

**THE INFLUENCE OF E-STORY BOOKS ON CHILDREN'S
READING ABILITY**



**A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE IN
TECHNOLOGY-ENHANCED LEARNING AND INNOVATION
SCHOOL OF INDUSTRIAL EDUCATION AND TECHNOLOGY
KING MONGKUT'S INSTITUTE OF TECHNOLOGY LADKRABANG
2023
KMITL-2023-ED-M-242-003**

This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.



COPYRIGHT 2023

SCHOOL OF INDUSTRIAL EDUCATION AND TECHNOLOGY

KING MONGKUT'S INSTITUTE OF TECHNOLOGY LADKRABANG

This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.

Thesis Title	THE INFLUENCE OF E-STORYBOOKS ON CHILDREN'S READING ABILITY
Student Name	Ms.Zhang Qi
Student ID	63603142
Degree	Master of Science
Program	Technology-Enhanced Learning and Innovation
Year	2023
Thesis Advisor	Assistant Professor Dr. Sirirat Petsangsri

ABSTRACT

The purposes of the study were; 1) to survey the effect of electronic storybooks on children's reading ability through literature reading and comparative experiments, 2) to survey students' satisfaction with e-story books. The subjects were 60 randomly selected from 300 students in Guanghongcheng Kindergarten in Huainan High-tech Zone, Anhui Province, using random cluster sampling. The experiment was divided into a traditional paper storybook reading group and an electronic storybook reading group. Four preschool teachers completed the distribution of traditional paper storybooks, e-story books, and test questions.

There were three main factors affecting children's reading ability, which were reading ability, number recognition and color judgment. The research tools were electronic storybooks, traditional paper storybooks, reading tests, and satisfaction questionnaire. The data were analyzed using mean, standard deviation, and independent sample t-test.

The results showed that students who learned e-storybooks had significantly higher reading scores than those who read with traditional storybooks at 0.05. The students' satisfaction with electronic storybooks was at a very satisfied level ($\bar{X}=4.81$, $S.D=0.33$).

ACKNOWLEDGEMENT

With the contribution of many people, this thesis existed. It owes its existence to the support and inspiration of many people.

To my thesis advisor, Assistant Professor Dr Sirirat Petsangsri, I would like to express my deepest gratitude for the encouragement and supervision through all obstacles and challenges from the beginning until the end of my study.

I also want to thank teachers Assistant Professor Dr Thanin Rattanaolan , Assistant Professor Dr Jirarat Sitthiworachart, Assistant Professor Dr.Kanyarat Sriwisathiyakun, Associated Professor Dr.John Morris for their support and guidance to me for the whole two years as well as Associated Professor Dr.Nattaphon Rampai as an external committee for his valuable comments. Also, I would like to thank all my friends who always be there to support and motivate me as always. Moreover, I also would love to express my gratitude to all respondents who contributed their information and time to this study. And I do believe the study could not be done without their input.

Finally, I must express my very greatest gratitude to my parents and all my relatives for providing me with unfailing support and continuous motivation throughout my years of study. This accomplishment would not have been possible without them.

Zhang Qi

TABLE OF CONTENTS

	Page
ABSTRACT.....	I
ACKNOWLEDGEMENT.....	II
TABLE OF CONTENTS	III
LIST OF TABLES	V
LIST OF FIGURES	VI
CHAPTER 1 INTRODUCTION	1
1.1 Background of the study	1
1.2 Research Questions	2
1.3 Research Objectives.....	2
1.4 Conceptual Framework.....	2
1.5 Scope of the study	2
1.6 Limitations of the study.....	3
1.7 Definition of the terms.....	3
CHAPTER 2 LITERATURE REVIEW	5
2.1 Electronic storybook	5
2.2 Children's reading on e-story book.....	5
2.3 Concept discussion.....	11
2.4 Children's Book Research	12
CHAPTER 3 RESEARCH METHODOLOGY.....	13
3.1 Research Design.....	13
3.2 Population.....	14
3.3 Sample.....	14
3.4 Research Instruments.....	15

This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.

TABLE OF CONTENTS (Continued)

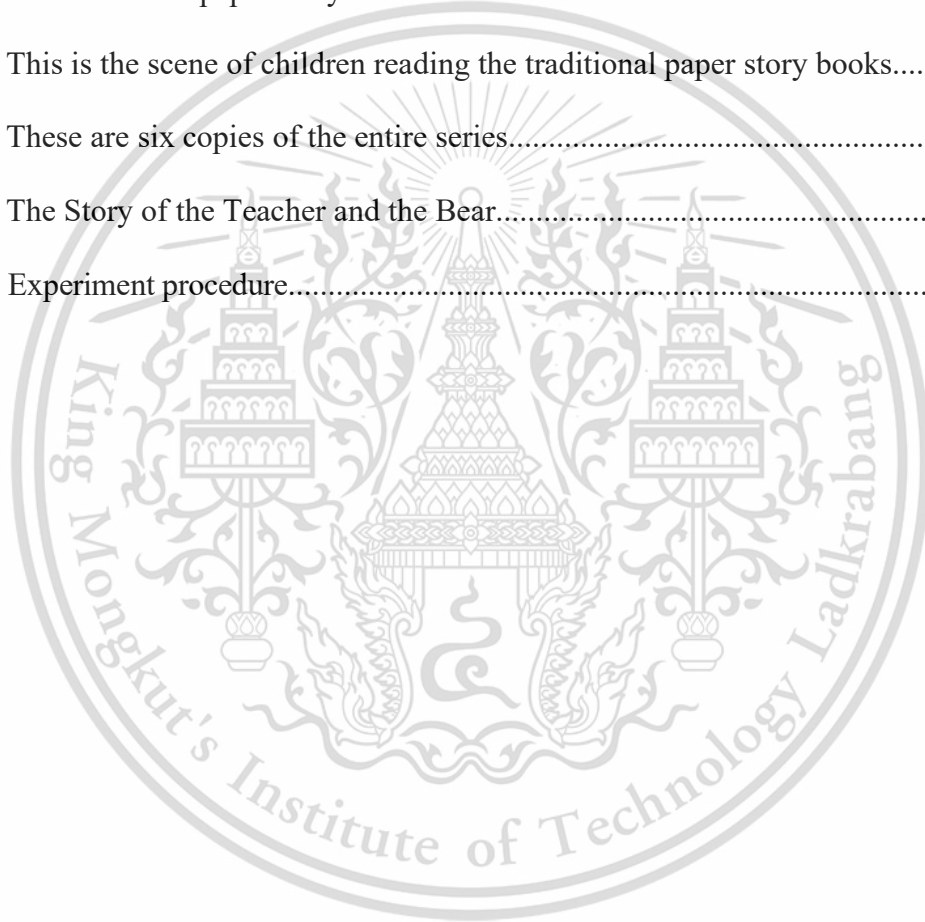
	Page
3.5 Data Collection.....	29
3.6 Data Analysis.....	31
CHAPTER 4 RESEARCH RESULTS.....	32
4.1 Introduction.....	32
4.2 Basic data statistics of the experiment.	32
4.3 Results analysis of children's satisfaction on e-storybook.....	35
4.4 Research results.....	36
CHAPTER 5 DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS	37
5.1 Discussions.....	37
5.2 Conclusion.....	37
5.3 Recommendation.....	38
REFERENCES.....	39
APPENDIX.....	42
Appendix A: The quality of electronic storybooks.....	43
Appendix B: Reading test (IOC).....	46
Appendix C: The IOC of children's satisfaction questionnaires using electronic books.....	50
Appendix D: Announcement of the result of thesis proposal examination.....	54
Appendix E: TEM8 examination certificate.....	55
AUTHOR BIOGRAPHY.....	56

LIST OF TABLES

Table	Page
3.1 The program is based on a series of three traditional story books.....	17
3.2 Mean and standard deviation of quality of e-storybook.....	18
3.3 The test questions plan based on the three category.....	22
3.4 A survey of children's satisfaction on reading electronic storybooks	27
3.5 Research design.....	31
3.6 Research objective and data sources.....	31
4.1 Descriptive statistics.....	32
4.2 Numbers perception analysis.....	33
4.3 Analysis of color judgment.....	33
4.4 Analysis of Read comprehension.....	33
4.5 Independent t-test of the effect of children reading ability.....	33
4.6 Mean and standard deviation on children's satisfaction on reading electronic storybooks.....	35

LIST OF FIGURES

Figure	Page
1.1 Conceptual Framework.....	2
3.1 E-books can be manually turned over the pages.....	15
3.2 The magician is doing magic with his hat.....	15
3.3 The cover of a paper story book.....	20
3.4 This is the scene of children reading the traditional paper story books.....	21
3.5 These are six copies of the entire series.....	21
3.6 The Story of the Teacher and the Bear.....	21
3.7 Experiment procedure.....	26



CHAPTER 1

INTRODUCTION

1.1 Background of the Study

With the development of society, electronic equipment has become an inevitable commodity for children. The form of story books has gradually become electronic, and there needs to be more research on the relevant background in China. Early reading skills stem from the "read readiness" concept put forward by the American Reading Council in 1925. Between 1920 and 1930, many primary school students had dyslexia, which caused widespread concern in kindergarten. More and more electronic products, such as tablets and point readers, enter children's lives. They can use these products to learn a second language online, read some e-story books and play games. Learning from these new electronic devices is different from traditional learning for children. Therefore, the study of the impact of traditional paper story books and e-story books on children's reading ability is not only of academic significance but also caters to the current demands. In addition to the impact of social background, school and family environment, e-storybook reading also positively impacts children's early reading ability.

The study of preschool children's early reading ability is widely concerned by educators, psychologists and linguists. It is of outstanding academic and practical significance to studying early reading and cognitive expression ability. Almost all the studies agree that early childhood education experience provides an essential basis for acquiring literacy skills and directly affects the subsequent academic.

Performance. The study of human language learning also shows that childhood is the best and most sensitive time to learn a language. During this critical period, if children's reading skills are well developed, they will be more likely to become effective readers, speakers, readers, and writers later.

When examining children's early reading ability, Chinese scholars mainly focus on selecting the three aspects of early childhood: number perception, colour judgment and understanding ability.

Li (2003) said the "Early Childhood Reading Capability Assessment Tool" measures the speech perception, grammar perception, visual recognition ability, working memory, story comprehension, etc., of volumes A and B. Volume A includes sentence retelling, repetition of meaningless words, phonograph differentiation, tone distinction, correction of error problems, oral filling in the blanks, writing judgment, finding the same part of the words, number forwarding retelling, digital reverse retelling ten contents. Volume B is a story reading test. Many research institutions have been adjusted according to this scale.

Generally, in today's society, with the diversity of children's reading media, e-story books are gradually replacing traditional paper story books. The new reading equipment is entering public life and affects how children read. Although e-story books are still developing, they will undoubtedly become one of the essential ways of

education.

1.2 Research questions

1.2.1 What are the effect of e-storybooks on children's reading ability?

1.2.2 What level of satisfaction of students in e-storybooks?

1.3 Research objectives

1.3.1 To study the effect of electronic storybooks on children's reading ability by comparing the number perception, color judgment, and reading comprehension scores of children who learned using traditional paper storybooks and those who learned using electronic storybooks.

1.3.2 To survey student's satisfaction toward e-storybooks.

1.4 Conceptual Framework

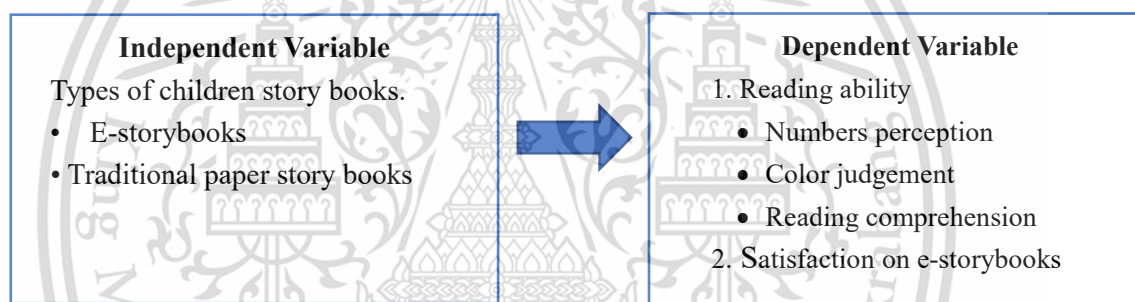


Figure 1.1 Conceptual Framework

1.5 Scope of the study

1.5.1 This study includes the following two stages.

1) Study the effects on factors of children's reading ability, and select suitable electronic storybooks for research.

2) Determine the influence of e-storybooks on children's reading ability.

1.5.2 Population and Samples

Population: The study group was 300 children aged 5-6 in a Chinese kindergarten. Most of them are fixed populations in the city, native Chinese speakers, normal intelligence, no speech or hearing impairment, and at least two years of education in kindergarten.

Sample: 60 students were randomly selected using cluster random sampling from Guanghongcheng kindergarten, high tech Zone, Huainan City, Anhui Province, China. The sample was divided into experimental and control groups of 30 people for each group. The experimental group used the electronic storybook reading method, and the traditional group used the traditional paper storybook reading method.

This material is for personal use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.

For research variables were below:

The independent variables were e-storybooks and traditional paper story books.

The dependent variable were reading ability of children composing of numbers perception, color judgement, and reading comprehensio.

1.6 Limitations of the study

The limitations of this paper were as follows: First, the selection of the sample means that was not representative of the entire group of children. Second, in order to complete the research, the author consulted many preschool teachers, but few responded positively.

1.7 Definition of the terms

E-story books: E-storybooks were an alternative to traditional paper books as they were downloaded to common platforms such as personal computers, laptops, tablets and even mobile phones via web links through specialized reading software, in the form of electronic documents, or read on any reader that can store large amounts of digital reading materials. Electronic storybook was the product of the development of science and technology which transforms the story text into electronic text. The information content such as text, picture, sound and image were digitized, and the book was presented in the form of text and image on the handheld reader.

Traditional story book: It is a traditional publication based on paper. For example daily books, newspapers, magazines and other paper-based publications all belong to traditional story book. We used The Story of the Teacher and the Bear. The Teacher and the Naughty Boy. The funny story of the teacher and the hat as our reading books, these three books mainly tells the story between the teacher and three different characters, Children are interested in these three books.

Children's Reading : Children's reading refer to all activities in which children imitate adults to understand the content of children's books by using images, text symbols and other means. Through reading, children can gain initial reading comprehension and literacy experience.

Reading ability : Reading ability refer to the ability that children need to complete reading related articles, including the judgment of color, the perception of numbers, and the ability to understand the article.

Numbers perception: Numbers perception was a flexible way for children to understand numbers and solve complex problems with the help of mathematical intuition.

Color judgement: It was mainly manifested in the development of vision and discoloration. After the age of 3, children like to read books. The opportunities to see close and small things with their eyes are increasing. They can learn to distinguish various basic colors, such as red, green, yellow, blue, black, etc. For colors with similar hues, such as red and pink, yellow and orange, it is easy to be confused.

Reading Comprehension: Understand the meaning of important concepts or sentences in the reading materials, screen and integrate the main information and important details of the reading materials, the ability to reasonably infer the implied information in reading materials according to the context.

Students' satisfaction: Student satisfaction refers to the feeling that a student feels that reading e-storybooks have met or exceeded his expectations. The core of this definition is: "Perception". Feeling is a psychological indicator, which can not be consistent with the actual situation, not a traditional technical or physical indicator, but a psychological indicator.



CHAPTER 2

LITERATURE REVIEW

2.1 Electronic storybook

Electronic storybook refers to a children's electronic book that uses modern multimedia technology to make the story content into exquisite and complete video and vividly displays the story in front of children with electronic equipment as the carrier. It has the characteristics of integration and interaction with the ingenious combination of image, text, sound, music, animation and other media, and multi-sensory channels to provide children with a story experience that can be seen, heard and felt. The content of electronic storybook takes children as the main appeal object, and its constituent elements include multimedia hypertext links of text, sound, pictures and animation; The plot of the story is rich, not a single text; Children can interact with them; Learning oriented, excluding entertainment video games. Compared with traditional paper books, e-storybooks have the following prominent features:

First, the combination of text, audio and video, and multi-sensory channels provide children with a story experience. Electronic storybooks usually include multimedia effects, such as dubbing, background music, sound effects and animation, which can be seen, heard and felt. Second, it is highly interactive, and additional functions help understand the story's content. The text reading, illustrations, highlighted text and activated details in the electronic storybook can explain the story content in more fact. For example, the animation details in the electronic storybook consistent with the text content can help children combine the text and visual information and deepen their memory and understanding of the picture book story through this association; When children click on a character or object, additional details of text or sound will appear in the text or picture on the screen. This function increases the text information that did not appear in the story and can expand the story event information obtained by children. Third, it is economical, convenient and safe. Electronic storybooks can be presented through various electronic media, with ample storage capacity and are easy to carry. They can be read at any time and place with solid selectivity. Compared with traditional picture books, they are economical and convenient. At the same time, compared with paper picture books, electronic storybooks avoid ink printing and are more secure.

2.2 Children's reading on e-story book

It is to point to special reading software, in the form of electronic documents, download links to common platforms through the network, such as personal computers, laptops, tablets, and even mobile phones, or in any reader can store a large number of digital reading materials on the reading books. Rao & Siriginidi Subba (2003) pointed out that electronic storybooks usually contain audio and video use.

functions different from picture books. These additional functions allow children to enjoy electronic books and audio-visual experiences and participate in the interaction. Researchers give different definitions from different levels and summarize the parts and content characteristics of e-storybooks. Grace & Koch (2008) pointed out that E-storybooks have the advantages of high storage capacity, convenient format conversion, easy carrying, easy reading and environmental protection. Xu Zhengmei, and Li Chuanfang (2006) summarized the elements of e-storybooks : (1) text, sound, pictures, animation and other multimedia hypertext links; (2) The plots of electronic storybooks are vibrant, not a single text; (3) Children can interact with it.

Early reading is an effective way to develop preschool children's language abilities. With the rapid development of electronic science and technology, electronic media, as a new tool that affects children's learning, life and entertainment, is favoured by more and more children. The age of their first contact with electronic products is decreasing, and the types are becoming more and more diversified.

Electronic storybooks are widely used electronic media for children. The availability of electronic storybooks brings new changes to the choice of reading methods. Children can read e-books independently, while ordinary paper books are not a single way to get stories. Do these two different reading styles affect children's reading levels? For this issue, predecessors have discussed and summarized some concepts.

2.2.1 Definition and characteristics of e-story book

Reading can promote the development of children's language cognition and sociability and plays a key role in the early development of children. Electronic storybook reading is an important part of reading in the new media era. With the development of science and technology, traditional paper reading is gradually transformed into electronic reading. E-reading is a new way of reading.

Sally & Cliff (2001) said the process of reading is simple, quick and interactive. Compared with traditional paper publications, electronic publications have their own advantages, such as large storage capacity, convenient retrieval, convenient preservation, etc. The development of information communication technology has changed the concept of a storybook.

Electronic storybooks are the result of the development of science and technology, which are used to convert the story text into electronic text, digitize the information content such as words, pictures, sounds and images, and present books in the way of words and images in a hand-held reader. Raoss (2003) said It usually contains audio and video features that differ from picture books. These additional features provide children with the opportunity to enjoy pictorial stories, audio-visual sensations and participate in interactions.

Researchers give different definitions from different levels, and generally summarize the functional characteristics and content characteristics of electronic storybooks. Cai (1996) points out that electronic storybooks are multimedia devices that use sound, text, video, animation and other media to express story content and plot, and interact with them in the process of reading. This concept emphasizes the functional characteristics of electronic storybooks. While Hong (1997) emphasizes the

story characteristics of electronic storybooks as children's books, pointing out that the content of electronic storybooks mainly appeals to children.

Xu (2006) summed up the elements of electronic storybooks: (1) They contain text, sound, pictures, animation and other multimedia hypertext links; (2) These stories are rich in plot, not a single text; (3) Children can interact with them; (4) They focus on learning and do not include entertainment video games.

Compared with traditional paper books, electronic storybooks have the following prominent features:

First, electronic storybooks combine pictures, text, sound and video to make the content vivid and exquisite. Electronic storybooks usually include multimedia effects such as written text, reading, speaking, music, sound effects and animation. The pictures are vivid and beautiful, and the characters are three-dimensional and lifelike.

Second, electronic storybooks are highly interactive, with various additional text functions and easy for kids to understand the content of the story. Text readings accompany highlighted text and include optional hidden hot spots that elaborate on the story with illustrations and activated hot spots. For example, when a user clicks a character or an object, a drawing or text on the screen makes a sound. This function adds the text information that did not originally appear in the story, which can expand the information of the story events that children can get, and clicking to highlight the text can also make relevant explanations appear.

Third, electronic storybooks are easy to carry with large storage capacity and strong selectivity. Story content can be presented through a variety of electronic media, which can be read at any time and place, and due to its large storage, children can choose from the app to read any story they are interested in, and the story content can be recorded instantly when they are creating some texts.

These elements constitute the most basic characteristics of electronic storybooks. Electronic storybook is a combination of paper storybook and electronic technology. As a new reading tool, it complements traditional paper book to some extent. Electronic storybook acquisition channels are increasingly diversified, and a variety of electronic media has a subtle impact on children's lives and learning. Therefore, electronic storybook reading is more valuable for the study of early language development in children.

The particularity of electronic storybooks can induce children's interest in reading. Maynard (2010) said children can read storybooks on their own, which is another advantage of electronic reading. Electronic storybook reading promotes the development of different early literacy skills. However, Labbo (2000) pointed many researchers have raised critical views on e-books, pointing out that electronic storybooks can distract children's attention and affect their understanding of the content and theme of the story due to their multimedia effects such as animation, sound and so on.

Electronic storybooks tend to be small, light and portable, with hand-written and stylus-operated screens and downloadable apps. Electronic storybooks usually include multimedia effects such as written words, readings, spoken language, music,

sound effects, and animation. This reading medium can help children capture more events in the story by adding the story text information that does not appear in the original text through text reading, along with the highlighted text and optional hidden hot spots, together with illustrations and activated text, so as to improve children's story comprehension. When children click on specific words, phrases or sentences, they can hear the written text.

2.2.2 Development and Impact of e-story book

Due to the availability of e-books in the teaching process, they have been widely used in classroom teaching. Studies have shown that e-books can promote the development of children's language and literacy, and improve their early reading level.

E-storybook reading promotes the development of preschool children's reading comprehension. In electronic storybooks, the combination of audio story content and explanatory animation, supplemented by each element, can enrich the story content, update the monotonous expression of the story, make up for the lack of experiential background of children's stories, and help children understand the story content. The Us National Reading Research Group suggests that reading development is influenced by phonological awareness, word spelling, oral presentation, total vocabulary and comprehension. Shanahan (2014) have analyzed that the cultivation of these five reading skills is consistent with the characteristics of e-book storybooks. The interactive resources provided by electronic storybooks are superior to the story performance of paper books, and are similar to the reading mode under adult guidance.

Research shows that children can read electronic storybooks on their own. Among them, the key factors affecting children's reading are the vocabulary and story comprehension ability that children are exposed to. Electronic storybook reading changes children's reading style and improves reading effect.

The multimedia effect of electronic storybooks is beneficial to children's vocabulary learning. When encountering a new word, children can click on the hot spot provided by the e-book and refer to the word definition for reading, which is similar to the word guidance provided by adults. Researchers once studied the effect of electronic storybook reading on children's vocabulary reading, and developed electronic storybooks designed to match preschool children's language experience. Electronic storybooks are embedded with electronic dictionaries that provide language interpretation, animation and spelling.

Dutch child education researcher Segel (2018) studied 40 children to see if their vocabulary learning was affected by reading electronic storybooks. Verhoeven (2002) said the initial vocabulary was significantly lower than that of local children of the same age. The children's vocabulary mastery was measured one week apart, and the results showed that the scores on the post-test improved significantly compared with the pre-test.

Some researchers investigated the level of e-books in promoting children's story understanding. Verhallen (2006) studied with sixty preschool children selected as subjects and divided into two groups: static electronic storybook reading group and

dynamic electronic storybook reading group. The results showed that the dynamic electronic storybook stimulated children's multiple senses to participate in reading, and the story content was richer, and the children's story comprehension level was higher.

All the above studies show that electronic storybook reading can improve children's vocabulary level and story comprehension ability.

E-storybook reading helps children develop good reading habits. Good reading habits contribute to the improvement of children's early reading level. Poor reading vocabulary and knowledge experience result in children's dependence on adults' guidance and help in the process of reading. The emergence of electronic storybooks has changed children's way of reading, and children can read independently with the help of electronic storybooks.

In the process of reading, children have more independent space for independent thinking, and choose the appropriate time to ask for help from electronic storybooks, and get explanations, timely understanding of the story content, to ensure the integrity of the story content. Autonomous reading mode gradually replaces adult help, which helps children develop good reading habits and make strategic choices according to their own needs.

In addition, the property of electronic storybooks can enhance children's reading participation and enable them to experience the process of active construction more. The positive interaction between children and electronic storybooks can realize a highly engaged e-book reading experience, cultivate children's interest in actively participating in reading, and develop good reading habits.

E-storybook reading promotes the development of early literacy. Researchers found that word reading in young children is an important skill for early literacy and a good predictor of reading and writing ability in elementary school. One dynamic option for e-books is text tracking, where written text changes according to narrative emphasis and coloring. Some e-books allow readers to track their favorite text, sentence, phrase, or individual word multiple times on each screen.

Ehri (1991) pointed out that children's textual orientation in reading may promote the development of orthographic knowledge in children. In fact, there's a lot of evidence that word reading in school beginners and kindergarten has improved with e-books.

Shamir (2008) compared adult-directed e-storybook reading, autonomous e-storybook reading, and non-e-storybook daily curriculum instruction groups, and found that e-storybook had positive effects on phonological awareness, word recognition, and story comprehension.

Now that the positive effects of electronic storybooks on early literacy have been recognized, researchers have turned their attention to the extent to which electronic storybooks affect early literacy. However, De Jong (2002) studied of 48 children aged 4-6 in the Netherlands found that adults guided children to read printed books better than digital storybooks.

Korat (2007) investigated the effects of self-reading electronic storybooks, adult narrating and control groups on word recognition, vocabulary, phonological

awareness and story comprehension, and found that there were no significant differences between the electronic storybooks group and the adult guided reading group, but all showed an increasing trend over time. All the above research results indicate that electronic storybook reading has a positive impact on children's early literacy.

To sum up, educational electronic storybooks can improve children's story comprehension level and early development of reading and writing ability, and cultivate good independent reading habits. Preschool children are energetic, full of curiosity and thirst for knowledge, mainly through visual and auditory perception of external information, to know things. With the growth of age, children's language ability develops rapidly and language complexity increases day by day.

E-reading has pictures, sounds and images, interactive, rich and vivid display forms, and can cover a variety of learning software. The information transmission characteristics of electronic reading just fit the requirements of children's cognitive development.

E-reading features pictures, sounds and images, interactive, rich and vivid display forms, and can cover a variety of learning software. The information transmission characteristics of electronic reading just fit the requirements of children's cognitive development. Studies have shown that the rational and correct use of electronic storybooks can effectively stimulate children's reading initiative, improve their reading comprehension level, and expand their knowledge.

The emergence of electronic storybooks affects preschool children's life and learning. At present, using electronic storybooks to narrate is a common learning mode for children. How to combine electronic storybooks reading with preschool children's narration more effectively is worth further discussion.

2.2.3 Current application of e-story book

Preschool Education Guidelines put forward "to effectively use modern educational means in children's daily life". Preschool education is an important part of basic education and the foundation of lifelong education. In the process of implementing the guidelines for early childhood education, the significance of early reading begins to gain the attention of educational researchers and practitioners.

According to the 10th National Reading survey released by China Press and Publication Research Institute, the reading rate of minors aged 0-17 is 77%, 20 percentage points higher than 54.9% of people aged 18-70.

Unsworth (2006) pointed In recent years, more and more electronic storybooks have been used in preschool language education. International Reading Association highlighted the importance of integrating technologies, including digital texts like e-books, into current literacy programs.

In 2009, the International Reading Council emphasized the importance of integrated technologies (e.g., e-books), including e-book reading in its literacy programs.

Hisrich's research 2019 shows that children are currently surrounded by media and have access to a wide variety of media on a daily basis. One of the electronic media that children are exposed to is the iPad. As a brand-new electronic medium,

iPad has received an enthusiastic response since its first release on January 27, 2010. As of January 2013, there are over 775,000 iPad applications available. This new thing of educational media has also been paid more and more attention by researchers. The 11th National reading survey shows that the contact rate of e-reading is increasing year by year.

Moody (1992) found that the use of electronic materials in the classroom has become commonplace, helping teachers accomplish classroom tasks while promoting early literacy development. E-reading has attracted more and more readers and become an important way of reading.

2.3 Concept discussion

The standard guidance of early reading is very important. It directly affects the development of children's learning interest, oral expression ability and thinking ability, and even affects students' lifelong learning ability and level. The learning and Development Guide for children aged 3-6 issued by the Ministry of education of China explicitly incorporates reading requirements into the target system of language teaching for young children. It can be seen that it is very important to cultivate children's reading interest and scientifically guide reading skills, which also plays a key foundation for children's later learning and all-round development.

2.3.1 The Importance of Early Reading

Through observation, it is found that there are several common problems in current children's reading. The first is that there is no reading target when reading. Children just turn the pages over and over. The second one is the lack of reading methods. In view of the importance of early childhood reading and the problems existing in children's reading, early childhood educators need to guide the correct reading interest and cultivate reading skills of children.

2.3.2 Effective methods and strategies

(1) The Choice of Books

Books should be selected with bright colors, simple words, pictures and pictures of the story reading, to germinate children's interest and stimulate their interest in words, symbols and emoticons.

It can not only make children fully feel the strong reading atmosphere, but also cultivate children's interest in reading. More importantly, it satisfies children's desire for knowledge and curiosity, and gradually cultivates their interest in reading.

(2) Keep a continuous interest in reading

Good language environment and communication atmosphere are useful in keeping reading interest. After understanding the story, songs, poems related words, children will have a strong interest in the words in the book. And no matter where they go in life, as long as there are words, they will consciously or unconsciously raise their heads and put their fingers to recognize, read these words, and talk to their parents, teachers, or peers more.

At this stage, preschool teachers and parents should actively create a text-related environment, so that children can explore and understand the relevant

knowledge with an excited mood. When necessary, adults should give children some related questions to answer, which can enhance the number of children's literacy and maintain their interest in words. It is found that they are very serious in this atmosphere, and there is a feeling of learning for a long time.

In a word, the reading ability training of children should strictly follow the requirements of the guidelines and adults should carry out related educational activities based on the physical and psychological needs of children. Tong Liming(2013) pointed that they should use scientific education methods, provide more opportunities for children to read and learn, step by step to cultivate children's early reading ability.

2.4 Children's Book Research

The biggest advantage of electronic storybooks is that some embedded audio, animation and small interaction can better help children remember the details of the story. Thiessen and others (2016) associate professor of psychology at the Carnegie Mellon University, confirmed this in a recent study. He found that children who read traditional paper books can remember 47% of what they read. The words in the electronic storybooks will move when the pronunciation is correct, which helps children improve the reading content they remember to 60%.

Newspaper reading among children and young adults has fallen from 48.6 percent in 2005 to 31.2 percent in 2012, according to the survey (Jin & Chen, 2006). With only three in 10 children and young adults saying they read a newspaper outside of class, getting news on electronic devices is becoming more popular. More than 40 percent of children and young adults use computers for news, 35.5 percent use their smart phones and nearly 30 percent use tablets. The study also found that while almost every child in the UK has access to their own computer at home, 40 percent of children have access to a smart phone or tablet, but 30 percent do not have a separate desk at home.

Anjing (2018) from China also shows that electronic storybooks can improve children's reading speed and comprehension ability.

Bus, A. G., Takacs, Z. K., & Kegel, C. A. (2015) said some researchers believe that the form of e-storybooks needs to be more consistent. Therefore, we should find out what are the main factors of e-storybooks that affect children reading ability and fundamentally explore the difference between e-storybooks and traditional storybooks. While most people strongly agree with the positive impact technology can have in providing more reading opportunities for young people, it is also vital that print reading is not abandoned. People are concerned to find that children who read only on screens have less chance to enjoy reading and become better readers. Therefore, acknowledging the positive impact of technology on reading volumes, more and more people are calling for a healthy balance of books and technology devices to be used at the same time.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

By combing through the relevant literature and studying different reading methods, I have a deeper understanding of how children read. To study the impact of e-story books on children's reading ability, the experimental design was conducted from the perspective of children's reading of story books to understand whether e-story books can improve children's reading ability.

Understanding ability, as a necessary reading skill, has been highly valued by researchers in psychology, linguistics and pedagogy. The introduction of a large number of excellent foreign picture books and the birth of the original local picture books have set off a wave of start reading picture books in China. Kindergarten teachers often use picture books or comic books to organize kindergarten language activities. Good reading begins with understanding what is being read, so story understanding becomes an important indicator of early reading ability. Teachers and parents can choose the appropriate reading method for children based on the findings of this article.

The tests in this study were conducted mainly in three aspects: number perception, color judgment and reading comprehension. There are many differences between traditional paper books and electronic storybooks in the form of reading and the way they are used. Children use different storybooks to read; the reading effect is different. It needs to be tested to get the final answer.

After understanding the type of reading type and reading ability, I found that there are many factors affecting children's reading ability, which are as follows:

1)Fun experinece of reading

According to the 2014 Children and Family Reading Report, 97 percent of children aged 3-6 think they can have fun from reading, compared with 75 percent of children who don't think they have not had fun reading for a while.Children who like reading have the most obvious gap in the "feel pleasure through reading" option, especially at the age of 5-6, and the difference is 87:6. This fully shows that only fun can become the motivation for children to read continuously.And 73 percent of children said they would read more if they found their favorite books.In What Books Children Think Are Fun, I found that choosing books, laughing, and improving imagination are three options for children, wanting a virtual story; smart, strong, brave characters; learning something new; and problem-solving books following three options.In e-story books, there are various design elements (animation, music, interaction), which will increase children's interest in reading and help children improve their interest in reading.

2)Read the story presentation form

According to the research results of "Impact of Animation on storybook reading effect" conducted by scholar , when storybooks contain animation (dynamic

pictures), children have higher memory ability, understanding ability and perceived interest than when reading static stories. In the study, she found that young children with an animation group had a higher reading comprehension ability than those

without an animation group. On the one hand, I think that animation can vividly present the more difficult fragments in the narrative in detail, enrich the learning content, and is conducive to children's understanding of the story. On the other hand, the animation used in the story is related to the story content, so when the animation is used to present the story plot, children have a higher interest and more attention, which is conducive to children's processing and integration of key information. At the same time, Takacs (2016) used eye movement research to compare the vocabulary growth and reading understanding of reading dynamic e-books and static paper picture books for children aged 5-6, and also found that electronic story books can promote children's reading understanding when only containing dynamic fragments and the content matches the story content. Therefore, animation has a very important impact on reading children's story books.

3) The interactivity of the story content

In children's reading education, because children are still young and lack of concentration, a certain interaction in reading will improve children's concentration and help children better understand the story. In early childhood education, reading guidance generally supports the concept of interactive reading, and it is believed that adding certain interactive factors to reading can gradually cultivate their early reading strategies and skills, and promote children to form a good reading ability and reading quality. Posner (1980) proposed that learners perform goal-driven top-down processing during early attention. The theory suggests that the interaction in reading has an impact on the integrity of the story content. Although strengthen interaction experience can help children distract attention, however, children in reading, will also be interactive details of interactive attention, if children are in a state of reading, attention will be interrupted by the integration of interaction form and comb, lead to poor learning effect, so the interaction in the story content is not generalized, its effect on children's reading understanding ability has advantages and disadvantages.

3.2 Population

Population: The population of this study was children from Guanghong Community Kindergarten, High-tech Zone, Huainan City, Anhui Province, China.

The whole school has 900 students:

Grade 1 : 300 students

Grade 2 : 300 students

Grade 3 : 300 students

3.3 Sample

Two classes of 60 children from 300 third year students in Guanghongcheng

This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.

Kindergarten were randomly selected using cluster sampling method. Two classes were randomly selected by cluster sampling method. All children had received more than two years of kindergarten education from the middle-class urban families with moderate socioeconomic status. The selected children were mentally normal and had no language or hearing impairment.

3.4 Research Instruments

There were 4 research instruments of this study as follows:

- 1.The e-story book
- 2.Traditional paper storybook
- 3.Tests on children reading ability
- 4.Satisfaction survey

3.4.1 Select the qualified electronic storybooks.

According to a series of three published story books 《The Story of the Teacher and the Bear》, 《The Teacher and the Naughty Boy》, and 《The funny story of the teacher and the hat》, choose experimental materials for e-books.A series of books with three stories was selected based on published test questions.

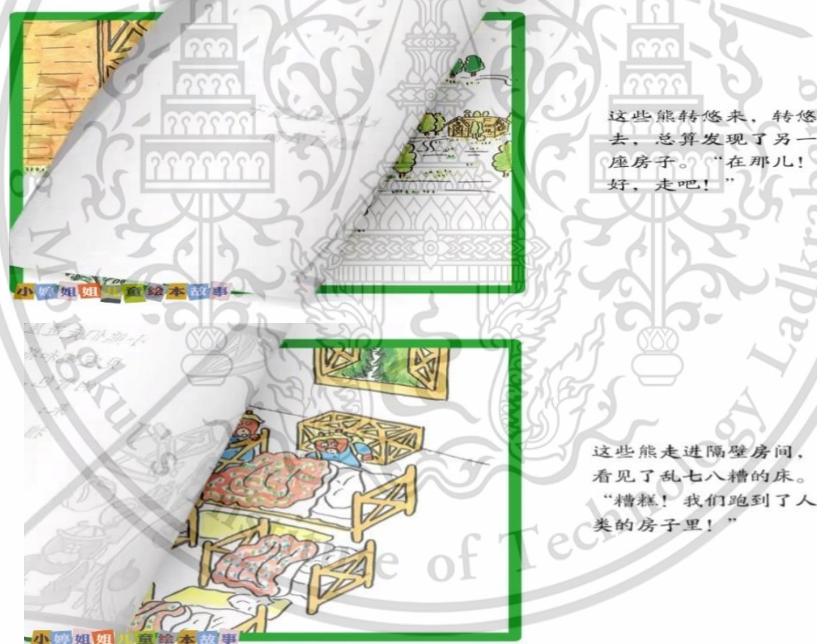


Figure 3.1 E-story books can be manually turned over the pages



Figure 3.2 The magician is doing magic with his hat

This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.

The link for E-story book :<https://www.bilibili.com/video/BV1NP411L71M/>

The author's name is Gao Lou Fang Zi, Japanese, born in Hakodate City, Japan in 1955, graduated from the Department of Arts and Sciences, Tokyo Women's University, Japan, majoring in Japanese literature, and is active in the field of children's book creation. His representative works include Cool Teacher, Going to the Wonderful Forest, November's Gate, Green Seed, and Children's Magic. He has won the cultural prize for Japanese classics children's publishing, and the picture books published have been translated into Chinese and English. Now lives in Sapporo, Japan.

Content abstract: How could the teacher be strange? How strange is that? And bears. What's that got to do with bears? This title, let the children imagine a series of stories, through the story of the strange teacher and the dream of the bear, let the children understand that people and animals are good friends, inspire them to get along with animals.

The children read the same story, except that the experimental group would use e-storybooks for reading, while the control group would use traditional paper storybooks.

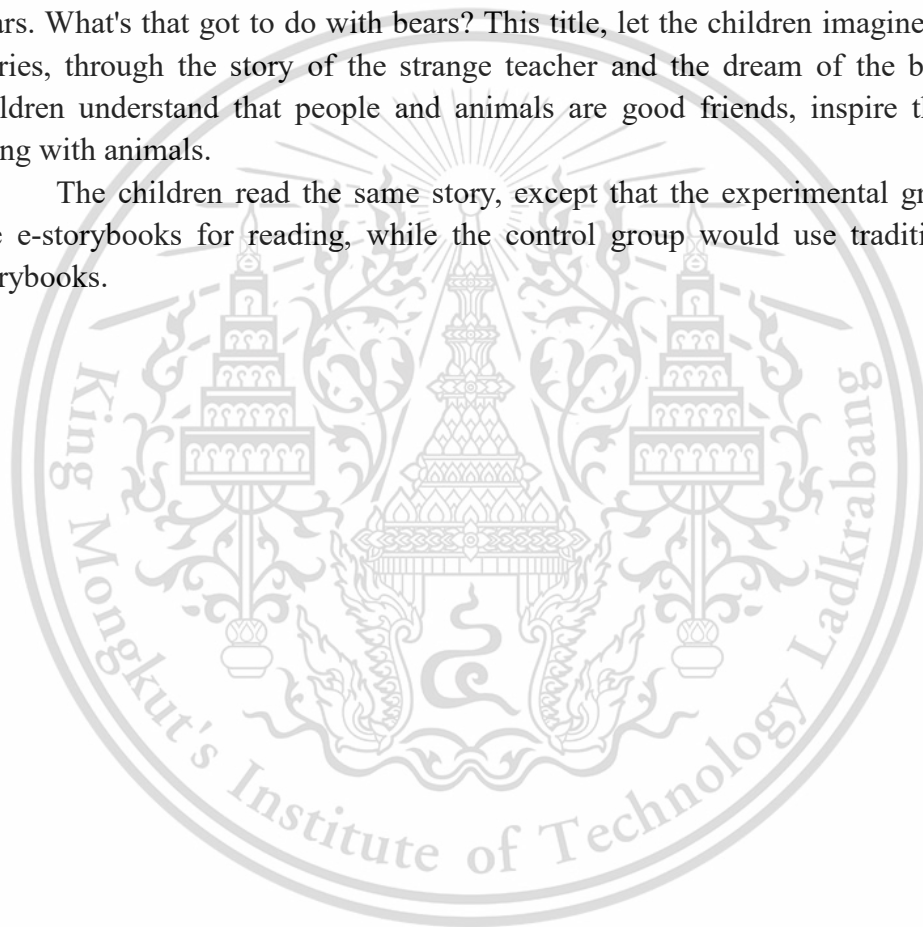


Table 3.1 The program based on a series of three traditional story books

Step Name	Description
Select	According to the traditional paper version of a series of three stories in the animal image.

Select electronic version:

- Dynamic emoticons

- Animal languages

- background music

- The background color

- The perception of numbers

- Reading ability

- color awareness

- Ability to understand

Table 3.1 (Continued)

Step Name	Description
Assess	When the e-books are selected, authoritative experts are sent to assess the satisfaction of the e-books
Summary	Focus on the overall effectiveness of traditional paper storybooks and e-storybooks, with a focus on measuring the reading experience of children. For this reason, at this stage, I designed the test questions and form a summary assessment by the score of the test questions.

Three experts evaluate the quality of electronic storybooks using 5-point Likert scale which 5 means highest and 1 means lowest.

The interpretation of the scores are as follow:

4.50-5.00 Meaning Highest

3.50-4.49 Meaning High

2.50-3.49 Meaning Neutral

1.50-2.49 Meaning Low

1.00-1.49 Meaning Lowest

Table 3.2 below shows the result of the quality of e-story book.

Table 3.2 Mean and standard deviation of quality of e-storybook (n=3,by the 3 experts)

No.	List of items	\bar{X}	S.D	meaning
1.	You think the content of e-storybooks attracts children. 你认为电子故事书的内容能吸引孩子。	5	0.00	highest
2.	Do you think children can operate e-storybooks by themselves and read them effectively. 你认为孩子们能自己操作电子故事书并有效地阅读吗。	5	0.00	highest
3.	Do you think children will understand the storyline in the e-storybook. 你认为孩子们能理解电子故事书的故事情节吗。	4.66	0.57	highest

Table 3.2 (Continued)

No.	List of items	\bar{X}	S.D	meaning
4.	Do you think e-storybooks have educational significance for children. 你认为电子故事书对孩子有教育意义吗。	5	0.00	highest
5.	Do you think the reading form of e-storybook is helpful for children to better understand the content. 你认为电子故事书的阅读形式有助于孩子更好地理解内容吗。	5	0.00	highest
6.	You think e-storybooks are more interactive. • 你认为电子故事书更具互动性。	4.66	0.57	highest
7.	Children can describe the content of e-storybooks in their own language. 孩子们可以用自己的语言描述电子故事书的内容。	5	0.00	highest
8.	The dubbing in the e-storybook is suitable for children's psychological development characteristics. 电子故事书中的配音适合儿童心理发展的特点。	5	0.00	highest
9.	The characterization in the e-storybook is in line with children current understanding ability. 电子故事书中的人物塑造符合儿童目前的理解能力。	4.66	0.57	highest
10.	The content and theme of the e-storybook are clear and the values are correct. 电子故事书的内容和主题清晰，价值观正确。	5	0.00	highest
11.	E-storybooks have rich color matching. 电子故事书色彩搭配丰富。	5	0.00	highest
12.	The animation in the electronic storybook is in line with children's reading habits. 电子故事书中的动画很符合孩子们的阅读习惯。	4.33	0.57	high
13.	The numbers in the e-storybook are clear and children can understand them. 电子故事书里的数字很清楚，孩子们能看懂。	5	0.00	highest
14.	If you are a parent, you will be willing to buy e-storybooks for children as reading tools. 如果你是一位家长，你会愿意为孩子购买电子故事书作为阅读工具。	4.66	0.57	highest

Table 3.2 (Continued)

No.	List of items	\bar{X}	S.D	meaning
15.	You will choose the e-storybook because of its appearance. 你会选择电子故事书，因为它的外观。	4.66	0.57	highest
16.	You will choose the e-storybook because of its practicability. 你会选择电子故事书，因为它的实用性。	4.66	0.57	highest
17.	You will choose the e-storybook because of its security. 你会选择电子故事书，因为它的安全性。	4.66	0.57	highest
18.	In terms of children's reading, there are still some problems that can be improved. 在儿童阅读方面，还存在一些可以改进的问题。	5	0.00	highest
19.	As a reading tool for children, e-storybooks can also add some functions. 作为儿童的阅读工具，电子故事书也可以增加一些功能。	4.66	0.57	highest
20.	You are satisfied with the content of the current e-storybook. 你对目前的电子故事书内容感到满意。	4.66	0.57	highest
	Total	4.81	0.20	highest

3.4.2 Traditional paper storybook

The traditional paper storybooks used in this experiment are three published paper storybooks: 《The Story of the Teacher and the Bear》, 《The Teacher and the Naughty Boy》, 《The funny story of the teacher and the hat》.



Figure 3.3 The cover of a paper story book



Figure 3.4 Young children reading the traditional paper story books



Figure 3.5 These are six copies of the entire series



Figure 3.6 The Story of the Teacher and the Bear

3.4.3 Tests on children reading ability

After student finished reading their storybook, the reading test was administered to them. There were 10 questions, each of which was worth 10 points out of 100. There were two problems on the perception of numbers, two problems on the judgment of colors and six problems on the ability to understand. The content validity (IOC) was evaluated by 3 experts (as shown in Appendix B).

Table3.3 The test questions plan based on the three category.

	Basic cognitive problems (10 points per question)
The perception of numbers	How many people are there in the picture? 图片中有几个人物?
	What page does the sledge appear on? 雪橇出现在第几页?
The judgment of colors	Have the colors shown in the picture? 有在图片中显示的颜色?
	What color is the teacher's clothes in the story? 故事中老师身上的衣服是什么颜色?
The ability to understand	Is it right to teachers for stealing bear food? 老师偷吃熊的食物行为正确吗?
	Did the teacher and the children do the right thing by preparing some food to send to the strange Bear Garden? 老师和孩子们准备一些食物送去怪熊园的行为正确吗?
	Is it right for the teacher to skateboard down the hill with the children? 老师和孩子们一起滑滑板下山对吗?
	Is it right for children and bears to coexist peacefully? 孩子和熊和平共处的行为是正确的吗?

Table 3.3 (Continued)

	Basic cognitive problems (10 points per question)
	Which one is the teacher? 哪个是老师?
	Which is the bear? 哪个是熊?

幼儿阅读能力测试

A test of reading ability for young children

1、图片中有几个人物？请圈“○”出正确答案

1. How many people are there in the picture? Please circle "o" to give the correct answer



1 2 3 4 5 6 7 8

2、雪橇出现在第几页？请在“□”写出正确答案

2. What page does the sledge appear on?? Write the correct answer in "□"

3、有在图片中显示的颜色？请圈“○”出它们。

3. Have the colors shown in the picture? Circle the "○" from it.



黄 Yellow



红 red



黑 black



绿 green

This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.

4、故事中老师身上的衣服是什么颜色？请圈“○”出正确答案。

4. What color is the teacher's clothes in the story? Please circle "○" to give the correct answer.



黄 Yellow



红 red



黑 black



绿 green

5、老师偷吃熊的食物行为正确吗？正确画“√”错误“×”

5. Is it right to teachers for stealing bear food? Yes " ✓ " No "×"



6、老师和孩子们准备一些食物送去怪熊园的行为正确吗？正确画“√”错误“×”

6. Did the teacher and the children do the right thing by preparing some food to send to the strange Bear Garden? Yes " ✓ " No "×"



7、老师和孩子们一起滑滑板下山对吗？正确画“√”错误“×”

7. Is it right for the teacher to skateboard down the hill with the children? Yes " ✓ " No "×"



8、孩子和熊和平共处的行为是正确的吗？正确画“√”错误“×”

8 . Is it right for children and bears to coexist peacefully? Yes " ✓ " No "×"

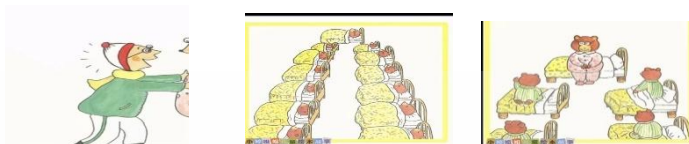
This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.



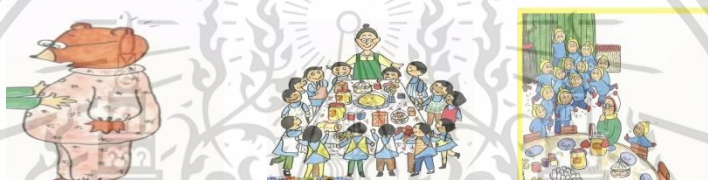
9、哪个是老师？请圈“○”出正确答案

9 . Which one is the teacher? Please circle "○" to give the correct answer



10、哪个是熊？请圈“○”出正确答案

10. Which is the bear? Please circle "○" to give the correct answer



This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.



Figure 3.7 Experiment procedure

3.4.4 Satisfaction survey

In order to investigate the satisfaction of children who read electronic storybooks, I designed a questionnaire to investigate their satisfaction. At the same time, the questions in the questionnaire were tested by IOC.

A survey of children's satisfaction on reading electronic storybooks.

The criteria for evaluation :

5 points : 十分满意 (Very satisfied)

4 points : 较满意 (Satisfied)

3 points : 满意 (Neutral)

2 points : 不满意 (Not satisfied)

1 point : 很不满意 (Very unsatisfied)

The interpretation of the scores:

4.50-5.00 Meaning Very satisfied

3.50-4.49 Meaning Satisfied

2.50-3.49 Meaning Neutral

1.50-2.49 Meaning Not satisfied

1.00-1.49 Meaning Very unsatisfied

Table 3.4 A survey of children's satisfaction on reading electronic storybooks

A survey of children's satisfaction on reading electronic storybooks 使用电子故事书阅读的儿童满意度调查					
问题 Description	5分 5 points	4分 4 points	3分 3 points	2分 2 points	1分 1 point
1. 你对电子故事书中的叙述者满意吗? 1. Are you satisfied with the narrators in electronic storybooks?					
2. 你对电子故事书中的背景音乐满意吗? 2. Are you satisfied with the background music in the electronic storybooks?					
3. 你对这个实验中使用的电子故事书的声音满意吗? 3. Are you satisfied with the sound of the electronic storybook used in this experiment?					

Table 3.4 (Continued)

问题 Description	5分 5 points	4分 4 points	3分 3 points	2分 2 points	1分 1 point
4. 你对本次实验使用的电子故事书的动画满意吗? 4.Are you satisfied with the animation of the electronic storybook used in this experiment?					
5. 电子故事书中的小动物配音你喜欢吗? 5.Do you like voice-over of small animals in electronic storybooks?					
6.你能理解电子故事书中的故事情节吗? 6.Can you understand the plot in an electronic storybook?					
7. 你对本次的故事书中的内容对你有帮助吗? 7.Did the content of this storybook help you?					

Table 3.4 (Continued)

问题 Description	5分 5 points	4分 4 points	3分 3 points	2分 2 points	1分 1 point
8.你在使用电子故事书时觉得方便吗? 8. Do you find it convenient to use electronic storybooks?					
9. 你对本次实验使用的故事书的色彩分布满意吗? 9. Are you satisfied with the color distribution of the storybook used in this experiment?					
10.你对这个实验中使用的电子故事书的触摸灵敏度满意吗? 10. Are you satisfied with the touch sensitivity of the e-storybook used in this experiment?					

Due to the limited comprehension ability of children, in the actual questionnaire process, we used smiley faces instead of points, but in the final statistics, numbers were used for measurement. Content Validity, IOC of satisfaction survey shown in Appendix B.

3.5 Data Collection

This experiment selected a series of books with three stories 《The Story of the Teacher and the Bear》, 《The Teacher and the Naughty Boy》, 《The funny story of

the teacher and the hat» as an experimental material. During the test, each group had a question using scores to assess the child's reading level 3. Tests on number perception, color judgment and reading comprehension.

The experiment was divided into two groups: traditional paper storybook reading group and electronic storybook reading group. Four preschool teachers completed the distribution of traditional paper storybooks, e-story books, and test questions. All the children were from urban middle-class families, of moderate socioeconomic status and had more than two years of kindergarten education. The children selected are mentally normal and have no language or hearing impairment. Test the score of Numbers perception, Color Judgment and, Reading comprehension respectively. Both groups of students read the storybooks, and all young children completed test questions related to the storybook, and answered the satisfaction survey .

(1) Traditional paper book storybook group

Traditional paper storybook teams require children to read regular paper books to get the story, and then complete the questions asked by the test subjects about the story comprehension. Based on the answers to these questions, the score is red to analyze the level of understanding of the children's story.

Before Reading Guide: Hello, children, I bring you an interesting picture story book, you read the story book first, and then help the teacher to solve the problems in the story.

After reading this question: Do you like it after reading it?

Now, please complete an interesting test.

The teachers were able to help young children read questions aloud during the test, and there was no time limit for subjects to take the test.

(2) The e-story book reading group

In the e-storybook reading group, children were asked to use the app to obtain stories and then complete the test on story comprehension. Based on the answers to these tests, their scores were used to analyze the level of understanding of children's stories.

The teachers showed the children how to use the app, how to find the screen after browsing, how to get the sound, and how to access the screen multiple times while reading.

Hello, I'll bring you an interesting story today. Where is the story? The teacher then showed the app to the kids. Before reading the story, the teacher tells the children how to operate the app. They then read the story on the app and help the teacher solve the tests in the story.

After reading this question: Do you like it after reading it? Now, please complete an interesting test.

The teachers were able to help young children read questions aloud during the test, and there was no time limit for subjects to take the test.

Because kindergarten children know few characters, the characters in the questionnaire are unknown to the children. The collection method of the questionnaire is: the teacher reads and the children write 1, 2, 3, 4, 5 on paper. Before reading the questionnaire, the teacher will tell the children that 1, 2, 3, 4, 5 represents the degree of satisfaction.

Table 3.5 Research Design

Group		
Experiment group	X1	O1
Control group	X2	O2

X1 : reading with e-story book

X2 : reading with traditional paper book

O1 : scores of students using e-story book

O2 : scores of students using traditional paper book

3.6 Data Analysis

Table 3.6 Research objective and data sources.

Research objective	Data source
RO1: To study children reading ability between the group using e-storybooks and the group who use traditional paper story books.	Test scores on children's reading ability.
RO2: To survey student's satisfaction toward e-storybooks.	Rating scores on students satisfaction.

The test question scores were used for the data analysis. Analysis of the effect of e-storybooks on children's reading ability.

After completing the test, we obtained several sets of data, and then we evaluated children's storybook scores. At the same time, we obtained an independent sample t-test and compared the average score to analyze whether e-storybooks have an impact on children's reading ability and what the differences are compared with traditional storybooks. Moreover, mean and standard deviation were analyzed for e-storybook satisfaction.

CHAPTER 4

RESEARCH RESULTS

4.1 Introduction

This chapter presents the results of data, which are collected and analyzed according to the detailed process in Chapter 3 .

4.2 Basic data statistics of the experiment

Table 4.1 Descriptive statistics

Descriptive statistics				
	Min	Max	Mean	S.D.
E-storybook				
Total score	80.00	100.00	91.00	7.58
Numbers perception scores	0	20.00	19.00	4.02
Color judgment score	0	20.00	19.00	4.02
Reading comprehension scores	40.00	60.00	53.00	7.49
Traditional paper storybook				
Total score	50.00	100.00	70.66	12.01
Number perception score	0	20.00	16.33	5.56
Color judgment score	10.00	20.00	19.00	3.05
Reading comprehension scores	10.00	60.00	35.33	13.06

From Table 4.1 finds that the average score of reading through the electronic storybook is 91, the maximum is 100, and the minimum is 80. However, the average score of reading through traditional paper storybook is 70.66, the maximum score is 100, and the minimum score is 50.

4.2.1 Numbers perception analysis

Results of two groups are obtained through the numbers perception test of children. Independent sample t-test was conducted on the results of children who read electronic storybooks and those who read traditional paper storybooks.

Table 4.2 Numbers perception analysis

Group	number	\bar{X}	S.D	t	df	Sig (one-tailed)
E-storybook	30	19.00	4.02	2.12	58	0.019
Traditional paper storybook	30	16.33	5.56			

From Table 4.2, we find that sig (0.019) <0.05, the test score difference is significant, it can be judged that the children who use electronic storybooks were significantly higher on number perception than the children who use traditional storybooks.

4.2.2 Analysis of color judgment

Results of two groups are obtained through the color judgment test of children. Independent sample t-test was conducted on the results of children who read electronic storybooks and those who read traditional paper storybooks.

Table 4.3 Analysis of color judgment

Group	number	\bar{X}	S.D	t	df	Sig (one-tailed)
E-storybook	30	19.00	4.02	0.00	58	0.5
Traditional paper storybook	30	19.00	3.05			

From Table 4.3, we find that sig (0.5) >0.05, the test score difference is not significant, it can be judged that the reading performance of children using electronic storybooks on color judgment is not significantly different from that of children using traditional storybooks.

4.2.3 Analysis of Reading comprehension

Results of two groups are obtained through the reading comprehension test of children. Independent sample t-test was conducted on the results of children who read electronic storybooks and those who read traditional paper storybooks.

Table 4.4 Analysis of Reading comprehension

Group	number	\bar{X}	S.D	t	df	Sig (one-tailed)
E-storybook	30	53.00	7.49	6.42	58	0.00
Traditional paper storybook	30	35.33	13.06			

From Table 4.4, we find that sig (0.00) <0.05, the test score difference is significant, it can be judged that the children who use electronic storybooks reading results on reading comprehension are significantly higher than the children who use traditional storybooks reading results.

4.2.4 Experimental Results

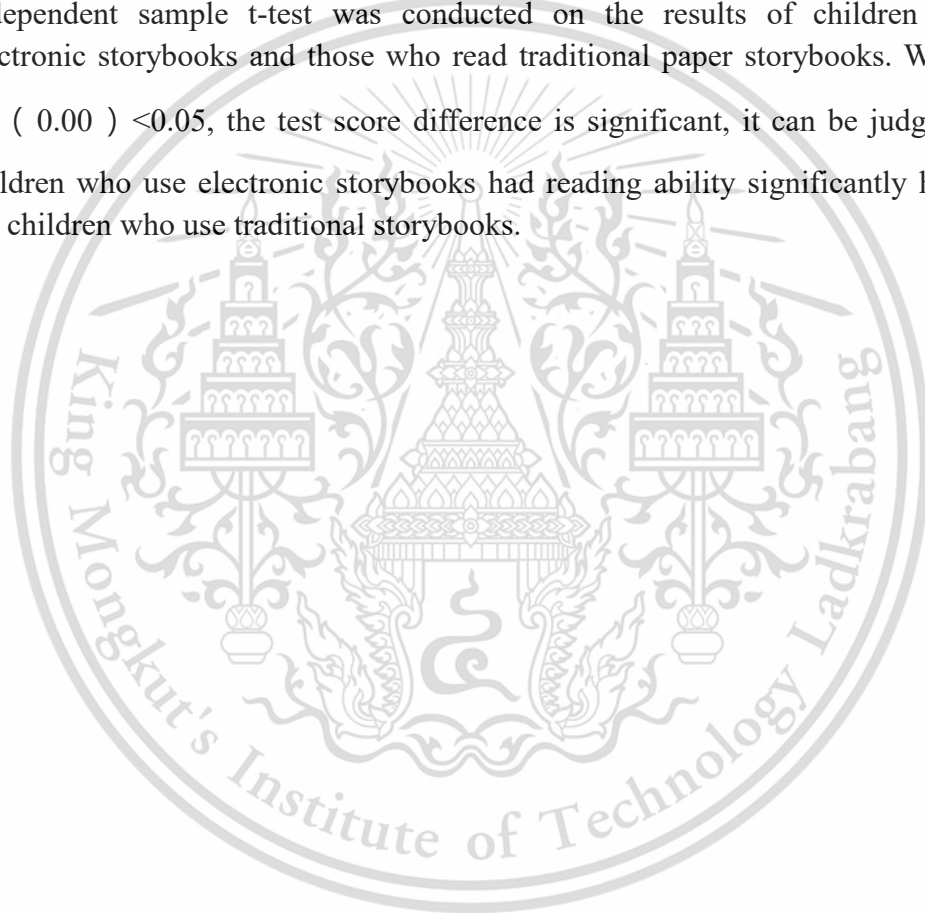
Table 4.5 Independent t-test of the effect of children reading ability

This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.

Group	number	\bar{X}	S.D	t	df	Sig (one-tailed)
E-storybook	30	91.00	7.58	7.83	58	0.00
Traditional paper storybook	30	70.66	12.01			

From Table 4.5, the average score of the children who read through electronic storybooks is 91.00, while the average score of the children who read through traditional paper storybooks is 70.66. The score of the electronic storybook group is significantly higher than that of the traditional paper storybook group. Results of two groups are obtained through the reading ability test of children. Independent sample t-test was conducted on the results of children who read electronic storybooks and those who read traditional paper storybooks. We find that sig (0.00) < 0.05, the test score difference is significant, it can be judged that the children who use electronic storybooks had reading ability significantly higher than the children who use traditional storybooks.



4.3 Results analysis of children's satisfaction on e-storybook

Table 4.6 Mean and standard deviation on children's satisfaction on reading electronic storybooks.(n=30)

List of items	\bar{X}	S.D	Meaning
1. Are you satisfied with the narrators in electronic storybooks?	4.83	0.53	Very satisfied
2 .Are you satisfied with the background music in the electronic storybooks?	4.63	0.71	Very satisfied
3. Are you satisfied with the sound of the electronic storybook used in this experiment?	4.73	0.58	Very satisfied
4. Are you satisfied with the animation of the electronic storybook used in this experiment?	4.93	0.25	Very satisfied
5. Do you like voice-over of small animals in electronic storybooks?	4.86	0.43	Very satisfied
6. Can you understand the plot in an electronic storybook?	4.73	0.58	Very satisfied
7. Did the content of this storybook help you?	4.73	0.58	Very satisfied

Table 4.6 (continued)

List of items	\bar{X}	S.D	Meaning
8. Do you find it convenient to use electronic storybooks?	4.96	0.18	Very satisfied
9. Are you satisfied with the color distribution of the storybook used in this experiment?	4.76	0.62	Very satisfied
10. Are you satisfied with the touch sensitivity of the e- storybook used in this experiment?	4.86	0.43	Very satisfied
Total	4.81	0.33	Very satisfied

We surveyed the satisfaction of 30 children who read electronic storybooks. we find that 30 children scored between 4.50 and 5.00 for each question. For example, The highest score is item 4 which is animation, and the lowest score is item 2 which is background music. The results of all questions in the questionnaire are $\bar{X}=4.81$, S.D=0.33. We can draw the conclusion that the children who read electronic storybooks are very satisfied with the way they read electronic storybooks.

4.4 Research results

According to the results of data analysis, we can get two results; the first result is that the children who use electronic storybooks had reading ability significantly higher than the children who use traditional storybooks. The second result is that children who read electronic storybooks are delighted with how they read them.

CHAPTER 5

DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.1 Discussions

The development of children's reading ability generally involves the whole stage of childhood, which has many influences on the development of children's reading ability. Electronic storybooks can significantly improve children's number perception, color judgment and reading comprehension. Children's reading ability is developed in the process of communication and application. Our research on the influence of electronic storybooks on children's reading ability is to better enrich children's language expression ability, cultivate reading interest and good reading habits, and further expand the learning experience.

According to cognitive load theory, learners' attention and mental resources are limited in learning. Resource allocation problems arise if several pieces of information are processed simultaneously. Therefore, the use of electronic storybooks is helpful in improving children's reading abilities. The results of our analysis are very similar to those of Segers, E, & Verhoeven, L.(2002), who tested the differences in vocabulary knowledge of 25 children aged around 5 years before and after using e-storybooks and found that the e-storybook intervention had a significant impact on children's vocabulary knowledge. There were substantial differences in scores before and after the test. After one week and one month, two post-tests were carried out, and the results showed that the children's vocabulary memory was good. But despite all the advantages of electronic storybooks, many parents and educators have expressed concern that electronic storybooks can improve young children's reading skills.

Children are very satisfied with reading electronic storybooks because they have a lot of animation in them to facilitate children's understanding of the story. But children were least likely to like background music in electronic storybooks, they think it interfered with their understanding of the content. This result is also verified by Segel's (2018) experiment.

5.2 Conclusion

Through sampling, this study fully understands the basic situation of children's reading, and uses the empirical research method to compare the effect of e-storybook and traditional paper storybooks on children's reading ability, and reveals the difference of e-storybook and traditional paper storybooks on children's number perception, color judgment and reading comprehension. The specific conclusions and suggestion are as follows:

- (1) Through literature reviews and research, e-storybooks are becoming more and more popular in early childhood education, and e-storybook reading provides children with fuller sensory stimulation and interaction between children and the software.
- (2) In most of the electronic storybooks, educational designers will present children with a variety of designs (animation, interactivity, music) simultaneously. It believes that these designs can improve children's learning interest and motivation in reading, and help children improve their academic performance.

This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.

(3) The use of e-storybooks is indeed helpful to improve children's reading ability, as well as in digital perception, color judgment, reading comprehension ability. Therefore, e-storybooks can replace traditional paper storybooks in reading to some extent.

(4) In the observation of the experiment, it is found that although a few children are using electronic devices for the first time, they are not good at how to click buttons, but after a period of trying, these children can successfully use electronic devices to complete the story reading. Some children who had more skilled operation would take the initiative to ask how to play the game to use electronic equipment. This shows that these children may have started to use electronic devices at their home.

(5) In the survey on the satisfaction of children using electronic storybooks, we found that the results of the questionnaire were all above 4.50 points, which indicates that children are very satisfied with reading electronic storybooks.

5.3 Recommendation

5.3.1 Recommendation for research results

Through the experiment, it is concluded that electronic storybooks have an important impact on children's reading ability, which can significantly improve children's reading ability. However, this experiment only uses one kind of storybook materials instead of multiple types of storybook materials. Moreover, due to the limited schedule of kindergarten, the experiment must be conducted one-on-one. The number of storybook interventions for children is less, giving children less time to adapt to the operation and function of e-storybooks. We must also fully consider the impact of student gender on research, and actively set variables for further research. We refer to the «3-6 Years Old Children's Learning and Development Guide», and hope that in the next step of research, we can better study how to use it to improve children's reading ability.

5.3.2 Recommendation for further research

Some of the core meanings of e-storybooks are changing, as can be seen in the title of a paper published in 2005 that used the phrase "talking books' software," One paper published in 2008 used the title "CD-Rom Storybooks" to describe storybooks in Electronic media, but one published in 2010 used the title "Electronic Books," The title of one paper published in 2012 was "Interactive Electronic Storybooks." These changes suggest that today's electronic storybooks are more focused on new and unique interactivity. Parents should pay attention to such an advantage that electronic devices can provide, and make full use of it, to create an environment for children to want to read or to take children to read together, because even if the experiment proves that the use of electronic storybooks will improve children's reading ability, but there is no early adult use guidance and standard instructions may not have good results. It is suggested that scholars should continue to study the gains brought by specific interactive design in the future, so that electronic storybooks can be better used by children. At the same time, research on how to use electronic storybooks effectively in order to help classroom learning.

REFERENCES

- Al Musawi, A., Al Saidi, Y., Al Hosni, R., & Al Saidi, H. (2017). Effectiveness Of E-Book in Improving Omani Kindergarten Kids Comprehension And Motivation Towards Stories Reading. *European Journal of Open Education and E-learning Studies*.
- An Jing. (2018). E-books or paper books: Factors affecting the reading effect of children's e-storybooks (Master's thesis, Central China Normal University).
- Bus, A. G., Takacs, Z. K., & Kegel, C. A. (2015). Affordances and limitations of electronic storybooks for young children's emergent literacy. *Developmental Review*, 35, 79-97.
- Caiec (2003). Design and implementation of 3rd animation actor object editing system for 3D electronic storybook. Hsinchu: Jiao Tong University.
- Chambers, A. (1993). *Tell Me: Children, Reading & Talk*. Primary English Teaching Association, Laura Street, Newtown, New South Wales
- Ciampa, K. (2012). Reading in the digital age: Using electronic books as a teaching tool for beginning readers. *Canadian Journal of Learning and Technology*, 38(2), n2.
- Danaei, D., Jamali, H. R., Mansourian, Y., & Rastegarpour, H. (2020). Comparing reading comprehension between children reading augmented reality and print storybooks. *Computers & Education*, 153, 103900.
- De Jong M T, Bus A G.(2002). Quality of book-reading matters for emergent readers: An experiment with the same book in a regular or electronic format. *Journal of Educational Psychology*, 94(1): 145.
- Ehri, L. C., & Sweet, J. (1991). Fingerprint-reading of memorized text: What enables beginners to process the print? *Reading Research Quarterly*, 442-462.
- Ertem, I. S. (2010). The Effect of Electronic Storybooks on Struggling Fourth-Graders' Reading Comprehension. *Turkish Online Journal of Educational Technology-TOJET*, 9(4), 140-155.
- Frith, U., & Snowling, M. (1983). Reading for meaning and reading for sound in autistic and dyslexic children. *British journal of developmental psychology*, 1(4), 329-342.
- Hong Wenqiong (1997). E-book collection. Department of Chinese Education, National Taitung Teachers College.
- Korat O (2010). Reading electronic books as a support for vocabulary, story comprehension and word reading in kindergarten and first grade. *Computers & Education*, 55(1): 24-31
- Korat O, Shamir A. (2007). Electronic books versus adult readers: Effects on children's emergent literacy as a function of social class. *Journal of Computer Assisted Learning*, 23(3): 248-259.
- Kremer, M., & Cingel, D. P. (2014). Parent-child joint reading in traditional and electronic formats. *Media Psychology*, 17(3), 262-281.

REFERENCES(Continued)

- Labbo L D, Kuhn M R. (2000). Weaving Chains of Affect and Cognition: A Young Child's Understanding of CD-ROM Talking Books. *Journal of Literacy Research*, 32(2):187-210.
- Langer, J. A. (1986). *Children reading and writing: Structures and strategies*. Ablex Publishing.
- Lau, J. (2008). Students' experience of using electronic textbooks in different levels of education.
- Lefever-Davis, S., & Pearman, C. (2005). Early readers and electronic texts: CD-ROM storybook features that influence reading behaviors. *The Reading Teacher*, 58(5), 446-454.
- Li Linhui (2011). *Research on the Development of Preschool Children's Picture storybook Reading Comprehension -- the perspective of multi-mode Meaning Construction*.
- Liu Huimin (2010). *A Study on the Correlation between Phonological awareness and early Reading Ability of Children*. Master's Thesis. Changchun: Northeast Normal University.
- Maynard S. (2010). The Impact of e-Books on Young Children's Reading Habits. *Publishing Research Quarterly*, 26(4):236-248.
- National Research Council. (1998). *Preventing reading difficulties in young children*.
- Noel, M. J. (2013). Does medium matter? Increasing preschoolers' vocabulary during shared storybook reading using electronic and print formats. *Western Carolina University*.
- Parish-Morris, J., Mahajan, N., Hirsh-Pasek, K., Golinkoff, R. M., & Collins, M. F. (2013). Once upon a time: parent-child dialogue and storybook reading in the electronic era. *Mind, Brain, and Education*, 7(3), 200-211.
- Rao & Siriginidi Subba. (2003). Electronic books: a review and evaluation. *Library Hi Tech*, 21(1):85-93.
- Sally Maynard, Cliff Mc Knight. (2001). Children's comprehension of electronic books: On empirical study. *New Review of Children S Literature & Librarianship*, 7(1):29-53.
- Segal-Drori, O., Korat, O., Shamir, A., & Klein, P. S. (2010). Reading electronic and printed books with and without adult instruction: Effects on emergent reading. *Reading and Writing*, 23(8), 913-930.
- Segers, E., & Verhoeven, L. (2002). Multimedia support of early literacy learning. *Computers & Education*, 39(3), 207-221.
- Shanahan T. (2014). *The National Reading Panel Report. Practical Advice for Teachers*.

REFERENCES(Continued)

- Shamir A, Korat O & Barbi N. (2008). The effects of CD-ROM storybook reading on low SES kindergarteners' emergent literacy as a function of learning context. *Computers & Education*, 51(1): 354-367.
- Setiani, F., & Rasto, R. (2016). Mengembangkan Soft Skill Siswa Melalui Proses Pembelajaran. *Jurnal Pendidikan Manajemen Perkantoran (JPManper)*, 1(1), 160-166.
- Segers, E., & Verhoeven, L. (2002). Multimedia support of early literacy learning. *Computers & Education*, 39(3), 207-221.
- Thiessen, E. D., Girard, S., & Erickson, L. C. (2016). Statistical learning and the critical period: how a continuous learning mechanism can give rise to discontinuous learning. *Wiley Interdisciplinary Reviews: Cognitive Science*, 7(4), 276-288.
- Tong, L.(2013). Effective countermeasures for strengthening children's reading comprehension ability. *Young Writers*, (12).(in Chinese)
- Unsworth L. (2006). *E-literature for children: Enhancing digital literacy learning*. New York: Routledge.
- Verhallen M J, Bus A G & De Jong M T (2006). The Promise of Multimedia Stories for Kindergarten Children at Risk. *Journal of Educational Psychology*, 98(2): 410-419.
- Xu, Z. & Li, C (2006). Electronic storybooks and Children's preferences: The Perspective of Human Factor Design. *The Symposium on Design and Management of Digital Learning*. (in Chinese)
- Yue, Y (2013). The influence of electronic storybook reading on the early reading Ability of 5-6 years old children. *Zhejiang Sci-Tech University*. (in Chinese)

APPENDIX

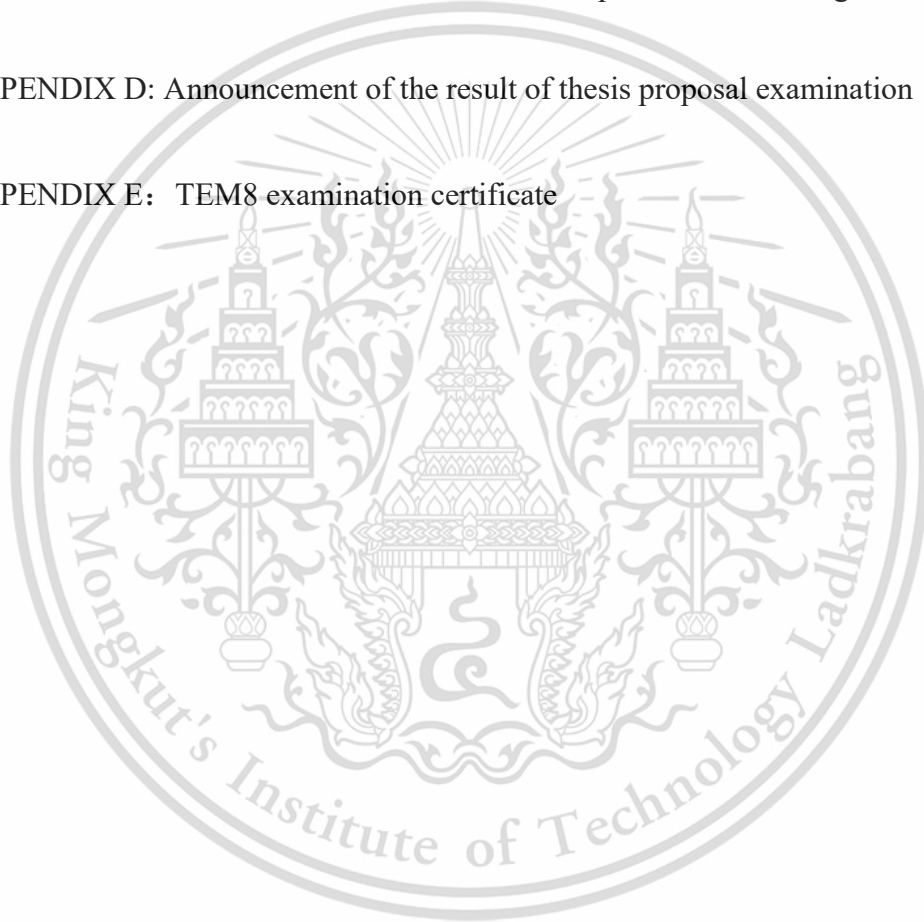
APPENDIX A: The quality of electronic storybooks

APPENDIX B: Reading test (IOC)

APPENDIX C: The IOC of children's satisfaction questionnaires using electronic books

APPENDIX D: Announcement of the result of thesis proposal examination

APPENDIX E: TEM8 examination certificate



APPENDIX A: The quality of electronic storybooks

We used the form below to test the quality of e-storybooks, and three experts were invited to score.

Table A.1 The quality of electronic storybooks

No.	Questions	Experts		
		1	2	3
1.	You think the content of electronic storybooks attracts children. 你认为电子故事书的内容能吸引孩子。	5	5	5
2.	Do you think children can operate e-storybooks by themselves and read them effectively. 你认为孩子们能自己操作电子故事书并有效地阅读吗。	5	5	5
3.	Do you think children will understand the storyline in the e-storybook. 你认为孩子们能理解电子故事书的故事情节吗。	5	5	4
4.	Do you think e-storybooks have educational significance for children. 你认为电子故事书对孩子有教育意义吗。	5	5	5
5.	Do you think the reading form of e-storybook is helpful for children to better understand the content. 你认为电子故事书的阅读形式有助于孩子更好地理解内容吗。	5	5	5
6.	You think e-storybooks are more interactive. 你认为电子故事书更具互动性。	4	5	5
7.	Children can describe the content of e-storybooks in their own language. 孩子们可以用自己的语言描述电子故事书的内容。	5	5	5
8.	The dubbing in the e-storybook is suitable for children's psychological development characteristics. 电子故事书中的配音适合儿童心理发展的特点。	5	5	5
9.	The characterization in the e-storybook is in line with children current understanding ability. 电子故事书中的人物塑造符合儿童目前的理解能力。	5	5	4

This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.

Table A.1 (Continued)

No.	Questions	Experts		
		1	2	3
10.	The content and theme of the e-storybook are clear and the values are correct. 电子故事书的内容和主题清晰，价值观正确。	5	5	5
11.	E-storybooks have rich color matching. 电子故事书色彩搭配丰富。	5	5	5
12.	The animation in the electronic storybook is in line with children's reading habits. 电子故事书中的动画很符合孩子们的阅读习惯。	4	4	5
13.	The numbers in the e-storybook are clear and children can understand them. 电子故事书里的数字很清楚，孩子们能看懂。	5	5	5
14.	If you are a parent, you will be willing to buy e-storybooks for children as reading tools. 如果你是一位家长，你会愿意为孩子购买电子故事书作为阅读工具。	4	5	5
15.	You will choose the e-storybook because of its appearance. 你会选择电子故事书，因为它的外观。	5	4	5
16.	You will choose the e-storybook because of its practicability. 你会选择电子故事书，因为它的实用性。	4	5	5
17.	You will choose the e-storybook because of its security. 你会选择电子故事书，因为它的安全性。	5	4	5
18.	In terms of children's reading, there are still some problems that can be improved. 在儿童阅读方面，还存在一些可以改进的问题。	5	5	5

Table A.1 (Continued)

No.	Questions	Experts		
		1	2	3
19.	As a reading tool for children, e-storybooks can also add some functions. 作为儿童的阅读工具, 电子故事书也可以增加一些功能。	4	5	5
20.	You are satisfied with the content of the current e-storybook. 你对目前的电子故事书内容感到满意。	4	5	5



APPENDIX B: Reading test (IOC)

Table B.1 Questions

No.	Questions
1.	<p>How many people are there in the picture?</p> <p>图片中有几个人物?</p>
2.	<p>What page does the sledge appear on?</p> <p>雪橇出现在第几页?</p>
3.	<p>Have the colors shown in the picture?</p> <p>有在图片中显示的颜色?</p>
4.	<p>What color is the teacher's clothes in the story?</p> <p>故事中老师身上的衣服是什么颜色?</p>
5.	<p>Is it right for teachers for stealing bear food?</p> <p>老师偷吃熊的食物行为正确吗?</p>
6.	<p>Did the teacher and the children do the right thing by preparing some food to send to the strange Bear Garden?</p> <p>老师和孩子们准备一些食物送去怪熊园的行为正确吗?</p>
7.	<p>Is it right for the teacher to skateboard down the hill with the children?</p> <p>老师和孩子们一起滑滑板下山对吗?</p>
8.	<p>Is it right for children and bears to coexist peacefully?</p> <p>孩子和熊和平共处的行为是正确的吗?</p>
9.	<p>Which one is the teacher?</p> <p>哪个是老师?</p>

Table B.1 (Continued)

No.	Questions
10.	Which is the bear? 哪个是熊?

Three China experts who works in the field of infant education were asked to check the congruence between objectives and items in the test. The data obtained were used to calculate the Item Objective Congruence index (IOC).

The evaluation criteria was used for checking the congruence between objectives and items of the test as follows:

+ 1 a item is considered congruent with the objectives.

0= a item is considered neutral in terms of whether it is congruent with the objectives.

-1 a item is considered not congruent with the objectives.

The IOC scores were between 0.67-1.00.

Table B. 2 IOC of reading test

No.	Questions	Experts			Total Score	IOC	Result
		1	2	3			
1.	How many people are there in the picture? 图片中有几个人物?	+1	+1	+1	3	1.00	Used
2.	What page does the sledge appear on? 雪橇出现在第几页?	+1	0	+1	2	0.66	Used
3.	Have the colors shown in the picture? 有在图片中显示的颜色?	+1	+1	+1	3	1.00	Used

Table B.2 (Continued)

No.	Questions	Experts			Total Score	IOC	Result
		1	2	3			
4.	<p>What color is the teacher's clothes in the story?</p> <p>故事中老师身上的衣服是什么颜色?</p>	+1	+1	+1	3	1.00	Used
5.	<p>Is it right to teachers for stealing bear food?</p> <p>老师偷吃熊的食物行为正确吗?</p>	+1	+1	+1	3	1.00	Used
6.	<p>Did the teacher and the children do the right thing by preparing some food to send to the strange Bear Garden?</p> <p>老师和孩子们准备一些食物送去怪熊园的行为正确吗?</p>	+1	+1	+1	3	1.00	Used
7.	<p>Is it right for the teacher to skateboard down the hill with the children?</p> <p>老师和孩子们一起滑滑板下山对吗?</p>	+1	+1	+1	3	1.00	Used

Table B.2 (Continued)

No.	Questions	Experts			Total Score	IOC	Result
		1	2	3			
8.	Is it right for children and bears to coexist peacefully? 孩子和熊和平共处的行为是正确的吗?	+1	+1	+1	3	1.00	Used
9.	Which one is the teacher? 哪个是老师?	+1	+1	+1	3	1.00	Used
10.	Which is the bear? 哪个是熊?	+1	0	+1	2	0.66	Used

APPENDIX C: The IOC of children's satisfaction questionnaires using electronic books

In this study, three educational technology experts were invited to test for consistency and content validity using a consistency index (IOC).

Evaluation criteria are used to check the consistency of objectives and test items,

Table C.1 Questions

No.	Questions
1.	你对电子故事书中的叙述者满意吗? Are you satisfied with the narrators in electronic storybooks?
2.	你对电子故事书中的背景音乐满意吗? Are you satisfied with the background music in the electronic storybooks?
3.	你对这个实验中使用的电子故事书的声音满意吗? Are you satisfied with the sound of the electronic storybook used in this experiment?
4.	你对本次实验使用的电子故事书的动画满意吗? Are you satisfied with the animation of the electronic storybook used in this experiment?
5.	电子故事书中的小动物配音你喜欢吗? Do you like voice overs of small animals in electronic storybooks?
6.	你能理解电子故事书中的故事情节吗? Can you understand the plot in an electronic storybook?
7.	你对本次的故事书中的内容对你有帮助吗? Did the content of this storybook help you?
8.	你在使用电子故事书时觉得方便吗? Do you find it convenient to use electronic storybooks?

Table C.1 (Continued)

No.	Questions
9.	<p>你对本次实验使用的故事书的色彩分布满意吗?</p> <p>Are you satisfied with the color distribution of the storybook used in this experiment?</p>
10.	<p>你对这个实验中使用的电子故事书的触摸灵敏度满意吗?</p> <p>Are you satisfied with the touch sensitivity of the e- storybook used in this experiment?</p>

Three China experts who works in the field of infant education were asked to check the congruence between objectives and items in the test. The data obtained were used to calculate the Item Objective Congruence index (IOC).

The evaluation criteria was used for checking the congruence between objectives and items of the test as follows:

+ 1 a item is considered congruent with the objectives.

0= a item is considered neutral in terms of whether it is congruent with the objectives.

-1 a item is considered not congruent with the objectives.

The IOC scores were between 0.66-1.00.It is indicated that the quality of e-storybook were at highest level.

Table C. 2 IOC of satisfaction survey

No.	Questions	Experts			Total Score	IOC	Result
		1	2	3			
1.	<p>你对电子故事书中的叙述者满意吗?</p> <p>Are you satisfied with the narrators in electronic storybooks?</p>	+1	+1	0	2	0.66	Used
2.	<p>你对电子故事书中的背景音乐满意吗? Are you satisfied with the background music in the electronic storybooks?</p>	+1	0	+1	2	0.66	Used

Table C.2 (Continued)

No.	Questions	Experts			Total Score	IOC	Result
		1	2	3			
3.	<p>你对这个实验中使用的电子故事书的声音满意吗?</p> <p>Are you satisfied with the sound of the electronic storybook used in this experiment?</p>	+1	+1	+1	3	1.00	Used
4.	<p>你对本次实验使用的电子故事书的动画满意吗?</p> <p>Are you satisfied with the animation of the electronic storybook used in this experiment?</p>	+1	+1	+1	3	1.00	Used
5.	<p>电子故事书中的小动物配音你喜欢吗? Do you like voice overs of small animals in electronic storybooks?</p>	+1	+1	+1	3	1.00	Used
6.	<p>你能理解电子故事书中的故事情节吗?</p> <p>Can you understand the plot in an electronic storybook?</p>	+1	+1	+1	3	1.00	Used
7.	<p>你对本次的故事书中的内容对你有帮助吗</p> <p>Did the content of this storybook help you?</p>	+1	+1	+1	3	1.00	Used

This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.

Table C.2 (Continued)

No.	Questions	Experts			Total Score	IOC	Result
		1	2	3			
8.	<p>你在使用电子故事书时觉得方便吗?</p> <p>Do you find it convenient to use electronic storybooks?</p>	+1	+1	+1	3	1.00	Used
9.	<p>你对本次实验使用的故事书的色彩分布满意吗?</p> <p>Are you satisfied with the color distribution of the storybook used in this experiment?</p>	+1	+1	+1	3	1.00	Used
10.	<p>你对这个实验中使用的电子故事书的触摸灵敏度满意吗?</p> <p>Are you satisfied with the touch sensitivity of the e- storybook used in this experiment?</p>	+1	+1	+1	3	1.00	Used

We found that the questionnaire used met the requirements of IOC survey.

APPENDIX D: Announcement of the result of thesis proposal examination



School of Industrial Education and Technology
King Mongkut's Institute of Technology Ladkrabang
Announcement of the result of thesis proposal examination

School of Industrial Education and Technology with the agreement of thesis proposal examination committees would like to announce the list of thesis title and thesis proposal of Master of Science in Technology-Enhanced Learning and Innovation program approved on June 14, 2022 as follows:

Ms. Zhang Qi student ID 63603142 whose thesis title's is "The Influence of E-Story Books on Children's Reading Ability" with Asst. Prof. Dr. Sirirat Petsangsri as the advisor.

To ensure that student can complete the research and thesis in time with the assistance of the advisor according to the regulations of King Mongkut's Institute of Technology Ladkrabang.

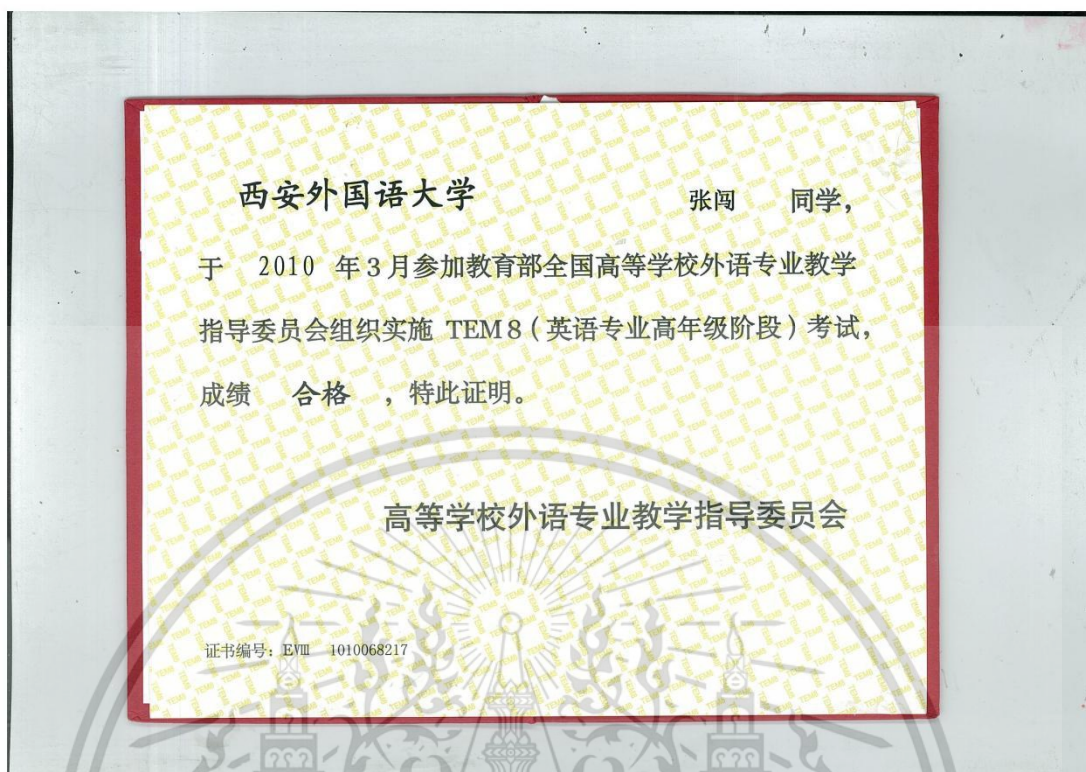
Announced on June 16, 2022

(Associate Professor Dr. Kitipong Mano)

Dean of the School of Industrial Education and Technology

2022/06/16 Time: 12:12:08 Non-PKI Server Sien.LN
Signature Code: NgAyA-EUANA-A0AEY-ANwBG

APPENDIX E: TEM8 examination certificate



This material is reserved for educational use only, not allowed for commercial use.

Forbidden to modify the content, and cite the document when use.

AUTHOR BIOGRAPHY

Author: Ms. Zhang Qi

Degree: Master of Science

Date of Birth: 14th, June. 1996

Place of Birth: AnHui Province, China

Education: 2020, Graduated Bachelor Degree in Education, Bozhou University

Major: Technology Enhanced Learning and Innovation

