accordingly, electronic storybooks which can be replayed for children to imitate the pronunciation of words and the reading of the story are able to facilitate children's oral ability. Electronic storybooks provide a fluent model of expression, intonation, and punctuation pauses as well for learners to facilitate their oral proficiency (Lefever-Davis & Pearman, 2006). Students can have the computer read the entire lines and then follow up by reading the same lines on their own. Students' oral abilities can be promoted through echo-reading with the computer.

In brief, electronic storybooks have shown a significant influence on English teaching and learning. Electronics books can be valuable resources and excellent tools for teachers to use as an instructional support to facilitate students' language learning.

Benefits of Electronic Storybooks on Vocabulary Learning

Several studies have proved that electronic storybooks could be used to enhance students' vocabulary development (Doty, Popplewell, & Byers, 2001; Lefever-Davis & Pearman, 2006; Mathew, 1995; Mckenna, 1998). Grant (2004) also addressed that electronic storybooks could enhance students' word recognition ability. ES becomes increasingly important in promoting students' vocabulary learning. The ESs have additional features that are not available in printed books such as animations, sound effects, oral reading functions, pronunciation of the words, the highlighting features,

and repetition. These features of electronic storybooks are able to facilitate students' vocabulary development.

The animations of the electronic storybooks that arouse students' interest and enhance their motivation to learn are often entertaining as well as informative. Animations that reinforce context by signaling story events and mood could further enhance students' comprehension of the story and their vocabulary learning (Higgins & Hess, 1998; Lefever-Davis & Pearman, 2006). Using electronic storybooks for supplemental activities can reinforce target words acquisition, and children could familiarize the meaning of unfamiliar words through animations. In Higgins and Cocks' (1999) study, they discovered that animated cues in electronic storybooks could facilitate vocabulary learning for most of the children. The animations and sound effects embedded in electronic storybooks provide richer contextual support for children to guess the meanings of unknown words and these features can enhance children's vocabulary development.

Segers, Takke, and Verhoeven (2004) claimed that children's vocabulary gain could be enhanced from listening to stories read to them by the computer. McKenna (1998) and Tompkins (2003) also maintained that the auditory feature of the electronic storybooks could enhance vocabulary development. Electronic storybooks can read the whole story automatically and simulate a read-aloud experience for children. Since children learn most of the words in their oral language, the oral reading function of electronic storybooks exposes them to new words modeled by a fluent reader in a meaningful context. Students can hear story characters in animated scenes reading the text aloud, and this feature of electronic storybooks provides an accurate model for students to imitate. Students can read along with the computer or echo the voices of the character. With the aid of the sound effects, oral reading function, and the animations of electronic storybooks, students can recognize the

words effectively. They can hear the sound of the word and connect the sound to its meaning through the animations or pictures.

Electronic storybooks not only show the words with pictures or animations but also contain an audio component and the highlighting feature while the narrator works through the text (Besalel, 2005; Higgins & Cocks, 1999). Since the computer pronunciation of the text enables students to hear the words spoken at the same time they are highlighted in the text, students' awareness of letter-sound relationship is thereby facilitated (Lefever-Davis & Pearman, 2006). Students can build phonemic awareness when individual words are highlighted through electronic storybooks. Students may encounter unknown words they do not know how to pronounce and phonics does not always ensure accurate pronunciation. Therefore, pronunciation of the words by the computer with the words highlighted can guarantee accurate word pronunciation and provide model for children to learn. Children acquire the vocabulary through frequent exposure to the words in the story. Repeated pronunciation of words with the highlighting feature in electronic storybooks can help reinforce the connection between the sounds of spoken language and the symbols of the written language.

Weber and Cavanaugh (2006) asserted that students are attracted to the use of computers and they are much more tolerant of the repetition from the computer. Students are always impatient to learn words and sentence patterns. Moreover, mechanic drills lack meaningful context and make students lose interest easily. Electronic storybooks can solve this problem since they offer students a meaningful context. The animations of the electronic storybooks can prolong students' interests in learning English and they can be replayed to reinforce students' learning. Reading electronic storybooks several times enables children to notice more details and have a deeper understanding of the story, which leads to more word gains (Senechal, 1997).

Since electronic storybooks provide multi-sensory learning for students, teachers can take advantage of them and integrate them into English teaching.

Related Studies of Comparison between Picture Books and Electronic Storybooks

Several studies have been conducted to compare the effects of picture books with those of electronic storybooks on reading comprehension. Standish (1992) found no significant differences between the two groups in the second-grade students' reading comprehension: one group read electronic texts; the other read traditional printed texts. Miller, Blackstock, and Miller (1994) discovered that students had better comprehension when they read electronic texts than printed ones. Greenlee-Moore and Smith (1996) compared electronic books with printed books in fourth-grade children's comprehension of stories and reported that electronic books were more effective in enhancing their comprehension when the stories were long and difficult. Matthew (1997) examined the effects of electronic storybooks and printed books on third-grade children's reading achievement and gained mixed results. The results showed that children who read electronic books obtained significantly higher scores than those who read printed books on story retelling and there was no significant difference between the two groups in a story comprehension test with open-ended questions. Doty, Popplewell, and Byers (2001) investigated the differences between two second-grade students in oral retelling and reading comprehension. One group read interactive CD-ROM storybooks, while the other group read the same story of the conventionally printed book. The results revealed that there was no significant difference in the oral retelling between the two groups, but the group who read interactive CD-ROM storybooks performed significantly better in reading comprehension.

Zhu (2004) compared the effects of the electronic storybooks with those of

printed books on second-grade and fifth-grade children's reading comprehension and reading attitudes. The results revealed that second graders who read electronic storybooks scored significantly higher in reading comprehension tests than those who read traditional printed books, but there was no significant difference between the two groups of the fifth graders. As for reading attitudes, the results also showed that electronic storybooks could improve the second and fifth graders' reading attitudes. There was little research about the effects of printed books or electronic storybooks on vocabulary learning. Liu's (2005) study compared the effects of electronic storybook instruction with those of picture book instruction on students' word recognition performance and learning attitudes. After the 10-week instruction, the fourth-grade students in the two groups took a Word Recognition Test and a Vocabulary Cueing Usage Test. However, no significant difference was found between the two groups both in word recognition performance and learning attitudes.

Word Recognition

The importance of word recognition ability should be highlighted since it is always considered fundamental and central to language learning, especially in reading and writing. Previous studies have shown that the ability of word recognition is closely related to reading comprehension (Burns, 2002; Juel, Griffith, & Gough, 1986; Mason & Au, 1986; Stanovich, 1991). Furthermore, Allen (1983) underlined the importance of vocabulary teaching in the classroom since it would be difficult to communicate without vocabulary. If students do not use the right words, communication will break down. Provided that students can not recognize words, it is impossible for them to read and communicate with others. In view of this, it is necessary for teachers to help students develop word recognition ability, especially for low achievers.

Cameron (2001) claimed that it is crucial to learn a foreign language by building up a useful vocabulary at primary level. He also proposed that there are different aspects of vocabulary knowledge and the first type of knowing about a word is the receptive knowledge (see Appendix E). It signifies that students can understand the meaning of the word when it is spoken and written. McGee and Richards (2003) also pointed out that "concept about words includes children's recognition that words are units of written language and that spoken words can match up with written words (p.42)." The Ministry of Education (2004) classified vocabulary into "word for recognition" and "word for production." The former means students have to understand the meaning of the word when it is spoken without spelling or using it. Investigators found that many learners' difficulties in learning English resulted from insufficient receptive and productive vocabulary (Nation, 1990). Therefore, teachers should enhance students' English learning starting from vocabulary teaching.

Remedial Instruction in Taiwanese Context

Since all students in Taiwan have to learn English from the third grade, the gap between students' English proficiency level has widened. Students who have low motivation and have no support from others to reinforce learning after school always have poor academic performance in English. Furthermore, there are only two periods of English classes per week. It will be hard for low-achievers to catch up with other classmates if they do not spend enough time reviewing English after school. Low achievers always feel helpless and have no interest in learning English, so they give up learning easily. For this reason, we should put more emphasis on remedial instruction to help underachievers enhance their learning and arouse their interest. Since low achievers have low motivation in learning English, it is necessary for

teachers to provide various teaching materials to meet their needs. Previous studies have shown the benefits and values of picture books and electronic storybooks in students' vocabulary learning. Hence, the present study used picture books and electronic books for remedial instruction.

Teachers have to teach underachievers to identify words first because word recognition is crucial to reading comprehension and central to English learning. Several studies have proved the positive effects of remedial instruction on student's word recognition performance in Taiwan. Wu (2005) examined the effects of picture book instruction on low achievers in remedial instruction in order to improve students' English learning and to enhance their learning attitudes. The results showed that the use of storybooks could improve low achievers' oral proficiency and enhance their learning attitudes. Kuo (2006) reported the effects of applying analogy strategies to word recognition in remedial instruction, and the results revealed that underachievers who used analogy strategies performed significantly better in word recognition tests. Wu (2006) confirmed the effects of nursery rhyme instruction on underachievers' phonemic awareness skills, word recognition, and spelling abilities in remedial instruction. Chen (2007) used English cartoons as teaching materials to enhance underachievers' English learning and discovered that their learning in the awareness of phonics and vocabulary learning was enhanced. Lin (2008) explored the effects of internet-assisted English instruction on low achievers' phonemic awareness skills and English learning; the results demonstrated that low achievers had a significant improvement in phonemic awareness skills, including word recognition, identifying distinctive features, vowels, blending, and initial phonemes. Since word recognition is indispensable to English learning, teachers have to reinforce underachievers' word recognition ability as soon as possible.

English Learning Attitude

Since attitudes can influence the choices that learners make, it is necessary for the researcher to explore underachievers' learning attitudes. There is a strong relationship between the learners' attitudes and their behaviors. Bloom (1976) stated that the feelings attached to a particular action had something to do with the behaviors. Gagne (1985) proposed that "an attitude is a mental state that pre-disposes a learner to choose to behave in a certain way and an attitude has cognitive, affective and behavioral components that interact (p.68)." Schrader & Lawless (2004) claimed that attitudes contained three dimensions: cognitive (beliefs), affective (feelings), and conative (behaviors). Fu (2007) stated that an attitude is a person's affective reaction to the environment, thus containing his or her point of view, feelings, and behaviors. Attitudes play a powerful role in learners' motivation to initiate and persist in learning. Since the internal states of a learner can influence his or her behaviors, teachers should pay attention to students' affective change in addition to their cognitive performance.

Some studies in Taiwan have investigated the influence of picture book instruction or electronic storybook instruction on learners' attitudes. Wu (2005) claimed that the underachievers had more positive attitudes toward English learning and became more attentive in class after the picture book instruction. Liu (2005) explored picture books and electronic storybooks on students' learning attitudes and found that students had more positive attitudes toward electronic storybooks. Hsueh (2007) confirmed that picture book reading instruction enhanced students' motivation and aroused their interests in learning English, so students could learn English in an interesting, relaxing, and creative way. Lin (2009) investigated the effects of using electronic storybooks on EFL learners' attitudes toward reading and discovered that electronic storybooks had positive effects on students' attitudinal changes in all

dimensions of reading attitudes. Since attitudes have a great impact on students' English learning, the present study examined the effects of electronic storybook instruction on the underachievers' English learning attitudes.

Critiques on the Previous Research

Several investigators have compared the effects of picture books with those of electronic storybooks on reading comprehension (Doty et al., 2001; Greenlee-Moore & Smith, 1996; Matthew, 1997; Miller et al., 1994; Standish, 1992; Zhu, 2004). Nevertheless, the researcher found only few studies comparing picture books with electronic storybooks in vocabulary learning. Moreover, there is little research about the effects of electronic storybooks on students' word recognition performance in remedial instruction. Liu (2005) compared picture book instruction with electronic storybook instruction in the word recognition performance of elementary school students, but the results showed that there was no significant difference between the two groups. The results could be explained by the short period, ten weeks, of instruction. Liu's (2005) suggestion for future research was that investigators could examine the effects of electronic storybook instruction and picture book instruction on students whose English proficiency levels are different. Influenced by Liu's suggestion, the present study focused on students with low proficiency in English in remedial instruction.

Although many studies claimed that electronic storybooks had positive effects on English learning, not all researchers agreed with these claims. Lewin (1996) argued that children's overly depending on the computer to pronounce unknown words might result in stopping decoding words on their own. Lewin (1996) noted that the oral reading feature of electronic storybooks might delay children's development of decoding skills. In addition, depending on the oral reading function of electronic

storybooks could hinder their literacy development because children might stop taking risks and rely on the computer pronouncing the same words repeatedly (Mckenna, 1998). Some investigators argued the benefits of the animations in electronic storybooks. Yang (2005) demonstrated that animations of the electronic storybooks might distract children's attention since children could not juggle many jobs at the same time. Trushell et al. (2003) mentioned that some electronic books contain incidental animations that can not advance the storyline or reinforce story events. This feature inevitably distracts children's attention.

The possible weaknesses in the previous studies can be classified into four aspects: (a) few studies compared picture books with electronic storybooks in vocabulary learning, (b) there was insufficient research on using electronic storybooks in remedial instruction, (c) the short period of instruction might lead to no significant differences in word recognition performance between electronic storybook group and picture book group, and (d) the researchers of previous studies argued the effects of electronic storybooks on English learning. Accordingly, the researcher conducted the present study to evaluate the effects of electronic storybooks on underachievers' English learning and attitudes. The purpose of this study was to examine the effects of electronic storybook instruction in comparison with those of picture book instruction on word recognition performance of students in remedial instruction. Additionally, the researcher further explored whether students' attitudes changed through the electronic storybook instruction.

CHAPTER 3

METHODOLOGY

The researcher investigated the effects of electronic storybook instruction on the English word recognition performance and learning attitudes of fourth-grade elementary school students in remedial instruction. An experimental research was adopted to answer the two research questions.

1. Is there any significant difference in underachievers' word recognition performance and/or English learning attitudes between the electronic storybook group and the picture book group?
2. Does electronic storybook instruction change the underachievers' attitudes toward learning English?

This chapter presents the research design of this study, including five sections: section one introduces who the participants are in this study; section two presents the teaching materials and instruments employed at each step; section three illustrates the procedures of this study; section four shows the teaching process; the last section is about data analysis.

Participants

Fifty four fourth-grade students selected from seven classes at an elementary school in Taichung City are the participants of this study. All of them have received formal English instruction at school for three years since they were first graders. They received one period, equivalent to 40 minutes, of English class per week during the first and second years and received two periods of English classes per week during the third grade. They took the Taipei County Student English Proficiency Test - Grade 4 (TCSEPT-G4) at the beginning of the first semester of their fourth grade. Students whose scores fell in the bottom 25% of each class were selected as the participants of this study. Based on 2009 Hand in Hand Project proposed by Ministry of Education

(教育部攜手計畫), these students were considered as underachievers in this study. Moreover, students who were diagnosed with language and learning disability were ruled out in this study.

The researcher evenly divided the participants into two groups, in order to make them as homogeneous as possible, which could avoid the potential threat of internal validity. The participants were matched on the basis of numbers, gender, background, and English word recognition performance. Both groups were instructed by the same English teacher, i.e. the researcher of this study, and they had the same period of English classes in the remedial program. The distribution of students in the two groups is displayed in Table 3.1. Most participants in this study did not attend English classes after school because they are from economically disadvantaged families. Since they constantly had unsatisfactory performance in English, the sense of frustration lowered their motivation in learning English.

Table 3.1 Distribution of Students in the Experimental and the Control Group

	Male	Female	Total
Experimental Group (N = 27)	14	13	27
Control Group (N = 27)	14	13	27

Instruments

To achieve the purpose of this study, the researcher adopted the following instruments, including (a) teaching materials, (b) the Taipei County Student English Proficiency Test, (c) the English Word Recognition Test, and (d) the Learning Attitude Questionnaire. These instruments of this study are described in detail as follows:

Teaching materials

The teaching materials of this study are five online stories, including *Monsters, Farm Animals, Five Senses, My Family*, and *I Can* (see Table 3.2). The five electronic storybooks were chosen from a website named *Kizclub* (www.kizclub.com). The researcher chose this website because it provides the printed version of the stories for teachers to download. This distinguishing characteristic makes this website stand out from others. Besides, the electronic storybooks provided in this website are classified into three levels according to the difficulty of the content. The five stories chosen for the participants of this study are evaluated as the first level in this website and are suitable for elementary school students. The picture books in this study are the printed version of the electronic storybooks in *Kizclub*, so the content of the story for both groups is exactly the same. The researcher also designed worksheets as supplementary materials for students to practice after the instruction.

The five stories were selected according to the following criteria (Ellis & Brewster, 1991; Fu, 2008; Hsu, 2005):

1. The language used in the story must fit elementary students' level and age.
2. The sentence patterns of the story should be repetitive, so students can easily pick up the sentence patterns when reading the story.
3. The pictures of the story should provide enough hints for children to comprehend the story and to figure out the meaning of the new words.
4. The illustrations and content of the story should attract students' attention and arouse their interest.
5. The content and theme of the story have to be related to students' daily life experiences.

Table 3.2 presents the theme of the story, the target words for students to learn, and the sentence patterns repeated in the story.

Table 3.2 Introduction of the Five Stories

Story	Theme	Vocabulary	Repetitive Sentence Patterns
Farm Animals	Animals	cow, pig, horse, sheep, cat, goat, duck	Rooster, rooster, what do you see? I see a big cow looking at me.
I Can	Action verbs	jump, swim talk, run, fly, dog, bird	A kangaroo can jump. And I can jump, too.
Five Senses	Senses	eyes, ears, nose, hand, see, hear, smell	I can see with my eyes.
My Family	Family	father, mother, brother, sister, grandmother, grandfather	This is my father.
Monster	Adjectives	big, little, tall, short, fat, thin	A big monster; a little monster.

As for the target words, the researcher chose the 33 words from the five stories based on the theme of the story, students' textbooks (KNSH 康軒), the list of 300 words for six graders (English Advisory Group of the Taipei County, 2004), and the list of 2000 high frequency words for elementary and junior high school students (Ministry of Education, 2004). These target words are listed in Table 3.3.

Table 3.3 Sources of the Target Words of this Study

Sources	Selected Words
Farm Animals	cow, pig, horse, sheep, cat, goat, duck (7)
I Can	jump, swim talk, run, fly, dog, bird (7)
Five Senses	eye, ear, nose, hand, see, hear, smell (7)
My Family	father, mother, brother, sister, grandmother, grandfather (6)
Monster	big, little, tall, short, fat, thin (6)
Textbooks (KNSH 康軒) (I love ABC, Hello Darbie)	pig, cat, sheep, goat, duck, dog, bird, jump, swim, run, eyes, ears, nose, hand, smell, father, mother, brother, sister, big, tall, short, fat, thin
The list of 300 words for six graders (Taipei County)	bird, cat, dog, pig, fly, run, swim, see, eye, ear, nose, hand, father, mother, brother, sister, grandmother, grandfather, big, fat, tall, thin
The list of 2000 high frequency words for elementary and junior high school students (MOE)	cow, pig, horse, sheep, cat, goat, duck, jump, swim, talk, run, fly, dog, bird, eye, ear, nose, hand, see, hear, smell, father, mother, brother, sister, grandmother, grandfather, big, little, tall, short, fat, thin

Taipei County Student English Proficiency Test - Grade 4 (TCSEPT-G4)

The purpose of having students take TCSEPT-G4 (see Appendix A) was used to select students whose scores fell in the bottom 25% of each class as the participants of this study. This test is a modified version of the 2009 Taipei County Student English Proficiency Test – Grade 4 (台北縣 97 學年度四年級英語能力檢測). Since students were just moving up to the fourth grade, some items of the test that students had not learned were modified to fit students' current level. TCSEPT-G4, a multiple-choice test, includes 50 items and contains two main sections, the listening and the reading. As for the listening test, the item types include (a) *Listen and Choose the Beginning*

Letter of the Word and (b) *Listen and Choose the Picture*. As for the reading test, the item types contain (a) *Match a Capital Letter with a Small Letter*, (b) *Read the Word and Choose the Picture*, and (c) *Read the Sentence and Choose the Picture*.

Word Recognition Test

In order to examine the participants' word recognition performance, the researcher designed a Word Recognition Test (see Appendix B). This Word Recognition Test was employed as the pre-test and the post-test for both groups. Before the experiment, the face validity of the Word Recognition Test was examined by some experts and several English teachers at an elementary school in Taichung City. They suggested that some pictures in the test that would cause ambiguity should be modified. As for the section, *Listen and Number*, English teachers thought it would be better to delete two pictures to prevent students' confusion. As for the sections, *Listen and Choose* and *Read and Choose*, experts suggested that the layout should be revised. After the researcher revised the Word Recognition Test, it was administered to 30 underachievers whose English proficiency level is similar to that of the participants in order to test the reliability (see Table 3.4). Cronbach's α is a measure of internal consistency, that is, a coefficient of reliability. A reliability coefficient of .70 or higher is considered acceptable in most social science research situations (Nunnally & Bernstein, 1994). The alpha coefficient for the Word Recognition Test of this study was acceptable at .847.

Table 3.4 Internal-consistency Reliability of the Word Recognition Test

Cronbach's α	Standardized item α	N
.847	.855	30

Cameron (2001) claimed that word knowledge is a matter of degree rather than all or nothing and he proposed different aspects of word knowledge. The researcher designed the Word Recognition Test based on Cameron's (2001) category of 'receptive knowledge,' which signified that students have to understand the word when it is spoken and written (see Appendix E). Receptive vocabulary, proposed by the Ministry of Education, signifies that students have to understand the meaning of the word without spelling it or using it in the right situation. The post-test of the Word Recognition Test is an achievement test designed to assess the underachievers' performance in recognizing words after the instruction. This test contains two main parts: the listening and the reading. Both parts are equally weighted and the total score of the test is 100 points. The purpose of the listening section is to test if students could understand the meaning of the word when it is spoken. The item types of the listening section include (a) *Listen and Choose* and (b) *Listen and Number*. The examinees have to choose the right picture when they hear the word, and then they have to number the pictures when they hear the word. The purpose of the reading section is to test if students could understand the meaning of the word when it is written. The item types in the reading section include (a) *Picture-word Matching* and (b) *Read and Choose*. The examinees need to match the picture with the corresponding word and choose the right word for the corresponding picture.

Learning Attitude Questionnaire

The Learning Attitude Questionnaire in this study was based on Lee's (1999) Questionnaire in order to explore the participants' attitudes before and after the instruction (see Appendix C). The reason why the researcher adopted Lee's (1999) Questionnaire was that she divided attitude into three categories; affective, cognitive, and behavioral, which conformed to Gagne's (1985) definition of attitude. Gagne

(1985) proposed that “an attitude is a mental state that pre-disposes a learner to choose to behave in a certain way and an attitude contains cognitive, affective, and behavioral components that interact (p.68).” The researcher was in agreement with Gagne’s (1985) definition because attitude could influence learners’ choices and positive attitude was crucial to their successful learning.

The Learning Attitude Questionnaire is measured by Likert’s Four-point Scale. These items are answered by degrees of the participants’ learning attitudes: “strongly agree”, “agree”, “disagree”, and “strongly disagree”, each of which is assigned 4, 3, 2, and 1 point respectively. The first part of the questionnaire is to inquire whether students attend English classes after school. The second part consists of 25 items, and the total score of the questionnaire falls in between 25 to 100 points. The 25 items are classified into three categories: affective, cognitive, and behavioral (see Table 3.5). The higher scores students get, the more positive attitudes they have. The face validity of the Learning Attitude Questionnaire was constructed by some English teachers and then some vague and incomprehensible items were modified. Besides, a pilot test was conducted on six fourth-grade underachievers in order to make sure the statement of the items in the questionnaire is comprehensible.

Table 3.5 Three Categories of the Learning Attitude Questionnaire

Category	Definition	Positive	Negative	Item numbers
Cognitive	understanding the value of learning English	1 2 3 4 5 6 7 8		8
Affective	feelings and interest in learning English	19 20 21 22 25	23 24	7
Behavioral	participation in activities in class and practical actions in learning English	9 10 11 12 13 14 15 16 17 18		10

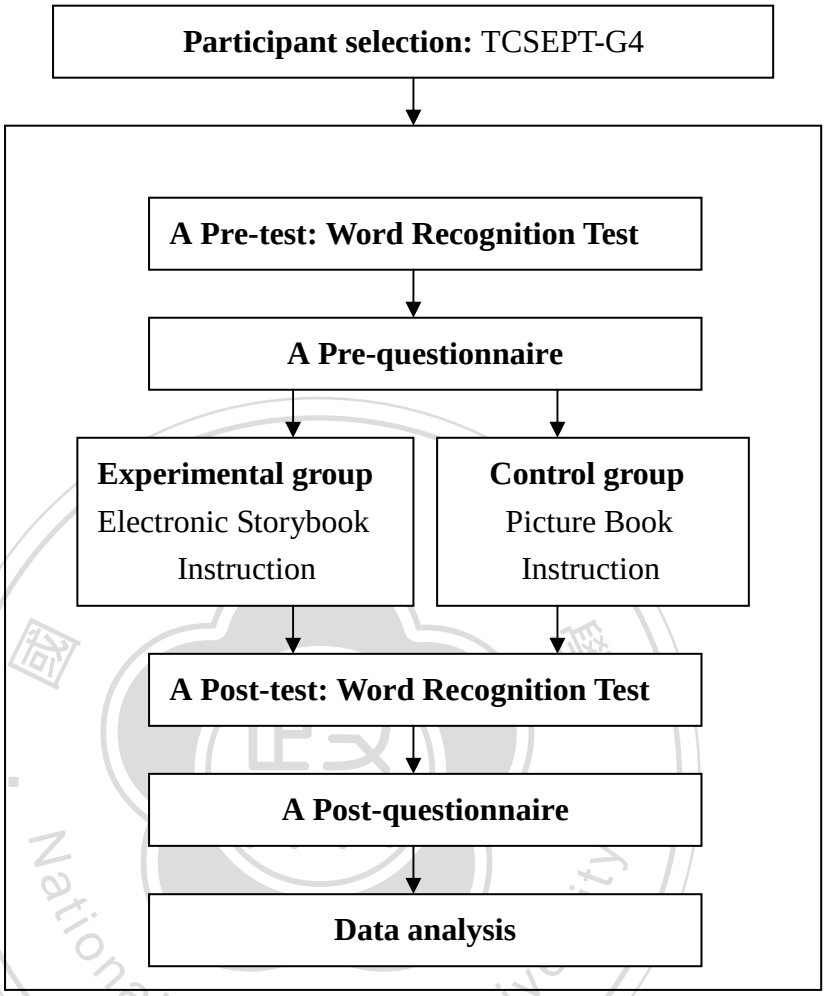
Procedure

This study was conducted to investigate if electronic storybook instruction could benefit underachievers in the word recognition performance and enhance their English learning attitudes. Before the experiment, the Word Recognition Test was administered to 30 students whose English proficiency level is similar to that of the participants of the study in order to test the reliability. Furthermore, the face validity of the Word Recognition Test and Learning Attitude Questionnaire was constructed by some experts and English teachers. Inappropriate items were revised based on experts' and teachers' suggestions. In the beginning of the semester, the TCSEPT-G4 was administered to the fourth graders in order to choose suitable participants for this study. Then, based on students' grades, they were evenly divided into two groups, the experimental group and the control group.

Before the instruction, the participants took the Word Recognition Test to ensure that students were matched on the basis of word recognition scores in the Word Recognition Test. Besides, the Learning Attitude Questionnaire was distributed to both groups to see whether there was any significant difference in learning attitudes between the two groups before the instruction. The instruction started in September 2009 and ended in December 2009, lasting for 16 weeks. Both groups received one extra period, 40 minutes, of English class at the noon breaks every week. During the instruction, the teacher used electronic storybooks for the experimental group and used picture books for the control group as teaching materials. At the end of the instruction, both groups took the Word Recognition Test again in order to assess their word recognition performance. Additionally, both groups filled out the Learning Attitude Questionnaire to give the researcher a deep insight into their learning attitudes after the instruction. At last, data collected from the pre-test, post-test, and the Learning Attitude Questionnaire were analyzed quantitatively. The procedure of

the study is illustrated in Figure 3.1.

Figure3.1 Procedure of the Study



Comparison between the Two Groups in the Pre-test

The independent samples *t*-test was used for the comparison between the two groups in the pre-tests of the Word Recognition Test. The purpose of the pretest was to ensure that there was no significant difference between the two groups in their word recognition performance before the experiment. Table 3.6 shows the comparison of the means and standard deviations of the scores in the pre-tests. No statistically significant difference was found between the two groups ($t = .893$, $p > .05$). The mean scores of the two groups were very close. In other words, the two groups of this study were homogeneous in the word recognition performance before the instruction.

Table 3.6 Comparison of the Scores on the Pretest of the Word Recognition Test between the Two Groups

Group	N	M	SD	t	p
Control group	27	51.56	19.14	-.135	.893
Experimental group	27	52.22	17.21		

Teaching Process

All the participants of this study took one additional period of English class per week for the remedial instruction. This remedial program lasted for 16 weeks. Five electronic storybooks from *Kizclub* were chosen as the teaching materials for the underachievers. The teacher spent three periods of English classes for each story. At the end of the instruction, the teacher spent one period of class to help underachievers review the target words in the five stories for both groups. In the first period, the teacher introduced the story. In the second period, the teacher reviewed the story and introduced the target words. In the third period, the teacher designed various activities and worksheets for students to practice and review what they have learned in the story. The teacher designed the lesson plans according to the sequence of warm-up, presentation, practice, production and wrap-up. The example of the lesson plan is provided in Appendix F and Appendix G. The comparison of the teaching process between the two groups is shown in Table 3.7.

Table 3.7 Comparison of the Teaching Process between the Two Groups

	Control group (Picture book instruction)	**Experimental group (Electronic storybook instruction)**
First Period	1. The teacher used the picture book to tell the story. 2. The teacher introduced the cover page and showed the title of the story. 3. Students listened to the story from the teacher. 4. The teacher told the story page by page and invited students to participate in. 5. The teacher demonstrated the story again and guided students to comprehend the story. 6. The teacher asked questions about the story and students discussed with each other. 7. The teacher read the story again and guided students to read with her. 8. Activity: Students put the pictures of the story in order when listening to the story read by the teacher.	1. The teacher used the electronic storybook to present the story. 2. The teacher presented the cover page and showed the title of the story. 3. Students read the story projected on a big screen without access to the computer. 4. The teacher clicked the button and the system of the electronic storybook automatically read the story page by page. 5. The teacher replayed the electronic storybook and paused at each page to see if students could comprehend the story. 6. The teacher asked questions about the story and students discussed with each other. 7. The teacher replayed the electronic storybook and clicked the sound button to make students read with the computer. 8. Activity: Students put the pictures of the story in order when listening to the story read by the system of the electronic storybook.

Second period	1. The teacher guided students to read the story again. 2. The teacher asked students to recall the target words they heard in the story. 3 The teacher used flashcards with pictures and words to teach students the target words. 4. The teacher designed activities for students to practice.	1. The teacher replayed the electronic storybook and students followed the system to read the story. 2. The teacher asked students to recall the target words they heard in the story. 3. The teacher used flashcards with pictures and words to teach students the target words. 4. The teacher designed activities for students to practice.
Third period	1. The teacher asked students to read the story (choral→group →pair). 2. The teacher designed different activities to help students review the words they have learned in the story. 3. A worksheet was given to students for practice and review.	1. The teacher asked students to read the story(choral→group→pair). 2. The teacher designed different activities to help students review the words they have learned in the story. 3. A worksheet was given to students for practice and review.

Picture Book Instruction

First Period: Introducing the Story

The teacher showed the cover page and the title of the picture book. Then, the teacher asked students what they saw from the cover page and encouraged them to predict what the story was about. Later, the teacher told the story by showing them pictures page by page. The teacher also used gestures, facial expressions, body movement, and intonation to help students comprehend the story. Since the sentence patterns of the story are repetitive, the teacher invited students to read the sentence patterns when telling the story. After telling the story, the teacher read the story again and guided students to understand the lines and the content of the story. Then, the teacher asked students questions about what happened in the story and encouraged

them to say any word they heard. Later, the teacher read the story again and invited students to read with the teacher. At last, the teacher designed an activity for students to arrange the pictures in order when listening to the story read by the teacher.

Second Period: Teaching the Target Words

The teacher asked students to recall what they have learned in the story and guided them to read the story. Then, the teacher showed them flashcards with pictures and words to teach the target words of the story. The teacher taught students how to decode and pronounce the word. After students were familiar with the words, the teacher introduced the sentence patterns of the story. Then, the teacher used flashcards for students to practice the sentence patterns. The teacher also designed various activities such as *Hitting the Word*, *Guessing the Word*, or *Matching the Pictures with the Words* for students to participate in.

Third period: Reviewing

The teacher showed students picture books and asked them to read the story. Students read the story according to the sequence of choral reading, group reading, and pair reading. Then, the teacher used different activities such as *Bingo*, *Miming*, or *Jump and Read* to help students review the words and the sentence patterns of the story. At last, the teacher gave each student a worksheet and guided them to complete.

Electronic Storybook Instruction

First Period: Introducing the Story

The teacher introduced the electronic storybook and showed the title of the story. Then, the teacher encouraged students to imagine what the story was about. The teacher used the electronic storybook to present the story. Students read the electronic storybook on a big screen without access to the computer. In the electronic storybook, the teacher had to click the mouse to turn to the next page. Each page of the story

contained a sound button. When the teacher clicked the sound button, the character of the system would read the sentence automatically. This system could highlight the word in accordance with the word when reading it, so students could see the word and hear the sound at the same time. Students could guess the meaning of the word and comprehend the story through the animations of the electronic storybook. When the character of the system read the story, the teacher could pause to ask students what they saw and heard in the story. When the story ended, the teacher asked students to discuss what the story was about. Later, the teacher replayed the electronic storybook and clicked the sound button at each page. Students were asked to read the story aloud with the system. At the end of the class, the teacher asked students to put the pictures in order when listening to the story along with the electronic storybook.

Second Period: Teaching the Target Words

The teacher asked students to recall what they had learned in the story. Then, the teacher replayed the electronic storybook. Students followed the electronic storybook for reading. Thereafter, the teacher showed them flashcards with pictures and words to teach the target words of the story. The teacher taught students how to decode and pronounce the word. After students were familiar with the words, the teacher introduced the sentence pattern of the story. Afterwards, the teacher used flashcards for students to practice the sentence patterns. The teacher also designed various activities such as *Hitting the Word*, *Guessing the Word*, or *Cowboy* and so forth for students to take part in.

Third Period: Reviewing

The teacher presented electronic storybooks to students and asked them to read the story. Students read the story according to the sequence of choral reading, group reading, and pair reading. Then, the teacher used different activities such as *Bingo*, *Miming*, or *Jump and Read* to help students review the words and the sentence

patterns of the story. At last, the teacher gave each student a worksheet and guided them to complete.

Data Analysis (SPSS)

The data collected in this study were analyzed quantitatively. The Statistical Package for the Social Science (SPSS) 12.0 was utilized to analyze the data. The researcher used independent-samples *t*-test to analyze the scores of the pre-test in order to make sure there was no significant difference between the two groups before the instruction. In order to answer Research Question One, the researcher used independent-samples *t*-test to analyze the scores of the post-test so as to examine if there was any significant difference between the two groups. An independent-samples *t*-test was used to analyze the scores of the pre-questionnaire in order to examine whether there was any significant difference in their attitudes between the two groups. If there was no significant difference in learning attitudes between the two groups, an independent-samples *t*-test was employed to compare the scores of the post-questionnaire to see which instruction was more effective in changing underachievers' English learning attitudes. As for Research Question Two, a paired-samples *t*-test was used to compare the score of the pre-questionnaire with that of the post-questionnaire in the experimental group so as to know whether the underachievers' attitudes changed after the electronic storybook instruction. The significance level was set at <.05.

CHAPTER 4

RESULTS

This chapter presents the results of the statistical analysis to answer the two research questions of this study. The post-test of the Word Recognition Test is shown first. Then, the findings of the underachievers' English learning attitudes before and after the instruction are demonstrated. The effects of electronic storybook instruction on the underachievers' word recognition performance and their English learning attitudes are described in terms of the results.

Post-test

The statistical results of the post-test of the Word Recognition Test between the control group and the experimental group are illustrated in Table 4.1. An independent-samples *t*-test was conducted to examine the differences between the two groups in word recognition performance after the instruction. According to Table 4.1, the mean score of the experimental group (96.44) was higher than that of the control group (87.56). The results demonstrated that there were significant differences between the two groups in the post-test of the Word Recognition Test (t = -2.182, $p < .05$). That is to say, the experimental group performed significantly better than the control group through the electronic storybook instruction.

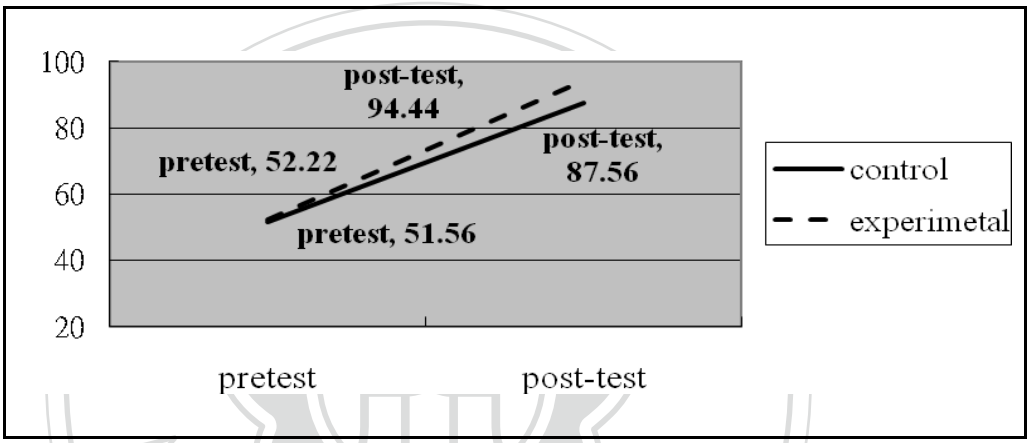
Table4.1 Comparison of the Scores on the Post-test of the Word Recognition Test between the Two Groups

Group	N	M	SD	t	p
Control group	27	87.56	15.32	-2.182	.036 *
Experimental group	27	96.44	5.86		

Note: * $p < .05$

Figure 4.1 presents the comparison of the pre-test and post-test between the two groups. According to the figure, the mean scores of the pre-test of the two groups were very close. Nevertheless, the experimental group scored significantly higher in the post-test than the control group, and this result indicated that the electronic storybook instruction was more effective than the picture book instruction on the word recognition performance.

Figure 4.1 Developmental Curves of the Pretest and Post-test of the Two Groups' Word Recognition Test



Because the Word Recognition Test contained two sections, the listening and the reading, the researcher further examined the underachievers' word recognition performance in the two sections. The mean scores and standard deviations of these two sections in the post-tests are shown in Table 4.2. Based on the mean scores in Table 4.2, the experimental group received better grades than the control group both in the listening and the reading sections. In order to compare the scores of the two sections, an independent-samples *t*-test was adopted. The statistical results revealed that there was no significant difference in the listening section between the two groups after the instruction ($t = -1.856$, $p > .05$). On the contrary, there were significant differences in the reading section between the two groups after the instruction ($t = -2.344$, $p < .05$). The results showed that the electronic storybook instruction was more effective than the picture book instruction in enhancing the

underachievers' word recognition performance in the reading section.

Table 4.2 Comparison of the Listening Section and Reading Section of the Word Recognition Test between the Two Groups

Test	Group	M	SD	t	p
Listening	Control	45.63	7.40	- 1.586	.123
	Experimental	48	2.35		
Reading	Control	41.93	9.06	- 2.344	.025 *
	Experimental	46.44	4.23		

Note: * p < .05

English Learning Attitude Questionnaire

The pre-questionnaire was distributed to the participants before the instruction so as to examine whether there was any significant difference in their learning attitudes between the two groups. Table 4.3 presented the mean scores and the standard deviations of the pre-questionnaires between the two groups in learning attitudes. The researcher analyzed the scores of the pre-questionnaires by using the independent-samples *t*-test to compare the two groups' learning attitudes before the instruction. The mean scores of the two groups were close to each other and there was no significant difference between them (t = -.012, p > .05). In other words, the two groups had similar English learning attitudes before the instruction.

Table 4.3 Comparison of the Scores on the Pre-questionnaire between the Two Groups

Group	**N**	**M**	**SD**	**t**	**p**
Control group	27	73.41	12.08	-.012	.99
Experimental group	27	73.44	9.64		

Since there was no significant difference between the two groups in their learning attitudes before the instruction, the scores of the post-questionnaires were compared to see which instruction was more effective in enhancing their attitudes. Table 4.4 shows the scores of the post-questionnaires of English learning attitudes between the two groups. An independent-samples *t*-test was conducted to examine the effectiveness of the instruction. The results demonstrated that there were significant differences in their English learning attitudes between the two groups after the instruction (t = -3.579, p < .01). That is to say, the electronic storybook instruction was more effective in enhancing the underachievers' English learning attitudes.

Table 4.4 Comparison of the Scores on the Post-questionnaire between the Two Groups

Group	N	M	SD	t	p
Control group	27	83.67	11.01	-3.579	.001**
Experimental group	27	92.85	7.51		

Note: ** p < .01

The underachievers' overall attitudes in the post-questionnaires between the two groups were statistically significant. Therefore, the researcher further examined the underachievers' attitudes in the post-questionnaire to see if there was any significant difference in the three categories: cognitive, affective, and behavioral. As shown in Table 4.5, the mean scores of the experimental group were higher than those of the control group in all three categories. An independent-samples *t*-test was used to analyze the mean scores and the results showed that there were significant differences between the two groups in the cognitive (t = - 5.317, p <.001) and affective category (t = - 3.787, p <. 01), but not in the behavioral category (t = - 1.633, p > .05).

Apparently, the electronic storybook instruction had a greater influence on the underachievers' learning attitudes, especially in the cognitive and affective categories.

Table 4.5 Three Categories of Attitude in the Post-questionnaire between the Two Groups

Category	Group	M	SD	t	p
Cognitive	Control	25.78	3.00	- 5.317	.000 ***
	Experimental	29.78	2.50		
Affective	Control	28.19	4.03	- 3.787	.001 **
	Experimental	31.30	1.38		
Behavioral	Control	29.70	4.90	- 1.633	.108
	Experimental	31.78	4.41		

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

There was no significant difference in the pre-questionnaires between the two groups, while there were significant differences in the post-questionnaires between the two groups. Therefore, the three categories of attitude in the post-questionnaire were further analyzed between the two groups. Table 4.6 shows the eight items that are representative of the cognitive category. Since there were significant differences in the cognitive category of attitude in the post-questionnaire between the two groups ($t = -5.317$, $p < .001$), the eight items in this category were further analyzed. Based on Table 4.6, the mean scores of the experimental group were all higher than those of the control group. An independent-samples *t*-test was employed to compare the differences in these eight items. The results showed that they were statistically significant between the two groups. In other words, the experimental group's attitudes toward learning English in the cognitive category were more positive than the control group's after the electronic storybook instruction.

Items 1, 3, 4 in the cognitive category were more significant ($p < .001$) than the others. This indicated that the electronic storybook instruction was more effective than the picture book instruction in enhancing the underachievers' attitudes. That is to say, the experimental group strongly agreed that English was both useful and important; furthermore, they felt that they could learn English better if they started learning English earlier. Items 2, 5, 7, were statistically significant ($p < .01$) and items 6, 8 also reached the significant level ($p< .05$). The results revealed that the experimental group had more positive attitudes than the control group did in learning English. The underachievers in the experimental group accepted that English was essential for the job and would be useful in many aspects in the future. Furthermore, they believed that learning English was good for them to enrich knowledge and understand foreign cultures.

Table 4.6 Comparison of the Items in the Cognitive Category of Attitude in the Post-questionnaire between the Two Groups

Items	Group	M	SD	t	p
1. I feel the earlier we start learning English the better the result is.	CG	3.11	.506	-3.844	.000***
	EG	3.67	.555		
2. I need to learn English for my job in the future.	CG	3.15	.534	-3.219	.002 **
	EG	3.63	.565		
3. I think English is important.	CG	3.26	.594	-4.110	.000 ***
	EG	3.85	.456		
4. I think English is useful.	CG	3.22	.506	-5.247	.000***
	EG	3.89	.424		
5. I think English can be used in many aspects after I grow up.	CG	3.19	.557	-3.467	.001 **
	EG	3.70	.542		
6. English is related to my future life.	CG	3.11	.577	-2.678	.010 *
	EG	3.56	.641		
7. Leaning English is helpful in enriching knowledge.	CG	3.30	.542	-3.289	.002 **
	EG	3.74	.447		
8. Leaning English is helpful in understanding foreign culture.	CG	3.44	.506	-2.280	.027 *
	EG	3.74	.447		

Note: * p < .05; ** p < .01; *** p <.001; CG: control group; EG: experimental group

Since there were significant differences in the affective category in the post-questionnaire between the two groups (t = - 3.787, p <. 01), the seven items representative of the affective category were further analyzed. From the mean scores

shown in Table 4.7, the experimental group performed better than the control group in the seven items. An independent-samples *t*-test was adopted to examine the mean scores in the seven items and the results showed that there were significant differences between the two groups in these items. The results revealed that the experimental group's English learning attitudes in the seven items were more positive than the control group's.

Based on Table 4.7, all the items in the affective category reached the significant level and this showed that the experimental group had more positive attitudes in learning English than the control group, especially in item 20 ($p<.001$). In other words, the electronic storybook instruction could more effectively enhance the experimental group's learning attitudes and make English learning more enjoyable. Items19, 21, 23, 24, 25 ($p <.01$) and item 22 ($p < .05$), were statistically significant. Obviously, the experimental group had more positive attitudes than the control group in these items. After the electronic storybook instruction, the experimental group felt more comfortable and relaxed in learning English. In addition, their motivation in learning English was enhanced through the electronic storybook instruction and they hoped that they could speak English fluently with others.

Table 4.7 Comparison of the Items in the Affective Category of Attitudes in the Post-questionnaire between the Two Groups

Questions	Group	M	SD	t	p
19. I hope I can speak English fluently with others.	CG	3.22	.974	-3.621	.001**
	EG	3.93	.267		
20. Learning English makes me happy.	CG	3.48	.580	-4.110	.000 ***
	EG	3.96	.192		
21. I feel comfortable in English class.	CG	3.56	.641	-5.247	.008 **
	EG	3.93	.267		
22. I feel relaxed in English class.	CG	3.63	.565	-3.467	.043 *
	EG	3.89	.320		
23. I feel bored in learning English.	CG	3.63	.565	-2.678	.005 **
	EG	3.96	.192		
24. I feel nervous when I think about learning English.	CG	3.59	.501	-3.289	.001 **
	EG	3.96	.192		
25. I feel unafraid to learn English.	CG	3.67	.408	-2.280	.004 **
	EG	3.96	.192		

Note: * p < .05; ** p < .01; *** p <.001; CG: control group; EG: experimental group

In order to answer the Research Question Two, the scores between the pre- and post- questionnaire within the experimental group were analyzed so as to explore whether the electronic storybook instruction changed the underachievers' learning attitudes. According to Table 4.8, the mean scores of the experimental group increased from 73.44 in the pre-questionnaire to the 92.85 in the post-questionnaire. The

researcher employed a paired-samples *t*-test to see if the learning attitudes of the experimental group significantly changed after the instruction. The results showed there were significant differences ($t = -7.934$, $p < .001$) between the pre- and post-questionnaire within the experimental group. In other words, the electronic storybook instruction enabled the underachievers to have positive attitudinal change toward learning English.

Table 4.8 Scores between the Pre- and Post-questionnaire within the Experimental Group

Experimental Group	M	SD	t	p
Pre-questionnaire	73.44	9.64	-7.934	.000***
Post-questionnaire	92.85	7.51		

Note: *** p <.001

CHAPTER 5

DISCUSSION

This chapter presents the discussion of the results so as to account for the findings of this study. Based on the findings of the present study, the effects of the electronic storybook instruction are discussed in terms of the underachievers' word recognition performance and English learning attitudes. The findings of this study are compared with those of the previous studies and then some viewpoints based on the relevant literature are proposed.

Effects of Electronic Storybook Instruction on Word Recognition Performance

The results of the present study showed that the electronic storybook instruction effectively improved the underachievers' performance in word recognition. The results of the study were consistent with the previous findings (Doty, Popplewell, & Byers, 2001; Lefever-Davis & Pearman, 2006; Matthew, 1995) that electronic storybooks could enhance students' vocabulary development. Besides, the findings corresponded to Grant's (2004) claim that electronic storybooks could be accountable for the increase of students' word recognition ability. The researcher provided some plausible explanations for the results.

The mean score of the post-test in the experimental group was significantly higher than that of the control group. This result could be explained by the special features of electronic storybooks that not available in picture books. First, the results confirmed the claims of Higgins and Hess (1998) and Lefever-Davis and Pearman (2006) that animations in electronic books could facilitate vocabulary learning. In the present study, the teacher used electronic storybooks to present the story and discovered that students had better comprehension of the story with the aid of animations. The animations impressed the underachievers with colorful pictures and

sound effects, and thus reinforced their word recognition ability. Nevertheless, the benefits of animations in students' word recognition performance in this study were in conflict with the claims in the studies by Trushell et al. (2003) and Yang (2005). Yang (2005) proposed that animations of electronics storybook could distract students' attention because students might not be able to simultaneously juggle multiple jobs. Trushell et al. (2003) noted that the incidental animations might have an undesirable influence on readers' ability to recall story events. The results of the present study showed that animations of electronic storybooks did not distract students' attention. The animations of the electronic storybooks chosen for this study were very simple and could assist the underachievers to have better comprehension of the story. For example, children could see a kangaroo jump from the right to the left under the sentence "A kangaroo can jump." Since the animations of the electronic storybooks were simple, they did not take children's attention away from deriving meaning or caused a breakdown in comprehension of the story. Instead, the animations provided contextual support for underachievers to guess the meaning of unknown words and, therefore, enhanced their word recognition performance.

Second, the results of this study were in agreement with the claims of Lefever-Davis and Pearman (2006) and Lin (2009) that the oral reading function and the highlighting feature of electronic storybooks could promote students' vocabulary learning. Through electronic storybooks, students could watch animations, listen to the book character read the story aloud, and see the words highlighted when the narrator went through the text. The oral reading in accordance with the words highlighted made students aware of the words being articulated and helped them keep up with the reading pace so as to reinforce letter-sound correspondence (Lin, 2009). Through the features of electronic storybooks, the underachievers could see the word when it was spoken and then connected the sound of the word to its meaning with the

aid of animations and colorful pictures. However, the results of the study were incongruent with Lewin's (1996) and Mckenna (1998)'s argument that automatic pronunciation of the words by the computer might hinder students' literacy development. Since the experimental group performed significantly better than the control group in word recognition performance, the oral reading function of the device appeared beneficial rather than detrimental to students. It is possible that students may encounter new words they do not know how to pronounce and phonics does not ensure accurate pronunciation. In the present study, the teacher used phonics to teach underachievers how to decode words. Nevertheless, students could not always have correct pronunciation by using phonics. With the aid of the oral reading function, the underachievers could imitate the pronunciation of words and the intonation of the sentences (Lefever-Davis & Pearman, 2006). They could practice orally by repetition with such function in electronic storybooks.The oral reading function of electronic storybooks provided an accurate model for underachievers to learn words instead of hindering students' development of decoding skills. In sum, the oral reading function and the highlighting features of electronic storybooks were effective in enhancing underachievers' word recognition performance.

The Word Recognition Test in the present study was divided into two main sections: the listening and the reading, which were designed to examine if the underachievers could understand the meaning of the word when it was spoken and written. The results showed that both groups received better grades on the listening section than those on the reading one. The results revealed that the underachievers in the present study had better understanding of the word when it was spoken than when it was written. The researcher provided some possible reasons for the results. Generally speaking, children can understand the meaning of the word when they hear it, but it does not mean that they can recognize the word and understand its meaning

when the word is in a written form. According to the Elementary and Junior High School Nine-Year Education Program Curriculum Guidelines, listening and speaking are the main focus for elementary school students. Based on the English Learning Competence Indicators, one of the listening abilities for the elementary level is that students are able to identify basic vocabulary, phrases, and the stress of sentences. Therefore, the results that the two groups had better grades in the listening section than those in the reading section of the Word Recognition Test could be explained by the emphasis on the listening and speaking instruction at the elementary level. In addition, previous studies have reported that students' listening to stories instead of reading them could promote the incidental learning of new words (Eller, Pappas, & Brown, 1998; Elley, 1989). In view of this, students could learn words better from listening to stories than from reading stories. Scott and Ytreberg (1990) mentioned that "listening is the skill that children acquire first, especially if they have not yet learnt to read (p.21)." Children acquired listening skill before the reading skill, so it would be easier for students to recognize the spoken word than the written one in the story. That is why both groups had better grades in the listening section of the Word Recognition Test in the present study. The underachievers were able to understand the meaning of the spoken word and chose the right picture for it.

The findings of this study in the listening section of Word Recognition Test were in accordance with Liu's (2005) study that there was no significant difference between the two groups. Electronic storybooks provided a model of fluent reading of the story and accurate pronunciation of the words for the underachievers to imitate (Lefever-Davis & Pearman, 2006). The underachievers in the electronic storybook group could see the animations and hear the computer reading the text at the same time; it reinforced the connection between the image and the sound of words. The control group under picture book instruction depended on the teacher to tell the story.

The teacher served as a model to tell stories with correct pronunciation, intonation, facial expression, and body movement so as to help students comprehend the story (Scott & Ytreberg, 1990). While the underachievers of the picture book group listened to the story, they could see the colorful pictures in the stories. Both groups could understand the meaning of the words well with the connection between the pictures and the sound of words through electronic storybook or picture book instruction. As a result, the underachievers in the two groups were able to identify the right picture when the word was spoken in the listening section of the Word Recognition Test. Although there was no significant difference in the listening section between the two groups, the mean score of the experimental group was higher than that of the control group. The result could be explained by the features of animations and repetition in electronic storybooks. Electronic storybooks contain not only colorful pictures but also animations that are not available in picture books. Chen, Ferdig, and Wood (2003) claimed that the animations of electronic storybooks could make the flat images alive and arouse students' interests in language learning. Through animations, the underachievers had high motivation in reading the stories and thus their English learning was facilitated. Weber and Cavanaugh (2006) noted that children were more tolerant of the repetition from the computer, so electronic storybooks could prolong students' interests in learning English. Since electronic storybooks could be replayed, students were able to have a deeper understanding of the story and have more word gains (Senechal, 1997).

As for the reading section, the results demonstrated that the experimental group under electronic storybook instruction performed significantly better than the control group. Most studies that compared the effects of electronic storybooks with those of picture books on reading comprehension found no significant difference between the students who read electronic storybooks and those who read picture books (Doty et al.,

2001; Matthew, 1995; 1997; Yang, 2005). The underachievers had to recognize the word and understand its meaning when it was written in the reading section of the Word Recognition Test. The results of the present study were different from the findings in Liu's (2005) study that no significant difference was found in the reading test between the two groups in his study. In Liu's (2005) Word Recognition Test, the reading section required students to choose the correct picture for the sentence or choose the right sentence for the picture. The big difference in the reading test between Liu's (2005) study and the present study was that he put the target word in the sentence for students to recognize.

The researcher provided some reasons for the result that electronic storybook instruction was more effective in enhancing word recognition performance, especially in the reading section. First, the words presented in electronic storybooks are larger than those in picture books. For the experimental group, words in electronic storybooks are projected on a big screen so that every student can see the words clearly. Depending on the pictures and relying on the teacher's reading, the underachievers in the control group acquired new words. Nevertheless, the words in picture books are not large enough for every student in the control group to see when the teacher tells the story. Liu (2005) pointed out that if words in picture books could be large enough for students to see clearly, picture books would be more helpful in students' acquisition of words. Second, electronic storybooks contains the oral reading function and the highlighting feature that are not available in picture books, and these features are highly beneficial to students' word recognition performance (Higgins & Cocks, 1999; Lefever-Davis & Pearman, 2006). It was difficult for the teacher to point at every word when telling the story in the picture book instruction. However, electronic storybooks could solve this problem because the system could read the text automatically with the word highlighted one by one (Higgins & Cocks,

1999). Electronic storybooks provided multi-sensory stimulation for the underachievers to recognize words more successfully and efficiently. Accordingly, the underachievers in the electronic storybook group got significantly better grades in recognizing written words in the reading section than those who were in the picture book group.

Effects of Electronic Storybook Instruction on English Learning Attitudes

Based on the findings of this study, the electronic storybook instruction offered a better alternative than the picture book instruction when considering the promotion of the underachievers' attitudes. The results of this study were similar to the findings in Liu's (2005) study that there were significant differences in English learning attitudes between the two groups. The electronic storybook instruction positively and effectively influenced low achievers' learning attitudes. This result might be due to some special features not available in picture books. Previous studies have proved that the animations and sound effects of electronic storybooks could enhance students' motivation and arouse their interest in English learning (Chen, Ferdig, &Wood, 2003; Shamir & Korat, 2006). The animations and sound effects of electronic storybook provided an entertaining value for children and increased their motivation to explore the story. Lefever-Davis and Pearman (2006) also indicated that the animations could prolong children's attention and engagement with the texts. As a result, electronic storybooks could motivate students to read and enhance their learning attitudes.

Since the questionnaire has three categories, the researcher discussed the underachievers' learning attitudes in terms of them. The electronic storybook instruction significantly enhanced the underachievers' attitudes in the cognitive and affective categories, but not in the behavioral category. The cognitive category of this study denoted that students could understand the value of learning English. The eight

items representative of the cognitive category were analyzed and all of them were statistically significant. The results revealed that the underachievers' attitudes toward the value of English were positively correlated with the electronic storybook instruction. Items 1, 3, and 4 made the cognitive category more significant between the two groups. It was an indication that the underachievers under electronic storybook instruction highly agreed that English was important and useful, and they thought they could learn English better with early schooling in English. In addition, they regarded English as an essential tool for the future job and life. The reasons why the underachievers in the experimental group could understand the value of learning English might be due to their high motivation in learning English (Chen, Ferdig, &Wood, 2003). Through electronic storybook instruction, the underachievers gained more confidence and had a sense of achievement in learning English. Accordingly, the underachievers understood the importance of learning English and had positive attitudes toward English.

The affective category contained seven items concerning students' feelings and interests in learning English. The seven items of the affective category were further explored and all the items in this category reached the significant level. The underachievers receiving electronic storybook instruction felt comfortable and relaxed while learning English. Shamir and Korat (2006) stated that the animations of electronic storybooks added pleasure for students and aroused their interests in learning. Therefore, the underachievers felt relaxed and enjoyable while reading electronic storybooks. Since electronic storybooks in this study were relatively short, in comparison with the graded readers, the underachievers did not lose patience or feel nervous when reading electronic storybooks. Instead, the underachievers who never imagined that they could read and comprehend the story written in English had a sense of achievement and encouragement. They gained more confidence in learning

English and hoped they could speak English fluently with others. The results provided strong evidence that electronic storybook instruction could lower underachievers' anxiety and help them build confidence in learning English.

Besides, item 20, which achieved the significant level, made the affective category more significant than others between the two groups. It implied that the underachievers in the electronic storybook group were convinced that learning English could make them happy. The underachievers had low motivation and no interest in learning English before the instruction. They even refused to learn English in the beginning. However, low achievers felt excited and interested when they saw electronic storybooks. The novelty of electronic storybooks caught students' attention and aroused their curiosity, so they started to accept learning English. Chen, Ferdig and Wood (2003) proposed that the use of animations in electronic storybooks not only provided entertaining values for students but also made dull pictures become vivid so as to arouse students' interest. The animations of electronic storybooks not available in picture books added pleasure for the underachievers and motivated them for further learning. Lefever-Davis and Pearman (2006) further advocated that animations in electronic storybooks could prolong students' interests in reading the text. This phenomenon was in accordance with Janssens' (1977) assertion that a change from routine lectures in the classroom was able to arouse their interest in learning. Through electronic storybooks, the underachievers enjoyed reading and learning English. As a result, animations with other features in electronic storybooks were crucial to bringing about positive attitudinal change in learning English among the underachievers.

No significant difference was discovered in the behavioral category of English learning attitudes between the two groups and some possible explanations were provided for the findings. The behavioral category was about the underachievers'

participation in class and their practical actions in learning English. The teacher designed the same activities and games for the two groups during the instruction. English games could enhance students' motivation in learning English and offer students an entertaining environment to practice English (Carrier, 1980; Hsu, 2006). Therefore, the underachievers' learning attitudes were enhanced and they learned English more effectively through the games and activities. The underachievers in both groups enjoyed learning English through activities and games, so they took part in the activities enthusiastically in class. This could explain why there was no significant difference between the two groups in the behavioral category.

The result showed that the electronic storybook instruction had positive influence on their attitudinal changes in all dimensions of English learning attitudes. The main reason that electronic storybook instruction positively changed the underachievers' learning attitudes might be consistent with the multimedia features, such as oral reading function, animations, highlighting feature, and sound effects, all of which available in picture books. The sound effects and animations of electronic storybooks could arouse the underachievers' interests in learning and enhance their motivation (Shamir & Korat, 2006). The oral reading function and the highlighting feature of electronic storybooks could facilitate the underachievers' learning (Lefever-Davis & Pearman, 2006; Lin, 2009). Their learning attitudes were enhanced with a sense of achievement in learning and they gained more confidence. As a result, electronic storybook instruction positively changed the underachievers' attitudes toward learning English.

CHAPTER 6

CONCLUSION

This final chapter contains four sections. The findings of the study based on the results and discussion are summarized first. Then, four pedagogical implications obtained from the results for elementary school English teachers are proposed. Third, the limitations of the present study are discussed. Finally, some suggestions for those who plan to conduct further studies related to electronic storybooks are provided.

Summary of Findings

The present study was conducted to investigate the effects of electronic storybook instruction on the fourth-grade underachievers' word recognition performance as well as their English learning attitudes. On the basis of the results and discussion presented in the previous chapters, the main findings pertinent to the two research questions in the present study are summarized as follows.

First, the electronic storybook instruction could substantially improve underachievers' word recognition performance. An independent-samples *t*-test was employed to analyze the post-tests of the Word Recognition Test between the two groups and the results indicated that there were significant differences in the underachievers' word recognition performance between the electronic storybook group and the picture book group. The electronic storybook group scored significantly higher than the picture book group in the mean scores of the post-test. The results demonstrated that the use of electronic storybooks as teaching materials could effectively assist the underachievers in recognizing words. The findings were in line with Grant's (2004) claims that electronic storybooks could facilitate students' word recognition ability. The experimental group prevailing over the control group could be explained by the features of the electronic storybooks, such as oral reading function, highlighting features, animations, sound effects, and pictures, not available in picture

books. Lin (2009) also confirmed that the features of electronic storybooks were helpful and could facilitate students' English learning in different aspects. The Word Recognition Test contains two main sections, the listening and the reading. An independent-samples *t*-test was analyzed and the results revealed that the listening section was not statistically significant, but there were significant differences in the reading section between the two groups. The highlighting function and oral reading function of electronic storybooks were probably the main causes of such results. Furthermore, the size of the word might be another plausible explanation for the results.

Second, the electronic storybook instruction was essential to the attitudinal change in the underachievers' English learning attitudes. An independent-samples *t*-test was implemented to analyze the post-questionnaire, and the results showed that there were significant differences in the underachievers' overall English learning attitudes between the two groups. In other words, the underachievers who received electronic storybook instruction in this study had significantly positive attitudes toward learning English. A paired-samples *t*-test was conducted to analyze the pre- and post-questionnaire within the experimental group, and the results were statistically significant. The average score in the post-questionnaire was significantly higher than that in the pre-questionnaire within the experimental group. Obviously, the electronic storybook instruction improved the underachievers' English learning attitudes and had positive influence. The main reason for the underachievers' attitudinal change could be explained by the multimedia features of the electronic storybooks. The Learning Attitude Questionnaire, including 25 items, was classified into three categories: cognitive, affective, and behavioral. Both the cognitive and affective categories achieved the significant level ($p<.05$), but the behavioral category did not. No significant difference was noticed between the two groups in the

behavioral category. The results revealed that the electronic storybook group had more propensities to learn English. Moreover, the underachievers' feelings about learning English were aroused after the electronic storybook instruction.

Pedagogical Implications

The main findings derived from the present study provide four pedagogical implications for elementary English teachers in Taiwan. First of all, word recognition ability is crucial to English learning, especially in reading. Bloom (2000) advocated that reading comprehension depends on understanding the meanings of words. In light of this, teachers should put more emphasis on students' word recognition ability. According to the results of this study, the electronic storybook instruction effectively enhanced low achievers' word recognition performance. Electronic storybooks with features of oral reading function, highlighting features, animations, colorful pictures, and sound effects should be adopted to provide s multiple input for students to learn English. Students read the English stories joyfully because electronic storybooks are attractive to them. Since students are more tolerant of the repetition in the computer, electronic storybooks can promote students' English learning with the words and sentence patterns repeated. After students read the electronic storybooks, teachers asked simple questions to see whether students could comprehend the story. Then, teachers replayed the electronic storybooks and asked students to look for the target words with the aid of pictures, animations, and oral reading function in electronic storybooks. Take the story *Farm Animals* used in the present study for example. Teachers could invite students to find out the animals they saw or heard from this story.

Second, English teacher could choose various electronic storybooks from the websites such as *Kizclub*, *Starfall*, *Storyplace*, etc. as supplementary materials. Online

electronic storybooks which are multimedia-supported contain different levels, genre, and features. Teachers could choose suitable electronic storybooks based on students' age, level, needs or the according topic. In the present study, the teacher chose the five stories evaluated as the basic level for the underachievers. For low achievers, their feeling of frustration could easily induce loss of interest; therefore, electronic storybooks chosen for them should be short, interesting, and lively. Additionally, the highlighting feature and oral reading function of electronic storybooks are essential for teachers to take into consideration since low achievers always need to model the pronunciation of vocabulary and follow the highlight of words to read. For high-level students, teachers could choose more challenging electronic storybooks for them to read after school, so as to develop good reading habits.

Third, the results of the present study demonstrated that electronic storybooks had significantly positive influence on the underachievers' attitudinal change. That is to say, they are valuable resources to arouse students' interests and enhance their motivation, especially for low achievers. Students with low proficiency are often afraid of learning English and can be distracted easily. Electronic storybooks can not only help low achievers gain confidence but also motivate them to learn English. The animations of electronic storybooks can attract students' attention and enable them to enjoy reading the stories. Since underachievers are easily distracted in class, electronic storybooks with animations can magnify their desire for learning more and induce them to read English for fun. The crucial point is to make students enjoyable when learning English. Enjoying learning English is much more important than how much students learn. As long as students are fascinated, their English learning will be enhanced. In view of this, teachers should provide various materials and design different activities for students to learn English with ease and happiness.

At last, the remedial instruction is indispensable in elementary schools since the

English proficiency gap among students increasingly widens nowadays. Hence, elementary school English teachers should implement remedial programs as soon as possible. Teachers need to help underachievers enhance their English learning and arouse their interest. The results of this study showed that electronic storybooks are seemingly promising. Therefore, the researcher maintained that they are potentially suitable materials for elementary school students, especially for the underachievers. In view of this, elementary school English teachers should choose electronic storybooks as teaching materials and incorporate them into English teaching.

Limitations of this Study

The findings of the present study revealed that the electronic storybook instruction were arguably beneficial and effective in enhancing the fourth-grade underachievers' word recognition performance. The findings also showed that such instruction had desirable results in changing underachievers' English learning attitudes. Nevertheless, three limitations still exist and it is hoped that they may be avoided in the future research.

First of all, the sample size in the present study was small with a number of only 54. There were 10 fourth-grade classes in this school, but the teacher of this study only taught seven classes. The underachievers in the other three classes could not participate in the remedial instruction of this study. Thus, it decreased the sample size. The 54 participants in the present study were further divided into two groups: the control group and the experimental group. Since there were less than 30 students in each group, the statistical results could be biased. Accordingly, the findings could not adequately represent the rest of similar underachievers at elementary schools in Taiwan.

The second weakness of this study was related to the time spent on the

experiment. The instruction of this study lasted for 16 weeks, which was approximately one semester. Although the findings showed that the electronic storybook instruction positively changed students' learning attitudes, it could not ensure that low achievers would keep learning English with positive attitudes and gain self-confidence in the future. A longer period of time should be considered in the future research to investigate the long-term effects.

In the end, whether the underachievers had extra English classes or not could not be fully controlled in the present study. The participants were chosen based on the Hand in Hand Project proposed by the MOE. Students whose scores of TCSEPT-G4 fell in the bottom 25% of each class were selected. Most of them in this case were from economically disadvantaged families. Nevertheless, the researcher could not ensure that all the participants would not go to cram schools to strengthen their English proficiency during the experiment. This factor, which could not be under control, seemed to have influence on the results of this study.

Suggestions for Future Research

Since the study has three limitations, some suggestions for the future research are offered to rectify them for those interested in exploring the effects of electronic storybooks.

First, since the sample size in the present study is insufficient, future studies are suggested to have more students from different grades, so as to ensure precise effects of electronic storybook instruction with a sufficiently large sample size. In this way, the results can be generalized to students in different elementary schools in Taiwan. Second, it is strongly encouraged that a longer period of time, approximately one year, should be taken to conduct a relevant experiment to investigate the effects of electronic storybook instruction on students' English learning attitudes. In addition, a

delayed test can be administered one month later after the post-test of the Word Recognition Test so as to examine the effects of electronic storybooks on students' long-term retention of vocabulary learning. Third, the present study examined the effects of electronic storybook instruction on students' word recognition performance. However, there are four language skills in English learning. Future studies are suggested to explore the effects of electronic storybooks on students' other language skills, such as listening, speaking, reading, and writing competence. Finally, since electronic storybooks contain different features, what features of electronic storybooks can affect students' English learning in different aspects or influence their learning attitudes are worth further investigation.

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臺北縣九十七學年度國小英語四年級檢測卷

學校：_____國小　班級：_____　座號：_____　姓名：_____　☐ 男　☐ 女

A、 聽力測驗

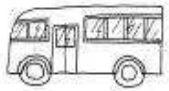
一、請仔細聽，選出正確的開頭字母。每題 2 分。

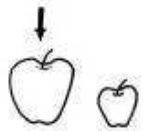
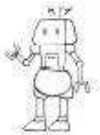
(3) 例: (1) t　(2) m　(3) p

(3) 1. (1) g　(2) h　(3) k
(2) 2. (1) n　(2) m　(3) h
(2) 3. (1) s　(2) z　(3) r
(1) 4. (1) w　(2) m　(3) v
(3) 5. (1) q　(2) j　(3) y

Script: 例: pen　(1) king　(2) milk　(3) zoo　(4) water　(5) yo-yo

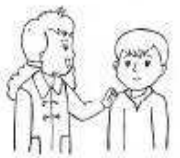
二、請仔細聽，選出正確的單字。每題 2 分。

例 (2)	(1) 	(2) 	(3) 

6. (2)	(1) **2**	(2) **3**	(3) **4**
7. (1)	(1) 	(2) 	(3) 
8. (3)	(1) 	(2) 	(3) 
9. (2)	(1) 	(2) 	(3) 
10. (2)	(1) 	(2) 	(3) 

Script: 例: bike　(6) three　(7) big　(8) robot　(9) bird　(10) sunny

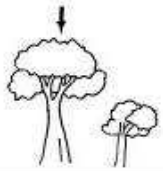
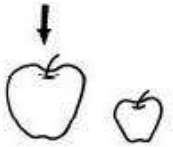
三、請仔細聽，選出正確動作的圖。每題 2 分。

例 (2)	(1) 	(2) 	(3) 

11. (3)	(1) 	(2) 	(3) 
12. (1)	(1) 	(2) 	(3) 
13. (2)	(1) 	(2) 	(3) 
14. (3)	(1) 	(2) 	(3) 
15. (3)	(1) 	(2) 	(3). 

Script: 例: It's OK. Try again!
(11) Line up.
(12) Sorry!
(13) Good job!
(14) Nice to meet you.
(15) Good bye.

四、仔細聽句子，選出適當的圖片。每題 2 分。

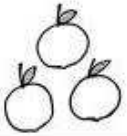
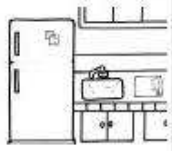
例 (3)	(1) 12	(2) 4	(3) 2
16. (3)	(1) 	(2) 	(3) 
17. (1)	(1) 	(2) 	(3) 
18. (2)	(1) 	(2) 	(3) 

19. (2)	(1) 	(2) 	(3) 
20. (1)	(1) 	(2) 	(3) 

Script: 例: It's two.
(16) This is an eraser.
(17) It's short.
(18) I want some milk.
(19) It's a kite.
(20) He's angry.

五、仔細聽對話，選出適當的圖片。每題 2 分。

例 (1)	(1) 	(2) 	(3) 
21. (1)	(1) 	(2) 	(3) 

22. (3)	(1) 	(2) 	(3) 
23. (2)	(1) 	(2) 	(3) 
24. (1)	(1) 	(2) 	(3) 
25. (3)	(1) 	(2) 	(3) 

Script: 例: A: What's this?
B: It's an apple.
(21) A: What can you do?
B: I can swim.
(22) A: Do you want some pizza?
B: Yes, please.
(23) A: What do you like?
B: I like bananas.
(24) A: Can you dance?

B: No, I can't. I can draw.

(25) A: Where is the kite?

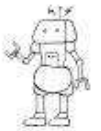
B: It's in the bathroom.

B、 閱讀測驗

六、讀一讀，選出正確的大小寫對應。每題 2 分。

例 (3)	E	(1) a (2) o (3) e
26. (1)	I	(1) i (2) l (3) j
27. (2)	t	(1) F (2) T (3) J
28. (3)	M	(1) w (2) n (3) m
29. (2)	b	(1) b (2) d (3) q
30. (3)	h	(1) N (2) U (3) H

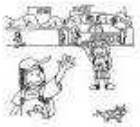
七、讀一讀，選出適當的圖片。每題 2 分。

例 (3)	two		
	(1) 12	(2) 4	(3) 2
31. (2)	grandpa		
	(1) 	(2) 	(3) 
32. (1)	teacher		
	(1) 	(2) 	(3) 
33. (1)	rabbit		
	(1) 	(2) 	(3) 
34. (2)	sleep		
	(1) 	(2) 	(3) 
35. (3)	twelve		
	(1) 3	(2) 10	(3) 12

八、讀一讀，選出適當的圖片。每題 2 分。

例 (2)	It's OK. Try again!		
	(1) 	(2) 	(3) 

36. (1)	Stand up.		
	(1) 	(2) 	(3) 
37. (2)	Let's play!		
	(1) 	(2) 	(3) 
38. (1)	Take out your book.		
	(1) 	(2) 	(3) 
39. (1)	Are you OK?		
	(1) 	(2) 	(3) 
40. (2)	See you.		

	(1) 	(2)  (3) 

九、讀一讀，選出適當的答案。每題 2 分。

例 (3)	It's a pen.	(1) It's a pencil. (2) It's a ruler. (3) It's a pen.
41. (2)	It's blue.	(1) It's yellow. (2) It's blue. (3) It's green.
42. (2)	The frog is on the box.	(1) The frog is in the box. (2) The frog is on the box. (3) The frog is by the box.
43. (1)	I want some juice.	(1) I want some juice. (2) I want some rice. (3) I want some milk.
44. (1)	I'm thirsty.	(1) I'm thirsty. (2) I'm hungry. (3) I'm angry.
45. (3)	I don't like dogs.	(1) I don't like birds. (2) I don't like cats. (3) I don't like dogs.

十、讀一讀，選出適當的答案。每題 2 分。

例 (1)	Q: What time is it?	(1) It's six. (2) It's red. (3) It's big.

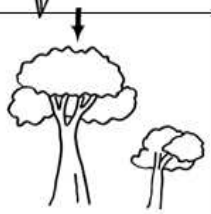
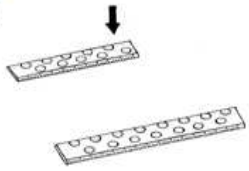
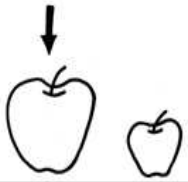
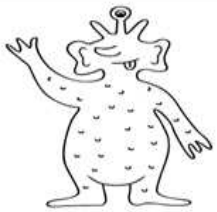
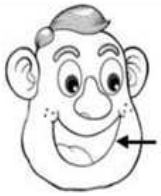
46. (1)	Q: How's the weather?	(1) It's rainy.
		(2) It's blue.
		(3) It's short.
47. (3)	Q: Who's she?	(1) I'm her mother.
		(2) He's my brother.
		(3) She's my sister.
48. (2)	Q: Is your brother tall?	(1) No, he is tall.
		(2) Yes, he is.
		(3) Yes, she is.
49. (2)	Q: How old is he?	(1) He's Santa.
		(2) He is seven.
		(3) He is old.
50. (3)	Q: Where is the dog?	(1) It's big.
		(2) It can jump.
		(3) It's on the chair.

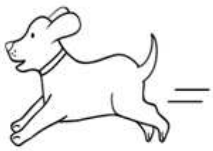
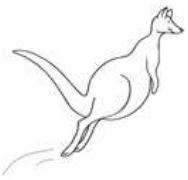
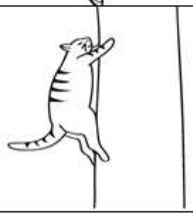
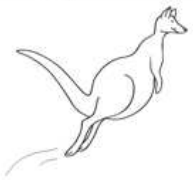
Appendix B: Word Recognition Test

Class : _____ Number: _____ Name: _____

I. Listening 聽力測驗 (50%)

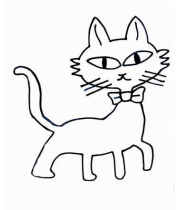
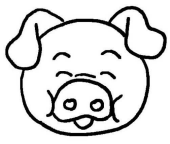
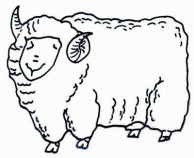
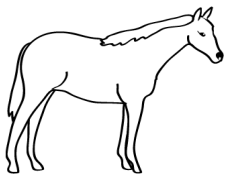
A. Listen and Choose 聽 CD，選出正確的圖片 (20%)。

1. ( )	1 	2 	3 
2. ( )	1 	2 	3 
3. ( )	1 	2 	3 
4. ( )	1 	2 	3 
5. ( )	1 	2 	3 
6. ( )	1 	2 	3 

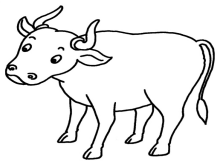
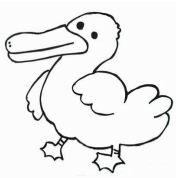
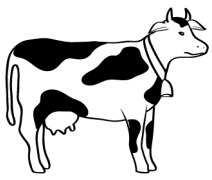
7. ( )	1 	2 	3 
8. ( )	1 	2 	3 
9. ( )	1 	2 	3 
10. ( )	1 	2 	3 

B. Listen and Number 聽 CD，按照 CD 念的順序寫下數字 (30%)。

1. 下面有十種動物，聽 CD，在( )內寫下數字 1~10 (20%)。

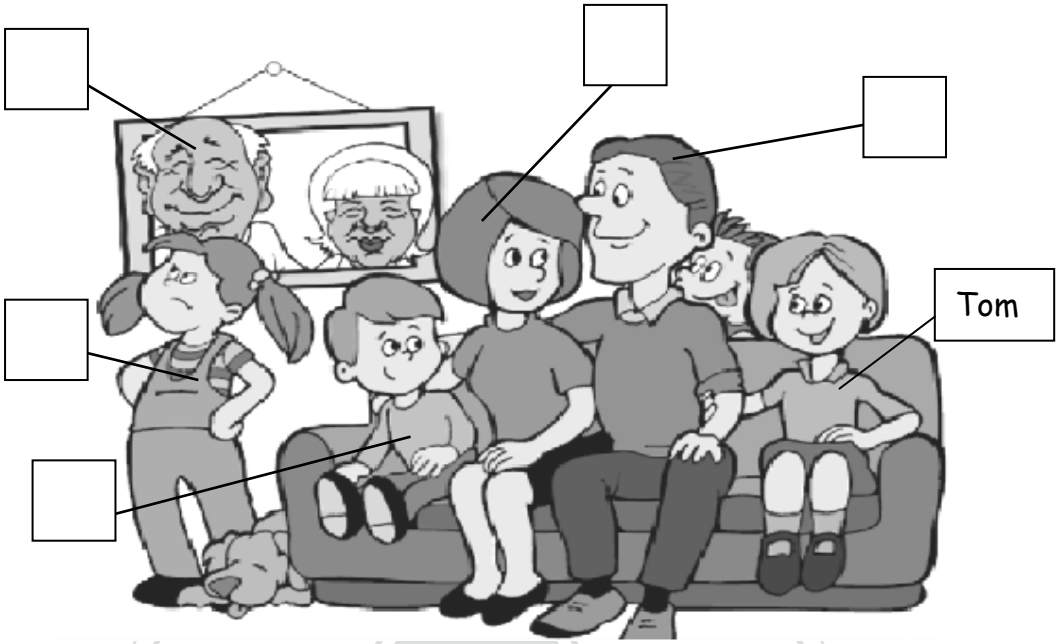
    

( ) ( ) ( ) ( ) ( )

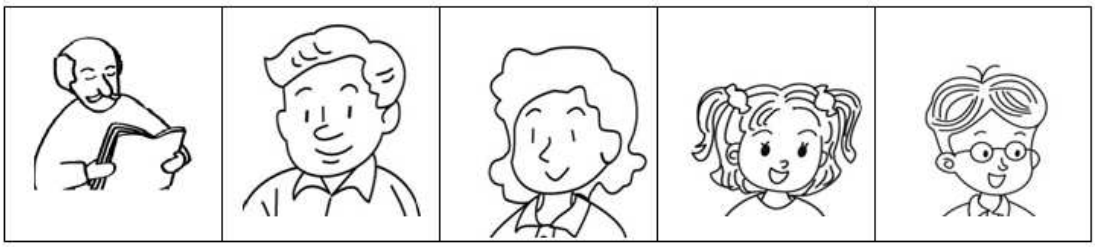
( ) ( ) ( ) ( ) ( )

2.下面圖片是 Tom 的全家福照，聽 CD，在 □ 內寫下數字 1~5 (10%)。



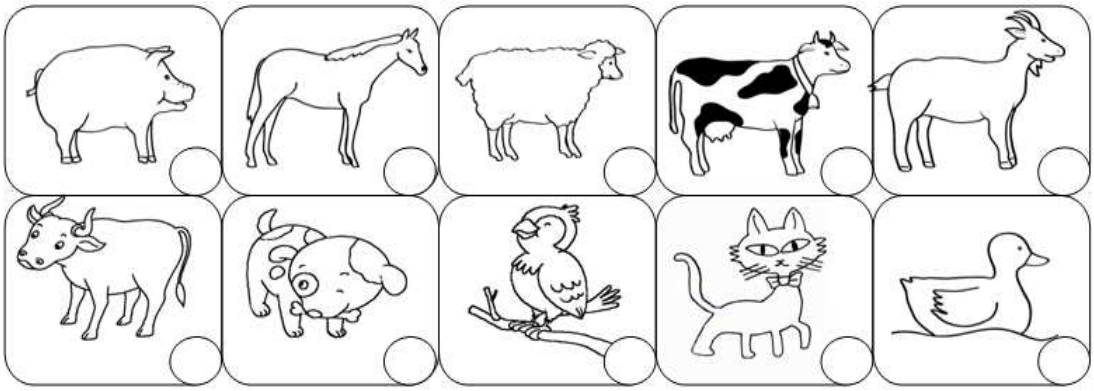
II. Reading 閱讀測驗 (50%)

A. Read and Match 看圖片連連看 (10%)。



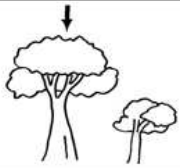
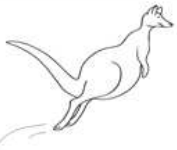
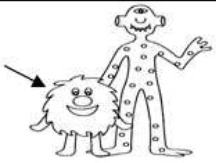
mother	grandfather	father	brother	sister

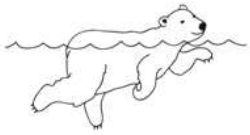
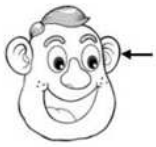
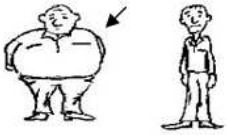
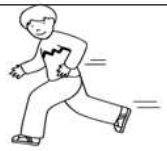
B. Read and Write 讀一讀，在圈圈內填入正確的數字(10%)。

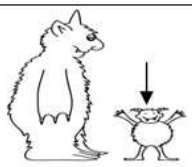


1. pig 2. ox 3. dog 4. cat 5. duck 6. bird 7. goat 8. cow 9. horse 10. sheep

C. Read and Choose 看圖片選出正確的單字 (30%)。

1. ( )		1. dig	2. pig	3. big
2. ( )		1. write	2. talk	3. sing
3. ( )		1. fall	2. ball	3. tall
4. ( )		1. jump	2. dance	3. fly
5. ( )		1. ear	2. eye	3. hand
6. ( )		1. short	2. big	3. tall

7. ( )		1. sing	2. swim	3. sleep
8. ( )		1. hand	2. eye	3. ear
9. ( )		1. bat	2. fat	3. hat
10.( )		1. sun	2. bun	3. run

11. ( )		1. pose	2. nose	3. rose
12.( )		1. hear	2. smell	3. taste
13.( )		1. fly	2. walk	3. run
14.( )		1. tall	2. little	3. big
15.( )		1. tree	2. bee	3. see

Appendix C: Learning Attitude Questionnaire (Chinese Version)

英語學習態度問卷

親愛的小朋友：

老師想要瞭解你們對學習英語的看法，這不是考試，也沒有正確答案，請你們依實際狀況耐心填答，讓老師瞭解你們的學習狀況。請務必每題作答，謝謝你們的合作！

一、基本資料

1. 我是 _____年_____班 _____號　姓名 _____
2. 我是 □ 男生 □ 女生。
3. 現在有在補習班學英文嗎？
   □ 有，一星期上課_____次，每次上課 _____小時。
   □ 沒有。

二、填答說明

請你根據自己心裡所想的，選出最接近的答案，在 □ 內打✓。
每題有四個選項，只能勾選一個答案，務必每題作答！

	非常同意	同意	不同意	非常不同意
1. 我覺得越早開始學英語越好。	□	□	□	□
2. 為了我未來的工作我需要學英語。	□	□	□	□
3. 我認為英語很重要。	□	□	□	□
4. 我認為英語很有用。	□	□	□	□
5. 長大後，在很多方面我都得用到英語。	□	□	□	□
6. 英語與我以後的生活相關。	□	□	□	□
7. 學了英語，對增加知識有幫助。	□	□	□	□
8. 學英語對於瞭解外國的事物有幫助。	□	□	□	□
9. 我喜歡學英語。	□	□	□	□
10. 我希望能繼續學英語。	□	□	□	□
11. 我很樂意做英語作業。	□	□	□	□
12. 我學英語的興趣很高。	□	□	□	□
13. 我喜歡聽英語歌曲。	□	□	□	□
14. 我希望常常上英語課。	□	□	□	□

15. 我願意在英語課中示範或表演。	□	□	□	□
16. 我喜歡和同學用學過的英語對話。	□	□	□	□
17. 上英語課時，我樂意回答老師的問題。	□	□	□	□
18. 我對學習英語一點也不害怕。	□	□	□	□
19. 我希望能用流利的英語與別人交談。	□	□	□	□
20. 學習英語讓我很快樂。	□	□	□	□
21. 上英語課讓我覺得很自在。	□	□	□	□
22. 我覺得上英語課很輕鬆。	□	□	□	□
23. 我覺得學英語很無聊。	□	□	□	□
24. 想到要上英語課，我就很緊張。	□	□	□	□
25. 我認為上英語課沒有什麼好怕的。	□	□	□	□

謝謝你們用心填寫！☺

Appendix D Learning Attitude Questionnaire (English Version)

Dear all,

This questionnaire is used to understand your attitudes toward learning English. This is not a test and there is no correct answer to the questions. Please answer each question honestly based on your own experiences. Thanks for your help!

A. Background information

- Class: _____ Number: _____ Name:_____
- Gender: ☐ boy ☐ girl
- Do you learn English in a private cram school now?
  ☐ Yes, I do.
  ☐ No, I don't.

B. Read each question and choose the most appropriate answer according to your own experiences.

1. I feel the earlier we start learning English the better the result is.
2. I need to learn English for my job in the future.
3. I think English is important.
4. I think English is useful.
5. I think English can be used in many aspects after I grow up.
6. English is related to my future life.
7. Leaning English is helpful to enrich knowledge.
8. Leaning English is helpful for understanding foreign culture.
9. I like learning English.
10. I hope I can keep learning English.
11. I like to do English homework.
12. I am interested in learning English.
13. I like listening to English songs.
14. I hope I can have more English classes.

15. I am willing to demonstrate or act in English class.
16. I like to talk to classmates in English.
17. I like to answer questions in English class.
18. I’m not afraid of learning English.
19. I hope I can speak English fluently with others.
20. Learning English makes me happy.
21. I feel comfortable in English class.
22. I feel relaxed in English class.
23. I feel bored in learning English.
24. I feel nervous when I think about learning English.
25. I feel unafraid to learn English.

Thanks for your help! ☺

Appendix E: Cameron (2001) Knowing About a Word

Type of knowledge	What is involved	example
receptive knowledge: aural/decoding	to understand it when it is spoken/written	
memory	to recall it when needed	
Conceptual knowledge	to use it with the correct meaning	not confusing *protractor* with *compasses*
knowledge of the spoken form: phonological knowledge	to hear the word and to pronounce it acceptably, on its own, and in phrases and sentences	to hear and produce the endings of verb forms, such as the /n/ sound at the end of *undertaken*
grammatical knowledge	to use it in a grammatically accurate way; to know grammatical concerns with other words	*she sang very well not *she sang very good*; to know that *is* and *be* are parts of the same verb
collocational knowledge	to know which other words can be used with it	*a beautiful view not * a good-looking view*
orthographic knowledge	to spell it correctly	*Protractor* not * *protracter*
pragmatic knowledge, knowledge of style and register	to use it in the right situation	*would you like a drink?* is more appropriate in a formal or semi-formal situation than *what can I get you?*
connotational knowledge	to know its positive and negative associations, to know its associations with related words	to know that *slim* has positive connotations, when used about a person, whereas *skinny* is negative
metalinguistic knowledge	to know explicitly about the word, e.g. its grammatical properties	to know that *protractor* is a noun; to know that *pro* is a prefix

Appendix F: Lesson Plan (Control Group)

Subject	English	**Date**	December 1st, 8th, 15th, 2009
Story	I can	**Time**	120 minutes (3 periods)
Students	Fourth graders	**Designer**	Sherry Tsai
Teaching aids	flashcards, picture books, worksheets	**Instructor**	Sherry Tsai
Students background	1. Students have learned English in school for three years. 2. Students have learned 26 letter names and letter sounds. 3. Students are not good at recognizing and spelling words. 4. Students are low achievers in class. 5. Students have low motivation in learning English.		
Teaching focus	Vocabulary Animals: dog, bird, cat Action: jump, swim, talk, run, fly Sentence pattern A dog can run. And I can run, too.		
Teaching Objectives	1. Students are able to comprehend the story. 2. Students are able to read the story aloud. 3. Students are able to recognize the target words in the story when the words are spoken and written.		
Teaching procedures			
First Period **Warm-up** 1. The teacher shows the cover of the picture book. 2. The teacher asks students what they see from the cover. 3. The teacher asks students to imagine what the story is about. **Presentation** 1. The teacher tells the story by showing pictures and words page by page. 2. The teacher points to pictures and words when telling the story. 3. After telling the story, the teacher asks students the words they see and hear in the story. 4. The teacher tells the story again and invites students to read with her. **Practice/Production** 1. The teacher shows the pictures of the story on the blackboard and asks students to put the pictures in order when reading the story. 2. The teacher divides students into two groups and students take turns to read the story. Group A: A kangaroo can jump. Group B: And I can jump, too.			

Wrap-up

All students read the story together.

Second Period

Warm-up

1. The teacher asks questions for students to recall what they have learned in the story.
2. The teacher shows students picture books and asks them to read the story together.

Presentation

1. The teacher asks students if they remember any word in the story and then shows the flashcards of the target words.
2. The teacher teaches students how to decode and pronounce the word.
3. The teacher introduces the sentence pattern and substitutes the word to practice the sentence pattern.

Practice/Production

1. The teacher shows students flashcards and asks them to say the word.
2. Hitting game
   The teacher puts the flashcards on the blackboard. When she says the word, students have to hit it.
3. Guessing
   The teacher acts out the word and students have to guess what it is.
4. The teacher divides students into two groups and puts the sentence pattern on the blackboard. When she shows the word, students have to say the sentence as soon as possible.

Wrap-up

The teacher reviews the words and sentence patterns.

Third Period

Warm-up

The teacher reviews the words by showing students flashcards and asks them to say the words.

Practice/Production

1. Bingo
   The teacher gives students a piece of paper and asks them to write down nine target words. Then, the teacher asks students questions about the story. The student who answers correctly can name one word. The student who gets three lines first will be the winner.
2. The teacher gives students worksheets and guides them to write.

Wrap-up

Students have to complete the worksheet after class.

Appendix G: Lesson Plan (Experimental Group)

Subject	English	**Date**	December 4st, 11th, 18th, 2009
Story	I can	**Time**	120 minutes (3 periods)
Students	Fourth graders	**Designer**	Sherry Tsai
Teaching aids	flashcards, picture books, worksheets, projector, screen	**Instructor**	Sherry Tsai
Students background	1. Students have learned English in school for three years. 2. Students have learned 26 letter names and letter sounds. 3. Students are not good at recognizing and spelling words. 4. Students are low achievers in class. 5. Students have low motivation in learning English.		
Teaching focus	Vocabulary Animals: dog, bird, cat Action: jump, swim, talk, run, fly Sentence pattern A dog can run. And I can run, too.		
Teaching Objectives	1. Students are able to comprehend the story. 2. Students are able to read the story aloud. 3. Students are able to recognize the target words in the story when the words are spoken and written.		

Teaching procedures

First Period

Warm-up

1. The teacher shows the title of the electronic storybook.
2. The teacher asks students what they see in the cover page.
3. The teacher asks students to guess what the story is about.

Presentation

1. The teacher plays the story and the book character reads the story automatically.
2. Students can hear the pronunciation of the words and see the animations.
3. After students watch the story, the teacher asks students the words they see and hear in the story.
4. Teacher replays the story and pauses to ask students what they hear on each page.

Practice/Production

1. The teacher plays the story and clicks the sound button. Then, she asks students to follow the system to read.
2. The teacher divides students into two groups and students take turns to read the story. Group A: A kangaroo can jump. Group B: And I can jump, too.

Wrap-up

All students read the story together.

Second Period

Warm-up

1. The teacher asks questions for students to recall what they have learned in the story.
2. The teacher plays the story and asks students to read the story together.

Presentation

1. The teacher asks students if they remember any word in the story and then shows the flashcards of the target words.
2. The teacher teaches students how to decode and pronounce the word.
3. The teacher introduces the sentence pattern and substitutes the word to practice the sentence pattern.

Practice/Production

1. The teacher shows students flashcards and asks them to say the word.
2. Hitting game
   The teacher puts the flashcards on the blackboard. When she says the word, students have to hit it.
3. Guessing
   The teacher acts out the word and students have to guess what it is.
4. The teacher divides students into two groups and puts the sentence pattern on the blackboard. When she shows the word, students have to say the sentence as soon as possible.

Wrap-up

The teacher reviews the words and sentence patterns.

Third Period

Warm-up

The teacher reviews the words by showing students flashcards and asks them to say the words.

Practice/Production

1. Bingo
   The teacher gives students a piece of paper and asks them to write down nine target words. Then, the teacher asks students questions about the story. The student who answers correctly can name one word. The student who gets three lines first will be the winner.
2. The teacher gives students worksheets and guides them to write.

Wrap-up

Students have to complete the worksheet after class.

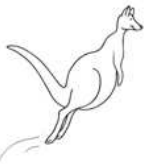
Appendix H: Worksheet

I can…

Class 班級_____ Number 座號_____ Name 姓名_____

★ Matching 連連看

1. 

2. 

3. 

4. 

5. 

swim fly talk jump run

★ Draw and write 請畫出一個你可以做的動作並寫下句型

I can _____.