



**USING INTERACTIVE WHITEBOARDS IN ENGLISH
LANGUAGE TEACHING: BELIEFS AND PRACTICES OF
CHINESE KINDERGARTEN ENGLISH TEACHERS**

**BY
XIANGRONG LI**

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF EDUCATION IN BILINGUAL
EDUCATION AND ENGLISH LANGUAGE TEACHING
SURYADHEP TEACHERS COLLEGE**

**GRADUATE SCHOOL, RANGSIT UNIVERSITY
ACADEMIC YEAR 2022**

Thesis entitled
**USING INTERACTIVE WHITEBOARDS IN ENGLISH LANGUAGE
TEACHING: BELIEFS AND PRACTICES OF CHINESE
KINDERGARTEN ENGLISH TEACHERS**

by
XIANGRONG LI

was submitted in partial fulfillment of the requirements
for the degree of Master of Education in Bilingual
Education and English Language Teaching

Rangsit University
Academic Year 2022

Assoc. Prof. Pragasit Sitthitikul, Ph.D. Assoc. Prof. Sumalee Chinokul, Ph.D.
Examination Committee Chairperson Member

Asst. Prof. Anchalee Chayanuvat,
Ed.D.

Member and Advisor

Approved by Graduate School

(Asst.Prof.Plт.Off. Vanee Sooksatra, D.Eng.)

Dean of Graduate School

June 16, 2023

Acknowledgements

First and foremost, my heartfelt gratitude goes to my thesis advisor, Assistant Professor Dr. Anchalee Chayanuvat. My advisor spent a lot of her time guiding me during my thesis journey. With the enthusiastic and professional help of my teacher, I could complete my thesis in the time frame that had earlier been planned.

Secondly, I would like to thank the thesis committee, Associate Professor Dr. Pragasit Sitthitikul, Chair of the Committee and Associate Professor Dr. Sumalee Chinokul, member of the Committee, who kindly gave me valuable advice and feedback to help me complete my thesis:

Thirdly, I would also like to thank my friend, Mengshan Han for living and studying in Thailand with me. She gave me a lot of support in data collection for the thesis, especially in classroom observation. With her expertise, we were on the right track with classroom observation data analysis. Besides, I would like to express my heartfelt thanks to all my classmates, who always helped me when I needed them.

Fourthly, I owe my gratitude to my family. Behind my growth, it is the expectation and care of parents. They always support me in their own way and let me fully enjoy my study abroad life. They always support me in every decision I make.

Last but not least, I would like to express my gratitude to my university. The whole writing process is based on the knowledge and skills I have acquired at Rangsit University. Through two years of study, I have learned the skills and knowledge that an excellent bilingual education teacher should have. In my future career path, I will adhere to the same educational principles and become an effective teacher.

Xiangrong Li
Researcher

6406916 : Xiangrong Li
 Thesis Title : Using Interactive Whiteboards in English Language Teaching: Beliefs and Practices of Chinese Kindergarten English Teachers
 Program : Master of Education in Bilingual Education and English Language Teaching
 Thesis advisor : Asst. Prof. Anchalee Chayanuvat, Ed.D.

Abstract

This study aimed 1) to study the beliefs of kindergarten Chinese English teachers towards the use of interactive whiteboards in teaching the young children; 2) to explore the practices of kindergarten Chinese English teachers in using the interactive whiteboards in teaching the young children, and 3) to examine the reasons for the use of interactive whiteboards in teaching the young children of kindergarten Chinese English teachers in Education First (EF) schools in Kunming. 26 teachers were the questionnaire respondents among whom 4 teachers were randomly selected for classroom observation and 8 voluntary teachers for semi-structured interviews. The questionnaire data analysis indicated that the teachers believed that the interactive whiteboard was an effective teaching tool (Mean=4.346/SD=0.689), and that it could enrich the teaching context and the teaching quality (Mean=4.315/SD=0.697). For the teachers practices, they used interactive whiteboards to teach (Mean=4.569/SD=0.863) and demonstrate (Mean=4.3626/SD=0.344) English vocabulary to increase interaction with students (Mean=4.375/SD=0.761). Analysis of the classroom observation checklist and semi-structured interview data confirmed the questionnaire findings. However, the data revealed that some teachers needed support in developing positive beliefs about teaching with interactive whiteboards. They needed to be professionally developed in the use of the whiteboards to improve their confidence and teaching effectiveness. The teachers' reasons for using the whiteboards were to adopt the student-centered approach, vocabulary teaching, game-based learning, the offered lessons matching the children's needs, fun and being focused and increasing comprehension and memory. Finally, the recommendations for the stakeholders in student education are that the school administrators need to frequently organize training workshops for kindergarten English teachers to participate in learning how to maximize the use of interactive whiteboards in teaching and learning; and the kindergarten teachers need to develop the correct beliefs, continuously strengthen their professional teaching knowledge and theories to enhance their confidence and teaching effectiveness.

(Total 229 pages)

Keywords: Kindergarten English Chinese Teachers, Interactive Whiteboards, Beliefs, Practices

Student's Signature Thesis Advisor's Signature

Table of Contents

		Page
Acknowledgements		i
Abstracts		ii
Table of Contents		iii
List of Tables		vi
List of Figures		viii
Chapter 1	Introduction	1
	1.1 Background of the Study	1
	1.2 Statement of the Problem	6
	1.3 Research Objectives	8
	1.4 Research Questions	8
	1.5 Scope of the Study	9
	1.6 Significance of the Study	10
	1.7 Limitations of the Study	12
	1.8 Definition of the Key Terms	12
Chapter 2	Literature Review	15
	2.1 Research on English as A Means of Instruction	15
	2.2 Traditional and Interactive with Whiteboard- Assisted English Teaching at The Kindergarten Level	25
	2.3 Education First	29
	2.4 Interactive Whiteboard Assisted Teaching	35
	2.5 The Teachers' Beliefs	42
	2.6 Research on Kindergarten English Teachers' Pedagogical Beliefs about Using Interactive Whiteboards	50
	2.7 Related Research	54

Table of Contents (continued)

		Page
Chapter 3	Research Methodology	68
	3.1 Research Design	68
	3.2 Research Site	69
	3.3 Population and Sample	70
	3.4 Research Instruments	72
	3.5 Validity and Reliability	78
	3.6 Data Collection	80
	3.7 Ethical Considerations	83
Chapter 4	Research Results	85
	4.1 Analysis of the Questionnaire	85
	4.2 Analysis of the Classroom Observation	95
	4.3 Analysis of the Semi-Structure Interviews	103
	4.4 Conclusion	123
Chapter 5	Conclusion, Discussion and Recommendations	125
	5.1 Conclusion	126
	5.2 Discussion	129
	5.3 Recommendations	140
	References	144
	Appendices	154
	Appendix A Research Instruments	155
	Appendix B Invitation Letters to IOC Experts	163
	Appendix C IOC Results	167
	Appendix D Cronbach's Alpha Reliability Analysis	173

Table of Contents (continued)

	Page
Appendix E Qualitative Data Analysis	176
Appendix F Certificate of Approval by Ethics Review of Rangsit University	227
Biography	229

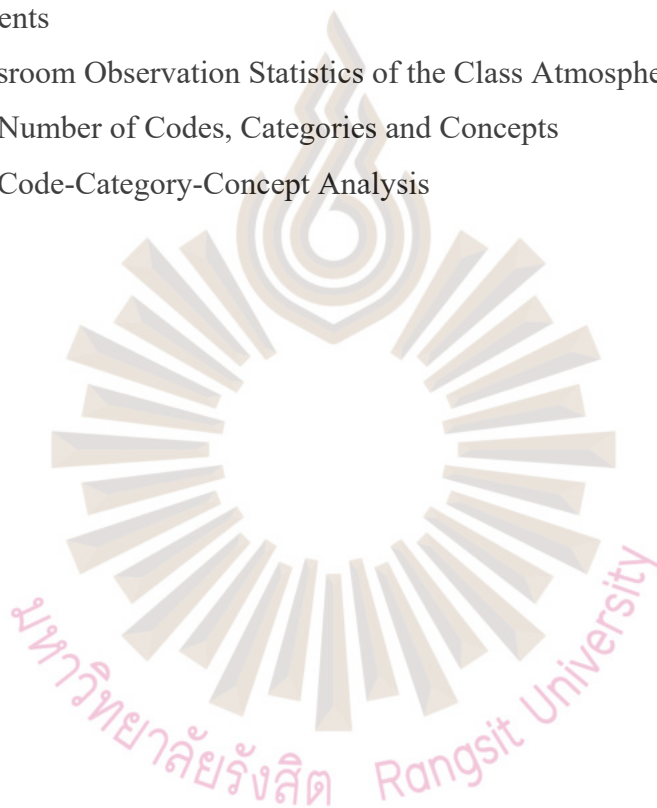


List of Tables

Tables	Page
2.1 Studies Related to Beliefs	44
2.2 Studies Related to Teachers' Beliefs	46
3.1 Teacher and Personal Information of the Participants of the Classroom Observation Checklists	71
3.2 Teacher and Personal Information of the Participants of the Semi-Structured Interviews	72
3.3 The Composition of the Questionnaire	74
3.4 The 5-point Likert Scale	75
3.5 The Classroom Observation Checklists	76
3.6 Interview Questions	77
3.7 Description of Internal Consistency Using Cronbach's Alpha	80
3.8 Cronbach's Alpha of Questionnaire in this Study	80
3.9 Schedule of classroom observation	81
3.10 Schedule of Semi-structured Interview	82
4.1 Gender and Age	86
4.2 Educational Background	86
4.3 Years of Teaching English and Teaching with Interactive Whiteboards	87
4.4 The Kindergarten English Teachers' Beliefs towards the Use of Interactive Whiteboards in Teaching English to Children	88
4.5 The Kindergarten English Teachers' Practices in the Use of Interactive Whiteboards in Teaching English to Children	91
4.6 Analysis of the Responses (Beliefs) in the Open-ended Question	93
4.7 Analysis of the Responses (Practices) in the Open-ended Question	94
4.8 Classroom Observation Statistics for Lesson Delivery	96
4.9 Classroom Observation Statistics of the Lessons	97

List of Tables (Cont.)

	Page
Tables	
4.10 Classroom Observation Statistics of the Teachers' Skills in Using Interactive Whiteboards	99
4.11 Classroom Observation Statistics of the Teachers' Interaction with Students	100
4.12 Classroom Observation Statistics of the Class Atmosphere	102
4.13 The Number of Codes, Categories and Concepts	103
4.14 The Code-Category-Concept Analysis	104



List of Figures

	Page
Figures	
1.1 Illustration of the Conceptual Framework	10
2.1 The Teacher's Beliefs Factors	49
2.2 Factors Influencing Teachers' Beliefs, Practices, and Reasons for Using Interactive Whiteboards	67
3.1 Analysis of Classroom Observation Checklists Data	83
3.2 Lichtman (2013) Three Cs of Data Analysis: Codes, Categories, and Concepts	83
4.1 Themes form Interviews of the Kindergarten English Teachers	123
4.2 Results from Three Research Instruments	124



Chapter 1

Introduction

This chapter provided background information on the issues that the present study addresses. It covered context of the study, statement of the problem, objectives of the study, research questions, scope of the study, the conceptual framework, the study's significance, the study's limitations, and definition of the key terms.

1.1 Background of The Study

In recent years, with the wave of English learning fever that had set off around the world, English learning was becoming more and more global, and China was paying more and more attention to English learning, with many parents beginning to initiate their children in English at the kindergarten level (Lei, 2022; Chen, 2020). Studies had shown that the age of three to six was a critical period for language development in young children. The ability to imitate and absorb new things and the low emotional barrier to learning language at this stage make it a golden period for language learning (Mei, 2021; Xing, 2019). In addition, the Guidelines for Learning and Development of Children Aged 3-6 also state that language was a tool for communication and thinking. Childhood was an important stage of language development in the development of spoken language. Children's language development was cross-cutting and also had an important impact on other areas of learning and development: while children used language to communicate, they also developed interpersonal skills, the ability to understand others and judge the environment in which they interact, and the ability to organize their thought (Ma, 2020; Liao, 2022). A large number of psycholinguists had demonstrated that children had a more sensitive sense of hearing and an excellent ability to imitate and comprehend language: compared to adults, children had the perceptual ability to distinguish speech more precisely and a stronger ability to modulate copies, making it

extremely easy to develop authentic speech and intonation (Miao, 2021; Ma, 2020; Wang, 2020). Research by British linguist Freeman Long (2000) also argued that the critical period for acquiring a pure accent in a foreign language was before the age of 6. These studies emphasized that a good initiation of children's English learning during the kindergarten years had a non-negligible impact on their individual development, provided a solid foundation for their future second language development, and enables them to better use this language for communication and interaction.

As the combination of low age with educational research and educational technology has become the trend of second language teaching reform (Li, 2021; Liu, 2022). According to the Implementation Plan for Accelerating Education Modernization, 2018-2022 (2019), effort should be made to develop new models of education teaching, new methods of education services, and new models of education governance based on information technology. In such a large social context, children's English teaching in China continues to develop in a variety of ways, and the teaching mode and teaching method of children's English, moreover, had been developed in its combination with educational technology, exemplified by interactive whiteboards, in constant exploration of elements and practice (Liu, 2022; Wang, 2020; Xing, 2019).

The Ministry of Education promoted the deep integration of information technology and education teaching, assisted schools in making full use of information technology to reform talent training and teaching methods, and gradually achieve full coverage of information technology in teaching applications (China Market Information Center, 2019). The Kindergarten Work Regulations suggest that "the selection of educational technology and educational methods should be integrated with the age characteristics of children; the application of educational technology needs to be versatile and variable; and teachers should give appropriate guidance in the teaching process to maintain children's pleasant emotions according to their existing experiences and interests (China National Education Commission, 1980). The current "Kindergarten Education Guideline" emphasized that "the organization of the content of kindergarten teaching activities should be integrated with educational technology

with emphasis on comprehensiveness, fun, and activity” (Chinese Ministry of Education, 2019). The requirements of these three guiding documents were based on the characteristics of young children, such as their active nature and intuitive thinking, which require the combination of educational technology and educational methods to meet the developmental characteristics of young children’s cognitive abilities such as thinking, attention and memory. The unique characteristics of the teaching method that combines education technology and teaching mainly with interactive whiteboard cater to the nature of young children, and teachers can deeply appreciate the value of interactive whiteboard teaching in teaching English to young children (Chen, 2020; Feng, 2021; Gao, 2022).

Interactive whiteboard integrated computer technology, microelectronics, and electronic communication technology, and was an intelligent platform for computer-based language teaching (Zang, 2019). As a new teaching media and the most popular teaching tool, it is both a product of the mixed development of modern education technology, information and communication technology and computer multimedia technology, and an inevitable product of the development of modern education technology (Yan, 2022; Zhao, 2019). From traditional blackboard to ordinary whiteboard, from ordinary whiteboard to electronic whiteboard, and from electronic whiteboard to interactive whiteboard (IWB), the development of information technology had continuously promoted the change of teaching concept and teaching tools (Yin, 2021; Zhen, 2019; Yan, 2022). Interactive whiteboards inherit the advantages and characteristics of modern multimedia teaching and retain the advantages of traditional blackboard teaching methods (Dong, 2021; Han, 2021). At present, interactive whiteboards had become the most powerful auxiliary tool for information-based education and have been widely promoted and applied in the field of education (He, 2021; Zhang, 2021). In conclusion, the emergence and application of interactive whiteboards represent the development trend of classroom teaching technology.

Since the end of the last century, interactive whiteboards had been developed and had undergone an evolutionary process from blackboards to interactive

whiteboards (He, 2021). This process has three main stages. The first stage was from blackboard to writing whiteboard; the second stage is from writing whiteboard to electronic whiteboard; and the third stage is from electronic whiteboard to interactive whiteboard (Yin, 2021; Zhu, 2017). Since the beginning of the 21st century, interactive whiteboards had taken the world by storm. Developed countries such as the United States, Canada, Australia, and the United Kingdom have carried out the application and research of interactive whiteboards in the classroom very early (Ye, 2019; Bian, 2022). According to Chen (2020), the application of interactive whiteboards is currently the most complete and mature in the United States; the UK government had also invested huge amounts of money to promote interactive whiteboards in kindergartens and elementary school and had conducted many experiments on the application of interactive whiteboards in teaching, and universities, research institutions and primary and secondary schools had achieved many excellent results in joint research. In addition, the UK government had created a platform specifically for teachers to use electronic interactive whiteboards and provided resources and technical support (Yin, 2021). The role of interactive whiteboards in teaching and learning had been recognized by the educational community, and many countries in Asia, America and Europe have started to promote the use of interactive whiteboards in education and teaching (Chen, 2020; Feng, 2021; Du, 2019).

Compared with the previously mentioned developed countries, the application and research of interactive whiteboards in China started late, but the development has been gradually improved in recent years (Zhu, 2018; Zang, 2020). However, in recent years, many Chinese scholars had conducted some explorations based on the theory of integrating interactive whiteboard technology with classroom teaching curriculum (Zhang, 2022; Zhu, 2020). Research institutions and educational teaching institutions had carried out research on the application of interactive whiteboards in the field of education and teaching around two aspects. First, to study the specific use of electronic interactive whiteboards in classroom teaching according to the characteristics of specific courses (Bian, 2022; Duan, 2019). Second, to analyze and study the functions of interactive whiteboards in several aspects and their impact on classroom teaching (Ding, 2018; Gao, 2022). Third, the analysis examined the

functions of interactive whiteboards and their impact on classroom teaching (Han, 2021; Huang, 2020; Jin, 2020). In addition, researchers had conducted studies related to the application of interactive whiteboards in teaching English to children. The study examined how the interactive functions of interactive whiteboards can be used to increase children's initiative and motivation to learn English (Ma, 2020; Lu, 2019; Liu, 2020). To study how teachers should use the resources of the interactive whiteboard to break through the key and difficult points of teaching and develop children's independent learning ability (Xing, 2022; Yu, 2020). Research on how teachers should use the various tools and functions of interactive whiteboards to improve the effectiveness of children's English teaching and learning, including instructional design, instructional applications and strategies, classroom content integration, assessment of teaching effectiveness, and the role of interactive whiteboard technology in classroom teaching (Weng, 2021; Chen, 2019). Therefore, the application of interactive whiteboards in English teaching has not only changed the traditional teaching methods and forms to a certain extent, but also promoted the transformation of education and learning styles (Du, 2019; Wang, 2020). With the help of interactive whiteboards, the "teacher-centered" teaching model in Chinese English classrooms was gradually replaced by a new "student- and teacher-centered" teaching model (Pang, 2020; Mei, 2021). These studies emphasized that, as an emerging English teaching medium and a powerful teaching tool, the application of interactive whiteboards in English classroom teaching was not only a product of the mixed development of modern educational technology, information and communication technology and computer multimedia technology, but also an inevitable product of the development of modern educational technology (Ye, 2021; Wu, 2020; Xiao, 2021).

Previous studies had found that factors that influence the quality of English education for young children include kindergarten English education beliefs, teachers' own English knowledge base, and self-efficacy (Gui, 2019; Hao, 2021). Among them, educational beliefs affect teachers' perceptions and judgments about the importance of kindergarten education, and can further influence teachers' teaching behaviors, content, and educational strategy choices in the classroom (Hong, 2018; Lu, 2021).

Teachers' own beliefs affect their perceptions of the English subject and their beliefs about young children's English learning, further influencing the way kindergarten teaching practices are implemented (Li, 2018; Ma, 2020). This showed the importance of teachers' educational beliefs on their teaching practices.

Therefore, it was worth investigating whether kindergarten teachers' beliefs can influence their choices of instructional tools and their classroom practices. It was necessary to further explore kindergarten English Chinese teachers' reasons for using the interactive whiteboards.

1.2 Statement of The Problem

With the integration of kindergarten English teaching and educational technology, interactive whiteboard devices were becoming more and more important and basic in daily teaching, and teachers were beginning to commonly use interactive whiteboards and web technologies for teaching and research activities (Ma, 2021). At this stage, Chinese kindergarten English teachers had a series of problems with the use of interactive whiteboards for teaching and learning activities.

Researchers have found that one aspect of the problem, due to the fact that teachers play the most important role as designers, organizers, and instructors in teaching activities (Wu, 2020; Ye, 2021). Teachers' beliefs about interactive whiteboard-assisted English language teaching will directly affect the use of interactive whiteboard in the classroom and thus students' learning outcomes. Teachers influenced by different factors that emphasize different teaching priorities, create different classroom atmospheres and contexts, and students' performance throughout the classroom, and teachers' beliefs about the use of interactive whiteboards in teaching also had an impact. Therefore, teachers' beliefs are critical to the successful integration and implementation of interactive whiteboard-assisted instruction in educational programs (Du, 2019; Han, 2021; Mei, 2021). However, in a portion of Chinese kindergarten teachers hold negative beliefs about using interactive whiteboards to assist kindergarten English teaching and ignore the importance of

interactive whiteboards and kindergarten English education, believing that the importance of using interactive whiteboards to assist young children in the second language domain is not significant compared to traditional classroom learning methods (He, 2018; Zhao, 2019; Yu, 2019). Meanwhile, some teachers' own negative beliefs such as aversion and rejection of interactive whiteboards have led them to avoid or inefficiently use them in kindergarten English education (Li, 2019; Zhen, 2021; Yan, 2022).

Researchers found that another aspect of the problem, the current practice of using kindergarten English teachers to use interactive whiteboards to assist kindergarten English education activities was also not optimistic. Studies on kindergarten English education practices show that kindergarten teachers allocated less time to English education using interactive whiteboards, while there were problems such as low time, low weighting, and poor quality of practice (Feng, 2021; Gui, 2019; Jin, 2020). According to Early and colleagues, they found that most kindergarten classes used interactive whiteboards for English activities for only 8% of the group instructional time in the day. Even when interactive whiteboards were used for English education, most teachers typically stay within a very narrow range of English teaching activities to instruct children, such as just using the interactive whiteboard to play audio and video (Han, 2020; Miao, 2021).

The researcher joined EF English School in Kunming, the city that was also the destination of this study, as an assistant teacher. While working at EF English School in Kunming, the researcher observed that kindergarten English teachers at EF English School in Kunming are influenced by different factors that emphasize different content and focus, create different classroom atmospheres and contexts, and have different student performance throughout the classroom, which leads to influences on kindergarten teachers' beliefs and practices in using interactive whiteboards in teaching. The kindergarten teachers' own negative beliefs such as aversion and rejection of interactive whiteboards lead them to avoid or inefficiently use interactive whiteboard practices in kindergarten English education. Therefore, the beliefs, practices, and reasons for using interactive whiteboards held by kindergarten

English teachers were worthy of being the subject of current research in kindergarten education.

1.3 Research Objectives

1.3.1 To study the beliefs of kindergarten Chinese English teachers towards the use of interactive whiteboards in teaching the young children.

1.3.2 To explore the practices of kindergarten Chinese English teachers in using the interactive whiteboards in teaching the young children.

1.3.3 To examine the reasons for the use of interactive whiteboards in teaching the young children of kindergarten Chinese English teachers.

1.4 Research Questions

Based on the research objectives, the research questions were formulated as follows:

1.4.1 What are the kindergarten Chinese English teachers' beliefs toward the use of interactive whiteboards in teaching the young children?

1.4.2 What are the kindergarten Chinese English teachers' practices in the use of interactive whiteboards in teaching the young children?

1.4.3 What are the reasons for the kindergarten Chinese English teachers in use of interactive whiteboard in teaching the young children?

1.5 Scope of The Study

This section gave brief introduction to the study to be conducted.

1.5.1 Location

This study conducted at EF English School in Kunming, Yunnan Province, China.

1.5.2 Population and Sample

In this study, English teachers working at EF English schools in Kunming, Yunnan Province the population of the study. There were currently 30 Chinese teachers at the EF campus in Kunming, whose main responsibility is English teaching activities to children aged 3 to 6 years old. The age of the teacher population ranges from 28 to 35 years old, and approximately 75% of the teachers are female. In addition, the teachers in this study already had 1-5 years of experience teaching English and had more than one year of experience using interactive whiteboards.

There were two EF campuses in Kunming, Yunnan Province, and the total number of Chinese English teachers in these two campuses is 30, and these teachers essentially used as the subjects of the study. Based on the total number of 30 experimental teachers at the Kunming EF campuses, the formula developed by Krejcie and Morgan (1970) allowed for the calculation of the experimental sample size, which yielded 26 teachers for the questionnaire and 8-12 teachers purposefully selected for the interview.

1.5.3 Instruments

This study used a mixed-methods approach, combining quantitative and qualitative data. Using questionnaires, classroom observation and semi-structured interviews, this study explored the beliefs, practices, and reason for use of Chinese kindergarten teachers of English in using interactive whiteboards to assist in teaching English in the classroom and the reasons for the different ways of use.

1.5.4 Conceptual Framework

This study focused on kindergarten Chinese English teachers' beliefs and practices about using interactive whiteboards in teaching and learning, and the reasons for the different ways of using interactive whiteboards in teaching and learning. The research process for this study was shown in Figure 1.1.

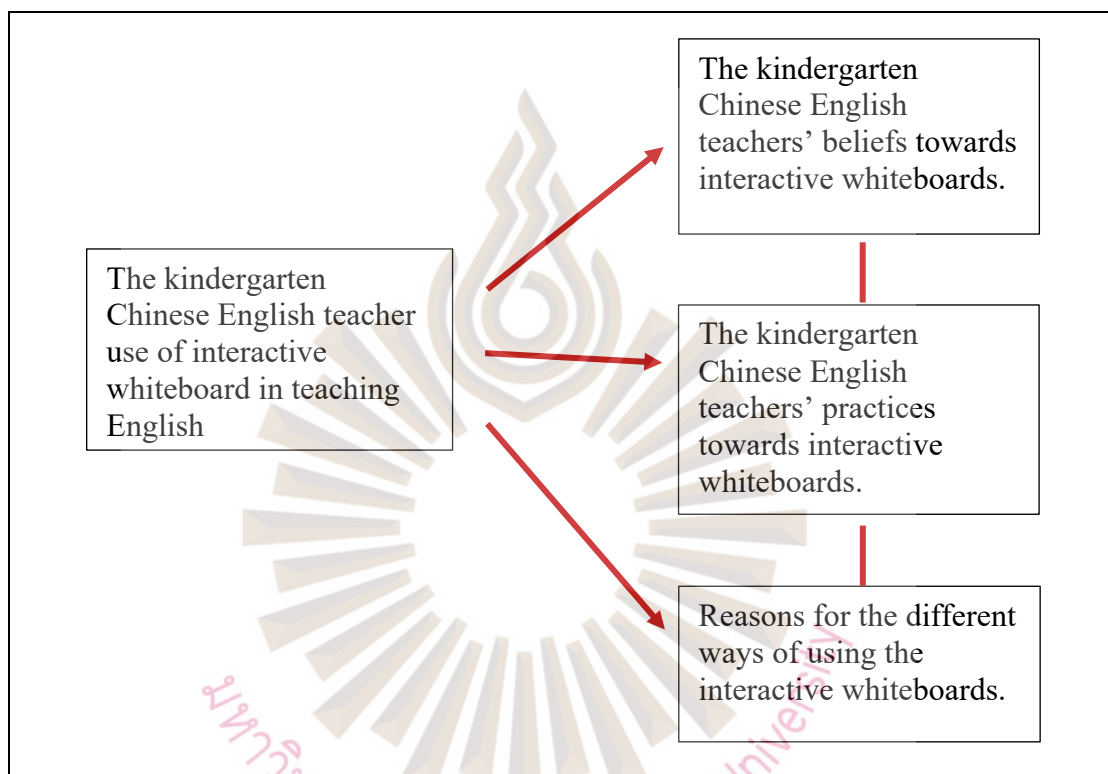


Figure 1.1 Illustration of the Conceptual Framework

1.6 Significance of The Study

1.6.1 Theoretical Perspective

From a theoretical perspective, this study examines whether teachers' beliefs about teaching using interactive whiteboards work in teaching practice by conducting a research analysis of the current situation of kindergarten English teachers' teaching beliefs about using interactive whiteboards in China, which was conducive to providing references for theoretical research on kindergarten English teachers' teaching beliefs about using interactive whiteboards and broadening the scope and

connotation of teacher belief research. It provided empirical data for future research and complements the research on teachers' teaching beliefs about using interactive whiteboards in the kindergarten teaching field. It also provided a new research perspective to promote the reform of kindergarten English teachers' educational philosophy and model.

1.6.2 Practical Perspectives

1.6.2.1 Improving Kindergarten English Teachers' Teaching Abilities Using Interactive Whiteboards

Numerous studies had demonstrated that teachers' beliefs had a more important influence on their educational and teaching activities as well as their professional development than their knowledge. By examining kindergarten English teachers' teaching beliefs and teaching practices using interactive whiteboards, it was important for teachers to refine their teaching concepts and improve their teaching activities in the process of teaching with interactive whiteboards in the classroom. Teachers can recognize the importance of their beliefs, gain a deeper understanding of their conscious and unconscious beliefs, form correct and reasonable teacher beliefs, consciously evaluate and reflect on their teaching practices, improve their vocabulary teaching abilities, and promote professional development.

1.6.2.2 Improving Children's English Learning Participate

Kindergarten teachers' teaching beliefs and classroom teaching practices were interrelated, and teachers' classroom practiced determine what kind of feedback and learning outcomes students receive. Therefore, analyzing kindergarten English teachers' teaching beliefs and teaching using interactive whiteboards is beneficial for teachers to adjust their teaching styles, provided learners with more effective vocabulary instruction, and enhance learners' interest in learning English and their English communicative competence. For children, the classroom learning process was one in which children actively acquire knowledge, pleasure, experience,

and success. The interactive benefits of the interactive whiteboard helped increase children's classroom participation and improve the level of classroom interaction so that children can actively participate in classroom learning activities. It helped children to explore the integration of English knowledge in English classroom teaching.

1.7 Limitations of The Study

Due to the small sample size, the results of the questionnaires and interviews only be applicable to small schools in similar contexts. The teachers in the study were the young teachers who are familiar with digital technology. Thus, the findings from the study cannot be applied to the contexts with the teachers of mixed digital technology abilities or big-size schools with many teachers.

1.8 Definition of The Key Terms

To better understand this study, the following terms are defined in the context of this study.

Interactive Whiteboards

The term refers to the instructional tool used in this study. Interactive whiteboard consists of hardware such as induction whiteboard, electronic pen and supporting teaching software. It combines computer technology, microelectronics, and electronic communication technology with human-computer interaction. With the emergence of new IWB classroom teaching information tools, the traditional blackboard and projection screen are gradually replaced. It effectively facilitates the teaching and learning of teachers and students in the classroom.

Kindergarten English Chinese Teachers

The term is defined as Chinese teachers who conduct English teaching activities with children aged 3 to 6 years. In this study, children's English teachers working in EF English training schools in Kunming, Yunnan Province selected as the

experimental subjects. The age of the experimental teachers ranges from 28 to 35 years old, and approximately 75% of the teachers are female. In addition, the teachers in this study already had 1-5 years of experience teaching English and had more than one year of experience using interactive whiteboards.

EF's Teacher Beliefs

With reference to scholars' definitions and with due consideration to their applicability in this study, this study defines "beliefs" as kindergarten teachers' beliefs about using interactive whiteboards for English language teaching. These beliefs are based on teachers' own knowledge, experiences, and other relevant factors that directly or indirectly influence their teaching practices and effectiveness. This study drew on Xu's (2014) definition of teachers' beliefs about using instructional tools. according to Xu (2014), teachers' beliefs about using instructional tools mainly include: teachers' understanding of the value of using a certain instructional tool; and teachers' understanding of the meaning of using a certain instructional tool. Based on Xu's theoretical support, this study divided kindergarten English teachers' beliefs about the use of interactive whiteboards into two dimensions: kindergarten English teachers' beliefs about the value of using interactive whiteboards and kindergarten English teachers' beliefs about the meaning of using interactive whiteboards. In addition, three scholars, Xu (2014) and Kim (2010) were consulted for the design of the questions on teachers' beliefs in the questionnaire, classroom observations, and semi-structured interviews.

Practices

The teaching practices in this study refer to a set of teaching practices that arise from kindergarten English teachers' use of interactive whiteboards to maintain and facilitate children's English learning. In this study, it can be considered that kindergarten English teachers' teaching practices using interactive whiteboards are the sum of various activities that teachers use interactive whiteboards in the process of teaching English and kindergarten teachers' classroom practices are strongly influenced by their pedagogical beliefs. This study was based on Zhang's (2015) theory of teachers' teaching practices, and this study designed the questions on

kindergarten English teachers' practices of using interactive whiteboards along five dimensions.

Reason for Using Interactive Whiteboard

This study defines the reasons why kindergarten English teachers choose to use interactive whiteboards as the reasons why kindergarten English teachers choose to use interactive whiteboards for children's English teaching activities among the diversity of teaching devices. In recent years, with the increasing refinement and popularity of interactive whiteboard devices, researchers have begun to focus on the reasons why kindergarten English teachers choose to use interactive whiteboards for their teaching activities. In this study, the researcher used three experimental instruments: questionnaires, classroom observations, and semi-structured interviews, and further analyzed the resulting experimental data to draw conclusions. The reasons for kindergarten teachers in the study to use interactive whiteboards for classroom instruction received strong influences from classroom beliefs and practices.

English as a Means of Instruction

In this study, English as a means of instruction will be based on the English language immersion of children aged 3 to 6 years old. "English immersion" refers to a period when children are "immersed" in a second language environment, during which the kindergarten teacher communicates only in the second language. In addition, immersion in English for children means that the English teacher uses the interactive whiteboard as the primary teaching tool to teach English to children by immersing them in the English environment using games, videos, and music.

Chapter 2

Literature Review

This literature review chapter first introduced research related to kindergarten English teaching, discussed the characteristics of kindergarten English teaching and the special features of kindergarten English teaching based on the relevant theoretical foundations of kindergarten English education, and discussed the content and current status of kindergarten English teaching in China. Next, in the second part, the teacher team of the experimental school, EF English School, the teaching curriculum and demonstrates EF's unique teaching system, as well as introducing how EF teachers use the interactive whiteboard. In the third section, teachers were shown how to use the interactive whiteboard in the classroom compared to the traditional classroom, and the advantages and disadvantages that the interactive whiteboard brings to teachers and students in English courses are explained. Next, in the fourth section, the basic information about interactive whiteboards and their current development in China and abroad is introduced, as well as how teachers can use interactive whiteboards to present different teaching contents in the classroom. In the next section, the researcher introduced beliefs, teachers' beliefs, and the relationship between teachers' beliefs and teaching practices, and discuss kindergarten English teachers' beliefs about using interactive whiteboards to support English language teaching. Finally, a summary of relevant theories and a review of related research are presented.

2.1 Research on English as A Means of Instruction

Scholars usually classify children into infants and children according to their ages, but there was no strict boundary between these stages (Chen, 2019). The children in the study were kindergarten children aged 3-5 years old.

According to the linguist Krashen, second language learners acquire language skills in two different ways. One was learning, which was the process of consciously learning a language (Gao, 2022; Hong, 2018). The other is acquisition, which is a subconscious process of learning a language, just like learning a native language (Krashen, 1985). For kindergarten children aged 3-6 years, the first type of acquisition focuses on learning forms and methods of expression through interpretation and analysis by the kindergarten teacher. On the other hand, the second type of acquisition comes more from meaningful communication in the natural environment, and kindergarteners focus more on expressing ideas in conversation (Yu, 2020; Duan, 2019). An important difference between the two is that learning is a conscious process, whereas acquisition is a subconscious process, with the former being used mainly for foreign language learning and the latter for native language learning (Krashen, 1985). Since this paper examines the teaching of English (non-native language) to children by Chinese kindergarten English teachers, the authors only examine the process of learning by kindergarten children-that is, the process by which Chinese kindergarten English teachers help children to acquire knowledge consciously and actively.

2.1.1 Theories related to English Education for Kindergarten Children

Many foreign and domestic studies related to kindergarten English education are mainly based on second language acquisition theory and general cognitive development theory of children, which provided strong theoretical support for kindergarten English education.

2.1.1.1 Second Language Acquisition Theory

Second language acquisition is a natural process of language development in young children, and “acquisition” is a natural subconscious process of language development in young children (Chen, 2020; Xing, 2022; Yu, 2020). There are different definitions of “second language” in academia. Some linguists have emphasized the difference between a “second language” and a “foreign language,”

which refers to a language other than the native language in a bilingual or multilingual environment (Duan, 2019; Ying, 2022; Wei, 2020). Lenneberg's "critical period hypothesis" suggests that the critical period for language acquisition is from about age 2 to adolescence, during which language is acquired naturally and effortlessly, but after a certain age, the brain no longer has the capacity for such language input (Ellis, 1999). With the development of the critical period hypothesis theory of language learning, English language learning is becoming increasingly popular and English language initiation is occurring earlier and earlier (Zhang, 2022; Zhu, 2017). Many aspects of children's second language learning resemble adults' second language learning, but children's comprehension, cognitive abilities, learning efficiency, and thinking styles are still very different compared to adults (Ye, 2019; Chen, 2020).

As a result, children's second language acquisition is receiving more and more attention and research. Extending to kindergarten English teaching, second language acquisition theory suggests that the process of kindergarten English learning is complex and has a variety of complex constraints (Bian, 2022). Children's own factors as well as learning strategies and learning beliefs all have an impact on children's second language learning (Dong, 2021; Wei, 2020). Children must be aware of the intrinsic and extrinsic factors that influence second language acquisition, and as kindergarten teachers, they should pay more attention to the influence of intrinsic and extrinsic factors on children's second language acquisition so that they can apply these factors appropriately and effectively in their teaching practices to facilitate English language teaching (Feng, 2021; Ye, 2019; Dong, 2021).

2.1.1.2 Theories of children's general cognitive development

According to Piaget's theory of children's general cognitive development, children's mental development is divided into four stages. His idea tries to understand not only how children acquire knowledge, but also the nature of intelligence (Badakar, 2010). It divides cognitive development into four stages: sensory-motor stage (0-2 years); preoperational stage (2-7 years); specific operational stage (7-12 years), and formal operational stage (12 years and more). Piaget's theory

was the first to describe the basic stages of children's thinking development and made an important contribution to further research on the process and laws of children's thinking development (Dong, 2021; Pang, 2020; Zhang, 2022; Jin, 2020).

In summary, according to the general child cognitive development laws, the kindergarten children who are in the preoperational stage, aged 3 to 6, are to be studied in this study. Children in the preoperational stage of the study think in the following ways: 1) Children begin to think symbolically and learn to represent objects with words and pictures (Liao, 2022; Ma, 2019). 2) Children of this age tend to be self-centered and have difficulty perceiving things from the perspective of others (Liu, 2020; Zhu, 2020). 3) Even though they are improving their language and cognitive skills, they still tend to think in very precise terms (Liu, 2021; Pang, 2020). Although the foundation for language development is established in the previous stage, the emergence of language is one of the main signs of preoperational development (Liu, 2021; Liao, 2022). Therefore, the kindergarten teachers who are the subject of this paper need to arrange and plan English teaching activities using interactive whiteboard assistance according to the general children's cognitive development. This stimulated children's interest in learning and complete the learning content to achieve the teaching objectives.

2.1.2 Characteristics of kindergarten children's English learning

Based on the general children's cognitive development, kindergarten children are full of strong curiosity and interest in the unknown, so children often have difficulty concentrating during English teaching, are easily distracted, and can maintain their attention for a short period of time (Yan, 2022; Zhao, 2017). Therefore, kindergarten teachers often need to combine the following characteristics to organize teaching activities when teaching English to school children (Ye, 2019; Mei, 2021).

2.1.2.1 Children acquire knowledge through facial expressions and visual pictures

Children's thinking can be divided into intuitive motor thinking and concrete visual thinking (Liao, 2022). Children's thinking is a combination of intuitive and tactile, e.g., children's thinking combines concrete images of things, surface images, and children's associations with surface images of things. The lack of distinctive materials, diverse activities, and accurate settings for teachers to use in instructional activities in the curriculum can limit children's visual thinking patterns. As a result, children understand and communicate language through spontaneous movements, nuanced gestures, and accurate contexts (Zhen, 2019; Li, 2020). Therefore, for children, kindergarten English teachers combine curriculum content with imagery-based teaching methods. By applying interactive whiteboards in the classroom, it can assist kindergarten teachers in creating English contexts and creating an atmosphere for children to acquire knowledge by visually stimulating children's visual thinking patterns through pictures and videos (Liu, 2022; Duan, 2019). For example, through the animal curriculum, teachers can use the interactive whiteboard to play relevant flash animations to allow children to visualize the images, and its teaching effect is far better than the traditional classroom.

2.1.2.2 There is a latent period for children to learn English

Children must first learn to "listen" before they can speak, read, or write. According to British educator Palmer, "Children speak their native language only after a period of incubation." External language input accumulates in the preschooler's brain throughout the incubation period, forming the subconscious and awakening the language information in the brain (Dong, 2021; Gui, 2019). The latency period is the first step in language comprehension and expression. Once children reach a certain level, they acquire and use language under the influence of an external communication environment (Palmer, 1969). The latency period is the time between when a child understands his first words and when he can utter them. Therefore, kindergarten teachers must follow this principle when organizing preschool English teaching activities. Children's level of listening development will determine the development of their speaking skills, and children will only be able to speak English once they have heard enough English in an English-speaking school. By introducing

interactive whiteboards into the classroom, teachers will combine video, music, and pictures to reveal the essence of things and their interconnections directly, creating an all-English listening environment that will help children pass through a “latency period” and form a subconscious that will awaken the English messages in their brains.

2.1.2.3 Affinity motivation motivates children to learn language

Affinity motivation refers to learners’ absorption of language knowledge in a specific context (Liu, 2022; Zhang, 2021). Children learn and acquire language to adapt to their language environment, join a language group, move forward in the group, and develop their own identity (Li, 2019; Wang, 2020). For example, children need to rely on their parents and kindergarten teachers at home. They must be in the presence of their parents and teachers to feel safe. Therefore, when children are in a second language environment, they engage and try to acquire new language rules to maintain their old sense of security and to satisfy the desire for communication and harmony (Zhang, 2022; Han, 2021). At this age, young children view second language acquisition as a means of gaining a sense of emotion, security, and accomplishment through language learning, rather than as a chore that needs to be completed. Teachers who can combine affinity motivation with language lessons can demonstrate instruction that far exceeds that of traditional classrooms.

2.1.2.4 Children experience a critical period of language acquisition

As with native language acquisition, the critical period for second language acquisition is from age two to age twelve. Before puberty, the brain is flexible enough to allow children to acquire a first language as well as a second language. After adolescence, the left brain becomes less plastic, making second language acquisition more difficult. The beginning of children’s English education is also a critical period for adolescents to learn a second language (Scovel, 1969). Therefore, children should feel the pleasure of language acquisition from the

beginning and bright stimulating activities should perceive and acquire language (Li, 2020; Zang, 2020).

2.1.3 The special characteristics of kindergarten English teaching

2.1.3.1 The special nature of the purpose of teaching

The goal of language learning for kindergarten children is not to acquire a high level of English or an extensive vocabulary, but to develop children's interest in learning English through English language teaching activities. Oral practice promotes the development of children's language skills and their acceptance of the subject language (Wang, 2020; Yan, 2022; Gui, 2019). When kindergarten teachers focus on the specificity of children's instructional purposes in the classroom, children's language learning contributed to the development of their conversational skills, scientific language acquisition skills, worldview, and appreciation of different cultures (Wu, 2020; Lu, 1999).

2.1.3.2 The specificity of teaching methods

ELT methods have a positive impact on all aspects of children's development. In order to maximize the effectiveness of teaching English to children, the first step is that kindergarten teachers need to develop children's interest in English (Wang, 2020; Chen, 2020; Hu, 2021). This required choosing scientific teaching methods and measures that are appropriate for children's characteristics, mastering the language learning patterns of preschool children, considering the physical and mental development of preschool children, and ensuring that kindergarten teachers can create a positive teaching atmosphere (Xing, 2022; Jin, 2020). Keeping children interested in what they are learning will help them eventually acquire knowledge of English. The performance of interest orientation, interest development, and mastery of English language learning interest development methods facilitate children's English language teaching activities (Chen, 2019; Wei, 2020; Li, 2021). Therefore, in children's English teaching activities, teachers should integrate language learning into daily life, intuitive

teaching methods, and teaching in the home environment. Through extensive exposure to English, children develop a subtle understanding of English.

2.1.3.3 Specificity of Teaching Content

Kindergarten English instruction emphasizes realism and teachers' use of real-world examples in the classroom. Teaching English to children through interactive whiteboard presentations is a great way to immerse them in the language and help them fall in love with English (Hong, 2018; Ye, 2019). Teaching English to children is determined by their age and psychological developmental characteristics and is within their range of acceptance (Hua, 2018; Ma, 2021). The instruction and the total amount of vocabulary they are exposed to, as well as the instructional requirements for visual, auditory, oral, play, and performance, should be appropriate for most children, and the basic content should include what is familiar to them (Lu, 2021; Hu, 2021).

2.1.4 The current situation of English teaching in Chinese kindergartens

At present, there are many different types of kindergarten English training and education institutions in China, with varying levels of education (He, 2021). To have a more comprehensive understanding of the current situation of kindergarten English teaching, this paper examines the current situation of kindergarten English teaching from four aspects: learning content, learning materials, learning styles, and learning methods.

2.1.4.1 Learning Content

There are many kinds of English teaching materials in kindergartens in China, and the learning contents vary, but most of them are arranged according to the concept of increasing the difficulty from shallow to deep. The kindergarten stage is the stage where children learn English to lay the foundation, and what they learn is the most basic knowledge (Ma, 2020).

In the first stage, which is the 26 letters of the alphabet, children first learn how to pronounce and write the 26 letters of the alphabet. Children are also introduced to simple and commonly used three- or four-letter words such as: colors (red, blue), numbers (one, two), and names (I, you, he, she).

In the second stage, children learn some basic action commands and learn some common verbs to do the corresponding actions, such as: turn on, turn off, sit, stand, speak, listen, etc. These words are often used by teachers in the classroom, and if children can understand these verbs, teachers will be able to use English as classroom language without any difficulty (Liu, 2020; Wang, 2020).

In the third stage, children are exposed to some simple basic sentence patterns, such as narrative sentences (I am fine.); greetings (How are you?); special questions (What is your name?); general questions (Do you have a pencil?) etc. They can simply ask others and introduce themselves to others.

In the fourth stage, after children have built a certain foundation, they need to expand their vocabulary and learn some common words that are closely related to their lives, including colors, stationery, animals, fruits, numbers, five senses, body parts, and so on (Pang, 2020; Mei, 2021). These words include colors, stationery, animals, fruits, numbers, five senses, and body parts. Some early childhood English training institutions also teach children the use of prepositions of orientation (at, in, on), indicative pronouns (this, that), personal pronouns (I, me), plural forms of nouns, common verbs, common adjectives, and progressive tenses. However, the content of English for young children is not systematic and coherent.

2.1.4.2 Learning Methods

English is taught in two ways in kindergarten, one in the classroom and the other at home. Parents tend to rely too much on classroom teaching and learning in a single way, making it difficult for children to learn English in their daily lives, let alone use it (Ma, 2019; Zhang, 2022; He, 2021).

2.1.4.3 Teaching Methods

English teaching in kindergartens in China is aimed at comprehension and application, and the traditional learning methods of rote memorization and mechanical drills have been abandoned. The current methods usually used by kindergarten English teachers in the classroom can be roughly divided into three kinds: whole-body response method (TPR teaching method), Orff teaching method, and interactive whiteboard-assisted teaching method (Zang, 2020). The main characteristic of the whole-body response method is that it emphasizes students' visual, auditory, and sensory unity through their body's motor response to language, thus improving their comprehension of language (James, 1966). The Orff method focuses on the ease of learning English at a certain pace for young children (Carl, 1895). The interactive whiteboard-assisted teaching method mainly uses the interactive whiteboard as a carrier and some multimedia materials, such as teaching videos and teaching software, to provide young children with some examples and imitations of role models, so that they can learn English through examples and imitations (Li, 2021; Pang, 2020). Teaching English to young children is mainly oral, so teaching mostly uses listening and speaking methods, such as listening to the teacher read words or sentences and following them in class, listening to and following conversations in audio, watching, and following conversations in videos, and talking with teachers, classmates, or others in prescribed contexts. Teacher-assisted reading is also a common method for teaching English to young children, but for young children it is limited to short sentences with visual illustrations.

2.1.4.4 Teaching Materials

Teaching materials are increasingly written with attention to children's psychology and interests, their growth and cognitive patterns, highlighting lively and interesting features, written with the participation of multinational educational institutions or individuals to ensure correctness and immediacy of writing, with content mostly based on the theme of daily life, in the form of stories, games, children's songs and songs, with beautiful, visual and vivid pictures on every page,

emphasizing overall language learning for young children, increasing communication opportunities and pay attention to the development of young children's English listening and speaking skills (Wei, 2021; Li, 2020).

2.2 Traditional and Interactive with Whiteboard-Assisted English Teaching at The Kindergarten Level

2.2.1 Traditional English Teaching in Kindergarten

Traditional English teaching is face-to-face teaching. In a traditional English classroom, the teacher speaks, and the students listen. Board books or board drawings are used to help children understand and learn what they are learning (Xing, 2019; Xiao, 2021). This model of teaching has many disadvantages for young children, which can be broadly summarized into two points:

1) It is difficult for children to take initiative and be motivated in the traditional English classroom.

The traditional Chinese English teaching model is teacher-centered, with the teacher playing the role of facilitator in the classroom (Yu, 2019; Zhu, 2018). Children are at a young age level and remain passive for a long time, with the result that their subjective cognitive and thinking skills are stifled by the teacher; children often end up losing interest in learning English in the traditional classroom due to the characteristics of language acquisition and the types of learning thinking and learning styles that are significantly different from those of adults (Miao, 2018; Gao, 2022).

2) The traditional English education model is straightforward.

In traditional English teaching, teachers mainly explain to students through board books, which makes the whole classroom dull and fails to ignite children's interest in learning. Students cannot learn from such a boring English class

(Wang, 2020). Due to the special nature of children's learning style, the teaching method using only blackboard + chalk does not meet the cognitive rules and characteristics of children, and this educational method can significantly reduce the efficiency and characteristics of children's language learning.

With the progress of the times and the application of interactive whiteboards in the education industry, the traditional English classroom can no longer meet the teaching needs of teachers and the learning needs of students, and thus is gradually eliminated and replaced by the interactive whiteboard English classroom.

2.2.2 Interactive whiteboards to assist kindergarten English teaching

Interactive whiteboards have rapidly entered the field of language education in China. Interactive whiteboard-assisted English classrooms can provide a relatively free and relaxed language environment for each child. Interactive whiteboards serve as an interactive medium that enhances communication between teachers and students (Zang, 2020; Xing, 2022). In short, the use of interactive whiteboards in kindergarten English education has accelerated in recent years. Interactive whiteboards in the classroom can demonstrate their great advantages as a modern teaching platform. Interactive whiteboard-assisted instruction can help students acquire knowledge. Kindergarten teachers can use interactive whiteboards to present a variety of text and images. Interactive whiteboards make scenes appear three-dimensional and diverse, increasing students' interest in learning (Wu, 2020). When various types of images are combined, students are more receptive to knowledge. This audio-visual sensory stimulation can help students understand new instructional models faster and more effectively (Pang, 2020).

2.2.3 The functions of interactive whiteboards in kindergarten English teaching

The following section presents the functions of interactive whiteboards that bring benefits to the children.

2.2.3.1 Stimulating Children's Visual Abilities

Among the many symbolic representations, children most often use “graphic” symbols. According to Vygotsky, “In the development of children’s speech, Vygotsky can confirm the existence of a pre-intellectual stage.” Thus, the sensitive period for the development of pictorial language is earlier for children than for written language. Until young children fully master their native spoken language, their thinking, conceptual understanding, and the need to communicate and transact remain in a state of development. During this developmental period, children become adept at using “pictures” to express their needs (Vygotsky, 1934).

Interactive whiteboards create a cognitive developmental environment for children and provide them with classroom-relevant pictures, images, and videos to stimulate their visuals, stimulate their interest in learning English, and improve their English learning. In addition, research confirms that the use of videos and pictures can indeed help children develop listening and grammar skills (Zhang, 2022; Xiao, 2021). In addition, in extensive teaching practice, researchers have found that kindergarten teachers’ use of interactive whiteboards in the classroom can also increase the amount of communicative discourse between teachers and children in the classroom. Therefore, the use of interactive whiteboards in kindergarten English instruction meets the developmental needs of children.

2.2.3.2 Meeting children's cognitive characteristics

Interactive whiteboards can combine text, graphics, photos, videos, animated sounds, and other elements to create visually and aurally stimulating content. Interactive whiteboards assist in teaching English with the advantages of intuitiveness, interactivity, personalization, and openness. According to cognitive psychology, 94% of information in daily life is obtained through visual and auditory means, of which 82% is obtained visually and 12% is obtained aurally (Ye, 2021). Feng (2020) argues that the integration of interactive whiteboards into children’s daily education is a novel and exciting educational approach that has the potential to increase children's interest

in learning and attention compared to primary and secondary school students' inability to focus on learning (Xiao, 2021; Wei, 2020). In addition, by using interactive whiteboards, teachers can develop new teaching methods, such as audio-visual dual instruction, to promote children's understanding and mastery of knowledge, thereby enhancing children's imagination. Children can use interactive whiteboards to access various types of information in the classroom. Interactive whiteboards can display written text while also transmitting input through sound, images, and video, which allows students to understand content faster. Interactive whiteboards can help teachers help students grasp content faster through video (Zhang, 2017).

2.2.3.3 Stimulating children's interest in learning

This atmosphere makes language learning and teaching more effective (Mayer, 2010) argues that young children enjoy novelty, variety, and moving objects. Young children's fascination with objects focuses on their novelty, versatility, and vividness. Because interactive whiteboards can provide a wealth of information in the form of audio, video, pictures, animations, text, and other materials, teachers of young children can create vivid, visual, and contextualized instructional materials that capture young children's desire to learn, stimulate their desire to learn, and visually present content so that young children can acquire knowledge in an enjoyable, relaxed environment (Wu, 2020; Ma, 2020). It goes without saying that if the early childhood teacher is in the classroom listening to the children, the amount of information in the children's brains will be minimal. When an interactive whiteboard displays auditory material that presents content to children through visual and auditory channels, children can perceive visual and auditory material stimuli and can access both visual and auditory information. It stimulates students' interest in learning, thus effectively improving teaching and learning.

In summary, the effectiveness of whiteboards in the classroom can be summarized as follows: they help teachers to control classroom instruction very effectively; they stimulate student learning and classroom interaction; and they integrate cross-disciplinary content. The interactive performance of whiteboards can

be divided into three stages, i.e., supporting direct instruction, interaction, and enhanced interaction. The three process stages are also expressed as three processes, i.e., the stage where the teacher sees interaction as a supplement to the traditional blackboard, the stage where the whiteboard is used as a support tool for interactive activities, and the stage where the teacher's role eventually changes from traditional professor to current instructor.

2.3 Education First

2.3.1 Introduction of Education First (EF)

Education First (EF) was founded in 1965 by Bertil Hult. EF is now the world's largest private English education provider, specializing in teaching English to children aged 3 to 18. EF started as an overseas school trip and has accumulated and accumulated over a long period of time to become a worldwide English training provider. EF's mission is to break down language barriers so that people around the world can better integrate and communicate. EF now has more than 15 million students around the world, and its teachers exceed 40,000. Today, EF has turned the world into an English classroom with more than 37,000 employees serving 15 million students in 52 countries. EF has a 40-year history worldwide and a 10-year history in China. EF has been operating in China since 1994, providing English instruction to Chinese students. EF schools are in more than 50 locations in China, from Urumqi to Hangzhou and from Harbin to Shenzhen operates not only adult English language schools in China, but also a variety of English language schools for teenagers and children.

2.3.2 Components of Education First

This section presents the components of Education First which are 1) EF's Teachers 2) EF's Curriculum 3) The EF Classroom Environment 4) EF's Interactive Whiteboards Devices and 5) EF's Interactive Whiteboards Training.

2.3.2.1 EF's Teachers

Recruitment companies for teachers are in China, with offices in Boston, London, Manchester, and Sydney. Teachers come from the UK, USA, Canada, Australia, Ireland, and New Zealand and are native English speakers. All teachers must have an internationally recognized TEFL certificate and a “dual” Cambridge Professional Teacher Qualification, confirm a teaching qualification, and be trained in EF's language training system to be hired; typically, only 5% of applicants are hired. Teachers who join EF must continue to receive training in teaching competencies. Students of the same level in a class typically spend most of their time with their native English teacher learning the language appropriate for them. In an interactive and collaborative classroom, teachers guide and help students develop their own understanding of the English curriculum.

2.3.2.2 EF's Curriculum

EF offers a variety of curriculum options for students of all ages. To maximize results, EF selects the most appropriate curriculum system for learning and receiving knowledge based on the student's personality. Efekta is a more adaptive, focused, and personalized way of learning English. EF English's exclusive instructional component is the Efekta system. The Efekta method teaches students all aspects of the language, including reading, writing, and listening, with an emphasis on speaking. The programs are geared towards three different age groups of learners: children (3-6 years old), adolescents (7-18 years old) and adults (18 years and older).

The most effective way to teach students to speak English fluently and confidently in the EF system is to provide plenty of opportunities for interaction in an authentic English environment, which is the ideal setting for students to explore the language. One of the EF curriculums covered in this study is the EF “Little Stars” program. This program is for children ages 3 to 6. These programs use audio, video, card cartoons, pull-out cards, and hand puppets to stimulate children's interest in learning. In addition, EF “High Achievers” is for EF youth ages 7 to 9. One of the

strengths of this program is that children learn through play. In the case of the Teen English classes. The teens between the ages of 10 and 17 are entering a critical phase of their English education as they prepare for high school and college entrance exams. EF's Pathfinder program offers five levels of English instruction for students ages 10 to 13, from beginner to intermediate, covering all skills: speaking, reading, writing, listening, grammar, vocabulary, and pronunciation. Before beginning their studies, students complete oral and written exams to ensure they are placed in the most appropriate class. EF's Real English program provides students aged 14 to 18 with the opportunity to practice their English in a friendly learning environment. They will gradually develop confidence and fluency in spoken English while honing their overall language skills in preparation for important school exams. In addition, EF Travel English is open to students who are interested in studying abroad.

2.3.2.3 EF's Constructivist Classroom Environment

In an EF English classroom, "classroom environment construction" refers to the process of creating a learning environment and incorporating interactive whiteboard technology and teaching aids. The classroom environment usually consists of many components, including the different roles of the teacher and students, the classroom atmosphere, the use of instructional materials, the size of the class, and the location and environment of the class. A constructivist learning environment requires a constructivist teacher and a constructivist classroom environment that is different from the traditional classroom environment in a regular school. Constructivist teachers organize their students into learning groups where they can work in small groups, collaborate on problems, exchange, or share creative ideas or their perspectives on topics, and demonstrate a high degree of adaptability. In a constructivist classroom, the atmosphere and environment are open, democratic, and dynamic. Instructional activities are interactive, collaborative, and student-centered. Students and teachers are on equal footing. Class sizes are small; teaching tools are abundant, varied, and modern. Classroom locations and environments are both convenient and quiet. The focus of instruction is on the process of learning, not the outcome of learning. At EF's

Kunming campus, EF offers workshops, face-to-face classes, life clubs and career services for learners of all ages. Class sizes typically range from 10 to 12 students.

2.3.2.4 EF's interactive whiteboards devices

Interactive whiteboards are the most popular teaching tool to help kindergarten children learn languages better by creating authentic interactive environments. EF's unique iLAB (Innovative Language Lab) learning system is a powerful learning tool developed and designed by EF's academic R&D team based on the widespread use of interactive whiteboards, computers, cell phones and the Internet in the classroom. iLAB contains an online system that covers the four components of English language learning: reading, writing, listening, and speaking. The following will show how iLAB can help teachers present different forms of instruction on the interactive whiteboard.

1) Through video--Interactive whiteboards focus children's attention and make what is being taught interesting and memorable. Each movie is a short video clip, and if they put the different movies together, it makes a complete story. For example, interactive whiteboards are used to allow children to connect the words and pictures they are learning. When using the interactive whiteboard, children are maximally engaged by the sounds that the interactive whiteboard switches and makes. For the children, they can enjoy the novelty of the interactive whiteboard while practicing the English words they have learned today.

2) Through audio--Pronunciation tools are highly personalized tools that help children focus and practice their pronunciation skills by allowing them to touch the interactive whiteboard in the classroom. This not only allows children to confirm correct English pronunciation, but also allows them to constantly perceive different English accents.

3) Through pictures--The most common way to teach English to young children is to perceive words through pictures. Through the interactive whiteboard,

children click on the pictures and the whiteboard will show them the audio of the words and then the teacher will instruct the students to practice the pronunciation of the words repeatedly by imitating them.

4) Teaching through video--During the new crown epidemic, students can also meet with their teachers through online smart classes to practice speaking, writing, and listening comprehension skills. This means that teaching and learning is not limited by location, time, or illness.

2.3.2.5 EF's Interactive Whiteboards Training

Teachers who join EF must continue to receive training in ELT skills and the use of interactive whiteboard equipment. Teachers will be trained in the use of interactive whiteboard technology from both theoretical and practical perspectives.

1) Training in the theoretical foundations of interactive whiteboard teaching.

Theory is the cornerstone of practice, and teachers must master the theory and methods of modern educational technology to use interactive whiteboard technology well for teaching. Some teachers are afraid of using interactive whiteboard technology in the classroom because they are afraid of making mistakes and of replacing the teacher with an interactive whiteboard. Therefore, the first step in the training is to overcome the teachers' psychological pressure so that they have confidence in themselves and understand the status of the interactive whiteboard in teaching. The training should be focused and leveled to train teachers in educational thinking and theory, including the basic knowledge of IT and curriculum integration.

2) Interactive whiteboard hardware application skills training.

All teachers at EF must pass relevant training and use interactive electronic devices in their courses. At the beginning of the training, teachers do not

know the function of the visualizer and how to operate it, so EF must make every teacher understand the role of the interactive whiteboard and how to use it. By analyzing the current situation of teachers' use of interactive whiteboard technology, EF knows that the level of teachers' use of interactive whiteboard technology directly affects the quality of teachers' teaching and students' learning efficiency. In the training work EF must make each teacher aware of the composition of the interactive whiteboard teaching environment, interactive whiteboard teaching development status and development direction; classroom interactive whiteboard equipment use methods and skills, based on mastering the use of hardware, to innovate independently.

3) Training of interactive whiteboard application capabilities.

According to the school's equipment and the equipment used by teachers, the training content of the interactive whiteboard software can be arranged, such as general optical slides and slides according to the school's equipment to determine whether to include in the training, computer software training is essential, mainly window basic operation, the use of common functions of word, the simple production of PowerPoint presentations, tabulation function.

4) Teachers need to have the ability to use interactive software, such as the Internet (basic search and query skills), and the use of e-mail communication.

Teachers need to have the ability of interactive whiteboard material processing software, including the processing of sound, image, video, and animation materials, the main software for sound material processing are WINDOWS self-contained recorder and the audio solver of Super Solver, image material processing software is Photoshop, video processing software is Premiere and other software.

2.4 Interactive Whiteboard Assisted Teaching

This section explains what the interactive whiteboard is and how it can be effectively used to assist teaching.

2.4.1 Status of Interactive Whiteboards

2.4.1.1 Definition of Interactive Whiteboards

Interactive whiteboard with the support of computer hardware and software, it has the functions of ordinary whiteboard, network multimedia and computer to realize the sharing of educational resources, human-computer interaction, and multiple interpersonal interactions (Yu, 2019; He, 2021). It contains a whiteboard screen that can be written, touched, and drawn and a sensor pen and operating software that integrates computer, communication technology, and blackboard, providing an intelligent platform for teachers and students (Wang, 2020; Lu, 2021). Since the end of the last century, it has undergone an evolutionary process from blackboard to interactive whiteboard. This process has three main stages: the first process is from blackboard to writing whiteboard; the second process is from writing whiteboard to electronic whiteboard; and the third process is from electronic whiteboard to interactive whiteboard (Charles, 2004).

2.4.1.2 Status of Interactive Whiteboards in Foreign Countries

The application and research of interactive whiteboards in the classroom has been carried out earlier in foreign countries, especially in developed countries such as the United States, Canada, Australia, and the United Kingdom. Thanks to the government's vigorous promotion, the application of electronic whiteboards is most perfect and mature in the United States (Liao, 2022; Zhang, 2022). The UK government also invests huge funds for the promotion of electronic whiteboards in primary and secondary schools, and conducts a lot of experiments on

the application of interactive whiteboards, and universities, research institutions and primary and secondary schools have achieved a lot of excellent results in joint research, in addition, the UK National Whiteboard Network also provides resources and technical support specifically for teachers to use electronic interactive whiteboards (Ma, 2020; Wang, 2020). Based on more and more practical evidence, the role of electronic whiteboards in teaching is also gradually recognized, and many countries in Asia, America, and Europe have also started to promote the use of interactive whiteboards in education and teaching (Zhang, 2016).

Many studies have been conducted abroad on the characteristics and functions of whiteboards, and the final results show that the use of interactive whiteboards can give full play to the characteristics of interactivity, significantly enhance the level of interaction and subjectivity of students' learning, help students to review and maintain the memory effect, and satisfy a wide range of students, which has a very important practical value in today's education field (Li, 2019; Pang, 2020; Xing, 2019).

2.4.1.3 Status of interactive whiteboards in China

The application and research of interactive whiteboards in China started late, and the actual use is still in the initial stage. However, in recent years, many scholars have made some explorations based on the theory of integrating media technology with classroom teaching curriculum. According to Li (2021), interactive whiteboards have become an important symbol of information-based classroom teaching under the new curriculum concept, and interactive whiteboards are highly efficient in English classroom teaching. In school English teaching, teachers can make full use of its technological advantages and effective compatibility with other media resources to enable students to learn language-verbal communication, interaction, and intellectual training, providing an intuitive, vivid, and effective teaching method for designing personalized and efficient classroom teaching (Feng, 2021; Gui, 2019). Given the interactive advantages of the interactive whiteboard, it helps build an interactive teaching environment that greatly enhances student participation, improves

the level of classroom interaction, and enables students to actively participate in classroom learning activities (Du,2019; Liao, 2022). Thus, interactive whiteboards also facilitate teachers to learn more about the differences in the way students process information and learning styles and can dynamically adjust their teaching methods and strategies based on student feedback (Lei, 2022; Liu,2020). The widespread use of new technologies like interactive whiteboards makes teaching methods more flexible and better adapted to teaching requirements. Interactive whiteboards play an important role in independent learning and exploring integration in children's English classroom teaching helps open new paths of change in English teaching and learning (Miao, 2021; Li, 2019).

The Ministry of Education will promote the deep integration of information technology and education teaching, assist schools in making full use of information technology to reform talent training and teaching methods, and gradually achieve full coverage of information technology in teaching and learning applications. Combining the latest Chinese education system policies and the highlight applications of interactive whiteboards in the implementation of distance education in the education sector during the fight against the new crown epidemic so far in 2019 (Ma, 2020; Lu, 2019). After that, more and more schools across the country also installed and used interactive whiteboard systems, and more and more scientific research institutions and educational teaching institutions launched research on the application of interactive whiteboards in the field of education and teaching around two aspects: one is to study the specific use of electronic interactive whiteboards in classroom education according to the characteristics of specific courses; the other is to analyze and study the functions of interactive whiteboards in many aspects and the impact on classroom teaching (Wei, 2020; Miao, 2021). The second is to analyze and study the functions of interactive whiteboards and their impact on classroom teaching (Gao, 2022; Lei, 2022; Mei, 2021).

2.4.2 Various tools and functions of interactive whiteboards

Interactive whiteboards help kindergarten teachers to better teach English in the classroom and make the process of teaching English in the classroom livelier and more flexible. Interactive whiteboards provide useful teaching aids such as playback, magnifying glasses, masks, recorded screens, thematic resource libraries, clock functions, etc., which make it easy to collect supplementary materials and facilitate information sharing between teachers and students. The following will demonstrate the use of the various tools and functions of the interactive whiteboard.

2.4.2.1 On-screen annotation and timely feedback

Since interactive whiteboards provide convenient writing and drawing functions, kindergarten teachers can apply them to teaching language subjects to achieve a learning method in which children learn language knowledge while exercising their thinking and imagination; applying them to teaching can present the results of students' practice and thinking, making it easy for teachers to identify problems and make timely evaluations. If children are in the classroom, the kindergarten teacher uses the electronic whiteboard to first present an electronic version of the text, explaining the use of the whiteboard screen annotation function to add some key words to mark (underline, etc.).

2.4.2.2 Keep partly hidden and partly presented

Based on the interactive whiteboard function, a masking function can be provided to change the background. Kindergarten teachers can partially present resources according to the learning process, which not only helps to focus children's attention but also effectively guides students to expand their thinking. It is particularly useful not only in new teaching practices, but also in regular practice and review sessions. For example, in children's English classes, the barrier feature is used at the very beginning of instruction to show objects one after the other. Thus, the interactive

whiteboard can effectively guide children's thinking and fully engage their interest in learning.

2.4.2.3 Drag-and-drop, flexible interaction

Based on the drag-and-drop, zoom and combination functions provided by the interactive whiteboard, kindergarten teachers allow children to experience the learning process in the drag-and-drop process and stimulate their thinking and creative abilities in the drag-and-drop combination. In teaching English to children, students cannot distinguish between words and their corresponding items. Teachers can use the "drag and drop" feature to drag graphics to the bottom of a given word. While dragging, students can clearly see the entire process of movement in a visual presentation in the classroom and continue to reinforce children's memory of the content through the dragging process. In lessons where children are learning about animals, the drag-and-drop feature is used to allow children to drag animals or words around the whiteboard so that students can learn animal words in a helpful and fun process.

2.4.2.4 Focus on zooming and highlighting key points

Based on interactive whiteboards that provide camera and zoom functions, kindergarten teachers can focus on presenting important content based on the focus of teaching and learning, making it easy to identify problems. For example, when teaching English to children, teachers can use the whiteboard's magnifying glass tool to help students double-check letter writing errors. Using the magnifying glass tool to zoom in on the details of writing and then having children observe them during the teaching process helps children develop an eye for detail and strengthens their memory of the letters they are learning.

2.4.2.5 Process Playback

Kindergarten teachers can use the playback function of the interactive whiteboard to help children recall their thinking by playing back the learning process. It helps children and teachers summarize the method, refine the approach, identify problems, catch the key, and solve the problem at the root. In language classes, teachers record the process of writing letters so that they can play back the process of writing letters at any time. Using the playback function, students can watch and practice, thus further clarifying the strokes and stroke order of letter writing and solving the difficult points of letter writing teaching.

2.4.2.6 Save function and accumulate resources

The interactive whiteboard provides a knowledge base and storage function to call learning resources and accumulate resources at any time. Live learning resources can be saved in various ways for easy review of old knowledge.

In addition to the six features mentioned above, whiteboards have many other very useful features. Interactive whiteboards are the best integrators of current classroom teaching and learning technologies (including digital electronics, computer technology, web technology, multimedia technology, audio technology, etc.). Interactive whiteboards feature the integration of diverse existing educational technologies and provide a more convenient operating platform for interaction between teachers and students (Li, 2020; Hua, 2018).

2.4.3 Benefits of interactive whiteboards for kindergarten children

Kindergarten children are active, articulate and have short attention span, which are all obvious characteristics of children (Jin, 2020; Feng, 2021). Therefore, in teaching English to kindergarten children, teachers should grasp the characteristics of students, create realistic language situations, enrich teaching methods, and guide students to learn independently (Li, 2020; Huang, 2020). If interactive whiteboards are used in the kindergarten English teaching stage, the content will be more vivid and

realistic, with illustrations and sounds. As a result, students' ability, interest, and teaching quality will change dramatically (Zhang, 2022; Duan, 2019).

2.4.3.1 Visualization can effectively stimulate children's interest

If the content is presented to children in the form of pictures and sounds, it can effectively attract kindergarten children's attention and lead them into the classroom and make them feel the charm of learning (Zhang, 2022; Lei, 2022). For example: When learning animals, the classroom situation must be reproduced with the power of the interactive whiteboard, which can present a lifelike image of animals in front of students' eyes, placing them in nature and stimulating strong curiosity (Lu, 2019; Hao, 2021); for landscape learning, scenes such as mountains, rivers, and grasslands need to be vividly depicted, but with just a word from the teacher, students will find it difficult to perceive, and may even find it boring and give up learning English (Gui, 2019). This is when the interactive whiteboard can play a good role in presenting the various scenes and colorful landscapes in front of children's eyes without reservation, thus attracting their eyes and showing the difference between the two teaching modes, and the final learning effect is evident to all (Zhu, 2020; Ye, 2019; Wu, 2020).

2.4.3.2 Kindergarten children can gain more by collecting linked knowledge

English is a comprehensive subject, so knowledge from other subjects is often involved in the learning process (Dong, 2021). Children's life experience and knowledge are still insufficient, and it is inevitable that they do not feel the pulse and image of English materials. Considering this, teachers must clarify the advantages of interactive whiteboards to help children better taste and perceive language and pay more attention to what they see and hear in their lives (Zhang, 2022; Chen, 2019).

2.4.3.3 Teaching and Learning with a Focus on Developing Children's Diverse Abilities

The combination of pictures, sounds, and colors is an unusual feature of interactive whiteboards (He, 2021; Pang, 2020). If teaching English to kindergarten children is made fun, students' reading, writing, and observation skills will be significantly improved, and over time, they will be equipped with multiple abilities such as aesthetics, problem solving, and analysis. With the effectiveness of interactive whiteboards, students can give full play to their imagination (Ma,2022).

More importantly, the interactive whiteboard is easy to operate because it is highly interactive for both kindergarten teachers and students (Mei, 2021; Bian, 2022). In addition, the implementation of the new curriculum reform provides them with a useful reference (Du, 2019). It gives priority to "learning" and reflects the individuality of "teaching" in English teaching. Through the interaction between students and teachers, students and students, and people and courseware, e-whiteboard teaching has greatly increased students' interest in learning and participation in teaching and improved the efficiency of English classroom teaching (Li, 2019; Zang, 2020).

2.5 The Teachers' Beliefs

The Teachers' beliefs influence how the teachers teach as they back up the teachers' choices of approaches, content and activities. The following section explains why the teachers' beliefs are important and worth studying.

2.5.1 The Studies of Beliefs

The study of teachers' beliefs is based on the study of belief, which can be conceptualized as an individual's judgment of the correctness or incorrectness of a proposition (Pajares, 1992) or as a series of conceptual representations of objective

things, people, and events themselves and their characteristics (Hermans, van Braak, & Van Keer, 2008, p. 128). “Belief” was first introduced by Plato in the Ideal State and defined as a relatively low-level expression of fact that does not belong to the realm of knowledge. Later, Hegel and his successors further enriched the connotation of belief, and “belief” began to be raised in modern philosophical studies. Pajares (1992) also suggested that beliefs were often mistaken for attitudes, values, judgments, opinions, and ideologies in the studies of that time. However, some scholars have argued that beliefs have a more affective and evaluative component than knowledge and operate by influencing cognition independently of knowledge-related cognition (Nespor, 1987).

In general, it is believed that beliefs refer to what individuals believe to be true, or to their inner world views and perceptions of content, and are implicit and external, personal, and subjective, sociocultural, and dynamic (Hu, 2021; Wu, 2022). Beliefs are implicit, exist at the mental level of individuals, do not have entities and cannot be directly observed, are difficult to explain and cannot be easily verified, but they are the source of individual decision making, guide individual behavior and are revealed from their behavior; beliefs are generated based on individual life practices and construct individual views and opinions in the process of their development, with certain individual subjective characteristics; at the same time, the generation and development of beliefs are also. At the same time, the emergence and development of beliefs are based on the interaction with others and society, which contains certain social and cultural characteristics; and with the interaction between individuals and society and culture, individuals’ beliefs will constantly undergo transmutation, and individuals constantly negotiate their beliefs with the external environment and integrate and update their belief systems through practice, which reflects the characteristics of dynamic development (Duan, 2019). With the gradual development of belief research, contemporary psychologists and educators have begun to integrate the concept of beliefs into teaching and learning contexts and have shown a high level of interest in teachers’ beliefs (Li, 2022). As individuals who draw on the classroom to shape the human learning experience and patterns of social development, teachers integrate their implicit and explicit beliefs into complex classroom settings, schools,

communities, and even larger national, international, and multicultural dimensions. This study reviewed research related to teachers' beliefs in the next section.

Table 2.1 Studies Related to Beliefs

Scholars	Conceptual definition
Rokeach, 1968	proposed the "belief system" hypothesis, which considers beliefs as aggregates.
Brown & Cooney, 1982	It is the aptitude (dispositions) for action and the factors that determine it.
Ajzen, 1985	Formation of attitudes guides actions and creates values that guide behavior.
Bandura, 1986	It is the best indicator of people's decisions.
Li S.D, 1995	It is a conception of value consciousness and a state of mind, something that is adhered to in thought and action.
Yu G.L, 2000	It is an individual's theoretical and personal view of society, reflecting behavior and psychology.
Wang Z.G, 2000	It is a personal construct, including a shared cultural inheritance.
Lin Y.G, 2008	It is a stable cognitive structure of society with strong personal emotions.
Xu Q, 2012	It is part of consciousness and closely related to knowledge; it is a mental structure of people's experience; it is shaped by sociocultural factors and is constantly evolving.

In summary, beliefs form the teachers' attitudes and guide their behavior and practices.

2.5.2 Teachers' Belief Studies

The study of beliefs began in psychology in the early 20th century. Along with the development of cognitive psychology, the field of education has seen a great

deal of research since the 1970s. Pintrich (1990) predicted that beliefs would become the most explored concept in the field of education (Pintrich, 1990).

Rokeach (1986) was the first to propose a “belief system” in which sub-beliefs of the belief system are organized in a “central-peripheral” form. Rokeach (1986) was the first to propose a “belief system” in which sub-beliefs are held in a “center-edge” format, with beliefs closer to the “center” being more stable and those far from the “center” being less stable (Rokeach, 1986) Richard & Lockhart (2000) categorized English teachers’ belief systems into five areas: English, learning, teaching, curriculum, and language teaching profession (Richard & Lockhart, 2020).

In the Chinese study, Lu (2019) analyzed English teachers’ beliefs and argued that no sub-belief can exist independently from the belief system and has different roles in the belief system with different impacts on teaching practice (Li, 2021). Xing (2019) classified English teachers’ beliefs into English language view, teaching view, learning view, teacher-student role view, environmental view, and professional view (Xing, 2022). Zhen (2019) proposed that the teacher belief system includes subject subculture, teacher experience, teaching experience, educational experience, level of pedagogy, and interactive colleague interactions leading to self-reflection (Zhen & Jiang, 2019). Zhao (2017) summarized and proposed five dimensions of Chinese English teachers’ beliefs in relation to their classroom teaching practices and the characteristics of English teaching: English language perspective, teaching perspective, learning perspective, cultural transmission perspective, and teacher-student role perspective (Zhao, 2019).

Teachers’ belief system is a complex, large, and orderly system, and everyone’s perspective differs. It involves not only the macro theories of education, but also the understandings and perspectives of teachers, students, curriculum, and other aspects. Although belief systems have entered the vision of researchers, there are few results of research on the formation and development of teachers’ belief systems from the perspectives of pedagogy and educational psychology, and even fewer studies on the relationships among sub-beliefs in belief systems (Ding, 2018).

Table 2.2 Studies Related to Teachers' Beliefs

Scholars	Conceptual definition
Clark & Peterson, 1986	It is a stock of its own knowledge that influences teachers' planning, interactive thinking, and decision-making.
Pajares, 1992	It is the educational beliefs held by teachers that encompass the teaching profession, students, subjects taught, roles, and responsibilities.
Kagan, 1992	It is a teacher's implicit and unconscious assumptions about students, learning, the classroom, and the content of instruction, as well as instigating individual knowledge.
Clandinin & Connelly, 1995	It is personal knowledge of practice, conscious or unconscious, that emerges from experience and demonstrates meaning in practice.
Calderhead, 1996	It is the views teachers hold about teaching, learning, learners, curriculum, the teacher's self-role, and other related concepts.
Porter & Freeman, 2002	It is the teacher's orientation toward teaching and learning, the teacher's view of students, the learning process, the role of the school in society, the teacher himself or herself, the curriculum, pedagogy, the purpose of education, teacher responsibility, and student competence.
Ye, Y, 1998	They are educational concepts and rational beliefs based on teachers' understanding of the nature of educational work.
Xin, Z.Q, 2000	It is a theory, viewpoint, opinion, and judgment about the phenomenon of teaching and learning.
Zhao, M.X, 2004	It is a high-level summary of one's educational thinking, an inner state of mind, and the core of professional quality.

Table 2.2 Studies Related to Teachers' Beliefs (Cont.)

Scholars	Conceptual definition
Guo X.N, 2008	It is a system of values that is developed in practice, including teachers' understanding of the nature of teaching, their choice of content, their view of the relationship between students' development and teachers, their determination of teaching goals, their use of evaluation methods and selection principles, their perception of their role as teachers, and their mastery of students' learning characteristics.
Wang H.X, 2008	It is the teacher's personal perception of educational phenomena related to teaching and learning
Yang Y.L, 2010	It is the teacher's endogenous perception of teaching and learning and its related contents
Jin A.D, 2013	It is the teacher's beliefs, attitudes, and psychological dispositions about the relevant factors in the teaching and learning process in a certain historical and cultural context.

2.5.3 Teachers' mastery of interactive whiteboard-assisted teaching theory

Scholars have argued that beliefs are dispositions that manifest themselves in an individual's cognition, emotions, and demeanor. Teachers' perceptions and emotions about whiteboard technology influence their beliefs about the use of interactive electronic devices to some extent. Teachers' beliefs about interactive whiteboard-assisted instruction refer to one's disposition toward the whiteboard, its use, and its impact on social thoughts and emotions (Deniz, 2000). Beliefs about interactive whiteboard-assisted instruction include fear of it, confidence in its use, curiosity about it, love of it, and prejudice (Lloyd, 1985; Marcoulides, 1989). Teachers' beliefs are critical to the successful integration and implementation of interactive whiteboard-assisted instruction in educational programs. Therefore, teachers' beliefs about interactive whiteboards have a significant impact on their acceptance and integration of whiteboard technology in the teaching and learning

process (Haferi, Fariz, and Bajti, 2018). Roussos (2007), teachers' lack of understanding and experience with information and communication technologies leads to a lack of confidence and fear of these technologies. Research suggests that education and experience may play an important role in determining a person's personal confidence (Garland & Noyes, 2004). According to one study, Bakrc, Eydura, and Erdemir (2009) found that teacher candidates did not receive sufficient training throughout their college years to build their understanding of how to use electronic whiteboards in education. Without this training, teacher candidates lacked trust in whiteboard-assisted instruction (Acuner & pek, 2017). Thus, factors such as teachers' knowledge of whiteboard-assisted instruction, their confidence in using whiteboards, and whether teachers have received adequate training in interactive whiteboard-assisted instruction can have a significant impact on teachers' beliefs about interactive whiteboard-assisted instruction. Thus, teachers' understanding of interactive whiteboard-assisted instruction, confidence in using the whiteboard, and whether teachers have received adequate training in interactive whiteboard-assisted instruction can have a significant impact on teachers' beliefs about interactive whiteboard-assisted instruction. Training is one way to overcome teachers' lack of competence in using interactive whiteboards. Whiteboard training works to consolidate and expand knowledge, skills, and attitudes so that all teachers' competencies can be used to build quality learning environments (Sudarsana, 2020).

2.5.4 Definition of Kindergarten Teachers' Beliefs about Using Interactive Whiteboards

This study draws on Xu's (2014) definition of teachers' belief in the use of teaching tools. Xu (2014) believes that teachers' belief in the use of teaching tools mainly includes 1) teachers' understanding of the value of using a certain teaching tool through comparative analysis of the definition of teachers' belief in the use of teaching tools at home and abroad. 2) Teachers' understanding of the significance of using a certain teaching tool. Teacher belief factors are shown in Figure 2.1.

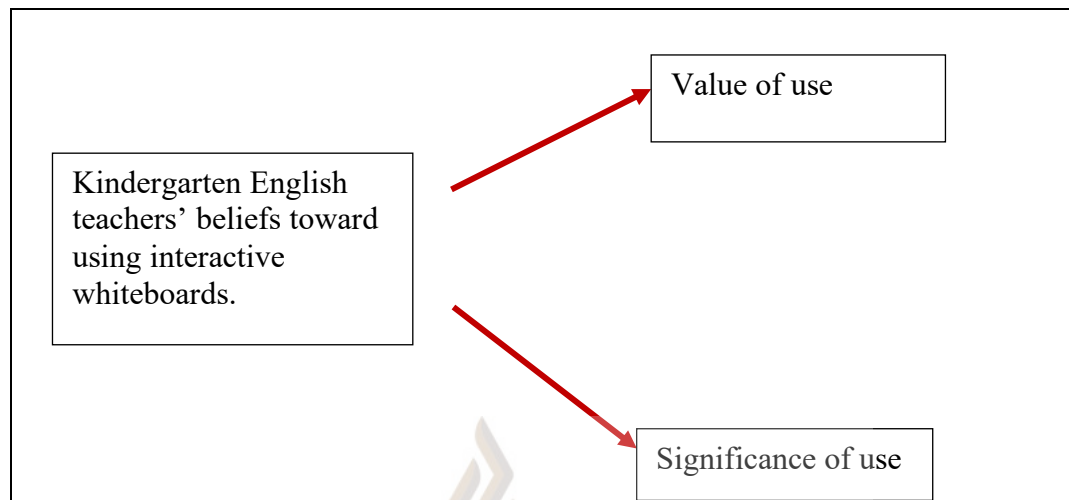


Figure 2.1 The Teacher's Beliefs Factors

In this study, kindergarten English teachers' beliefs about the use of interactive whiteboard were divided into two dimensions: the value belief of kindergarten English teachers' using interactive electronic whiteboard and the meaning belief of kindergarten English teachers' using interactive electronic whiteboard.

Children were usually curious about new and interesting things. Interactive whiteboard provided more vivid, rich, and diversified learning content through multimedia, animation, and audio, which could stimulate children's interest and enthusiasm in learning and made them more actively participate in English learning (Wang, 2019; Wei 2020; Zhu & Wang, 2017). Moreover, interactive whiteboards could help kindergarten English teachers support personalized teaching functions. Kindergarten English teachers could choose different teaching resources and strategies according to each student's learning situation and needs to help students better learn and master English knowledge (Zhou, 2019; Wu 2020, Ma 2020). Interactive whiteboards supported a variety of teaching methods. Interactive whiteboard could support different teaching methods, such as game teaching, cooperative inquiry, classroom competition, etc., to improve the teaching effect (Liu, 2022; Qiu, 2018). The use of interactive whiteboards in kindergarten English classrooms could provide multi-element discussion. Interactive whiteboards can be used for group discussion in class to improve students' thinking and expression skills (Zhou, 2021; Fang, 2021).

The use of interactive whiteboard in kindergarten English classroom could improve the teaching quality. Using interactive whiteboard, teachers could better complete the teaching objectives, improve the teaching quality, and let students better grasp the knowledge and skills (Huang, 2020; Li, 2019; Han, 2021). Gao (2022) believed that interactive whiteboards could display various images, audio, and video in multimedia form, which can enrich the teaching content. Teachers could add animation, sound, video, and other elements to make students understand the knowledge point more intuitively. Interactive whiteboards allowed teachers to demonstrate knowledge points in real time, such as through interactive demonstration experiments or simulation operations, so that students could have a deeper understanding and grasp of knowledge points (Zhou, 2021; Wang, 2021).

2.6 Research on Kindergarten English Teachers' Pedagogical Beliefs About Using Interactive Whiteboards

According to prior research, studies on kindergarten English teachers' educational beliefs about using interactive whiteboards focus on kindergarten English teachers' beliefs about teaching and development using interactive whiteboards, kindergarten teachers' beliefs about using interactive whiteboards to practice English teaching (including beliefs about the importance of using interactive whiteboards and beliefs about practicing interactive whiteboard teaching), and kindergarten teachers' beliefs about their own ability to use interactive whiteboards. Kindergarten teachers' beliefs about their own ability to use interactive whiteboards.

2.6.1 Kindergarten Teachers' Beliefs about Teaching and Development with Interactive Whiteboards

First, teachers' beliefs about the use of interactive whiteboards in kindergarten English instruction were related to teachers' perceptions of the developmental appropriateness and age appropriateness of children. Research has found that many kindergarten teachers have negative beliefs about the use of

interactive whiteboards in the classroom that interfere with the normal curriculum of children's English language learning and are not age and developmentally appropriate (Chen, 2019). However, with the rise of a large body of research, children were found to be capable of substantial interactive whiteboard manipulation and learning English. The National Association for the Education of Young Children and the American Council of Teachers of Mathematics also agreed that the use of interactive whiteboards in kindergarten English instruction is developmentally appropriate for children and should be a priority at the kindergarten level of education (The National Association for the Education of Young Children [NAEYC] & The National Council of Teachers of Mathematics [NCTM], 2002). Mccray and Chen's study shows that most kindergarten teachers have positive beliefs about the use of interactive whiteboards for teaching and developing children's English and that children are comfortable and capable of using interactive whiteboards for teaching and learning activities, and that kindergartens should promote them. The use of interactive whiteboards in the classroom. At the same time, research shows that if teachers fail to reconcile the use of interactive whiteboards with children's second language acquisition theories, they will not be able to develop positive beliefs about the use of interactive whiteboards in kindergarten English teaching and development, thus belittling the importance of interactive whiteboards in kindergarten English teaching (Chen, 2020). Therefore, kindergarten teachers must first realize that the integration of kindergarten English teaching and interactive whiteboards is consistent with the age and developmental characteristics of children, and that children have the ability and desire to learn English using interactive whiteboards to develop the right beliefs about using interactive whiteboards in kindergarten English teaching and development and thus adopt a more positive attitude toward teaching and learning.

Second, kindergarten teachers' beliefs about the use of interactive whiteboards to support children's English language instruction and development were related to how teachers provided interactive whiteboard instructional support in the classroom. Differences in beliefs about interactive whiteboard-assisted instruction affect the corresponding support they provide for children's English language development (Li, 2020). Research shows that some teachers believe that children's

English language learning and development cannot be achieved without the help and support provided by the teacher, and therefore it is the teacher's responsibility to use the interactive whiteboard to assist in setting clear ELL goals and conducting ELL activities for children (Liu, 2020). Some teachers, on the other hand, believe that children are completely autonomous in constructing English knowledge and that all activities should be initiated by children; therefore, they believe that teachers' educational responsibility is to use interactive whiteboards to provide a stimulating environment for children and to foster children's interest in learning, without paying attention to teachers' active teaching activities (Han, 2021). This shows that teachers' beliefs about using interactive whiteboards to assist children's English teaching and development influence teachers' teaching behaviors.

2.6.2 Kindergarten teachers' beliefs about using interactive practice English teaching

Kindergarten teachers' beliefs about using interactive whiteboards to practice English language teaching include beliefs about the importance of using interactive whiteboards for teaching and learning, and beliefs about using interactive whiteboards to practice English language teaching.

Several studies on kindergarten English teachers' beliefs about the importance of using interactive whiteboards indicate that different teachers have different perceptions of the primary educational approach at the kindergarten level and therefore have different beliefs about the importance of using interactive whiteboards. For example, a study by Li (2020) found that most teachers believed that more emphasis should be placed on traditional teaching methods for children's English language proficiency development and lastly on interactive whiteboard-assisted instruction for children's English language proficiency (Dong, 2021). Researchers studied more than 700 child caregivers, teachers, and educational administrators and found that 74% of the stakeholders preferred to use traditional teaching methods and approaches to teach English to children and ignored the importance of using interactive whiteboard-assisted instruction (Ye, 2021).

Meanwhile some teachers hold emotional attitudes of fear and hatred towards using interactive whiteboards for teaching activities and do not consider it important in children's English lessons, so they hold more negative beliefs about the importance of interactive whiteboards in English teaching (Ma, 2021). In contrast, there are also teachers who place more importance on the ability of educational technology and believe that the use of interactive whiteboards to help children acquire the necessary knowledge of English with interest is the main goal of kindergarten education, and therefore have more positive beliefs about the importance of using interactive whiteboards to assist in English education (Wu, 2020). Some empirical studies by Zhu (2021) also found that with the modernization of school equipment and a younger teacher population, more teachers expressed beliefs emphasizing the importance of using interactive whiteboards to assist in English language teaching, but when it comes to actual implementation, teachers do not pay attention to the design of interactive whiteboard teaching activities and do not spend a lot of time practicing the use of interactive whiteboards in English lessons (Jin, 2020; Gui, 2019).

Beliefs about the importance of using interactive whiteboards to assist in teaching English can influence teachers' beliefs about practicing the use of interactive whiteboards to assist in teaching English. For example, kindergarten teachers who believed that test-taking ability was the most important developmental goal for children held more positive beliefs about traditional educational methods and negative beliefs about practicing the use of interactive whiteboards to assist in English language education. The study showed that these teachers allocated only 8% of their instructional time to interactive whiteboard-assisted English lessons, while 21% of their instructional time was spent on literacy, reading, and writing lessons for exam-oriented language instruction (Wang, 2020). Also, in terms of practicing interactive whiteboard-assisted English education, teachers' beliefs about practicing interactive whiteboard-assisted English instruction stay very narrowly defined, and most kindergarten teachers believe that using interactive whiteboard-assisted instruction is difficult, so they hold beliefs and practice using interactive whiteboard-assisted English instruction limited to videos and simple English teaching activities, and ignore other aspects (Zang, 2020; Yin, 2021).

2.6.3 Kindergarten Teachers' Beliefs about Their Own Ability to Use Interactive Whiteboards

Kindergarten teachers' beliefs about their own ability to use interactive whiteboards significantly affect children's English language development. It was found that teachers' own anxiety or negative beliefs about using interactive whiteboards led to students' anxiety about using interactive whiteboards in the English classroom and had a negative impact on English development (Gao, 2022). Conversely, teachers' confidence in their own ability to use interactive whiteboards had a positive impact on children's English learning. Also, teachers' beliefs about their own ability to use interactive whiteboards can influence children's practice of English teaching activities. Teachers who are confident in their ability to use interactive whiteboards are happy to use interactive whiteboard skills and teach children English in a fun classroom environment (Wu, 2018; Du, 2019), in contrast, teachers who lack confidence in their ability to use interactive whiteboards and have negative beliefs tend to avoid using interactive whiteboards for English teaching practices (Chen, 2019; Pang, 2020). Studies have shown that some teachers who do not have confidence in their ability to use interactive whiteboards believe that using interactive whiteboards in teaching activities will damage teachers' self-esteem and cause classroom loss of control, so these teachers who have low beliefs about their ability to use interactive whiteboards usually avoid using interactive whiteboards to teach children's English and organize teaching activities (Miao, 2021; Lu, 2021).

2.7 Related Research

The researcher found that kindergarten English teachers' beliefs and practices regarding the use of interactive whiteboards by focusing on the following areas.

2.7.1 Research on Teachers' practice of using interactive whiteboards to assist English teaching

Wu (2020) conducted a study titled “A Study on the Application of Interactive Whiteboards in Primary School English Teaching”. In the article, the authors proposed the hypothesis that interactive whiteboard-assisted teaching activities have a significant impact on the development of relevant skills in preschool children. The experimental hypothesis was confirmed by a group experiment in which interactive whiteboard-assisted instruction improved children’s development of relevant skills. The authors discuss the role of interactive whiteboard-assisted instruction in creating language learning environments for children, but do not discuss in depth how these environments are created. The findings suggest that interactive whiteboard-assisted classroom instruction can provide a reliable audiovisual environment for children to learn English.

Bian (2022) conducted a study titled “Action Research on Interactive Whiteboards in Mathematics Teaching Activities for Middle Class Children”. Through teaching experiments and classroom observations, the author experimented whether the advantages of interactive whiteboard-assisted teaching lie in the advanced visualization features that enable children to participate in teaching and learning consciously and actively, which greatly increases children’s interest in learning while optimizing teaching and learning and achieves the expected teaching effect. Based on the relevant experiments and data, the authors finally concluded that the visual animation of the interactive whiteboard is most helpful for teaching preschool children compared to traditional teaching methods.

Yan (2022) conducted a study titled “The Effectiveness of Interactive Whiteboard Classroom Activity Modules on the Learning of Students with Different Learning Styles”. The authors conducted a group experiment to investigate interactive whiteboard-assisted methods of teaching English to young children. Using the data from the group experiment and questionnaires, the concluded that teaching content should be selected according to children’s developmental characteristics and current situation, and then the interactive whiteboard-assisted teaching technology should be used to create educational contexts and mini-games to optimize teaching sessions and

stimulate children's interest in learning and improve the effectiveness of English teaching.

Zhang (2017) conducted a study titled "The Use of Interactive Whiteboards in the Gamification of Mathematics Activities" which examined the positive effects of interactive whiteboard technology on children's cognitive development in three domains: attention, memory, and visual thinking, using the dynamic, interactive, and intuitive features of electronic whiteboards. Most of these papers discuss how interactive whiteboard instructional scenarios align with children's cognitive development, create context, stimulate children's interest, improve instruction, sharpen focus, and facilitate teaching and learning, and some of these papers elaborate on how interactive whiteboards used for instruction should focus on effectiveness, reflect individual differences, focus on teacher skills, and address application issues. Research on the impact of interactive whiteboards on children's intellectual development.

Liu (2020) conducted a study on the practical use of whiteboards in language activities for young children and mentioned this in his article. Interactive whiteboards have the potential to stimulate children's senses and create a positive language environment. The use of interactive whiteboards in education allows children to listen while reading and recording English pronunciation for teaching purposes.

Xiao (2021) conducted a study entitled "Interactive Whiteboards in Kindergarten Language Activities". The article discusses the need for interactive whiteboard instruction in kindergartens and provides insight into the problems of interactive whiteboard instruction. The study shows that the use of interactive whiteboards in the classroom can foster children's interest in learning English, enable them to acquire the ability to use English, develop the ability to think in English, and use English as a communicative tool in their daily lives.

Gao (2022) summarized the application of interactive whiteboard in kindergarten teaching in five aspects through a questionnaire survey in "Research on

the application of interactive whiteboard in kindergarten teaching”. The study shows that interactive whiteboard-assisted teaching is adaptable, controllable, and interactive, and can greatly improve teaching effectiveness.

To summarize the above research, mainly by studying the practice of interactive whiteboards in English teaching, the researcher found that the use of interactive whiteboards can improve the effectiveness of children’s English teaching in four main dimensions: teacher-student; student-student and human-computer interaction in teaching activities, English teachers’ teaching skills and practices using whiteboards, children’s receptiveness to whiteboards and the promotion of learning effectiveness by teaching with whiteboards (Li, 2019; Du, 2019; Weng, 2021). The study can conclude that the use of interactive whiteboards can better facilitate teacher-student interaction, student-student interaction and teacher-student-lesson interaction in English teaching and improve students’ motivation to participate in classroom activities (Yu, 2019; Yin, 2021; Gao, 2022). English teachers’ practical teaching skills and their skills in operating the interactive whiteboard, and the extent to which students accept the whiteboard have an impact on the effectiveness of English learning. To some extent the use of interactive whiteboards in English teaching can improve children’s English learning effectiveness.

2.7.2 A Research on the Integration of Interactive Whiteboard and Traditional Kindergarten English Classroom

Ma (2019) conducted a study titled “Theoretical Foundations of Interactive Whiteboards in Classroom Teaching-Teaching Interaction, Interaction and Interaction” and concluded through questionnaires and classroom experiments that when teachers use interactive whiteboards for teaching activities, they should not only The study concluded from questionnaires and classroom experiments that when teachers use interactive whiteboards for teaching activities, they should focus not only on the curriculum being taught, but also on the overall development of preschool children. The study concluded that when teachers use interactive whiteboards for instructional activities, they should focus not only on the curriculum they teach but also on the

overall development of preschool children. This type of research focuses on theoretical studies of interactive whiteboard-assisted instruction in early childhood education teaching and learning, exploring how to integrate interactive whiteboards into kindergarten curricula rather than using interactive whiteboard-assisted instruction as a teaching tool.

Ye (2019) conducted a study titled “A study on the application of interactive whiteboards in kindergarten focused teaching activities-taking Fuzhou as an example”. The study examined the application of interactive whiteboards in kindergarten focused teaching activities from multiple dimensions using questionnaires, interviews, and observations as the main research methods. The application of interactive whiteboards in kindergarten focused teaching activities was investigated, from which the integration of interactive whiteboard assistive technology with kindergarten curriculum was analyzed and studied, and interactive whiteboards and multimedia technology were no longer used as teaching tools. The authors divided early childhood education into five categories: health, language, social, science, and creativity. The content of each domain interacts with the others to promote the development of preschoolers’ emotions, attitudes, talents, knowledge, and skills. Research suggests that early childhood education is no longer defined by social, science, health, arts, or language content, but rather encompasses specific topics that include the above. Language acquisition is no different from other subjects. Instead, language acquisition requires not only the acquisition of linguistic knowledge, but also the integration of cognitive and social information.

Wang (2020) conducted a study titled “Research on Teaching Interaction in Kindergarten in the Interactive Whiteboard Environment” with the principle of intentional sampling, selected a provincial model school, and studied four teaching activities in the interactive whiteboard environment. and the current situation. The experiment was based on Piaget’s theory of cognitive development stages, and the analysis of relevant data showed that students in early childhood stages have not yet formed logical thinking and are more receptive to more visual knowledge such as pictures and animations, especially in English learning, where visual contextual

presentation can improve learning efficiency. The continuous integration of interactive whiteboards with traditional classrooms is more likely to promote children's emotions, attitudes, talents, knowledge, and skills.

Dong (2021) conducted a study titled “Pros and cons of interactive whiteboards in kindergarten group teaching activities”. This study used a questionnaire to classify interactive whiteboard resources in early childhood teacher training programs into four dimensions: IT use, media type, IT application time, and IT integration strategies. The dimensions of interactive whiteboard resources in early childhood teacher training courses were divided into IT use, media type, IT application time, and IT integration strategies. The article analyzes the teaching practice of interactive whiteboards in preschool education through research arguments and proposes the basic principles of appropriateness, simplicity and playfulness of IT application, teachers’ mastery of IT teaching activity design and implementation, and the co-construction and sharing of kindergarten digital education resources as issues that need to be addressed.

In summary, the advantages of the interactive whiteboard are the advanced visualization functions that enable children to participate in teaching and learning consciously and actively, which greatly improves the autonomy of children’s learning and enables teaching to be optimized while achieving the desired teaching effect (Lu, 2021; Feng, 2021). Through the above study, the purpose is to summarize the reasons why teachers can better interactive whiteboard classroom and kindergarten English classroom teaching, scholars by systematically studying how teachers can better apply interactive whiteboard, optimize kindergarten English classroom teaching in terms of teaching design, implementation, evaluation and reflection, promote innovation in the information technology curriculum and teaching environment, better solve problems in teaching, and improve teaching efficiency and effectiveness, so as to achieve the goals of the new curriculum reform and promote teachers’ professional development and teaching effectiveness (Ye, 2019; Pang, 2020). Through analysis and comparison, we conclude the extent to which the pre-set functions of interactive whiteboards are used in current classroom teaching and explore the reasons for this phenomenon (Ding,

2019; He,2021). The ultimate goal is to aspire to seek effective ways for teachers to use interactive whiteboards in classroom teaching and to explore ways to effectively integrate English subject teaching with educational technology.

2.7.3 Research on the Factors Influencing Teachers' Teaching Beliefs

Richards & Lockhart (1996) summarized the sources of teachers' beliefs into six areas, which are teachers' previous language learning experiences, successful teaching experiences in teaching, established teaching practices, teachers' personal dispositions and preferences, teachers' understanding of the principles of education and teaching, and a specific pedagogy.

Yan (2022) pointed out that among the many factors that influence teachers' beliefs, external environmental factors have a role that cannot be ignored, mainly macro-environmental factors (educational policies, examination systems, etc.) and micro-environmental factors (teaching environment, teacher-student roles, etc.). If teachers' teaching beliefs are separated from the real social and cultural context, it will lead teachers to abandon their original educational beliefs from reality and may also create misconceptions about teachers' actual teaching practices.

Yu (2019) in addition to learning experiences, the professional training received by teachers also has a role in the formation of teachers' beliefs, but there are individual differences in the way they are influenced.

Cabaroglu & Roberts (2000) examined the impact of professional training on pre-service teachers' beliefs by using 20 foreign language teachers who underwent 36 weeks of professional training. The results showed that 19 teachers felt that the course training changed their beliefs.

Lu (2019) categorized the influencing factors as: teachers' personal life experiences, socio-cultural conditions, educational traditions, and social reality. Luo

(2021) collated that teachers' beliefs are influenced by both individual and environmental factors through a documentary analysis method.

Zhang (2017) outlined the factors influencing teachers' beliefs more systematically, stating that teachers' beliefs are influenced by both external environmental factors and personal factors, such as examinations, school culture, teachers' own professional development, and learning experiences, with teachers' professional development perspectives being the most important influencing factor.

In summary, teachers' beliefs are dynamic and open, and their formation and development are influenced by a variety of factors. Teachers' professional growth and development are not only influenced by their own view of classroom teaching, but also by the teaching environment and teachers' teaching experiences. In order to effectively promote the research and development of teachers' beliefs, scholars at home and abroad have made a lot of research on the sources and influencing factors of teachers' beliefs (Mei, 2021; Zhang, 2017). Comprehensive domestic and international studies have revealed that the factors affecting teachers' beliefs mainly include individual factors and external environmental factors. Among them, individual factors include teachers' professional knowledge and teaching experience, while students' personality characteristics and classroom environment are external environmental factors.

2.7.4 Research on Teachers' Beliefs and Practices

Mayer (1985) pointed out that the relationship between teachers' beliefs and teaching practices is the most fundamental issue in the study of teachers' beliefs. As research continues, the relationship between teachers' beliefs and teaching practices has increasingly become an important research topic.

Ding (2018) showed that whether teachers can express their beliefs clearly and whether these beliefs are explicit or implicit, they affect teachers' instructional planning and decision making, act as a filter on teachers' thoughts and behaviors, and have varying degrees of influence on classroom teaching.

Lee (2016), on the other hand, noted that teachers' beliefs are not fully reflected in their teaching due to factors such as the external environment, and sometimes there is even a mismatch between teachers' beliefs and their teaching practices.

The findings of scholars such as Pajares (1992), Burns (1992), and Richards (1998) indicate that teachers' beliefs have a high degree of congruence with their actual teaching practices.

Johnson (1994) offered a different perspective, stating that there is some difference between teachers' teaching practices and their teaching beliefs due to the actual students' situations.

Xiao (2021) explored the relationship between teachers' beliefs and teaching practices using questionnaires and interviews. The results showed that in teaching, teachers' beliefs and classroom practices were largely consistent in the face of some ideas that could be implemented, while teachers' teaching beliefs would be weaker than their teaching practices in the face of some beliefs that could not be put into practice.

Liu (2020) confirmed the relationship between teachers' beliefs and teaching practices through her research, and the results showed that teachers' beliefs and practices in creating a good classroom teaching environment were largely consistent. However, due to external factors such as test pressure and internal factors such as teachers' lack of reflection, teachers are sometimes unable to fully practice their beliefs in teaching.

Zhu (2021) combined teachers' beliefs with their teaching practices under the guidance of content-language integration theory.

In summary, there is a dynamic process between teachers' beliefs and their teaching practices. To a certain extent, teachers' beliefs are generally consistent with

their teaching and learning, but due to various factors, teachers are sometimes unable to fully practice their teaching beliefs in their teaching (Weng, 2021; Zhu,2021). This is the driving force behind the continuous development of teacher belief research, which motivates teachers to continuously reflect on their teaching, improve their teaching beliefs, and enhance their teaching abilities.

2.7.5 Research on Kindergarten English Teachers' Pedagogical Beliefs about Using Interactive Whiteboards

Liu's (2020) study showed that kindergarten teachers at this stage hold positive beliefs about using interactive whiteboards for children's English teaching and development, believing that children are happy and capable of using interactive whiteboards for relevant teaching activities and that kindergartens should also vigorously promote the use of interactive whiteboards in the classroom. However, if teachers fail to reconcile the use of interactive whiteboards with children's second language acquisition theories, they will fail to develop positive beliefs about the use of interactive whiteboards in kindergarten English teaching and development and thus belittle the importance of interactive whiteboards in kindergarten English teaching.

Li (2021) Kindergarten teachers' beliefs about using interactive whiteboards to assist children's English language instruction and development are related to how teachers provide interactive whiteboard instructional support in the classroom. Differences in beliefs about interactive whiteboard-assisted instruction affect the corresponding support they provide for children's English language development.

Chen (2020) showed that teachers believed that children were completely autonomous in the construction of English knowledge and that all activities should be child-initiated; therefore, they believed that teachers' educational responsibilities were to use interactive whiteboards to provide a stimulating environment for children and to foster children's interest in learning, without placing importance on teacher-initiated instructional activities.

Dong (2021) researchers studied more than 700 child caregivers, teachers, and educational administrators and found that 74% of those involved preferred to use traditional teaching styles and methods to teach English to children and neglected the importance of using interactive whiteboards to assist in teaching and learning.

Han (2021) found that teachers held emotional attitudes of fear and hatred towards using interactive whiteboards for teaching activities and did not consider it important in children's English lessons, thus they held more negative beliefs about the importance of interactive whiteboards in teaching English. In contrast, there are also teachers who place more importance on the ability of educational technology and believe that the use of interactive whiteboards to help children acquire the necessary knowledge of English with interest is the main goal of kindergarten education, and therefore have more positive beliefs about the importance of using interactive whiteboards to assist in English education.

Zhu (2018) and some other empirical studies also found that with the modernization of school equipment and a younger teacher population, more teachers expressed their beliefs emphasizing the importance of using interactive whiteboards to assist in English language teaching, but when actually implemented, teachers do not pay attention to the design of interactive whiteboard teaching activities and do not spend a lot of time practicing the use of interactive whiteboards in English courses.

Liao (2022) Teachers' beliefs about their own ability to use interactive whiteboards also influence children's practice of English language teaching activities. Teachers who were confident in their own ability to use interactive whiteboards were happy to use interactive whiteboard skills and to teach children English in a fun classroom environment. In contrast, teachers who lacked confidence in their ability to use interactive whiteboards and had negative beliefs tended to avoid using interactive whiteboards for ELT practice (Chen, 2019).

Xiao (2021) showed that some teachers with low beliefs about their ability to use interactive whiteboards often avoid using interactive whiteboards to teach

children's English and organize instructional activities because they are not confident in their ability to use interactive whiteboards and believe that using interactive whiteboards in instructional activities will damage teachers' self-esteem and cause classroom loss of control.

2.7.6 Summary

In summary, Numerous studies have confirmed the importance of teachers' beliefs about using interactive whiteboards to teach English, and that different beliefs lead to different educational behaviors, which in turn have a corresponding impact on children's language development. Research has shown that kindergarten teachers' beliefs about the use of interactive whiteboards can influence teachers' teaching practices using interactive whiteboards and further influence children's English interest scores. There is also a larger body of research that has explored the importance of using interactive whiteboards to support English language instruction, content standards for implementation, curriculum models, and aspects of influencing factors. Numerous studies have confirmed the ability and necessity of children aged 3 to 6 years old to learn English with interactive whiteboards, and the appropriateness and necessity of implementing interactive whiteboard-assisted English education in children's kindergarten years. Teachers' beliefs and appropriate teaching practices in using interactive whiteboards in kindergarten English play an important role in the development of children's English language skills, and research shows that teachers' educational beliefs influence the development of kindergarten English language teaching activities, the selection of content, and the use of educational strategies. Teachers' beliefs about the quality of kindergarten English language education activities can help children acquire English language skills and develop in a comprehensive manner.

However, some early studies have found that some kindergarten teachers have negative beliefs about the use of interactive whiteboards in English language teaching, believing that the use of interactive whiteboards will affect children's health, and that they have negative attitudes toward interactive electronic devices and

kindergarten English language teaching, so they rarely use interactive whiteboards in most kindergarten English language teaching. At the same time, the use of interactive whiteboards in kindergarten English teaching also has problems such as low teaching time, low weighting, and poor education quality. Therefore, this study focuses on understanding kindergarten English teachers' beliefs about using interactive whiteboards in Kunming, the current practice of kindergarten English teachers on using interactive whiteboards, and the factors that affect teachers' use of interactive whiteboards to assist in English teaching activities, and this study is divided into three parts:

Study 1, To study the beliefs of kindergarten Chinese English teachers towards interactive whiteboard-assisted English teaching.

Study 2, To explore the practices of kindergarten Chinese English teachers towards interactive whiteboard-assisted English teaching.

Study 3, examine the reasons for the kindergarten English teachers for their use of interactive whiteboards.



Using Interactive Whiteboards in English Language Teaching: Beliefs/Practices/Reasons for Use of Chinese Kindergarten English Teachers					
Beliefs		Practices		Reasons for use	
<u>English as a Means of Instruction</u> - Theories Related to English Education for Kindergarten Children - Characteristics of Kindergarten Children's English Learning - The Special Characteristics of Kindergarten English Teaching - The Current Situation of English Teaching in Chinese Kindergarten	<u>Traditional and Interactive with Whiteboard-Assisted English Teaching at The Kindergarten Level</u> - Traditional English Teaching in Kindergarten - Interactive Whiteboard to Assist Kindergarten English Teaching - The Function of Interactive Whiteboard in Kindergarten English Teaching	<u>Education First</u> -Introduction of Education First (EF) -EF's Teachers -EF's Curriculum -EF's Constructivist Classroom Environment -EF's Interactive Whiteboard Devices -EF's Interactive Whiteboard Training	<u>Interactive Whiteboard Assisted Teaching</u> - Status of Interactive Whiteboard -Various Tools and Functions of Interactive Whiteboard - Benefits of Interactive Whiteboards for Kindergarten Children	<u>The Teachers' Beliefs</u> - The Study of Beliefs - Teachers' Belief Studies - Teachers' Mastery of Interactive Whiteboard-assisted Teaching Theories -Definition of Kindergarten Teachers' Beliefs about Using Interactive Whiteboards	<u>Kindergarten English Teachers' Pedagogical Beliefs about Using Interactive Whiteboards</u> - Kindergarten Teachers' Beliefs about Teaching and Development with Interactive Whiteboards - Kindergarten Teachers' Beliefs about Using Interactive Practice English Teaching

Figure 2.2 Factors Influencing Teachers' Beliefs, Practices, and Reasons for Using Interactive Whiteboards

Chapter 3

Research Methodology

The purpose of this study was to examine kindergarten English teachers' practices and beliefs about the use of interactive whiteboard-assisted instruction in children's English classrooms and to determine the reasons that led to differences in kindergarten English teachers used of interactive whiteboard-assisted instruction. Systematic research planned presented in this chapter to ensure the accuracy and completeness of the research plan. The chapter described the research topic, research design, research instruments, validity and reliability, data collection procedures, analysis of research data, and ethical considerations.

In the research scene, although there were many domestic and international studies on interactive whiteboards to assist kindergarten English teaching (Zang, 2020), there are few studies on teachers' beliefs about using interactive whiteboards in Chinese kindergarten English classrooms and the reasons that lead to differences in teachers' use (Zhu, 2018).

3.1 Research Design

This study adopted a mixed-methods research approach. The study collected both quantitative and qualitative data from the three research instruments used: the questionnaire, classroom observation and the semi-structured interview. According to Creswell (2009), a survey design provided a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. As for the semi-structured interviews that brought in qualitative data, “unstructured and generally open-ended questions were used to elicit views and opinions for the participants” (Creswell, 2009).

The use of the questionnaire alone cannot provide a comprehensive description of the research phenomenon (Nunan, 2002). Combining both qualitative and quantitative methods for research design can greatly improve the quality of research results. Combining both qualitative and quantitative methods in a study can greatly improve the quality of the findings (Mander, 2017). The main purpose of the questionnaire survey was to determine kindergarten English teachers' beliefs about interactive whiteboard-assisted instruction and the reasons that led to differences in teachers' use. To supplement the limitations of the questionnaire survey, which cannot collect in-depth data, observation and semi-structured interviews will be conducted following the questionnaire survey. In brief, this current study adopts a sequential explanatory design. Weight typically is given to the quantitative data and the mixing of the data occurs when the initial quantitative results inform the secondary data collection (Creswell, 2009).

3.2 Research Site

This study was conducted at EF English schools in Kunming, Yunnan Province, China. EF Education specializes in teaching English to children between the ages of 3 and 18, and EF English teachers are able to tailor their programs to children of different ages through the use of a variety of resources and teaching methods.

Now currently, EF English Schools have two campuses in Kunming, and the 30 full-time English teachers in the study are from the same teachers who teach the "Little Stars" program for ages 3 to 6 at the two Kunming campuses. "Little Stars" is the name of EF Education's program for children ages 3-6. "Little Stars" focuses not only on the development of children's English language skills, but also on broader competencies such as social skills training and cognitive development. The Little Stars program helps EF teachers create a dynamic, all-English classroom environment (EF Little Stars, n.d.). The EF Kunming campus provides each teacher with an interactive whiteboard-equipped classroom to display teaching resources and create an all-English classroom environment through interactive whiteboards, such as flashcards, spelling games and PPTs, audio, music, and video. In addition, EF English Schools in Kunming

accommodate 8-10 students per class with a full-time English teacher and two teaching assistants to ensure that every kindergarten child receives the teacher's attention in the classroom.

3.3 Population and Sample

3.3.1 Population

In this study, English teachers working at EF English schools in Kunming, Yunnan Province the population of the study. There were currently 30 Chinese teachers at the EF English schools in Kunming, whose main responsibility is English teaching activities to preschool children aged 3 to 6 years old. The age of the teacher population ranges from 28 to 35 years old, and approximately 75% of the teachers are female. In addition, the teachers in this study already had 1-5 years of experience teaching English and had more than one year of experience using interactive whiteboards.

3.3.2 Sample

The sample size calculated from the formula of Krejcie and Morgan (1970), which is appropriate for a small group of the study population. The calculation was as follows:

$$S = \frac{X^2 NP(1-P)}{d^2 (N-1) + X^2 P(1-P)} \quad (3-1)$$

S = required sample size

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)

N = the population size

P = the population proportion (assumed to be .50 since this would provide the maximum sample size)

d = the degree of accuracy expressed as a proportion (.05)

Since there are only two EF campuses in Kunming, Yunnan Province, and the total number of Chinese English teachers at these two campuses is 30. Therefore, these 30 full-time English teachers were used as the study population. Based on the formula developed by Krejcie and Morgan (1970), the sample size of full-time English teachers at the Kunming EF campuses was calculated to be 26 for the questionnaire and 8 for the semi-structured interviews. Then, from the eight participating teachers in the semi-structured interviews, four full-time English teachers were randomly selected to conduct a classroom observation session (Creswell, 2003). Only four of the eight teachers gave permission for the researcher and a colleague to enter the classroom to conduct classroom observations, photograph, and complete a classroom observation form.

For the classroom observation sample of the quantitative study, four participating teachers suitable for classroom observation were randomly selected from the semi-structured interview sample of the qualitative study, and one lesson from each of the four participating teachers was selected for observation recording, each lesson lasting approximately 60 minutes. To ensure the accuracy of the observations, the researcher also invited a colleague to participate in the classroom observation recording. All four kindergarten English teachers had experience in teaching English in kindergarten. Their personal information was shown in Table 3.1 including age, gender, and teaching time.

Table 3.1 Teacher and Personal Information of the Participants of the Classroom Observation Checklists

Teacher No.	Age	Gender	Teaching time
Teacher A	25	Male	2 years
Teacher B	27	Female	3 years

Table 3.1 Teacher and Personal Information of the Participants of the Classroom Observation Checklists (Cont.)

Teacher No.	Age	Gender	Teaching time
Teacher C	28	Female	3 years
Teacher D	33	Female	8 years

For the semi-structured interview sample of the qualitative study, eight participating teachers who were suitable for semi-structured interviews were randomly selected from the questionnaire sample of the quantitative study, and each interview lasted approximately 10 to 15 minutes. All of these eight kindergarten English teachers had experience in teaching English in kindergarten. Their personal information as shown in Table 3.2 included age, gender, and teaching time.

Table 3.2 Teacher Number and Personal Information of the Participants of the Semi-Structured Interviews

Teacher NO.	Age	Gender	Teaching Experience
Teacher A	25	Male	2 years
Teacher B	27	Female	3 years
Teacher C	28	Female	3 years
Teacher D	33	Female	8 years
Teacher E	35	Male	10 years
Teacher F	30	Female	6 years
Teacher G	24	Female	1 years
Teacher H	31	Female	7 years

3.4 Research Instruments

This study used three instruments to collect data. The questionnaire design was based on Kim's (2010) study and responded analysis of children's interactive whiteboard-assisted English language instruction. Kim investigated the use of interactive whiteboards by kindergarten English teachers to assist in teaching English to

children. However, the questionnaire modified based on the data in the literature review, as the literature on the use of interactive whiteboards may have more to contribute to the field. Second, semi-structured interviews were used to collect more in-depth data. The interview method was often used to compensate for the limitations of questionnaires in cases where some additional information cannot be obtained through questionnaires (Nunan, 2002). Third, to confirm the validity of the data obtained, the researcher also developed a Classroom Observation Scale for actual observation of kindergarten English classrooms to collect legitimate data. This Classroom Observation Scale was based on the Classroom Observation Scale used in Zhang's (2015) study of teachers' use of CALL attitudes and has been applied. Therefore, the Classroom Observation Scale for this study was reliable.

There were three kinds of research instruments in this study: questionnaire classroom observation and semi-structure interview.

3.4.1 The Questionnaire

The questionnaire used in this study was designed with reference to Kim's (2010) questionnaire. First, the questionnaire questions were subjected to an item goal congruence activity to ensure the validity of the questionnaire research instrument. Second, before sending the questionnaire to EF teachers, to ensure its reliability, the researcher invited another group of 30 non-participating teachers to participate in a pilot test on March 18, 2023, and the pre-experimental test resulted in an alpha value of 0.756 for the questionnaire. Therefore, the questionnaire in this study was reliable.

The questionnaire used in this study carefully prepared and designed to obtain answers to the research questions. As shown in Appendix A, the questionnaire had four main sections:

The questionnaire used in this study was carefully prepared and designed to obtain answers to the research questions. As shown in Appendix A, the questionnaire had a total of 37 questions divided into four main sections:

1) The first part is personal information contains 5 items. The researcher mainly obtained basic information and personal data of teachers, such as age, gender, years of teaching English, years of using interactive whiteboard, and teachers' personal teaching philosophy.

2) In the second part for teachers' beliefs about using interactive whiteboards contains 14 items. According to the conceptual framework described in Chapter 1, there are two reasons that influence kindergarten teachers' beliefs about using interactive whiteboards to support instruction in children's English classrooms. The questionnaire divided these beliefs into two main sections: The teachers' understanding of the value of using a particular instructional tool; The teachers' understanding of what it means to use a particular instructional tool. The researcher focused on obtaining teachers' beliefs about the use of interactive whiteboards.

3) In the third section for teachers' practice of using interactive whiteboards contains 17 items. The researcher used the questionnaire to obtain mainly teachers' practice behaviors in using interactive whiteboards.

4) The fourth section consisted of open-ended questions that were used to determine if kindergarten teachers found any other difficulties when using interactive whiteboard-assisted instruction in their classrooms. The open-ended questions will be used to determine if teachers find any accommodations or difficulties when implementing interactive whiteboard-assisted instruction in the classroom.

Table 3.3 The Composition of the Questionnaire

Dimensions	Location
Personal Information	Q1-Q5
Teacher's Beliefs	Q6-Q19
Teacher's Practices	Q20-Q36
open-ended Questions	Q37

For the primary analysis, researcher calculated descriptive statistics (mean, standard deviation, and two-tailed test) for the questionnaire data. The means were interpreted as follows: Strongly disagree in the point range of 1.00-1.80; Disagree 1.81-2.60; Medium 2.61-3.40; Agree 3.41-4.20; Strongly Agree 4.21-5.00 (Pimentel, 2010). The Likert Scale Interval was shown in Table 3.4.

Table 3.4 The 5-point Likert Scale

Likert Scale Description	Liker Scale	Likert Scale Interval
Strongly disagree	1	1.00-1.80
Disagree	2	1.81-2.60
Neutral	3	2.61-3.40
Agree	4	3.41-4.20
Strongly agree	5	4.21-5.00

Source: Pimentel, 2010

3.4.2 Classroom Observation Checklists

In order to confirm the validity of the data obtained, the researcher developed a Classroom Observation Checklist for actual observation of kindergarten English classrooms to collect legitimate data. This Classroom Observation Checklist was developed and applied based on the Classroom Observation Scale used in Zhang's (2015) study of teachers' attitudes toward using CALL. A total of 25 checklist items were created for classroom observation to study four teachers' one-hour-long teaching practices in four different classes. The classroom observation checklist was in five sections, each with five items: the lesson delivery, the lesson, the teacher's skills, the teacher's interaction with the students and the classroom atmosphere. Observers could record objectively what they saw with **Yes** or **No**. The Classroom Observation Checklist consisted of five parts. The Classroom Observation Checklist was shown in Table 3.5.

Table 3.5 The Classroom Observation Checklist

Lesson Delivery
<ol style="list-style-type: none"> 1. The teacher delivers the lesson in an organized manner. 2. The lesson adopts the student-centered approach. 3. The teacher is clear in what he/she wants to teach. 4. The teacher demonstrates high level classroom management ability 5. The teacher shows that he/she is well-prepared for the class.
The Lesson
<ol style="list-style-type: none"> 1. The lesson is clear and concise. 2. The lesson is expected to bring about the learning outcomes in the students. 3. The lesson matches the students' needs. 4. The lesson is designed to match the pace of learning of students. 5. The lesson shows the teacher's skill in using the Interactive Whiteboard.
The Teacher's Skill in Using the Interaction Whiteboard
<ol style="list-style-type: none"> 1. The teacher is skillful. 2. The teacher is confident. 3. The teacher shows understanding for the role of the Interactive Whiteboard. 4. The teacher is fluent. 5. The teacher is happy to use the Interactive Whiteboard.
The Teacher's Interaction with the Students
<ol style="list-style-type: none"> 1. The teacher uses interactive whiteboard to Class interactive pattern. 2. The teacher uses pair work interactive pattern. 3. The teacher uses group work interactive pattern. 4. The teacher gives opportunity to all students equally to talk to the teacher. 5. The teacher gives opportunity to all the students equally to ask him or her
The Class Atmosphere

Table 3.5 The Classroom Observation Checklist (Cont.)

The Class Atmosphere
1. The class is active.
2. The class atmosphere is relaxing.
3. The class is in control.
4. The students are friendly to their friends.
5. The students enjoy their activities.

3.4.3 Semi-structured Interviews

Through semi-structured interviews, the researcher could obtain first-hand data and gain a thorough understanding of the participants' perspectives. Based on the questionnaire data, the researcher could include additional interview questions during the interview, which facilitates the advancement of the study. To avoid ambiguities in translation, the semi-structured interviews were conducted in English. Therefore, semi-structured interviews were used to compensate for the limitations of the document survey and certain additional information could not be obtained through the questionnaire. There were 4 questions in the semi-structured interview as shown in Table 3.6 and Appendix A.

Table 3.6 Interview Questions

Interview Questions
1. What do you think about the policy of adopting the Interactive Whiteboard technology at the school?
2. Can you describe your experience of using Interactive Whiteboards to support your teaching? How do you do it?
3. In your opinion, what type of lessons/activities are effective with the use of Interactive Whiteboards?
4. What suggestions do you have for improving the teachers' technical skills in Interactive Whiteboard application?

3.5 Validity and Reliability

This section explains the researcher's attempted to avoid threats to validity and reliability of the instruments.

3.5.1 Validity

To validate the research instruments, the designed questionnaires and interview questions presented for assessment by three experts for Index-Objective Congruence (IOC) check. Mainly, the experts will focus on whether each item in both instruments matches the objectives of the study. The contents of the questionnaire items and the interview questions scrutinized on a three-scale range from -1 to +1 where +1 showed Congruent, 0 was Questionable, and -1 showed Incongruent.

The IOC divided the consistency and coherence of these items into three levels in their calculations. (Invitation letter from expert shown in Appendix B). The three experts selected only one answer from the following three options for a given score:

+1 = consistent with a clear understanding.

0 = not sure or unsure if the item is relevant to the study, and

-1 = not understood, inconsistent, or not relevant to the study.

The consistency value of the total score for each item must be equal to or greater than 0.50 (Petchroj & Chamniprasart, 2004); the IOC score was calculated by the following formula:

$$IOC = \frac{\sum R}{N} \quad (3-2)$$

R = score given by the expert

σR = total score for each expert

N = number of experts

The subjective evaluation of the experts calculated to give indexes of item-objective congruence. The index calculated using the formula proposed by Rovinelli and Hambleton, 1977 (Turner et al, 2002):

$$I_{ik} = \frac{(n-1) \sum_{j=1}^n X_{ijk} - \sum_{i=1}^n \sum_{j=1}^n X_{ijk} + \sum_{j=1}^n X_{ijk}}{2(N-1)n} \quad (3-3)$$

Where I_{ik} = Index of congruence between objective i and Item k

N = number of objectives

n = number of contents experts

The basic rule of thumb has it that the item congruence index (IOC) for both individual items and the entire questionnaire by three experts should not be less than 0.67 (Rovinelli and Hambleton, 1977; Hambleton, 1978 cited in Turner and Carlson, 2003). Thus, the items were revised and modified based on the remarks and recommendations of the experts where the benchmark was not met. The criteria were set up for the score of the test item, if the score falls between 0.67 and 1.00, the item was considered valid and acceptable. The scores of the test items in this study were all above 0.67, and then these items were valid for data collection in this research (Appendix C).

3.5.2 Reliability

Upon successful clearance by the experts on content validity, the questionnaire piloted test to check its reliability so that confusion over the wording and the meaning can be avoided. All the questionnaire respondents understood each item in the same

way. The researcher conducted Pilot Test with a sample of 30 participants who have similar characteristics and experience of using the Interactive Whiteboards, most likely from groups in other school districts in Kunming. The coefficient of reliability of the responses checked with the aid of Cronbach's alpha (α).

Table 3.7 Description of Internal Consistency Using Cronbach's Alpha

Cronbach's α	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Source: Jain & Angural, 2017

The thumb rule for validity has it that for an item to be considered acceptable, its IOC score should be equal to or above and not less than 0.75; and for the entire instrument, the acceptable reliability test should be greater than 0.75 (Sukamolson & Sitti, 2019). By using SPSS to calculate the Pilot Test of questionnaire, the Cronbach's α value of the questionnaire was 0.756. The result as follows Table 3.8:

Table 3.8 Cronbach's Alpha of Questionnaire in this study

Item	Sample	Cronbach's α
37	30	0.756

3.6 Data Collection

To ensure the reliability and validity of the collected data. First, both the questionnaire and interview questions were subjected to a project goal congruence activity to ensure the validity of both research instruments. Second, to ensure the reliability of the questionnaire, another group of 30 teachers was invited to participate in a pilot test on March 18, 2023. After the data were collected, the researcher used the

Cronbach's Alpha formula to calculate the reliability of the questionnaire. The alpha value of the questionnaire was 0.756.

The first step was the questionnaire, which the researcher distributed to 26 full-time EF teachers in Kunming through WeChat on March 20, 2023, and by the end of the month, the questionnaire was returned. The next step was classroom observation. Four EF teachers were randomly selected at the Kunming campus from March 22 to 25, 2023, and classroom observations were conducted via the Internet (VooV). Each teacher observed one lesson for one hour each. To avoid experimental error or inaccuracy, the researcher invited a colleague to observe with the researcher and to fill out a classroom observation scale during the observation process. The observations focused on five areas: 1) instruction, 2) lessons, 3) teacher skills in using the interactive whiteboard, 4) teacher-student interaction, and 5) classroom climate. This colleague, like the researcher, had over a year of experience and was familiar with the students and the teaching process.

Table 3.9 Schedule of classroom observation

Classroom Observation Teacher	Date of Classroom Observation	Time points of Classroom Observation	Length of Classroom Observation
Teacher A	March 22, 2023	10:0-11:00	60 minutes
Teacher B	March 23, 2023	10:0-11:00	60 minutes
Teacher C	March 24, 2023	14:00-15:00	60 minutes
Teacher D	March 25, 2023	10:0-11:00	60 minutes

The final step was a semi-structured interview in which the researcher interviewed a random sample of eight full-time EF teachers. During the last week of March 2023, the researcher conducted semi-structured interviews with the eight teachers via Microsoft voice calls. Throughout the interview process, the researcher interviewed kindergarten English teachers based on the data from the questionnaire and observed classroom behaviors and performance to significantly improve the quality and accuracy

of the experimental data. Each teacher was given 10-15 minutes to answer the questions. The interviews were audio-recorded with the consent of the interviewees.

Table 3.10 Schedule of Semi-structured Interview

Interviewed Teacher	Date of Interview	Time points of interview	Length of interview
Teacher A	March 25, 2023	12:30-13:00	10 minutes
Teacher B	March 25, 2023	16:30-17:00	15 minutes
Teacher C	March 26, 2023	12:30-13:00	10 minutes
Teacher D	March 26, 2023	16:30-17:00	10 minutes
Teacher E	March 27, 2023	12:30-13:00	10 minutes
Teacher F	March 27, 2023	16:30-17:00	10 minutes
Teacher G	March 28, 2023	12:30-13:00	10 minutes
Teacher H	March 28, 2023	16:30-17:00	15 minutes

3.6.1 Data Analysis

For the data analysis, the researcher adopted appropriate techniques for two different types of data. In this study, two types of data were available. First, the researcher used SPSS software to analyze the quantitative data collected through the questionnaire. The descriptive statistics such as percentage, average and standard deviation were used to analyze the questionnaire responses.

For the classroom observation checklist, 'Yes' and 'No' answers were required and the notes of the two observers were compared followed by the discussion over what was seen.



Figure 3.1 Analysis of Classroom Observation Checklists Data

Another data set, the interviewed data, were analyzed using Lichtman's 3 Cs Model (2013), which consists of three major steps: Codes—Categories---Concepts. Figure 3.1 was shown the model of presentation.

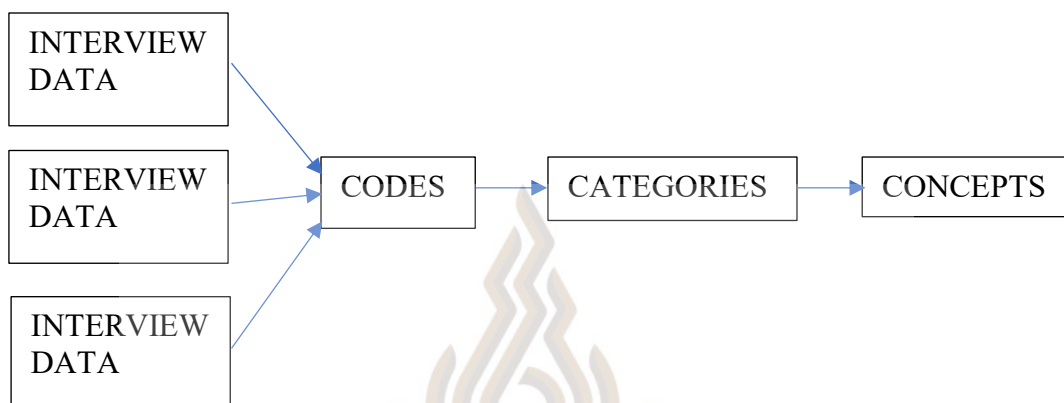


Figure 3.2 Lichtman (2013) Three Cs of Data Analysis: Codes Categories, and Concepts

3.7 Ethical Considerations

To conduct the study ethically, the researcher took the following steps:

1) Prior to conducting the study, the researcher obtained consent from the participants.

2) Personal information and responses from participants collected and maintained in a secure manner.

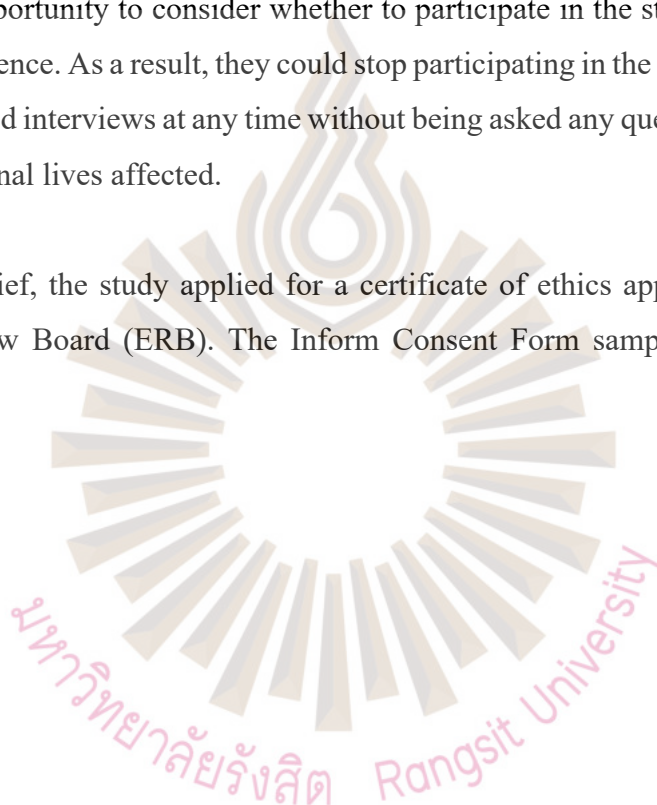
3) The subjects of this study were adult full-time teachers of English to young children. This study did not include minor children.

4) To prevent disclosure of participant information, the data collected will be deleted within one year of the publication of this study.

All samples signed an informed consent form to confirm that the personal information and identity of the participant were not disclosed in this study. The informed consent form for this study included the Informed Consent Form 18+, which was adapted from the RSU Ethical Review Board (ERB) form.

Following the RSU Ethical Review Board (ERB), an informed consent process strictly followed to provide potential research participants with sufficient information and ample opportunity to consider whether to participate in the study without pressure or undue influence. As a result, they could stop participating in the survey process and/or semi-structured interviews at any time without being asked any questions or having their work or personal lives affected.

In brief, the study applied for a certificate of ethics approval from the RSU Ethical Review Board (ERB). The Inform Consent Form sample was shown in the Appendix F.



Chapter 4

Research Results

In this chapter, questionnaires, semi-structured interviews, and classroom observations were used to conduct the research. This chapter presents the findings of the questionnaires, semi-structured interviews, and classroom observations. The purposes of this study were to examine kindergarten teachers' beliefs about using interactive whiteboards in the classroom and kindergarten English teachers' practices of using interactive whiteboards in the classroom.

4.1 Analysis of the Questionnaire

This questionnaire survey was targeted at full-time English teachers in Kunming. In this study, 26 full-time kindergarten English teachers in Kunming EF completed the questionnaire, which contained four sections: personal information, kindergarten English teachers' beliefs about teaching with interactive whiteboards, kindergarten English teachers' practices of using interactive whiteboards, and an open-ended question. A total of 26 questionnaires were distributed and 26 were returned, with a 100% return rate.

4.1.1 Personal Information

The questionnaire was administered to 26 kindergarten English teachers from EF English schools in Kunming. The results of the personal information questionnaire data analyzed were shown in the following tables (Tables 4.1-4.3). Tables 4.1-4.3 showed the personal information statistics of the responding population, including gender, age, educational background, years of teaching and years of using interactive whiteboards of the teachers interviewed, with all details shown in Tables 4.1-4.3.

Table 4.1 Gender and Age

Item	Choice	N	Percentage
Gender	Male	8	30.77%
	Female	18	69.23%
	Total	26	100%
Age	20~30 years old	20	76.92%
	30~40 years old	6	23.08%
	40~50 years old	0	0
	Total	26	100%

As Table 4.1 showed, the online questionnaire was administered to 26 kindergarten English teachers. There was a considerable difference in the gender ratio of the participating teachers, with most of the teachers surveyed being female (N=18/69.23%), while male respondents were 8 (30.77%). There was also a difference in the age of the participating teachers, with 20 (76.92%) being 20 to 30 years old and 6 (23.08%) being 30 to 40 years old, however, none of them were over 40 to 50 years old.

Table 4.2 Educational Background

Educational Background	N	Percentage
Diploma	2	7.69%
Bachelor's	16	61.54%
Master's	8	30.76%
Total	26	100%

The educational backgrounds of the participating teachers were shown in Table 4.2, which analyzed the distribution of kindergarten English teachers' education. The most represented educational background was a bachelor's degree (N=16/61.54%), the least represented educational background was a diploma (N=2/7.69%), and in addition, the remaining 10 teachers had a master's degree (38.46%).

Table 4.3 Years of Teaching English and Teaching with Interactive Whiteboards

Item	Number of Years	N	Percentage
Number of Years	1~5	17	65.38%
in Teaching	6 ~ 12	9	34.62%
Experience	Total	26	100%
Number of Years	1 ~ 5	24	92.30%
in Experience of	6 ~ 12	2	7.69%
Using Interactive	Total	26	100%
Whiteboards in			
English Classes			

The number of years the kindergarten English teachers had been teaching English shown in Table 4.3 indicated that 17 teachers had 1-5 years of experience in teaching English (65.38%), which was the largest proportion of all options. 9 teachers had 6-12 years of teaching experience (34.62%). This information showed that all kindergarten English teachers had prior teaching experience.

In addition, the number of years the kindergarten English teachers had been teaching with interactive whiteboard devices shown in Table 4.3 reveals that all kindergarten English teachers interviewed had experience teaching with interactive whiteboards. The teachers having 1 to 5 years of experience teaching with interactive whiteboards were the largest percentage of all options (N=24/92.30%). Besides, there were 2 other teachers who had 6 to 12 years of experience teaching with interactive whiteboards (7.69%).

4.1.2 The Kindergarten Chinese English Teachers' Beliefs towards the Use of Interactive Whiteboards to Teach English to Children

The questionnaire surveyed 26 kindergarten English teachers from EF English schools in Kunming about their beliefs towards the use of interactive whiteboards. The questionnaire data analyzed was shown in Table 4.4 below. Descriptive statistics namely

means and SDs were calculated for all items. Table 4.4 analyzed kindergarten English teachers' beliefs towards the use of interactive whiteboards, with specific details of each item being displayed in the table.

The mean values were interpreted based on Pimentel (2010) as follows: 'Strongly disagree' within the point range of 1.00-1.80; 'Disagree' 1.81- 2.60; 'Moderate' 2.61-3.40; 'Agree' 3.41-4.20; 'Strongly agree' 4.21-5.00

Table 4.4 The Kindergarten English Teachers' Beliefs towards the Use of Interactive Whiteboards in Teaching English to Children

No.	Items	Mean	SD	Interpretation
6	Interactive whiteboards are effective tools to support the teaching of English to children.	4.346	0.689	Strongly Agree
15	Interactive whiteboards can help improve the quality of teaching and learning.	4.315	0.697	Strongly Agree
18	Children can learn better with the use of interactive whiteboards.	4.310	0.647	Strongly Agree
9	Interactive whiteboards make the lessons easy to understand for the children.	4.277	0.560	Strongly Agree
10	Interactive whiteboards make the lessons interesting for the children.	4.215	0.431	Strongly Agree
12	Interactive whiteboards encourage the adoption of teacher-centered approach in teaching English.	1.654	0.562	Strongly Disagree
11	Interactive whiteboards are similar to ordinary whiteboards.	1.615	0.637	Strongly Disagree
14	Interactive whiteboards can help improve students' knowledge retention.	4.195	0.736	Agree

Table 4.4 The Kindergarten English Teachers' Beliefs towards the Use of Interactive Whiteboards in Teaching English to Children (Cont.)

No.	Items	Mean	SD	Interpretation
13	Interactive whiteboards can help improve student learning engagement.	4.146	0.613	Agree
7	The use of interactive whiteboards can facilitate teachers' teaching improvement.	4.131	0.514	Agree
17	I believe interactive whiteboards are appropriate for young children.	4.120	0.562	Agree
8	Interactive whiteboards are needed to assist teaching in the classroom.	4.038	0.599	Agree
19	Interactive whiteboards may distract the students from the focused points of teaching.	3.692	0.736	Agree
16	Interactive whiteboards are an outdated teaching tool.	3.692	0.928	Agree
	Average	3.803	0.636	Agree

Table 4.4 showed that the overall mean of kindergarten English teachers' beliefs towards the use of interactive whiteboards was 'Agree' ($\bar{x}=3.803/SD=0.636$), which means that the participating teachers had strong beliefs about using interactive whiteboards in kindergarten English teaching activities. They believed that interactive whiteboards could help them to do a better job of teaching English activities to children.

Specifically, the highest mean in this study was Item 6 ($\bar{x}=4.346/SD=0.689$), which indicated that most of the participating teachers strongly agreed that interactive whiteboards were an effective tool to support the teaching of English to children. The second highest mean Item 15 ($\bar{x}=4.315/SD=0.697$) showed that most of the teachers strongly agreed that interactive whiteboards can enhance the quality of teaching and learning. Item 18 ($\bar{x}=4.310/SD=0.647$), the third highest mean, indicated that most of the participating teachers strongly agreed that interactive whiteboards were an effective tool to support the teaching of English to children. Item 10 ($\bar{x}=4.277/SD=0.431$), which

indicated that most of the participating teachers strongly agreed that the interactive whiteboard makes the children's lessons interesting. Finally, Item 9 ($\bar{x}=4.215/SD=0.560$) showed that most of the participating teachers strongly agreed that the interactive whiteboard makes the lessons easier to understand. On the contrary, the lowest mean in this study was Item 11 ($\bar{x}=1.615/SD=0.637$). It showed most teachers strongly disagreed that interactive whiteboards were the same as regular whiteboards. Item 12 ($\bar{x}=1.654/SD=0.562$) also had a low mean. This indicated that most teachers strongly disagreed that interactive whiteboards encouraged a teacher-centered approach to teaching and learning activities. Although Item 11 and Item 12 had the lowest mean scores, they point out that in the teachers' beliefs, the interactive whiteboards would benefit their English language teaching.

However, despite the teachers' beliefs that the interactive whiteboards had a number of advantages that enhance student learning, the teachers believed that Item 16: the whiteboards were outdated ($\bar{x}=3.692/SD=0.928$) and Item 19: the whiteboards could distract the students from the lessons ($\bar{x}=3.692/SD=0.736$).

4.1.3 Kindergarten Chinese English Teachers' Practices towards the Use of Interactive Whiteboards in Teaching English to Children

The questionnaire surveyed 26 kindergarten English teachers from EF English schools in Kunming about their practices in the use of interactive whiteboards. The questionnaire data analyzed was shown in Table 4.5 below. Descriptive statistics namely means and SDs were calculated for all the items. Table 4.5 analyzed kindergarten English teachers' practices towards the use of interactive whiteboards, with specific details of each item being displayed in the table.

The mean values were interpreted based on Pimentel (2010) as follows: 'Strongly disagree' within the point range of 1.00-1.80; 'Disagree' 1.81-2.60; 'Moderate' 2.61-3.40; 'Agree' 3.41-4.20; 'Strongly agree' 4.21-5.00.

Table 4.5 The Kindergarten English Teachers' Practices in the Use of Interactive Whiteboards in Teaching English to Children

No.	Items	Mean	SD	Interpretation
26	I use the interactive whiteboard in teaching English vocabulary.	4.511	0.402	Strongly Agree
28	I use the interactive whiteboard to interact with my students by getting my students to present their tasks on it.	4.375	0.761	Strongly Agree
31	Interactive whiteboards are an important tool in demonstrating vocabulary.	4.362	0.344	Strongly Agree
23	I use the interactive whiteboard based on what I have learned from the workshops I attended.	4.292	0.679	Strongly Agree
24	I use the interactive whiteboard in teaching all the four skills in English (Listening, Speaking, Reading, and Writing).	4.269	0.863	Strongly Agree
33	I am confident of my teaching when using Interactive Whiteboard.	1.769	0.815	Strongly Disagree
34	There are few problems when I use the Interactive Whiteboard in my teaching.	1.692	0.928	Strongly Disagree
32	I can skillfully operate the Interactive Whiteboard.	2.231	1.177	Disagree
20	I use the interactive whiteboard in all my lessons.	4.192	0.618	Agree
22	With each activity I use in my lessons, I get my students to work on the interactive whiteboard.	4.180	0.748	Agree

Table 4.5 The Kindergarten English Teachers' Practices in the Use of Interactive Whiteboards in Teaching English to Children (Cont.)

No.	Items	Mean	SD	Interpretation
21	When I use interactive whiteboards in my teaching, I become more active.	4.146	1.008	Agree
27	Teaching English using Interactive whiteboards increase my workload of lesson preparation.	3.846	0.543	Agree
35	I am selective about which activities will be appropriate with the Interactive Whiteboard.	3.692	0.471	Agree
25	I use the interactive whiteboard in teaching English grammar.	3.577	1.102	Agree
29	I need to learn about teaching with interactive whiteboards as I still teach in the traditional style.	3.577	0.703	Agree
30	I use interactive whiteboards for the purpose of assessing my students too.	3.577	0.703	Agree
	Average	3.511	0.763	Agree

Table 4.5 showed that the overall mean of kindergarten English teachers' perceptions of their teaching practices in the use of interactive whiteboards was 'high' ($\bar{x}=3.511/SD=0.763$), which means that the participating teachers agreed that they used interactive whiteboards for teaching activities in their kindergarten English classes. Specifically, the highest mean in this study was Item 26 ($\bar{x}=4.511/SD=0.402$) showed that most of the participating teachers strongly agreed that they used interactive whiteboards to teach English vocabulary to young children. The second 'high' item of the mean scores, Item 28 ($\bar{x}=4.375/SD=0.761$) showed that most of the teachers used the interactive whiteboards to interact with their students and had them use the interactive whiteboard to present their tasks. Item 31 ($\bar{x}=4.362/SD=0.344$), the third highest mean score indicated that most teachers used the interactive whiteboard as the most important tool to demonstrate the taught vocabulary. Item 23 ($\bar{x}=4.292/SD=0.679$),

the third highest mean score indicated that most of the participating teachers strongly agreed that they were eager to participate in interactive whiteboard training activities and that it would significantly help them to improve their use of interactive whiteboards. Finally, Item 24 ($\bar{x}=4.269/SD=0.863$), which indicated that many of the participating teachers strongly agreed with the use of interactive whiteboards to teach the four skills of English for kindergarten children. On the contrary, the lowest mean score in this part of the questionnaire was Item 34 ($\bar{x}=1.692/SD=0.928$) indicated that most of the teachers felt they had a lot of problems using the interactive whiteboard. Item 33 ($\bar{x}=1.769/SD=0.815$) also had a low mean score, indicating that most of the teachers did not feel confident in teaching English using the interactive whiteboard. In the same way, at the lowest mean score of ($\bar{x}=2.231/SD=1.177$), showed the only item rated with “Disagree”, Item 32: the teachers can skillfully operate the interactive whiteboard.

4.1.4 Part 3: The Open-ended Question in the Questionnaire

There was only one open-ended question in this part:

Question 41-Please give additional comments and suggestions about using interactive whiteboard to teach English. Write your answer on the space given.

This question was intended to collect any other related information about the teachers’ beliefs and practices about the use of interactive whiteboards the teacher English to kindergarten children. Altogether, there were ten responses which were coded and categorized into concepts as shown in Table 4.6 below.

Table 4.6 Analysis of the Responses (Beliefs) in the Open-ended Question

No.	Responses	Codes	Categories	Concepts
1	Interactive whiteboards are a very important tool for teaching English.	Important Teaching Tools	Seeing the Value	Beliefs

Table 4.6 Analysis of the Responses (Beliefs) in the Open-ended Question (Cont.)

No.	Responses	Codes	Categories	Concepts
2	I realize that interactive whiteboards are an effective English language aid.	An Effective Aid	Seeing the Value	
3	I also realized during the teaching process that the interactive whiteboard is a classroom support tool.	Auxiliary Tool	Seeing the Value	
4	The interactive whiteboard makes the classroom very interesting.	Making Classroom Interesting	Seeing the Value	
5	It can increase the fun of teaching.	Increasing Fun	Seeing the Value	
6	The interactive whiteboard is an effective tool for teaching English.	Effective Tool	Seeing the Value	

Table 4.7 Analysis of the Responses (Practices) in the Open-ended Question

No.	Responses	Codes	Categories	Concepts
7	In my class, I often have students use the interactive whiteboard to interact with other students.	Interaction with Students	The Teacher's Interaction with Students	Practices
8	When I use the interactive whiteboard, I design many games to engage students in classroom activities.	Engaging Students in the Activities	The Teacher's Interaction with Students	

Table 4.7 Analysis of the Responses (Practices) in the Open-ended Question (Cont.)

No.	Responses	Codes	Categories	Concepts
9	The children love to play games and the interactive whiteboard makes it easy for me to play interactive games.	Children Plan Interactive Games	The Teacher's Interaction with Students	
10	When I talk to them, they tell me that they can understand the meaning of the words faster and remember the meaning of the words quickly because of the interactive whiteboard.	Learning Vocabulary Better	Students said they learned vocabulary better	

The responses to this open-ended question were content analyzed into two major concepts—the Teachers' Beliefs and The Teachers' Practices. It was found that the responses revealed that the teachers saw the value of the Interactive Whiteboard as an important and effective teaching tool that made the lessons fun and interesting for the students. As for the Teachers' Practices, the teachers used the Interactive Whiteboard for teacher-student interaction in the classroom. The students found it fun and remembered vocabulary better.

4.2 Analysis of the Classroom Observation

In this classroom observation, only four classes of four full-time EF teachers in Kunming were randomly selected from the 26 EF teachers who agreed to be the questionnaire respondents. The researcher and one colleague observed the classes and took down notes about what happened in the classroom using the class observation sheet designed for the purpose. The observation sheet was divided into five sections: 1) The

lesson delivery, 2) The lesson, 3) The teachers' skills in using the interactive whiteboard, 4) The teacher's interaction with the students, 5) The class's atmosphere.

4.2.1 The Lesson Delivery of Kindergarten English Teachers Using Interactive Whiteboard

Detailed classroom observation statistics are given in Tables 4.8-4.12

Table 4.8 Classroom Observation Statistics for Lesson Delivery

Lesson Delivery	Teacher A		Teacher B		Teacher C		Teacher D		TOTAL	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1. The teacher delivers the lesson in an organized manner.	√		√		√		√		4	0
2. The lesson adopts the student-centered approach.		√		√		√		√	1	3
3. The teacher is clear in what he/she wants to teach.	√		√		√		√		4	0
4. The teacher demonstrates high level classroom management ability		√		√	√			√	1	3

Table 4.8 Classroom Observation Statistics for Lesson Delivery (Cont.)

Lesson Delivery	Teacher A		Teacher B		Teacher C		Teacher D		TOTAL	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
5. The teacher shows that he/she is well-prepared for the class.	√		√		√		√		4	0

This section presents the observations of classroom teaching in Part 1, based on the results tallied in Table 4.8 and the researchers' observation checklists. The researcher's observations regarding the use of interactive whiteboards for lesson delivery by the kindergarten English teachers in Part 1 found that all the four participating teachers were organized and clear about their teaching goals in the situation of using the interactive whiteboard to assist in teaching English to children. In addition, all the teachers demonstrated thorough preparation for the lesson, such as preparing and designing the lesson materials before the lesson and combining the use of the interactive whiteboard with children's games but three out of four of the participating teachers did not use the interactive whiteboard with a "student" centered approach to teaching English in kindergarten.

However, three out of four of participating teachers did not use student-centered approach in their teaching. Besides, they did not have good classroom management skills and repeatedly lost control of the classroom during the interactive games using the interactive whiteboard. Children showed unusual excitement after using interactive whiteboard videos and games in one participating teacher's classroom, but the teacher had no way to control the out-of-control classroom situation.

4.2.2 The Lessons of Kindergarten English Teachers Using Interactive Whiteboard

Table 4.9 Classroom Observation Statistics of the Lessons

The Lesson	Teacher A		Teacher B		Teacher C		Teacher D		TOTAL	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1. The lesson is clear and concise.	√		√		√		√		4	0
2. The lesson is expected to bring about the learning outcomes in the students.	√		√		√		√		4	0
3. The lesson matches the students' needs.	√		√		√		√		4	0
4. The lesson is designed to match the pace of learning of students.	√		√		√			√	3	1
5. The lesson shows the teacher's skill in using the Interactive Whiteboard.		√		√		√		√	2	2

Based on the results tallied in Table 4.9, all four of the teachers observed created lessons that were clear and concise, and that the content of the lessons met the needs of the students and achieved the expected instructional outcomes that the lessons would bring to the children. However, only three of the participating teachers were able

to design the lessons that were right for the students' learning pace and only one teacher demonstrated acceptable whiteboard skill such as using the "magnifying glass" feature to focus children's attention on writing errors and using the interactive whiteboard's carousel feature to play fun games.

4.2.3 Teachers' Skills in Using the Interactive Whiteboard

Table 4.10 Classroom Observation Statistics of Teachers' Skills in Using Interactive Whiteboards

The Teachers' Skills in Using the Interaction Whiteboard	Teacher A		Teacher B		Teacher C		Teacher D		TOTAL	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1. The teacher is skillful.		√		√	√		√		2	2
2. The teacher is confident.	√			√	√		√		1	3
3. The teacher shows understanding for the role of the Interactive Whiteboard.		√		√	√		√		2	2
4. The teacher is fluent.	√		√			√	√		3	1
5. The teacher is happy to use the Interactive Whiteboard.		√		√	√		√		2	2

Based on the results tallied in Table 4.10 and the researcher's observation checklist, it was found that two out of four of the participating teachers demonstrated

good skills in using the interactive whiteboard in their teaching activities, and only one of the two was able to master the hardware and software functions of the interactive whiteboard and to design related lesson materials. The remaining two teachers showed unfamiliarity with the use of the interactive whiteboard. Thus, only one of the four teachers was confident in using the whiteboard. Two teachers demonstrated an understanding of the role of the interactive whiteboard in teaching activities and were comfortable using various options of the interactive whiteboard in teaching English to children. The other two participating teachers only used the interactive whiteboard as a presentation platform and rarely designed interactive games with the interactive whiteboard.

In addition, three of the participating teachers showed a lack of confidence in using the interactive whiteboard for related activities, with one teacher showing the strongest expression of lack of confidence after a loss of control in the classroom, so much so that she chose to abandon using the interactive whiteboard for the rest of the lesson. Two teachers were happy to use the interactive whiteboard, while the other two were not.

4.2.4 The Teacher's Interaction with the Students

Table 4.11 Classroom Observation Statistics of Teacher's Interaction with Students

The Teacher's Interaction with the Students	Teacher A		Teacher B		Teacher C		Teacher D		TOTAL	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1. The teacher uses Teacher to Class interactive pattern.	√		√		√		√		4	0

Table 4.11 Classroom Observation Statistics of Teacher's Interaction with Students
(Cont.)

The Teacher's Interaction with the Students	Teacher A		Teacher B		Teacher C		Teacher D		TOTAL	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
2. The teacher uses pair work interactive pattern.	√		√				√	√	3	1
3. The teacher uses group work interactive pattern.	√		√				√	√	3	1
4. The teacher gives opportunity to all students equally to talk to the teacher.		√		√	√			√	1	3
5. The teacher gives opportunity to all the students equally to ask him or her questions.		√		√	√			√	1	3

The above table revealed that all the four teachers preferred the Teacher-to-whole-class interaction pattern for kindergarten English teaching activities, with three of them preferred the pair-work interaction and the group-work interaction patterns, based on the researchers' observations, it was found that in these teachers' classrooms, these teachers preferred to teacher-to-student interaction and intentionally avoided student-student interaction.

In addition, only one teacher gave each student the same opportunity to interact and communicate with the teacher equally using the interactive whiteboard. The remaining three teachers paid more attention to the more active students and the more mischievous students and did not give each student the same attention and the same number of opportunities to interact with the teacher using the interactive whiteboard.

4.2.5 The Class Atmosphere

Table 4.12 Classroom Observation Statistics of the Class Atmosphere

The Class Atmosphere	Teacher A		Teacher B		Teacher C		Teacher D		TOTAL	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1. The class is active.		√	√		√		√		3	1
2. The class atmosphere is relaxing.		√	√		√			√	2	2
3. The class is in control.	√			√		√	√		2	2
4. The students are friendly to their friends.	√		√			√	√		3	1
5. The students enjoy their activities.		√		√	√		√		2	2

Table 4.12 and observation notes revealed that the three participating teachers' entire classes were active when using the interactive whiteboard for English lessons. Two classes became out of control during the second half of the lesson, and students showed an unusual state of excitement after using the interactive whiteboard, affecting the rest of the class. With one teacher unable to control the classroom and the students

became aggressive. While the researcher and a colleague observed that the class atmosphere was not relaxed. It was evident that the class students did not enjoy the teaching activities organized by the teachers in two classes. In two classes, students showed great interest in being able to use the interactive whiteboard in the classroom and participated actively in the games organized by the teachers.

4.3 Analysis of the Semi-Structured Interviews

In this section, data were collected from semi-structured interviews, with the participation of eight kindergarten English teachers from EF English School in Kunming.

To examine kindergarten English teachers' beliefs and practices regarding the use of interactive whiteboard, online interview data were collected from eight teachers from EF schools, who were selected on a voluntary basis. Themes were analyzed from the meaning conveyed by the responses, showing the beliefs and practices of kindergarten English teachers in using interactive whiteboards (See Appendix E for all the detailed responses).

The data of the eight interviews from the participating interviewees were analyzed based on Lichtman's (2013) The Three Cs Analysis Technique. The following table shows the number of codes, categories, and concepts.

Table 4.13 The Number of Codes, Categories and Concepts

Teachers A-H	Number of Codes	Number of Categories	Number of Concepts
Teacher A	20	10	3
Teacher B	22	13	3
Teacher C	20	9	3
Teacher D	18	12	3
Teacher E	16	7	3

Table 4.13 The Number of Codes, Categories and Concepts (Cont.)

Teachers A-H	Number of Codes	Number of Categories	Number of Concepts
Teacher F	16	11	3
Teacher G	13	8	3
Teacher H	12	12	3
Total	137	82	24

Table 4.13 shows a total of 24 concepts which can be subsequently reduced to 1) Teachers' Beliefs 2) Reasons for Use 3) Teachers' Practices. The analysis of the interviewed data is in the three Cs (Code-Category-Concept) columns below.

Table 4.14 The Code-Category-Concept Analysis

Code	Category	Concept
Effective English Tools (5)	Value of Use	Teachers' Beliefs
Enrich Teaching Content (3)	Effective Aids (8)	
Classroom Aids (3)	Teaching enrichment (7)	
Diversification of teaching content (3)		
Significant teaching effect (3)		
Enrich Teaching Content (1)		
Encourage use (3)		
Enrich Teaching Content. (1)		
Diversify teaching content (3)		
Auxiliary tools (2)		
Teaching content enrichment (2)		

Table 4.14 The Code-Category-Concept Analysis (Cont.)

Code	<u>Category</u>	Concept
Children can easily understand what they are learning (1)	<u>Benefits of Use</u>	Reasons for Use
Quickly focus students' attention (2)	Attracts Attention (8)	
Fun (2)	Helps with comprehension and memory (9)	
Quickly remember words (2)		
Children enjoy lessons (3)		
Quickly matching vocabulary with photos (3)		
Students understand fast (2)		
Focus on teaching content (3)		
Suitable for children's teaching work (2)		
Help to focus on learning (3)		
Suitable for children's memorization and comprehension (3)		
Fun for children (3)		
Quick to remember (4)		
Attracting children (4)		
Helps children understand (3)		
Interactive whiteboards are fun for children Suitable for children (2)		
Attracts attention (2)		
Memorize Words through Auditory (1)		

Table 4.14 The Code-Category-Concept Analysis (Cont.)

Code	Category	Concept
Teachers lack expertise and are afraid of making mistakes (3)	<u>Using Skills</u>	Teachers' Practices
Lack of self-Confidence (4)	Lack of Expertise (8)	
Teaching Vocabulary (8)	Lack of self-Confidence (8)	
Student-centered teaching method (2)	<u>Lesson Content</u>	
Play games (1)	Teaching Vocabulary (9)	
Diversification of teaching content (3)	Student-centered teaching method (9)	
Picture Matching Vocabulary (3)	<u>The interaction</u>	
Difficulty controlling students (2)	Interactive game teaching (9)	
Students were very interested in the whiteboard course (2)	<u>The Class's Atmosphere</u>	
Lack of interactive teaching (4)	Classes are out of control (7)	
Game teaching (1)		
Students as the main body of teaching (3)		
Very willing to use (2)		
Students love teaching games (3)		
Lack of Expertise (5)		
Student-centered (2)		
Active classroom atmosphere (2)		
Hard for children to control (1)		
Interactive		

When the codes were categorized, eight categories emerged. As shown in Table 4.14: 1) Effective aids; 2) Enriching instruction; 3) Attracting attention; 4) Aiding comprehension and memory; 5) Lack of expertise; 6) Lack of confidence; 7) Teaching

words; 8) Student-centeredness; 9) Teaching games; and 10) Loss of control in the classroom. These themes can be further categorized into three concepts: Teachers' beliefs, Reasons for use, and Teachers' practices.

4.3.1 Kindergarten English Teachers' Beliefs toward the Use of Interactive Whiteboards

The findings reveal 2 main teacher's beliefs of kindergarten English teachers toward using interactive whiteboards: 1) Interactive whiteboards are effective teaching aids 2) Interactive whiteboards can enrich teaching content.

4.3.1.1 Interactive whiteboards are effective teaching aids

The following interviewed data point out the teachers' beliefs.

“I have realized over time that the interactive whiteboard is very easy to use in the English classroom, and it helps me to find many examples and photos to show.”(Interviewee A, personal communication, March, 25, 2023).

“For me, the interactive whiteboard helped me to organize the warm-up session for the children, which they enjoyed and were very willing to participate in.” (Interviewee B, personal communication, March, 25, 2023).

“The interactive whiteboard is very efficient because I can quickly find the content associated with the lesson and show it to the children. For example, the children have difficulty in distinguishing the words lion and cheetah, so the interactive whiteboard can quickly find the relevant photos and match them, which is very efficient.” (Interviewee C, personal communication, March, 26, 2023).

“The interactive whiteboard is convenient and effective. I can quickly show videos and pictures on the board and the children love watching the videos and the repetition helps them to identify and remember the content.” (Interviewee D, personal communication, March, 26, 2023)

“As a teacher I must admit that interactive whiteboards provide us with diverse teaching resources. Interactive whiteboards can integrate various teaching resources such as animations, pictures, videos, etc., making teaching more vivid, visual and intuitive.” (Interviewee E, personal communication, March, 27, 2023)

“I can interact and communicate with students through the interactive whiteboard, making the class more interactive and interesting, allowing students to participate more actively and improving classroom interactivity.” (Interviewee F, personal communication, March, 27, 2023)

“Using interactive whiteboard can really improve teaching efficiency. You can create teaching courseware quickly through interactive whiteboard to facilitate teaching preparation, and also record students' homework, grades, and other information quickly.” (Interview F, personal communication, March, 27, 2023)

“Students' interest in learning is crucial to teaching interactive whiteboards can provide diverse teaching contents and teaching formats, making students more interested and improving their motivation and initiative.” (Interviewee G, personal communication, March, 28, 2023)

“Teachers can innovate teaching forms and practice teaching concepts through interactive whiteboards, thus continuously improving

teaching quality and promoting teaching practice and innovation.”
(Interviewee H, personal communication, March, 28, 2023)

4.3.1.2 Interactive Whiteboards Can Enrich Teaching Content

“The use of interactive whiteboard allows teachers to flexibly call electronic courseware, video, audio, animation, and images can become my teaching materials, no longer a single blackboard and book materials, different forms of courseware can be used to easily explain some abstract and difficult to understand knowledge points.”
(Interviewee A, personal communication, March, 25, 2023)

“In the process of teaching, I no longer only explain the knowledge, but also choose to use interactive whiteboard for interactive games, which children love to learn through interaction and games.”
(Interviewee B, personal communication, March, 25, 2023)

“Audio, animation, and the children's favorite videos are all easily combined with the interactive whiteboard.” (Interviewee C, personal communication, March, 26, 2023)

“I like to use music to introduce warm-up games, such as the ‘ABC song’, which is significantly more effective when combined with music and animations for movement and singing along than simply identifying and recognizing letters.” (Interviewee D, personal communication, March, 26, 2023)

“I use the interactive whiteboard in many ways in my teaching. I display multimedia resources such as pictures, videos, and audio on the whiteboard to better present the lesson content. I also write, draw, and design interactive activities on the whiteboard to get students more

actively involved in the classroom.” (Interviewee E, personal communication, March, 27, 2023)

“Teachers can show relevant educational videos on the interactive whiteboard, such as animations, documentaries, etc. This can give students a deeper understanding of the relevant points. Teachers can also use the interactive whiteboard to record videos of their own lectures for students to review and learn from.” (Interviewee F, personal communication, March, 27, 2023)

“Instructors can use the interactive whiteboard for real-time presentations and drawings, such as diagrams, sketches, schematics, etc., which allow students to understand the content more visually.” (Interviewee G, personal communication, March, 28, 2023)

“Instructors can design a variety of interactive tasks on the interactive whiteboard, such as fill-in-the-blank, connect the dots, drag, and drop, etc., to get students more actively involved in the classroom. This interactive approach allows students to have a deeper understanding of the course content through hands-on practice and also enriches the teaching content.” (Interviewee H, personal communication, March, 28, 2023)

4.3.2 Reasons for use

The findings of the study revealed 2 main reasons for kindergarten English teachers' use of interactive whiteboards: 1) Capturing children's attention; 2) Enhancing comprehension and memory. The actual words of the interviewees are presented below.

4.3.2.1 Capturing children's attention

“My preference for using the interactive whiteboard depends on the fact that the interactive whiteboard appeals to my students. Whenever I use the interactive whiteboard to deliver a lesson, they are curious about what is happening on the interactive whiteboard and are able to focus more on the class.” (Interviewee A, personal communication, March, 25, 2023)

“After I use the interactive whiteboard, students are more active in answering questions and participating in activities, and almost no students talk small talk.” (Interviewee B, personal communication, March, 25, 2023)

“I use the interactive whiteboard a lot in my teaching. It is a great tool to keep students more focused on the class content. By using the whiteboard, I can present the course content in a more vivid, interesting, and diverse way. In addition, the students enjoy using the whiteboard to interact and share their ideas, which makes them more engaged in the class.” (Interviewee C, personal communication, March, 26, 2023)

“Interactive whiteboards can also be used to show videos, display pictures and audio and other multimedia resources, which can better stimulate students' interest and curiosity and make them more focused on the course content.” (Interviewee C, personal communication, March, 26, 2023)

“Interactive whiteboards can provide a more interactive and fun learning experience for children. This is because whiteboards can be presented in a variety of formats such as pictures, animations, and videos. In addition, interactive whiteboards can facilitate the development of children's thinking and creativity as it allows them to

participate more actively in the classroom and present their ideas and opinions.” (Interviewee E, personal communication, March, 27, 2023)

“My preference for using the interactive whiteboard depends on the fact that the interactive whiteboard appeals to my students. Whenever I use the interactive whiteboard to deliver a lesson, they are curious about what is happening on the interactive whiteboard and are able to focus more on the class.” (Interviewee E, personal communication, March 27, 2023)

“After I use the interactive whiteboard, students are more active in answering questions and participating in activities, and almost no students talk small talk” (Interviewee F, personal communication, March, 27, 2023)

“I use the interactive whiteboard a lot in my teaching. It is a great tool to keep students more focused on the class content. By using the whiteboard, I can present the course content in a more vivid, interesting, and diverse way. In addition, the students enjoy using the whiteboard to interact and share their ideas, which makes them more engaged in the class.” (Interviewee G, personal communication, March, 28, 2023)

“Interactive whiteboards can also be used to show videos, display pictures and audio and other multimedia resources, which can better stimulate students' interest and curiosity and make them more focused on the course content.” (Interviewee H, personal communication, March, 28, 2023)

“Interactive whiteboards can provide a more interactive and fun learning experience for children. This is because whiteboards can be presented in a variety of formats such as pictures, animations, and

videos. In addition, interactive whiteboards can facilitate the development of children's thinking and creativity as it allows them to participate more actively in the classroom and present their ideas and opinions.” (Interviewee H, personal communication, March, 28, 2023)

4.3.2.2 Enhancing memorization and comprehension

“Interactive whiteboards can provide students with a more vivid, intuitive, and diverse learning experience. By using the whiteboard, I can give students a deeper understanding of the course content and present multimedia resources more easily.” (Interviewee A, personal communication, March, 25, 2023)

“I display pictures and videos directly on the whiteboard during the interactive whiteboard process to better present the content. Students can understand the concepts and examples in the course visually.” (Interviewee B, personal communication, March, 25, 2023)

“The interactive whiteboard can integrate a variety of multimedia resources such as PPT, PDF, web pages, etc., allowing kindergarten teachers to present relevant content more easily. With the use of multiple multimedia resources, students can gain a deeper understanding of relevant points.” (Interviewee C, personal communication, March, 26, 2023)

“I often use interactive whiteboards to design various interactive tasks, such as filling in the blanks, connecting lines, dragging, and dropping, etc., so that students can participate more actively in the classroom. This interactive approach allows students to gain a deeper understanding of the course content through hands-on practice.” (Interviewee D, personal communication, March, 26, 2023)

“I often use interactive whiteboards to create courseware and explain and explain in detail the text, images, and videos in the courseware. Students can understand the lesson content both aurally and visually.” (Interviewee E, personal communication, March, 27, 2023)

“Most often use word spelling games: I will design word spelling games on the interactive whiteboard, such as having students spell words based on pictures or audio prompts, or having students drag letters around the whiteboard to spell words. This interactive approach allows students to memorize the words in a game, which increases their interest and motivation in learning.” (Interviewee F, personal communication, March, 27, 2023)

“In addition, I think you can use the interactive whiteboard to create word memory cards that match words with corresponding pictures or audio, allowing students to memorize words by looking, listening, and speaking.” (Interviewee G, personal communication, March, 28, 2023)

“Play an audio file on the interactive whiteboard and have students dictate the words. This way can help students to memorize words through auditory way is also a good way.” (Interviewee H, personal communication, March, 28, 2023)

4.3.3 Kindergarten English Teachers’ Practices toward the Use of Interactive Whiteboards

The teachers in the study voiced that they used the interactive whiteboard for vocabulary teaching, interactive game teaching and as a student-centered teaching method. However, the teachers admitted that they lacked expertise and confidence in using the interactive whiteboard and that at times they could not control the class. The interviewed data were shown below.

4.3.3.1 For Vocabulary Teaching

“I usually used an interactive electronic whiteboard to teach vocabulary. For me, used an interactive electronic whiteboard, I could quickly display the meaning of the words I had learned so that students could understand the vocabulary more clearly.” (Interviewee A, personal communication, March, 25, 2023)

“For me, used an interactive electronic whiteboard was a good way to teach vocabulary. In the process of vocabulary teaching, I could use the interactive electronic whiteboard to help students remember the meaning of words with the most intuitive pictures. In addition, in the process of using the interactive electronic whiteboard, I could use its audio function to standardize the pronunciation of students’ words.” (Interviewee B, personal communication, March, 25, 2023)

“In the process of using the interactive electronic whiteboard, I thought it was the most effective in the process of vocabulary teaching. I could use the search function of the interactive electronic whiteboard to help students expand their vocabulary and help students master more knowledge in the limited time.” (Interviewee C, personal communication, March, 26, 2023)

“In my opinion, it was the best teaching method for children aged 3-6 to use interactive electronic whiteboard in the process of vocabulary teaching. The interactive electronic whiteboard was in line with the cognitive characteristics of children aged 3-6. In particular, the use of pictures, audio and other materials in the class could help students understand what they had learned and connect it with real life.” (Interviewee F, personal communication, March, 27, 2023)

“I like to use interactive electronic whiteboard to assist teaching in the process of vocabulary teaching, because it was relatively difficult and boring for 3–6-year-old children to teach words simply by using books. Used interactive electronic whiteboard could show the words learned by using pictures, and students would be more interested.” (Interviewee E, personal communication, March, 27, 2023)

“For the process of vocabulary teaching, the use of interactive electronic whiteboard was the most reasonable teaching method. I can use an interactive electronic whiteboard to assess students' mastery, so that I could adjust my teaching progress at any time.” (Interviewee H, personal communication, March, 28, 2023)

4.3.3.2 Interactive Game Teaching

“In the process of using the interactive electronic whiteboard, I used the interactive electronic whiteboard to organize the students to play games, and I interacted with the students whenever they play games.” (Interviewee A, personal communication, March, 25, 2023)

“Students enjoyed playing games on the interactive electronic whiteboard, and I got to see how well they were mastering what they were learning as they play.” (Interviewee B, personal communication, March, 25, 2023)

“I used an interactive electronic whiteboard to allow students to compete in writing competitions, during which other students could act as judges, thus facilitating interaction between students.” (Interviewee D, personal communication, March, 26, 2023)

“Students can remember what they have learned quickly by playing games, and I can observe how well they have mastered what they have learned.” (Interviewee E, personal communication, March, 27, 2023)

“I could use an interactive electronic whiteboard to organize games for students. I could create a relaxed and fun learning environment for students, not only that, but also increased student engagement and motivation.” (Interviewee F, personal communication, March, 27, 2023)

“I was able to use an interactive electronic whiteboard to provide visual stimulation to students to make them more focused and engaged in the teaching process.” (Interviewee G & Interviewee H, personal communication, March, 28, 2023)

4.3.3.3 As a Student-centered teaching method

“I thought the use of interactive electronic whiteboard in the classroom was in line with the concept of student-centered teaching. In class, I could use the interactive electronic whiteboard to organize some classroom activities for students to participate in.” (Interviewee A, personal communication, March, 25, 2023)

“The presence of an interactive electronic whiteboard satisfies a student-centered approach, where I stopped being the interpreter of knowledge in the classroom and became the transmitter of knowledge. The use of interactive electronic whiteboard in class cultivates students' ability to learn independently.” (Interviewee B, personal communication, March, 25, 2023)

“My used of an interactive electronic whiteboard in the classroom helped me design my schedule around my students and prevents me

from neglecting them.” (Interviewee C, personal communication, March, 26, 2023)

“For me, used an interactive electronic whiteboard in my classroom had prevented me from having to rely too much on PowerPoint, and my classes had gradually shifted to a student-centered class.” (Interviewee D, personal communication, March, 26, 2023)

“Used the interactive electronic whiteboard in the kindergarten English class created a student-centered classroom environment for me. I could use the interactive electronic whiteboard to organize students to play many games, and I could use the interactive electronic whiteboard to quickly assess students' learning.” (Interview E, personal communication, March, 27, 2023)

“Used an interactive electronic whiteboard in the classroom helped me create a student-centered teaching philosophy where students could participate in every class activity. Such teaching methods could help students improve student efficiency.” (Interviewee G, personal communication, March, 28, 2023)

4.3.3.4 Lack of expertise

“For me, the interactive electronic whiteboard was a teaching tool that I had only recently started, so I did not have a lot of expertise related to the interactive electronic whiteboard yet.” (Interviewee A, personal communication, March, 25, 2023)

“For me, I still spent a lot of time preparing for my classes, and even before class I spent a lot of time in the classroom working on the interactive electronic whiteboard, Because I did not think I have

enough professional knowledge of interactive electronic whiteboard.” (Interviewee B, personal communication, March, 25, 2023)

“When I first started teaching kindergarten English, the school did not emphasize the need to use interactive electronic whiteboard in kindergarten English classroom, but with the increasing popularity of multimedia education, I realized the role of interactive electronic whiteboard in kindergarten English teaching, so I now start to learn how to use interactive electronic whiteboard in the classroom, But I still lacked the expertise to use interactive electronic whiteboards.” (Interviewee C, personal communication, March, 26, 2023)

“The interactive electronic whiteboard was a new teaching tool for me. Although the school had organized how to use the interactive electronic whiteboard in kindergarten English classes, I felt I still lacked the professional knowledge about it.” (Interviewee H, personal communication, March, 28, 2023)

“I learned about how to use interactive electronic whiteboard in class when I was in university, but I have forgotten some professional knowledge due to too long time.” (Interviewee E, personal communication, March, 27, 2023)

“The interactive electronic whiteboard was a new teaching tool for me, and although I had over 6 years of teaching experience. However, the teaching experience of using interactive electronic whiteboard in kindergarten English classroom was 0.” (Interviewee F, personal communication, March, 27, 2023)

“The school continued to emphasize the importance of using interactive electronic whiteboard in kindergarten English classes but has not given me relevant training on interactive electronic

whiteboard. Even if there is training, the content of the training is only about the characteristics of interactive electronic whiteboard, so I still lack professional knowledge of interactive electronic whiteboard.” (Interviewee G, personal communication, March, 28, 2023)

4.3.3.5 Lack of confidence

“As I had only recently started to use the interactive electronic whiteboard, I often feel fear about using the interactive electronic whiteboard in my classes.” (Interviewee A, personal communication, March, 25, 2023)

“I was afraid to use the interactive electronic whiteboard in the classroom, even if I go to the classroom before class and actually operate the interactive electronic whiteboard according to the course schedule, but I still felt afraid because I was afraid of using the interactive electronic whiteboard during the class.” (Interviewee B, personal communication, March, 25, 2023)

“Since I had only recently started learning how to use an interactive electronic whiteboard, I was not confident in using it and I was afraid that something will go wrong or that I used it incorrectly.” (Interviewee C, personal communication, March, 26, 2023)

“The school constantly emphasized that teachers should use interactive electronic whiteboard in the classroom. However, I encountered many problems in the process of using interactive electronic whiteboard, such as out-of-control class, students' inattention and so on. However, I did not know how to deal with these problems, which made me feel very unsure about using interactive electronic whiteboard in English class.” (Interviewee D, personal communication, March, 26, 2023)

“Although I was trained in how to use the interactive electronic whiteboard in kindergarten English class when I was at school, the interactive electronic whiteboard used in school was different from the one I was trained to use, so I still felt fear about using the interactive electronic whiteboard.” (Interviewee E, personal communication, March, 27, 2023)

“The interactive electronic whiteboard was a new educational tool for me, and I did not feel confident that my previous English teaching method, which was based on books, had suddenly changed to a multimedia device.” (Interviewee F, personal communication, March, 27, 2023)

4.3.3.6 Class out of control

“When I used an interactive electronic whiteboard, students got so excited that they often ran up to the podium and touch the whiteboard themselves. When one student does it, other students copy the student's behavior, and the class became chaotic.” (Interviewee A, personal communication, March, 25, 2023)

“When I was using the interactive electronic whiteboard, students would ask me to play cartoons they liked to watch, and every time I could not carry out my teaching activities properly.” (Interviewee B, personal communication, March, 25, 2023)

“When I was using the interactive electronic whiteboard, I would experience network problems, and the students would get excited, and the class would get out of control.” (Interviewee C, personal communication, March, 26, 2023)

“The multimedia equipment in the classroom often fails, and every time there was a failure, the students were constantly talking about why the interactive electronic whiteboard was failing, which could cause the class to get out of control.” (Interviewee D, personal communication, March, 26, 2023)

“Students would not listen to my instructions when they were playing games, and some would keep touching the interactive electronic whiteboard, caused chaos in the class.” (Interviewee E, personal communication, March, 27, 2023)

“When students did writing exercises on the interactive electronic whiteboard, some students scribbled on the interactive electronic whiteboard, others copy it, and I could not move on to the rest of the class.” (Interviewee F, personal communication, March, 27, 2023)

“Whenever I taught using the interactive electronic whiteboard, the students were only interested in the content they like. Other times they were not focused, and the class got out of control.” (Interviewee G, personal communication, March, 28, 2023)

“Every time I used an interactive electronic whiteboard, students tended to imitate the sounds that appear on the interactive electronic whiteboard, which could make the class very confusing.” (Interviewee H, personal communication, March, 28, 2023)

In brief, analysis of the teachers' semi-structured interview data revealed teachers' beliefs, reasons for use, and practices regarding the use of interactive whiteboards. The following figure, Figure 4.1, clearly shows the themes that emerged under each of the three concepts.

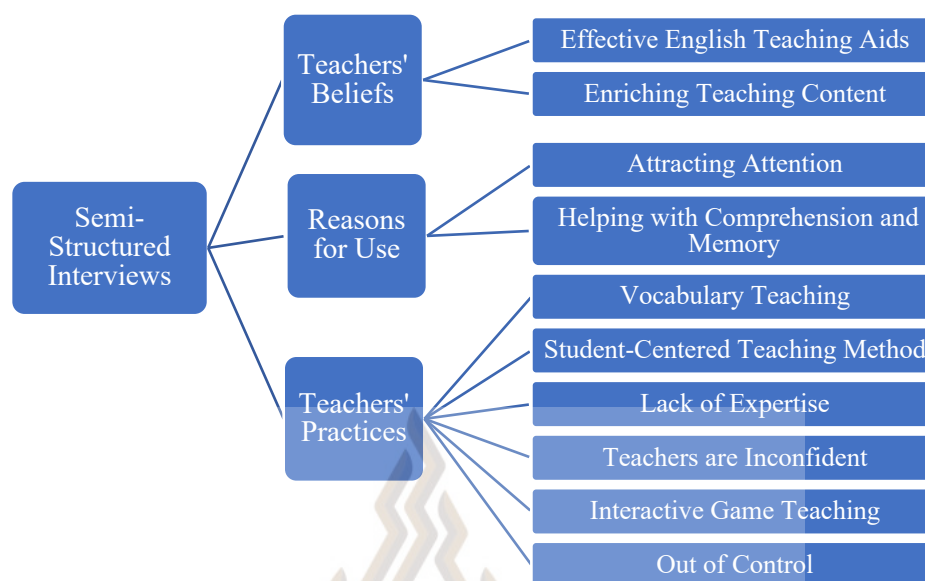


Figure 4.1 Themes form Interviews of the Kindergarten English Teachers

4.4 Conclusion

In summary, the data collected from the questionnaires were analyzed from 26 full-time EF English teachers at the Kunming campus, and four teachers were randomly selected from the 26 full-time English teachers for classroom observations and eight teachers for semi-structured interviews.

Analysis of data from both quantitative and qualitative studies, questionnaires, classroom observations, and interviews revealed that kindergarten English teachers found interactive whiteboards to be effective aids to enhance teaching and learning and to enrich teaching and learning. Kindergarten English teachers use interactive whiteboards because they are child-friendly, fun for children, focus children's attention, and help children understand and remember. Vocabulary instruction and interactive games are important practices for kindergarten English teachers using interactive whiteboards. All demographic information, answers to the questionnaires, and answers to the interviews were determined through statistical calculations and descriptive statements. The conclusion from the findings of the instruments, discussion of the emerging issues and recommendation for the use of the results found in this chapter and for future research are described in Chapter 5.

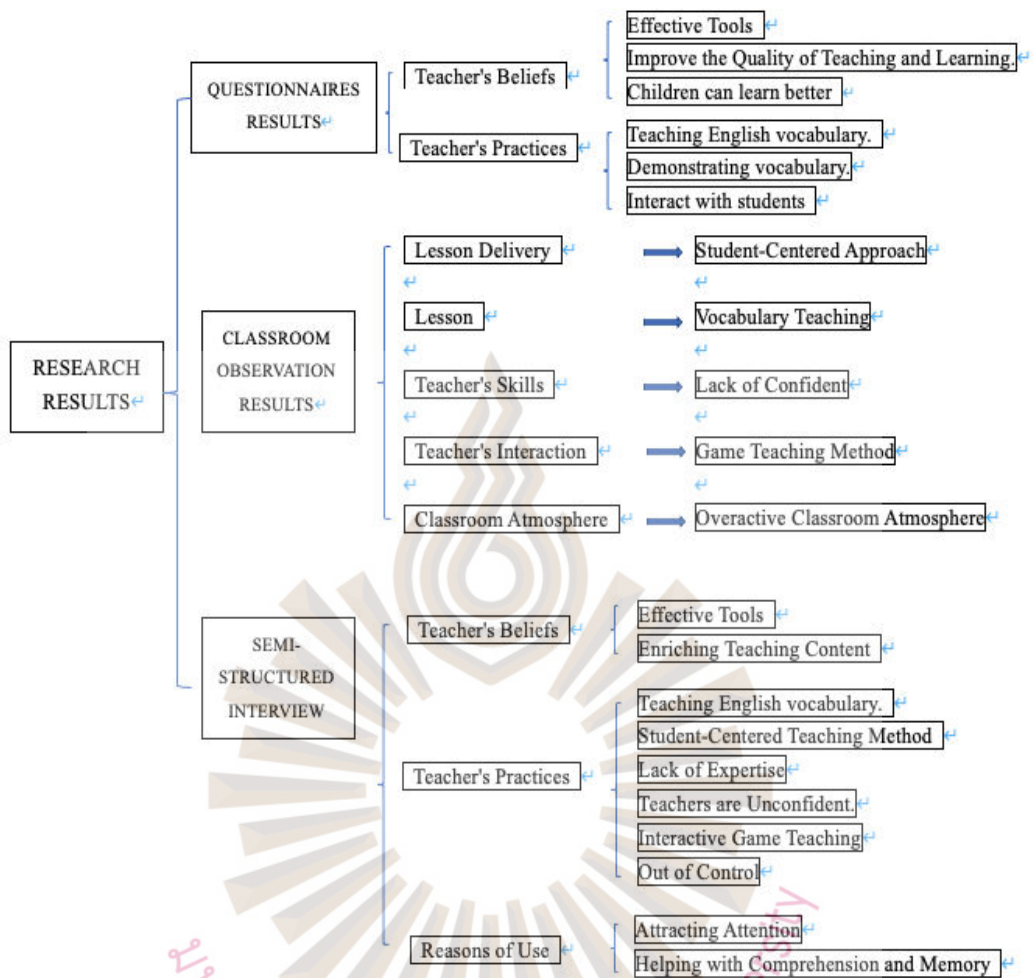
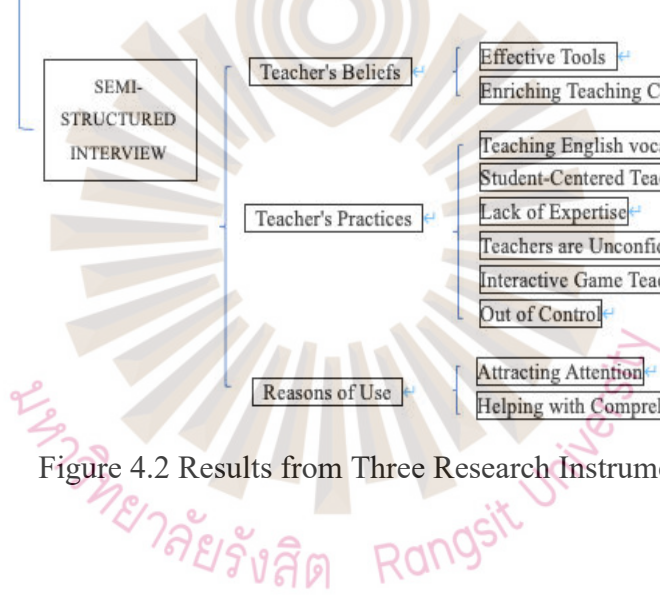


Figure 4.2 Results from Three Research Instruments



Chapter 5

Conclusion, Discussion and Recommendations

This chapter present the conclusion from the analyzed findings, discussion of findings followed by recommendations for the use of the findings and for future studies. This chapter is separated into sections: conclusion, discussion, and recommendations.

This study aimed to investigate the beliefs and practices of kindergarten English teachers toward to the use of interactive whiteboards in kindergarten English teaching. The teachers who filled out the questionnaire ranged from 28 to 35 in age, and about 75% were female. In addition, the teachers in this study had at least 1-5 years of kindergarten English teaching experience and at least one year of interactive whiteboard teaching experience. Specifically, the study asked the following three research questions:

This section discussed the answers to the research questions:

1) What are the kindergarten Chinese English teachers' beliefs towards the use of interactive whiteboards in teaching English to children?

2) What are the kindergarten Chinese English teachers' practices towards the use of interactive whiteboards in teaching English to children?

3) What are the reasons for the kindergarten Chinese English teachers' use of the interactive whiteboards?

5.1 Conclusion

5.1.1 Responses to Research Question 1

What are the kindergarten Chinese English teachers' beliefs towards the use of interactive whiteboards in teaching English to children?

The data from the questionnaires collected from 26 kindergarten English teachers found that kindergarten English teachers believed that interactive whiteboards helped them to do better teaching and learning activities. This is because they believed that interactive whiteboards were an effective tool to support the teaching of English to children ($\bar{X}=4.346/SD=0.689$), that kindergarten English teachers the use of the interactive whiteboards helped improve their teaching ($\bar{X}=4.315/SD=0.697$) and children learned better by the using interactive whiteboards ($\bar{X}=4.310/SD=0.647$).

The qualitative data were analyzed from semi-structured interviews with 8 randomly selected kindergarten English teacher interviewees from 26 questionnaire respondents and similar findings were found: kindergarten teachers perceived interactive whiteboards as an effective English teaching tool and that interactive whiteboards helped kindergarten English teachers to enrich their teaching content.

The research data from the classroom observations of four randomly selected kindergarten English teachers found that interactive whiteboards helped teachers enrich their teaching content and interactive whiteboards helped students learn better.

5.1.2 Responses to Research Question 2

What are the kindergarten Chinese English teachers' practices towards the use of interactive whiteboards in teaching English to children?

The questionnaire data collected from 26 kindergarten English teachers revealed that kindergarten English teachers used interactive whiteboards in their

teaching activities and found that the majority of kindergarten English teachers used the interactive whiteboard to teach English vocabulary for kindergarten ($\bar{X}=4.511/SD=0.402$), used the interactive whiteboard to interact with students when they are presented on it ($\bar{X}=4.375/SD=0.761$) and used the interactive whiteboards to present words ($\bar{X}=4.362/SD=0.344$), had participated in interactive whiteboard training activities ($\bar{X}=4.292/SD=0.679$), used interactive whiteboards to teach the four kindergarten English skills ($\bar{X}=4.269/SD=0.863$). In addition, the researcher found that few teachers had difficulty using the interactive whiteboards ($\bar{X}=1.692/SD=0.928$) and few felt had low confidence in using the interactive whiteboards ($\bar{X}=1.769/SD=0.815$).

Data from the interview data analysis indicated that these kindergarten English teachers used student-centered teaching methods in their practice of using interactive whiteboards. The classroom atmosphere was active but easily got out of control. The interviewees blamed the classroom management problem based on their lack of expertise and their lack of confidence in using the interactive whiteboards. As for the type of activities with the use of interactive whiteboard, the interviewees used games for interactive teaching.

Classroom observations were conducted with 4 randomly selected teachers. Analysis of the data revealed that the teachers' classroom atmosphere was active when using the interactive whiteboards, but the classes easily got out of control. The teachers said they were not confident in their teaching skills. For class interaction, the teachers enjoyed using interactive whiteboards to interact with students. In addition, the researchers also found through classroom observations that some kindergarten English teachers lacked a student-centered approach to teaching. During the observations, the researchers found that some kindergarten English teachers had a single, inflexible approach to teaching content and methods that were not adapted and optimized for the individual needs of different students. In addition, researchers found that these English teachers lacked opportunities to provide students with independent choice and control, that students' learning pace and interests were not adequately considered, and that lessons were too fast or too slow to meet the needs of different students.

5.1.3 Responses to Research Q3

What are the reasons for the kindergarten Chinese English teachers use of interactive whiteboard?

The data collected from 26 kindergarten English teacher questionnaire respondents found that they mostly used interactive whiteboards for the following reasons: interactive whiteboards made it easier to help children understand the curriculum ($\bar{X}=4.277/SD=0.560$) and lessons using interactive whiteboards were fun for children ($\bar{X}=4.215/SD=0.431$).

The data obtained from eight English teachers who were interviewed showed that the teachers' reasons for using the interactive whiteboards were the interactive whiteboard-assisted lessons captured the children's attention, the interactive whiteboard instruction helped children understand the lesson content; and the interactive whiteboard lessons were very interesting for children.

Classroom observations revealed that the classroom atmosphere was particularly active and could attract children's attention when the kindergarten English teachers used interactive whiteboards to assist in teaching English. In addition, the teachers interacted with the children in the process of using the interactive whiteboard, and the children were able to better understand the lesson content and strengthen their memory.

Thus, it can be concluded that interactive whiteboards have academic values with supportive roles for the teachers. The teachers believed that the whiteboards made their teaching and the teaching content better, while the students also learned better when interactive whiteboards were used. Both the teachers and the students benefited from the use of the interactive whiteboards.

5.2 Discussion

This part reveals the issues that emerged for the three questions:

5.2.1 Kindergarten Chinese English Teachers' Beliefs toward the Use of Interactive Whiteboards in Teaching English to Children

According to quantitative and qualitative data, the beliefs of kindergarten English teachers on the use of interactive whiteboard were: 1) Interactive whiteboard was an effective tool; 2) It could help improve teachers' teaching standards; 3) interactive whiteboard enriched their teaching content.

5.2.1.1 The Interactive whiteboard is an effective tool

It was worth noting that interactive whiteboard was an effective tool to support children's English teaching. It could enhance the children's learning interest, improve the teachers' teaching effect, support personalized teaching, improve interaction and participation, and benefit children's English learning and development. The findings were similar to Chen (2020). Children were usually curious about new and interesting things. Interactive whiteboard provided more vivid, rich, and diversified learning content through multimedia, animation, and audio, which could stimulate children's interest and enthusiasm in learning and made them more actively participate in English learning (Bian, 2022; Ding 2018; Hao & Xian, 2019). In addition, the interactive whiteboard provides a wealth of teaching resources and tools, kindergarten English teachers could choose appropriate courseware, images, videos, and other resources according to the teaching objectives and the actual situation of students to help children better understand and master English knowledge, improved the teaching effect (Lu, 2019; Wu, 2020; Pang, 2019). Moreover, interactive whiteboards could help kindergarten English teachers support personalized teaching functions. Kindergarten English teachers could choose different teaching resources and strategies according to each student's learning situation and needs to help students better learn and master English knowledge. (Ma, 2019; Wu, 2020; Lu 2017). Interactive whiteboard provided

rich interactive functions and gamified learning methods, which could better stimulate children's learning enthusiasm and participation. For example, teachers could design a variety of games and interactive activities to help children learn through play and enhance their learning interest and self-confidence. (Zhen, 2019; Weng 2017).

Therefore, it can be concluded that the interactive whiteboard can be made an addition to the classroom because of the benefits it can offer.

5.2.1.2 The Interactive whiteboard improves the teachers' teaching standards

In this study, most of the kindergarten English teachers believed that interactive whiteboards could improve teachers' teaching standards. The findings of the study were similar to Gao (2022). Kindergarten English teachers thought that the interactive whiteboard helped enhance teaching interaction, promote teacher-student interaction, improve classroom activity, and make teaching more vivid (Liu, 2019; Ma, 2019; Li, 2019). Using interactive whiteboards in kindergarten English classes could help stimulate students' interest. Interactive whiteboard could display rich multimedia materials, such as pictures, videos, and animations to stimulate students' interest in learning (Zhen, 2019; Han 2018). The use of interactive whiteboard in kindergarten English classroom could improve the classroom efficiency. The interactive whiteboard could quickly switch between different contents and make teaching easier for teachers (Gao, 2022; Yu, 2019). Interactive whiteboards supported a variety of teaching methods. Interactive whiteboard could support different teaching methods, such as game teaching, cooperative inquiry, and classroom competition to improve the teaching effect (Liu, 2019; Ye, 2018). The use of interactive whiteboards in kindergarten English classrooms could provide multi-element discussion. Interactive whiteboards can be used for group discussion in class to improve students' thinking and expression skills (Hu, 2021; Duan, 2019). The use of interactive whiteboard in kindergarten English classroom could improve the teaching quality. Using the interactive whiteboard, teachers could better complete the teaching objectives, improve the teaching quality, and let students better grasp the knowledge and skills (Feng, 2021; Li, 2019; Dong, 2021).

5.2.1.3 Interactive whiteboards can enrich the teaching content

Kindergarten English teachers believed that interactive whiteboards could help them enrich their teaching content. These findings were similar to other previously conducted studies (Huang, 2020; Hua, 2018; Chen, 2020; Lei, 2022). Gao (2022) believes that interactive whiteboards could display various images, audio, and video in multimedia form, which can enrich the teaching content. Teachers could add animation, sound, video, and other elements to make students understand the knowledge point more intuitively. Interactive whiteboards allowed teachers to demonstrate knowledge points in real time, such as through interactive demonstration experiments or simulation operations, so that students could have a deeper understanding and grasp of knowledge points (Liu, 2020; Wu, 2020). The interactive whiteboard can provide a variety of teaching methods. According to the different needs of students, teachers could design personalized teaching plans, which could enrich the teaching content and meet the learning needs of different students. (Ma, 2019; Mei, 2019).

5.2.2 Kindergarten Chinese English teachers' practices in the use of interactive whiteboards in teaching English to children

According to the collected quantitative and qualitative data, practices of kindergarten English teachers on the use of interactive whiteboards were identified as: 1) Vocabulary Teaching, 2) Student-Centered Teaching Method, 3) Game Teaching Method, 4) Active Classroom Atmosphere, 5) Lack of Professional Knowledge and 5) Lack of Confidence.

5.2.2.1 Vocabulary Teaching

Obviously, the interactive whiteboard played an important role in the process of kindergarten English vocabulary teaching. Other researchers also came up with similar findings in their studies. The interactive whiteboard could present words in a variety of ways such as pictures and videos. This multi-sensory learning mode could help children understand and memorize words more easily, thus improving their

vocabulary mastery (Liu, 2019) When kindergarten English teachers used the interactive whiteboard for vocabulary teaching, kindergarten students could quickly understand the meaning of the words they had learned and combine what they had learned with reality through the pictures and videos displayed by the kindergarten English teachers (Weng, 2017; Yan, 2021). In addition, the interactive whiteboard enabled vocabulary learning through puzzles, fill-in-the-blanks, games, and other forms that helped kindergarten students consolidate and strengthen their vocabulary knowledge for a stronger grasp. Similarly, Gao (2022) mentioned that the interactive whiteboard in kindergarten English vocabulary teaching could help kindergarten English teachers truly understand the vocabulary learning situation of kindergarten students and timely adjusted the teaching methods. The interactive whiteboard could carry out personalized teaching according to the vocabulary learning situation of kindergarten students, and kindergarten English teachers could adjust the content and methods of vocabulary teaching according to the feedback of kindergarten students, to better met the vocabulary needs and interests of kindergarten students.

5.2.2.2 Student-Centered Teaching Method

Based on the data from the questionnaires and the interviews, kindergarten English teachers used interactive whiteboards in kindergarten English classrooms not only in vocabulary teaching, but also as an embodiment of a kindergarten student-centered teaching method. Hu (2021) mentioned that interactive whiteboard could be operated by touch screen, handwriting and other ways. Kindergarten students could take the initiative to participate in teaching activities under the guidance of kindergarten English teachers, to better understand and master the knowledge of kindergarten English teachers. In the process of using the interactive whiteboard, kindergarten English teachers could set up different teaching contents and forms, such as games, music, and animation according to the different levels and needs of kindergarten students. This personalized way of learning can meet the different learning needs of kindergarten students, so that they could get a sense of achievement in learning more easily (Pang, 2019). In addition, the interactive whiteboard could provide a more personalized learning experience. Kindergarten English teachers could set different

teaching contents and forms, such as games, music, and animation, according to children's different needs and interests. This personalized teaching method could make children better play their advantages and specialties in the learning process and promote their personalized development (Du, 2018; Zhen, 2019; Yan, 2022). The interactive whiteboard encouraged a kindergarten student-centered teaching method that did not only met the different learning needs of kindergarten students, but also helped kindergarten students increase their classroom participation and enthusiasm. The interactive whiteboard could display the teaching content in the form of images, sound and video so that kindergarten students would have an interest in the classroom content. At the same time, children could directly operate the electronic whiteboard, such as click, drag, write, to increase the kindergarten students' participation and enthusiasm, so student learning was more active (Ma, 2020; Li, 2018; Lu, 2020). Interactive whiteboards created interactive and diverse learning environments for kindergarten English teachers, enabling kindergarten students to be more active in the learning process. Kindergarten students could directly operate the electronic whiteboard, such as click, drag, write and so on to make learning more vivid and interesting, but also could better cultivate the kindergarten students' learning interest and motivation (Hu, 2021; Wei, 2020; Xiao, 2021). Not only that, the use of interactive whiteboard by kindergarten English teachers in kindergarten English classroom was a teaching method centered on kindergarten students. It was also reflected that kindergarten English teachers could provide timely feedback for kindergarten students using the interactive whiteboard. Interactive whiteboard could help children better understood and grasped the curriculum content as well as improved children's learning effect. The electronic whiteboard had more abundant teaching resources and more intuitive display methods. It could display vocabulary, sentence patterns, pronunciation, and other aspects through multimedia, and provided opportunities for oral practice and interaction. This diversified learning style could better help children develop language skills and improve their language expression and communication ability.

However, through classroom observations, it was found that some teachers did not deliver student-centered instruction in the process of classroom practice. The teacher focused on teacher-directed instruction. According to Yu (2019)

and Wu (2020), their studies revealed that the teachers did not design flexible and varied teaching activities in the classroom with traditional textbook themes and lacked student group work, inquiry-based learning, and role-playing. The teachers ignored individual student differences and failed to provide individualized instructional support and assistance to students, resulting in some students' inability to effectively understand and master knowledge (Ye, 2019; Ma, 2020).

For this point, since the class observation data were only from the observer and from a colleague observing one class session in two classes that were observed, it could not be confidently claimed that the interactive whiteboards would lead to teacher-directed teaching rather than student-centered learning. This emerging issue should be studied further.

5.2.2.3 Game Teaching Method

Interactive whiteboard not only provided kindergarten English teachers with student-oriented teaching methods but also provided kindergarten English teachers with game teaching methods. Game teaching method could help kindergarten students learn English more easily and enhanced their learning interest and enthusiasm. Games were one of children's favorite activities. By incorporating English learning into games, young children could be more actively involved in learning, thus provided a fun learning environment (Hua, 2018; Pang, 2019). Interactive whiteboards provided kindergarten English teachers with various forms of games to attract children's interest and deepen their memory. Kindergarten students could learn English through games, which could make them remember English words, vocabulary, and sentence patterns more deeply because the game itself was a process of memory (Li, 2019). For example, kindergarten English teachers could display some English knowledge points on the interactive whiteboard, and then asked kindergarten students to compete by answering questions to stimulate their interest in learning (Dong, 2021; Wu, 2020). Kindergarten English teachers could display an English story on the interactive whiteboard, and then asked kindergarten students to demonstrate the story by manipulating the graphics and words on the whiteboard, to help children better understand the English story (Wang, 2018;

Gao, 2022). Kindergarten English teachers could play English songs on the interactive whiteboard, and then let children learned English songs through singing, dancing, and other ways, to improve their English language sense and oral expression ability (Duan, 2019; Li, 2019).

However, in practice, many problems were found in the use of interactive whiteboards by kindergarten English teachers. This can be attributed to the ability to operate the interactive whiteboards.

5.2.2.4 Lack of Professional Knowledge

Due to a lack of professional knowledge, kindergarten English teachers in the process of using the interactive whiteboard could not use it to the maximum advantage. First, kindergarten English teachers lacked professional knowledge of English education and linguistics, so kindergarten English teachers could not reasonably design the teaching content and teaching activities. For example, kindergarten English teachers might simply project words and sentences from kindergarten English textbooks onto the interactive whiteboard without thinking deeply about how to guide kindergarten students to better understand and use the content. This mechanical teaching method could make kindergarten students lose interest in English learning (Ding, 2018; Li, 2019). Second, without systematic training and professional support, kindergarten teachers might not be able to solve the problems and difficulties in the use of interactive whiteboards. For example, when kindergarten English teachers encountered technical problems or software errors, they could not solve them in time, which inevitably affected the progress and effect of teaching. In addition, kindergarten English teachers lacked understanding of the psychological and learning development of kindergarten students and misjudged the abilities and needs of kindergarten students, resulted in poor teaching results (Ding, 2021; Chen, 2019). Third, the kindergarten English teachers were not familiar with the student-centered method and skills of interactive whiteboard and might not teach effectively, for example, kindergarten English teachers did not know how to use interactive whiteboards for games and interactive activities to attract young children's attention and stimulate their interest in learning. In addition, kindergarten

teachers who did not understand the features and limitations of the interactive whiteboard were bound to have inappropriate or ineffective use, such as used images or text on the electronic whiteboard that was too small or too vague or choose teaching software and applications that were not suitable for kindergarten students (Yu, 2019; Xiao, 2021; Li, 2019).

5.2.2.5 Lack of Confidence

Kindergarten English teachers lacked confidence in using interactive whiteboards in kindergarten English classes affected how kindergarten English teachers used interactive whiteboards in kindergarten English classes. First, when kindergarten English teachers were not confident in using the interactive whiteboard, the teachers may show a hesitant and uncertain attitude, which confuse and upset kindergarten students. At the same time, the performance of kindergarten English teachers also affected children's learning interest and participation, thus affecting the class atmosphere (Chen, 2019; Yan, 2022). Second, kindergarten English teachers might be afraid to try some new teaching contents or methods because they were not confident when using interactive whiteboards. In this way, the learning scope of kindergarten students would be limited, affecting their learning effect (Weng, 2017; Wei, 2020). Third, if kindergarten English teachers were not confident when using interactive whiteboards, they would not master the technology well, leading to a decline in the teaching quality. For example, kindergarten English teachers were not able to smoothly switch teaching resources such as slides or presentation videos, thus affecting the classroom (Wu, 2020; Liao, 2022).

5.2.2.6 Overactive Classroom Atmosphere

Finally, classroom atmosphere affected kindergarten English teachers' use of interactive whiteboards in kindergarten English classes. Classroom atmosphere was an educational environment created by kindergarten English teachers in the classroom, which played an important role in the use of interactive whiteboard by kindergarten English teachers in kindergarten English classroom (Han, 2018). First, a

good classroom atmosphere could stimulate children's learning motivation and made them more actively participate in classroom activities. If the classroom was often out of control, kindergarten students may lose interest in the teaching content, and kindergarten students' attention focused on things unrelated to the classroom content, which affected the effect of kindergarten English teachers used of interactive whiteboard in kindergarten English class (Jin, 2020; Zhen, 2019). Second, a good classroom atmosphere could improve the learning effect of kindergarten students, so that they could better understand and absorb the knowledge taught by kindergarten English teachers. On the contrary, if the classroom atmosphere was not good, for example, the classroom was often out of control, kindergarten students may not be able to listen attentively or understand the content taught by the teacher, thus affected the effect of kindergarten English teachers used interactive whiteboard in kindergarten English class (Du, 2019; Hao & Xian, 2019). Third, a good classroom atmosphere could bring positive emotional experience to children and make them more interested in learning English, thus affected their interest in and attitude towards English learning. On the contrary, bad classroom atmosphere may brought negative emotional experience to children, thus affecting their attitude and interest in English learning (Ma, 2019; Lu, 2019).

5.2.3 The Reasons for the Kindergarten Chinese English Teachers' Use of Interactive Whiteboards

According to qualitative and quantitative research analysis, the reasons for kindergarten English teachers to use interactive whiteboard were as follows: 1) Interactive whiteboard helps attract students' attention; 2) Interactive whiteboards help students understand and memory; 3) Interactive whiteboards are fun for students.

5.2.3.1 Interactive Whiteboard Helps Attract Students' Attention

It is worth noting that interactive whiteboards could attract students' attention, made students actively participate in the teaching process in the classroom, increased their interest and participation in learning, and promoted their thinking and creativity (Yan, 2022; Ye, 2019; Zeng, 2019). Kindergarten English teachers used

interactive whiteboard to teach English subjects to help students focus their attention, and make students more engaged in class through animation, video, pictures, and other ways of presentation (Zhao, 2017; Zhang 2017; Zang, 2020). Interactive whiteboard equipment helped teachers to better display and present teaching content to attract students' attention. Teachers used a variety of tools on the whiteboard, such as doodles, marks, images, videos, etc., to better demonstrate and explain knowledge points (Gui & Lei, 2019; Wu, 2020). In addition, teachers also drawn pictures and played games on the whiteboard so that students could better understand and participate in the class more intently, like Ma's (2019) point of view. The interactive whiteboard provided many free English resources to assist kindergarten English teachers in teaching. Massive resources enrich teachers' teaching content, and could also catch children's eyes (Huang, 2020; Pang, 2019; Duan, 2019). Compared to traditional teaching equipment, interactive whiteboards were more convenient, efficient, and faster to enrich the teaching content because teachers could use relevant pictures, audio, and interactive games (Chen, 2020; Bian, 2022; Yu, 2019).

5.2.3.2 Interactive whiteboards help students understand the lesson content and improve their vocabulary retention

The interactive whiteboard as a modern teaching tool helped children understand the curriculum in a variety of ways. According to Gui & Lei (2019), kindergarten English teachers used multimedia display, interactive whiteboard could display a variety of images, audio, and video in the form of multimedia so that children could more intuitively understand and feel the knowledge (Chen, 2019; Du, 2019; Ma, 2019). For example, in English classes, kindergarten English teachers could help children better understand the meaning of English words and sentences by showing language-related pictures, animations or videos. In addition, kindergarten English teachers could interact with students in real time to help students understand, interactive whiteboard could realize real-time interaction between the teachers and the students. Kindergarten English teachers could timely adjust the classroom content and teaching methods according to students' reactions and helped students to better understand the knowledge (Ma, 2020; Lu, 2019; Xiao, 2021). At the same time, students could also

interact with teachers through interactive whiteboards to ask questions and solve problems, thus deepening their understanding of the curriculum (Weng, 2017). Interactive whiteboards could design teaching content through gamification so that students could learn knowledge in a pleasant atmosphere (Du, 2019; Hong, 2018). For example, English songs, English games, and other forms can be used to increase students' participation and to better understand English. Interactive whiteboards could provide personalized teaching programs according to the different characteristics and needs of students (Wei, 2020; Hu, 2021). For example, teaching content and teaching methods can be designed according to students' learning level and English foundation to help students better understand and master English knowledge.

5.2.3.3 Interactive Whiteboards are Fun for Students

The interactive whiteboard, as a modern teaching tool could bring children a lot of fun, which was similar to Chen's (2019) point of view. Interactive whiteboard could present a variety of images, audio, and video in the form of multimedia. This audio-visual effect could attract children's vision and hearing, so that they were more easily attracted to the knowledge and improve their interest in learning (Chen, 2019; Wu, 2018). In addition, interactive whiteboards allowed for real-time interaction between teachers and students. This kind of interaction could promote the communication between teachers and students and enable children to grow up rapidly in the interaction (Ma, 2019; Yan, 2022). At the same time, students could enhance the fun of learning by interacting with teachers, solving problems, and exchanging ideas (Pang, 2019; History, 2019). Interactive whiteboards could turn a course into gamified forms, such as English songs and English games, so that students could learn in a pleasant atmosphere, which could make children feel more interesting and vivid in class (Ma, 2019; Ding, 2018). The interactive whiteboard was indeed a very effective teaching aid for the teachers, allowing students to participate in the classroom interaction more actively, and indeed making the classroom more interesting and enhancing student learning, similar to punishment (2019). Liu (2020) proposes that interactive whiteboards could provide personalized teaching plans according to different characteristics and needs of students. For example, teaching content and teaching

methods can be designed according to students' interests and learning characteristics, which can enhance students' attention and interest in the course.

In conclusion, it is evident that as a tool, the interactive whiteboard has many options that the teacher can use to deliver an effective lesson. However, analyzing the emerging issues, it can be concluded that to maximize the use of the interactive whiteboard, the teachers need to be well trained in how to use the whiteboards. As for their beliefs about the use of the whiteboards, there are no problems since the teachers are positive to using the whiteboards to support their teaching. To help the teachers, the school administrators should give intensive training on the interactive whiteboard operation to the teachers.

In conclusion, for this group of teachers in the study, the interactive whiteboards have many benefits and students seem to enjoy using them. Teacher-student interaction is found to be good. However, there are still some unclear areas that need further investigation: 1) Whether the interactive whiteboards effectively encourage student-centered approach or teacher-centered approach or both (as suggested by this group of teachers, teachers in the questionnaire tended to use student-centered teaching methods, but only one teacher in the classroom observation used student-centered teaching methods). 2) Whether the class atmosphere tends to be overactive with the use of interactive whiteboards. 3) Whether the teachers lack the skill of effectively operating the interactive whiteboards. 4) How should teachers' confidence be improved.

5.3 Recommendations

This study focused on kindergarten English teachers' beliefs and practices regarding the use of interactive whiteboards to support teaching and learning. The study found that kindergarten English teachers had positive beliefs about the use of interactive whiteboards as an effective teaching aid that could help teachers enrich and improve the quality of teaching and learning. The study of kindergarten English teachers' practice with interactive whiteboards found that: teachers use interactive whiteboards to apply

student-centered teaching methods; teachers use interactive whiteboards in a lively classroom atmosphere, but they tend to lose control; teachers lack expertise and are not confident in using interactive whiteboards; teachers use interactive whiteboards to teach interactive games. Further research on teachers' beliefs and practices of interactive whiteboards is recommended.

5.3.1 Recommendations for Kindergarten English Teachers

The previous research has demonstrated the importance of kindergarten English teachers' beliefs and practices about using interactive whiteboards. Therefore, it is important to develop kindergarten English teachers' beliefs and practices regarding the use of interactive whiteboards. The recommendations are as follows:

5.3.1.1 Kindergarten teachers need to develop the correct beliefs about teaching with interactive whiteboards. In addition, teachers need to continuously strengthen their professional knowledge and theories. They can take the initiative to explore the teaching theories of interactive whiteboards by reading professional books and participating in training activities to promote the renewal and internalization of teaching beliefs and improve their teaching practices in actual classroom teaching.

5.3.1.2 Kindergarten teachers teaching English using interactive whiteboard-assisted need to learn enough professional knowledge theoretical support, according to the research findings interactive whiteboard-assisted teaching is very important to develop learners' interest and ability in English. However, if teachers themselves have little theoretical knowledge about interactive whiteboard-assisted teaching and do not know why and how to use them effectively, they cannot teach their students better in the actual teaching process.

5.3.1.3 Kindergarten teachers need to keep accumulating teaching practices and their teaching beliefs about using interactive whiteboards will change to some extent. In the interviews, teachers indicated that as their teaching practice improves, they become more flexible in their choice of teaching methods using the

interactive whiteboards. They have learned some new theories and methods in the process of participating in the training activities, and they keep reflecting on them in their later teaching, consciously refining their beliefs about using interactive whiteboards and improving their teaching behaviors.

5.3.1.4 The English teachers can organize their classroom teaching according to their original teaching beliefs about using interactive whiteboard assistance. Teachers should always pay attention to the atmosphere of the classroom when using interactive whiteboards to assist their teaching English. Teachers should pay attention to students' English learning needs and classroom atmosphere and adjust classroom teaching practices when appropriate in order to enhance students' interest in learning. Since the content taught in the classroom is limited, teachers can teach students strategies for vocabulary learning, encourage students to actively expand their vocabulary knowledge, and develop vocabulary learning autonomy.

5.3.2 Recommendations for Future Research

There are few studies on kindergarten English teachers' beliefs and practices about interactive whiteboard-assisted teaching, and more comprehensive and in-depth studies are needed. Combining the findings of this research, the following outlook is proposed.

5.3.2.1 First, the number and scope of the research sample should be expanded. When selecting the research sample, attention should be paid to whether the coverage of the sample is extensive. In addition, research on teachers' beliefs and practices of teaching and learning about educational technology at different stages of career development or different types of teachers can be conducted.

5.3.2.2 Secondly, comparative, and dynamic research on teachers' beliefs should be strengthened. Teacher beliefs are a dynamic process of change, and this paper only provides a static description of them, which can be supplemented with relevant

dynamic data. Exploring the formation and development patterns of teachers' beliefs and practices improves the scientific nature of the study.

5.3.2.3 Finally, because teachers' beliefs and practices about teaching using interactive whiteboards cover a wide range, this study only selected some of the dimensions to carry out research, so the content covered is not comprehensive enough. There is a need to expand and refine the scope of the study and to conduct a detailed study of each dimension.



References

- Ayres, R. (2002). Learner Attitudes Towards the Use of IWB. *Computer Assisted Language Learning*, 15(3), 241-249. doi: 10.1076/call.15.3.241.8189
- Bian, L. X. (2022). *Action research on the application of interactive whiteboard to math teaching activities of middle-class children* (Unpublished Master's thesis). Shanghai Normal University, China.
- Blumenfeld, P., Soloway, E., Marx, R., Krajcik, J., Guzdial, M., & Palincsar, A. (1991). Motivating Project-Based Learning: Sustaining the Doing, Supporting the Learning. *Educational Psychologist*, 26(3), 369–398. https://doi.org/10.1207/s15326985ep2603&4_8
- Boyatzis, R. E. (1998). *Transforming qualitative information: thematic analysis and code development*. New York: Sage Publications.
- Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Chen, N. O. (2019). *The Interest Orientation of English teaching and the cultivation method of interest in English learning*. *The New Generation*, 19(3), 23-27. Retrieved from <http://www.qikan.com.cn>.
- Chen, G. L. (2020). The Application of Interactive Electronic Whiteboard in Children's Math Activities: Reading and Writing. *Education Teaching Journal*, 15(5), 33-45.
- China Market Information Center. (2019). *Report on forecast and analysis of Competition situation and investment prospect of China's educational software market from 2009 to 2013*. Beijing: Author.
- Chomsky, C. (1997). *Foundations of Bilingual Education and Bilingualism* (2nd). Philadelphia: Multilingual Matters. Cultivation method of interest in English learning.
- Deniz, L. (2000). Öğretmen adaylarının bilgisayar yaşantıları ve bilgisayar tutumları. *M. Ü. Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi*, 12, 135–166.
- Ding, Z. J. (2018). The Application of Interactive Whiteboard in Primary School Chinese Teaching. *Chinese Audio-visual education*, 2(3), 43-46.

References (Cont.)

- Dong, Y. F. (2021). Pros and cons of interactive whiteboard in kindergarten group teaching activities. *Knowledge Window*, 5(1), 95-98.
- Du, D. I. (2019). On the Application of Situational Teaching Method in Junior Middle School English Teaching. *Reading and Writing*, 28(5), 89-94.
- Duan, S. S. (2019). Interactive Whiteboard and Its Application in Chinese Primary and Secondary School Classroom Teaching. *Journal of Gansu Education*, 27(1), 95.
- EF (n.d). *EF Introduction*. Retrieves from: <https://baike.so.com/doc/5732286-5945028.html>.
- Feng, Y. I. (2021). *Research on the application of interactive whiteboard in kindergarten teaching* (Unpublished Master's thesis). Hebei Normal University, China.
- Fosnot C. (1996). *Constructivism: Theory, perspectives, and practice*. New York: Teachers College Press.
- Gao, Z. (2022). *A study on the application of interactive whiteboard in kindergarten teaching*. Beijing: Education Forum.
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference, 11.0 update* (4th ed.). Boston: Allyn & Bacon.
- Gui, L. & Lei, L. P. (2015). Integration of computer software and kindergarten curriculum. *Modern Information Technology*, 11(1), 6-11.
- Han, K. (2021). Deep theory and method of information technology and curriculum integration. *Audio-visual education research*, 13(1), 7-8.
- Hao, O., & Xiao, S. (2021). Analysis on the application of information technology in kindergarten teaching activities. *Research on preschool Education*, 11(3), 34-38.
- He, F. (2019). *The application of multimedia technology in kindergarten teaching* (Unpublished Master's thesis). Northeast Normal University, China.
- Hess, R. D., & McGarvey, L. J. (1987). School-Relevant Effects of Education Uses of interactive whiteboard in Kindergarten Classrooms and Homes. *Journal of Educational Computing Research*, 3(3), 269–287. <https://doi.org/10.2190/yblv-9u6r-1wt7-40wc>

References (Cont.)

- Hong, X. (2016). The Research on the Present Situation and Countermeasures of Life-Oriented English Teaching in Kindergarten-Taking Little Oxford Kindergarten in Qinhuangdao for Example. *Advances in Education*, 6(6), 241-246.
- Hu, R. (2021). *Practical Research on Interactive Whiteboard Teaching of Biology in High School* (Unpublished Master's thesis). Ili Normal University, China.
- Hua, T. (2018). Research on Interactive Teaching Mode of Interactive Electronic Whiteboard. *Curriculum Education Research*, 32(9), 32-33.
- Huang, Y. (2020). Application of interactive whiteboard Aided Instruction (IWBAI) in preschool Teaching. *Journal of Changchun normal university*, 25(2), 127-129
- Jain, S., & Angural, V. (2017). *Use of Cronbach's Alpha in Dental Research*. *Medico Research Chronicles*, 4(3), 285-291. Retrieved from <https://www.medrech.com/index.php/medrech/article/view/242>.
- Jin, L. (2010). *Investigation and countermeasure analysis of multimedia Assisted English teaching for children* (Unpublished Master's thesis). Shaanxi Normal University, China.
- Kadam, P. S. (2021). *Early Detection of Prone to Failure Student Using Machine Learning Techniques*. *Bioscience Biotechnology Research Communications*, 14(5), 36–39. <https://doi.org/10.21786/bbrc/14.5/7>
- Kendra. (2021). *What is Piaget's Four Stages of Development?* Very well Mind. <https://www.verywellmind.com/piagets-stages-of-cognitive-development-2795457#citation-3>
- Latif, E. (2011). The impact of retirement on psychological well-being in Canada. *The Journal of Socioeconomics*, 40(4), 373–380.
- Lei, G. (2022). Investigation and Analysis of the status quo of interactive electronic whiteboard classroom teaching application. *New Curriculum*, 7(3), 22-23.
- Li, F. (2018). Application Advantages of Interactive Electronic Whiteboard in Teaching. *Gansu Education*, 18(4), 51.
- Li, L. (2019). *Application Advantages of Interactive Electronic Whiteboard* (Unpublished Master's thesis). Yanbian University, China.

References (Cont.)

- Li, Z. (2020). On the organic combination of traditional English teaching mode and multimedia English teaching mode. *New educational era*, 23(1), 25-26.
- Li, G. H. (2021). *Classroom Teaching interaction Research supported by interactive electronic whiteboard* (Unpublished Master's thesis). Shenyang Normal University, China.
- Liao, J. O. (2022). On the History of Chinese Infant English education. *Journal of Shaanxi Normal University*, 11(3), 134-142.
- Lindahl, M. G., & Folkesson, A. M. (2012). ICT in preschool: friend or foe? The significance of norms in a changing practice. *International Journal of Early Years Education*, 20(4), 422–436. <https://doi.org/10.1080/09669760.2012.743876>
- Liu, H. Y. (2020). The practical application of electronic whiteboard in language activities for young children. *Curriculum Education Research*, 7(3), 226-229.
- Liu, T. L. (2021). Research on High School Chemistry Teaching Design assisted by Interactive Electronic Whiteboard, *Shanxi Education Teaching*, 10(4), 41-42.
- Liu, R. T. (2022). *A comparative study of three Teaching modes of Kindergarten English in China* (Unpublished Master's thesis). Shanxi Normal University, China.
- Loyd, B. H., & Loyd, D. E. (1985). The Reliability and Validity of an Instrument for the Assessment of Computer Attitudes. *Educational and Psychological Measurement*, 45(4), 903–908. <https://doi.org/10.1177/0013164485454021>
- Lu, Z. T. (2019). The Application of Electronic Whiteboard in Children's Language Activities. *Journal of Parents*, 18(8), 75-77.
- Lu, H. (2021). *Research on Interactive Whiteboard to create Language learning situation for children* (Unpublished Master's thesis). Nanjing Normal University, China.
- Lu, G., Wan, H., & Liu, S. (1999). Hypermedia and Its Application in Education. *Educational Media International*, 36(1), 41–45. <https://doi.org/10.1080/0952398990360107>

References (Cont.)

- Mbadakar, C., Jthakkar, P., Mhugar, S., Kukreja, P., Gassudani, H., & Gokhale, N. (2017). Evaluation of the Relevance of Piaget's Cognitive Principles among Parented and Orphan Children in Belagavi City, Karnataka, India: A Comparative Study. *International Journal of Clinical Pediatric Dentistry*, 10(4), 346–350. <https://doi.org/10.5005/jp-journals-10005-1463>
- Ma, L. M. (2019). Application Analysis of Multimedia in English Situational Teaching in Junior High School. *Campus English*, 57(5), 132-137.
- Ma, W. B. (2020). Immersion Bilingual teaching and its implications for Foreign Language Teaching in China. *Journal of Jinan Institute of Education*, 4, 48-50. doi: 10.3969/j.issn.1673-4270.2002.04.013
- Ma, Z. I. (2021). Theoretical Foundations of Interactive Whiteboard in Classroom Teaching-Teaching Interaction, Interaction, and Interaction. *Telecommunications Education Research*, 67(9), 331-338.
- Marcoulides, G. A. (1989). Measuring computer anxiety: The computer anxiety scale. *Educational and Psychological Measurement*, 49(3), 733-739.
- Mathis, A., Smith, T., & Hansen, D. (1970). College students' attitudes toward computer-assisted instruction. *Journal of Educational Psychology*, 61(1), 46.
- Mayer, R. (2010) *The Cambridge handbook of Multimedia Learning*. Cambridge: Cambridge University.
- Mei, T. H. (2021). *Children's English learning in the context of cartoons* (Unpublished Master's thesis). Henan University, China.
- Miao, Z. Z. (2021). *The enlightenment of English immersion teaching experiment research to us* (Unpublished Master's thesis). Xi'an Jiaotong University, China.
- Palmer, H. E. (1969). *This language-learning business*. London: Oxford University.
- Pang, Y. (2020). *On the Application of Multimedia Technology in English Language Teaching* (Unpublished Master's thesis). Shandong Normal University, China.
- Petchroj, L. & Chamniprasart, A. (2004). *Research Methodology*. Bangkok: Pimdeekarnpim.

References (Cont.)

- Plowman, L. & Mcpake, J. (2010). The technologization of childhood? Young children and technology in the home. *Children & Society*, 24(1), 63-74.
- Ray, M., & Jat, K. R. (2010). Effect of electronic media on children. *Indian Pediatrics*, 47(7), 561–568. <https://doi.org/10.1007/s13312-010-0128-9>
- Roussos, P. (2007). The Greek computer attitudes scale: construction and assessment of psychometric properties. *Computers in Human Behavior*, 23(1), 578-590.
- Rovinelli, R. J., & Hambleton, R. K. (1977). On the use of content specialists in the assessment of criterion-referenced test item validity. *Dutch Journal of Educational Research*, 2(1), 49-60.
- Sandholtz, J., Ringstaff, C., & Dwyer, D. (1997). *Teaching with technology: Creating student-centered classrooms*. New York: Teachers College, Columbia University.
- Scott, H. K., & Cogburn, M. (2022). *Piaget*. San Francisco: Stat Pearls Publishing LLC.
- State Council of China. (1999). *The decision on deepening educational reform and comprehensively promoting quality-oriented education*. Beijing: Author.
- State Council of China. (2019). *Modernization of Chinese Education 2035*. Beijing: Author.
- State Council of China. (2019). *The Implementation Plan for Accelerating the Modernization of Education (2018-2022)*. Beijing: Author.
- Sudarsana, I. K. (2016). Development Model of Pasraman Kilat Learning to Improve the Spiritual Values of Hindu Youth. *Jurnal Ilmiah Peuradeun*, 4(2), 217-230.
- Scovel, T. (1969). *Foreign Accents, Language Acquisition, And Cerebral Dominance I*. Hoboken: Blackwell Publishing Ltd.
- Tatnall, A., & Davey, B. (2016). *Reflections on the History of Computers in Education: Early Use of Computers and Teaching about Computing in Schools*. Berlin: Springer.
- The Ministry of Education of the People's Republic of China. (2001). *The guidelines for kindergarten education*. Beijing: Author.

References (Cont.)

- The Ministry of Education of the People's Republic of China. (2018). *Education Informatization 2.0*. Beijing: Author.
- U.S. Department of Education. (2019). *Early learning and educational technology policy brief*. Washington: Author.
- Vallis, K. W. (2009). Build your own board: Rhoads offer a cost-effective alternative to interactive whiteboard. *Learning & Leading with Technology*, 37(1), 18-20.
- Vygotsky, L.S. (1934). *Thought and Language*. Cambridge: MIT press.
- Wang, L. S. (2020). *A study of kindergarten teaching interaction in interactive whiteboard environment* (Unpublished Master's thesis). Northwest Normal University, China.
- Wang, Z. Z., Zhu, G., & Zhang, G. (2020). Connotation interpretation of pre-school education Informatization. *Audio-visual education research*, 13(7), 34-36.
- Wang, K. (2020). *Research on the influence of Interactive whiteboard assisted kindergarten education activities on children's cognitive development* (Unpublished Master's thesis). Northeast Normal University, China.
- Warner, L., & Lynch, S. (2002). Classroom Problems that Don't Go Away. *Childhood Education*, 79(2), 97-100. <https://doi.org/10.1080/00094056.2003.10522778>
- Wei, L. (2020). Effective Use of Interactive Electronic Whiteboard to Improve Children's Mathematics Teaching Efficiency. *Journal of Gansu Education*, 20(9), 17-20.
- Weng, J. P. (2021). Using Interactive Electronic Whiteboard to Promote the Gamification of Mathematical Activities. *Journal of Fujian Education*, 25(5), 78-80.
- Wu, L. (2020). *A study on the application of interactive whiteboard in elementary school English teaching* (Unpublished Master's thesis). Shanghai Normal University, China.
- Wu, Y. Y. (2020). Research on classroom application of interactive whiteboard. *China Audio-visual Education* 12(03), 1-7.

References (Cont.)

- Xhaferi, G., Farizi, A., & Bahiti, R. (2018). Teacher' attitudes towards e-learning in higher education in Macedonia Case study: University of Tetovo. *European Journal of Electrical Engineering and Computer Science*, 2(5). <https://doi.org/10.24018/ejece.2018.2.5.26>
- Xiao, Y. (2021). Using interactive whiteboards in kindergarten language activities. *South China Education Information Technology Research Experience Exchange Meeting*, 4(8),34-54.
- Xing, Y. (2019). Research on the development path of pre-school education informatization in 2.0 era. *China Audio-visual Education*, 19(5), 49-55.
- Xing, K. L. (2022). *Constructivism-Oriented Teaching and Learning in English Training Institutes: Constructing Effective Classroom* (Unpublished Master's thesis). Ocean University of China, China.
- Yan, Y. (2022). *A study on the impact of interactive whiteboard classroom activity modules on students' learning with different learning styles* (Unpublished Master's thesis). Tianjin Normal University, China.
- Ye, Y. T. (2019). A study on the application of interactive whiteboard in kindergarten focused teaching activities--a case study of Fuzhou L Garden. *Contemporary Family Education*, 8(9), 15-19.
- Ye, M. P. (2021). *Information technology and emotional education*. Beijing: Education Science Press.
- Yin, R. (2021). *Exploring Health Teaching in Primary Schools Based on Interactive Whiteboard*. Beijing: China Education Technology Equipment.
- Ying, Y. G. (2022). On the Application of interactive whiteboard Technology in English Teaching. *China Education Technical Equipment*, 48(7), 102-107.
- Yu, R. Y. (2019). English teaching methods for preschool children. *Shanghai Education Press*, 2(1), 9-11.
- Yu, H. P. (2020). *A survey of teachers' and students' attitudes towards computer-assisted foreign language teaching* (Unpublished Master's thesis). Huazhong University, China.

References (Cont.)

- Zang, Y. L. (2019). *Research on the cultivation of image interpretation ability in preschool children's media literacy Education* (Unpublished Master's thesis). Nanjing Normal University, China.
- Zang, D. L. (2022). *Application of interactive electronic whiteboard in gamification of Mathematical activities* (Unpublished Master's thesis). Yanbian University, China,
- Zhang, L. H. (2017). A study on the strategy of constructing interactive and efficient English classroom teaching based on interactive electronic. *E-learning in China*, 25(9), 56-59.
- Zhang, Z. (2018). Integration and optimization of junior high school chemistry experiment teaching using interactive electronic whiteboard. *Child and Health*, 18(8), 23-29.
- Zhang, Y. (2021). *A Study of Primary School English Teachers' Attitude towards language learning in computer aided Instruction* (Unpublished Master's thesis). Qingdao University, China.
- Zhang, F. T. (2022). On the application of multimedia technology in English teaching for children. *China Academic Journal Electronic Publishing House*, 3(1). Retrieved from <http://www.cnki.net>
- Zhao, H. L. (2017). Exploration of infant language teaching model based on information technology environment. *New West (Theory Edition)*, 17(1), 142-146.
- Zhao, Y. R. (2019). Integrating modern information technology to develop new kindergarten curriculum. *New curriculum research*, 2(1), 134-139.
- Zhen, Q. A. (2019). *A study on the changes of teachers' classroom teaching behavior under different teaching environments: a case study of electronic double-board and multimedia projection classroom* (Unpublished Master's thesis). Central China Normal University, China.
- Zhu, Z. (2018). Application of Electronic whiteboard in the teaching process of different Chemistry courses. *Journal of Science*, 33(3), 147-148.

References (Cont.)

- Zhu, Z. Z. (2018). On the over-dependence of interactive whiteboard in Primary School English classroom. *Modern teaching*, 3(2), 47-48.
- Zhu, O. P. (2020). Using interactive electronic whiteboard to construct multi-dimensional interactive mode and multiple evaluation system of high school English. *Chinese modern educational equipment*, 2(6), 31-32.
- Zhuo, W. Q. (2021). *Outlook on Foreign Language Education* (Unpublished Master's thesis). East China Normal University Press, China,



Appendices





Appendix A

Research Instruments

Questionnaire

Dear teachers,

My name is Xiangrong Li. I am a postgraduate student at Rangsit University in Thailand, majoring in bilingual education. Direction: This questionnaire was developed as part of the "Using Interactive Whiteboards in English Language Teaching: Practices and Beliefs of Kindergarten English Teachers" study to understand your beliefs and practices regarding the use of interactive whiteboards in teaching English to children. Your responses are very important to this study, and we thank you for taking the time out of your busy schedule to respond. All responses will be kept strictly confidential, and this questionnaire is for research purposes only, so please fill it out honestly. Thank you very much for your support! Please read each question carefully and answer it according to your situation.

This questionnaire is made for a research purpose only, thank you for your cooperation.

Xiangrong Li

Questionnaire

Direction: This questionnaire was developed as part of the "Using Interactive Whiteboards in English Language Teaching: Practices and Beliefs of Kindergarten English Teachers "study to understand your beliefs and practices regarding the use of interactive whiteboards in teaching English to children. Your responses are very important to this study, and we thank you for taking the time out of your busy schedule to respond. All responses will be kept strictly confidential, and this questionnaire is for research purposes only, so please fill it out honestly. Thank you very much for your support!

The objectives of the study are:

- (1) To study the beliefs of kindergarten English teachers towards interactive whiteboard-assisted English teaching
- (2) To study the practices of kindergarten English teachers towards interactive whiteboard-assisted English teaching
- (3) To examine the reasons for the kindergarten English teachers for their use of interactive whiteboards with the chosen activities

Note: In the following price section, there are five selective lines for each option's viewpoint (you can express your views on these viewpoints to different degrees), please mark "√" in the corresponding box.

Strong=5 Agree=4 Uncertain/Not applicable=3 Disagree=2 Strongly disagree=1

No.	PART 1: Personal Particulars				
1	Gender <input type="checkbox"/> Male <input type="checkbox"/> Female				
2	Educational Background <input type="checkbox"/> Diploma <input type="checkbox"/> Bachelor's <input type="checkbox"/> Master's Other (Please specify)				
3	Age <input type="checkbox"/> 20-30 years old <input type="checkbox"/> 30-40 years <input type="checkbox"/> 40-50 years <input type="checkbox"/> Other (Please specify)				
4	Number of Years in Teaching Experience <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-12 years <input type="checkbox"/> 13 years <input type="checkbox"/> Other (Please specify)				
5	Number of Years in Experience of Using Whiteboards in English Classes <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-12 years <input type="checkbox"/> 13 years <input type="checkbox"/> Other (Please specify)				
No.	PART 2:				1
	5	4	3	2	1

	Teachers' Beliefs about Using Interactive Whiteboards					
6	Interactive whiteboards are effective tools to support the teaching of English to children.					
7	The use of interactive whiteboards can facilitate teachers' teaching improvement.					
8	Interactive whiteboards are needed to assist teaching in the classroom.					
9	Interactive whiteboards make the lessons easy to understand for the children.					
10	Interactive whiteboards make the lessons interesting for the children.					
11	Interactive whiteboards are similar to ordinary whiteboards.					
12	Interactive whiteboards encourage the adoption of teacher-centered approach in teaching English.					
13	Interactive whiteboards can help improve student learning engagement.					
14	Interactive whiteboards can help improve students' knowledge retention.					
15	Interactive whiteboards can help improve the quality of teaching and learning.					
16	Interactive whiteboards are outdated teaching tools.					
17	I believe interactive whiteboards are appropriate for young children.					
18	Children can learn better with the use of interactive whiteboards.					
19	Interactive whiteboards may distract the students from the focused points of teaching.					
No.	PART 3: Teachers' Practices in Using Interactive Whiteboards	5	4	3	2	1
20	I use the interactive whiteboard in all my lessons.					
21	When I use interactive whiteboards in my teaching, I become more active.					
22	With each activity I use in my lessons, I get my students to work on the interactive whiteboard.					
23	I use the interactive whiteboard based on what I have learned from the workshops I attended.					

24	I use the interactive whiteboard in teaching all the four skills in English (Listening, Speaking, Reading, and Writing).					
25	I use the interactive whiteboard in teaching English grammar.					
26	I use the interactive whiteboard in teaching English vocabulary.					
27	Teaching English using Interactive whiteboards increase my workload of lesson preparation.					
28	I use the interactive whiteboard to interact with my students by getting my students to present their tasks on it.					
29	I need to learn about teaching with interactive whiteboards as I still teach in the traditional style.					
30	I use interactive whiteboards for the purpose of assessing my students too.					
31	Interactive whiteboards are an important tool in demonstrating vocabulary.					
32	I can skillfully operate the Interactive Whiteboard.					
33	I am confident of my teaching when using Interactive Whiteboard.					
34	There are few problems when I use the Interactive Whiteboard in my teaching.					
35	I am selective about which activities will be appropriate with the Interactive Whiteboard.					
36	In using the interactive whiteboard to facilitate my teaching, my class is often very noisy with the students actively working with their peers to get the answers correct.					
No.	PART 3: Open-ended Question					
37	Please add additional remarks and comments in the space given.					

CLASSROOM OBSERVATION CHECKLIST

CLASSROOM OBSERVATION CHECKLIST							
School		Class		Population		Course	
Teacher		Date		Level		Duration	
Observer							

Direction: Please employ the following scale as you rate each of the checklist items. Rate each item based on the observed behavioral performance of the teacher using the interactive whiteboard during the teaching activity. Each item is judged on an individual, self-contained basis, regardless of its relationship to an overall set of behaviors relevant to the cluster heading.

(The research and a colleague will conduct classroom observations as observers and complete the classroom observations scale.)

Areas for Class Observation: The observer will tick the box “Yes” or “No” to report what he or she sees and take some notes on the following topics.			
1	Lesson Delivery	Yes	No
	1. The teacher delivers the lesson in an organized manner.	<input type="checkbox"/>	<input type="checkbox"/>
	2. The lesson adopts the student-centered approach.	<input type="checkbox"/>	<input type="checkbox"/>
	3. The teacher is clear in what he/she wants to teach.	<input type="checkbox"/>	<input type="checkbox"/>
	4. The teacher demonstrates high level classroom management ability	<input type="checkbox"/>	<input type="checkbox"/>
	5. The teacher shows that he/she is well-prepared for the class.	<input type="checkbox"/>	<input type="checkbox"/>
2	The Lesson	Yes	No
	1. The lesson is clear and concise.	<input type="checkbox"/>	<input type="checkbox"/>
	2. The lesson is expected to bring about the learning outcomes in the students.	<input type="checkbox"/>	<input type="checkbox"/>
	3. The lesson matches the students’ needs.	<input type="checkbox"/>	<input type="checkbox"/>
	4. The lesson is designed to match the pace of learning of students.	<input type="checkbox"/>	<input type="checkbox"/>

	5. The lesson shows the teacher's skill in using the Interactive Whiteboard.	<input type="checkbox"/>	<input type="checkbox"/>
3	The Teacher's Skill in Using the Interaction Whiteboard	Yes	No
	1. The teacher is skillful.	<input type="checkbox"/>	<input type="checkbox"/>
	2. The teacher is confident.	<input type="checkbox"/>	<input type="checkbox"/>
	3. The teacher shows understanding for the role of the Interactive Whiteboard.	<input type="checkbox"/>	<input type="checkbox"/>
	4. The teacher is fluent.	<input type="checkbox"/>	<input type="checkbox"/>
	5. The teacher is happy to use the Interactive Whiteboard.	<input type="checkbox"/>	<input type="checkbox"/>
4	The Teacher's Interaction with the Students	Yes	No
	1. The teacher uses interactive whiteboard to Class interactive pattern.	<input type="checkbox"/>	<input type="checkbox"/>
	2. The teacher uses pair work interactive pattern.	<input type="checkbox"/>	<input type="checkbox"/>
	3. The teacher uses group work interactive pattern.	<input type="checkbox"/>	<input type="checkbox"/>
	4. The teacher gives opportunity to all students equally to talk to the teacher.	<input type="checkbox"/>	<input type="checkbox"/>
	5. The teacher gives opportunity to all the students equally to ask him or her questions.	<input type="checkbox"/>	<input type="checkbox"/>
5	The Class Atmosphere	Yes	No
	1. The class is active.	<input type="checkbox"/>	<input type="checkbox"/>
	2. The class atmosphere is relaxing.	<input type="checkbox"/>	<input type="checkbox"/>
	3. The class is in control.	<input type="checkbox"/>	<input type="checkbox"/>
	4. The students are friendly to their friends.	<input type="checkbox"/>	<input type="checkbox"/>
	5. The students enjoy their activities.	<input type="checkbox"/>	<input type="checkbox"/>

Semi-Structured Interview Questions

NO.	Interview Questions
1	Please tell me about the Interactive Whiteboard technology resources available at your school?
2	What do you think about the policy of adopting the Interactive Whiteboard technology at the school?
3	Can you describe your experience of using Interactive Whiteboards to support your teaching? How do you do it?
4	In your opinion, what type of lessons/activities are effective with the use of Interactive Whiteboards?
5	What suggestions do you have for improving the teachers' technical skills in Interactive Whiteboard application?



The image features a large, faint watermark of the Rangsit University logo in the background. The logo consists of a stylized flame or sunburst at the top, a circular emblem with radiating lines in the middle, and the university's name in Thai and English at the bottom.

Appendix B

Invitation Letters to IOC Experts

มหาวิทยาลัยรังสิต Rangsit University

STC.4800/0728

7 March 2023

Subject: Invitation for you to be our IOC (Item Objective Congruence) expert

Dear Assistant Professor Dr. Pairin Srisintorn,

Our student, Miss Xiangrong Li student number 6406916, who has already completed her coursework and thesis proposal defense on 10 February 2023. Her research is entitled "Using Interactive Whiteboards in English Language Teaching: Practices and Beliefs of Kindergarten English Teachers". On this occasion, Suryadhep Teachers College is honored to invite you to be an Item Objective Congruence (IOC) expert of the instruments since the student is now ready to take the next step in research, that is, getting the IOC experts to review her instruments (Attached herewith) which are:

- 1) A Questionnaire
- 2) Semi-structured Interview Questions consisting of 5 questions
- 3) A Classroom Observation Checklist

I hope that you will kindly accept this invitation. On behalf of Suryadhep Teachers College, Rangsit University, I would like to thank you for your kind support.

Sincerely yours,



Malivan Praditceera, Ed.D.

Dean

Suryadhep Teachers College

Rangsit University



มหาวิทยาลัยรังสิต Rangsit University T. (66) 2997 2200-30
 เมืองทอง น.พหลโยธิน Muang-Ake, Paholyothin Rd. F. (66) 2791 5757
 อ.ปทุมธานี 12000 Pathumthani 12000, Thailand E. info@rsu.ac.th

STC.4800/0729

7 March 2023

Subject: Invitation for you to be our IOC (Item Objective Congruence) expert

Dear Dr. Mongkol Sodachan,

Our student, Miss Xiangrong Li student number 6406916, who has already completed her coursework and thesis proposal defense on 10 February 2023. Her research is entitled "Using Interactive Whiteboards in English Language Teaching: Practices and Beliefs of Kindergarten English Teachers". On this occasion, Suryadhep Teachers College is honored to invite you to be an Item Objective Congruence (IOC) expert of the instruments since the student is now ready to take the next step in research, that is, getting the IOC experts to review her instruments (Attached herewith) which are:

- 1) A Questionnaire
- 2) Semi-structured Interview Questions consisting of 5 questions
- 3) A Classroom Observation Checklist

I hope that you will kindly accept this invitation. On behalf of Suryadhep Teachers College, Rangsit University, I would like to thank you for your kind support.

Sincerely yours,

Malivan Praditceera, Ed.D.

Dean

Suryadhep Teachers College

Rangsit University

RSU มหาวิทยาลัยรังสิต
RANGSIT UNIVERSITY

มหาวิทยาลัยรังสิต
เมืองเอก ถนนพหลโยธิน
จ.ปทุมธานี 12000

Rangsit University
Muang-Ake, Pathayothin Rd.
Pathumthani 12000, Thailand


T. (66) 2997 2200-30
F. (66) 2791 5757
E. info@rsu.ac.th

STC.4800/0730
7 March 2023
Subject: Invitation for you to be our IOC (Item Objective Congruence) expert
Dear Assistant Professor Dr. Nareerat Watthanawelu,

Our student, Miss Xiangrong Li student number 6406916, who has already completed her coursework and thesis proposal defense on 10 February 2023. Her research is entitled "Using Interactive Whiteboards in English Language Teaching: Practices and Beliefs of Kindergarten English Teachers". On this occasion, Suryadhep Teachers College is honored to invite you to be an Item Objective Congruence (IOC) expert of the instruments since the student is now ready to take the next step in research, that is, getting the IOC experts to review her instruments (Attached herewith) which are:

- 1) A Questionnaire
- 2) Semi-structured Interview Questions consisting of 5 questions
- 3) A Classroom Observation Checklist

I hope that you will kindly accept this invitation. On behalf of Suryadhep Teachers College, Rangsit University, I would like to thank you for your kind support.

Sincerely yours,

Malivan Praditceera, Ed.D.
Dean
Suryadhep Teachers College
Rangsit University

www.rsu.ac.th

The image features a large, faint watermark of the Rangsit University logo in the center. The logo consists of a stylized flame or sunburst shape at the top, a circular emblem with radiating lines in the middle, and the university's name in Thai and English at the bottom. The text "Appendix C" is centered over the upper part of the watermark.

Appendix C

IOC Results

มหาวิทยาลัยรังสิต Rangsit University

IOC Result of the Questionnaire

Items	Rating by Experts			IOC Average	Remarks
	Expert 1	Expert 2	Expert 3		
Part 1: Personal Information					
1	+1	+1	+1	+1	Accepted
2	+1	+1	+1	+1	Accepted
3	+1	+1	+1	+1	Accepted
4	+1	+1	0	0.67	Accepted
5	+1	+1	0	0.67	Accepted
Part 2: Teachers' Beliefs about Using Interactive Whiteboards					
6	+1	+1	+1	+1	Accepted
7	+1	+1	+1	+1	Accepted
8	+1	+1	+1	+1	Accepted
9	+1	+1	+1	+1	Accepted
10	+1	+1	+1	+1	Accepted
11	+1	+1	+1	+1	Accepted
12	+1	0	+1	0.67	Accepted
13	+1	0	0	0.33	Unaccepted
14	+1	+1	0	0.67	Accepted
15	+1	+1	+1	+1	Accepted
16	+1	0	+1	0.67	Accepted
17	0	0	+1	0.33	Unaccepted
18	+1	0	+1	0.67	Accepted
19	+1	+1	+1	+1	Accepted
20	+1	+1	+1	+1	Accepted
21	+1	+1	+1	+1	Accepted
Part 3: Teachers' Practices in Using Interactive Whiteboards					
22	+1	+1	+1	+1	Accepted
23	+1	+1	+1	+1	Accepted

24	+1	+1	+1	+1	Accepted
25	0	+1	+1	0.67	Accepted
26	+1	+1	+1	+1	Accepted
27	+1	0	+1	0.67	Accepted
28	+1	0	+1	0.67	Accepted
29	+1	+1	+1	+1	Accepted
30	+1	+1	+1	+1	Accepted
31	0	+1	+1	0.67	Accepted
32	0	0	-1	-0.33	Unaccepted
33	+1	+1	+1	+1	Accepted
34	+1	+1	+1	+1	Accepted
35	+1	+1	+1	+1	Accepted
36	+1	+1	0	0.67	Accepted
37	+1	+1	+1	+1	Accepted
38	+1	+1	+1	+1	Accepted
39	+1	0	0	0.33	Unaccepted
40	+1	+1	+1	+1	Accepted
Part 4: Open-ended Question					
41	+1	+1	+1	+1	Accepted

IOC Result of the Classroom Observation Checklist

Items	Rating by Experts			IOC Average	Remarks
	Expert 1	Expert 2	Expert 3		
Part 1: Lesson Delivery					
1	+1	+1	+1	+1	Accepted
2	+1	+1	+1	+1	Accepted
3	+1	+1	+1	+1	Accepted
4	+1	+1	+1	+1	Accepted
5	+1	+1	+1	+1	Accepted
Part 2: The Lesson					
1	+1	+1	+1	+1	Accepted
2	+1	+1	+1	+1	Accepted
3	+1	0	+1	0.67	Accepted
4	+1	0	+1	0.67	Accepted
5	+1	+1	+1	+1	Accepted
Part 3: The Teacher's Skill in Using Interaction Whiteboard					
1	0	+1	+1	0.67	Accepted
2	0	+1	+1	0.67	Accepted
3	0	+1	+1	0.67	Accepted
4	0	+1	+1	0.67	Accepted
5	+1	+1	+1	+1	Accepted
Part 4: The Teacher's Interaction with the Students					
1	+1	+1	+1	+1	Accepted
2	+1	+1	+1	+1	Accepted
3	+1	+1	+1	+1	Accepted
4	0	+1	+1	0.67	Accepted
5	0	+1	+1	0.67	Accepted
Part 5: The Class Atmosphere					
1	+1	+1	+1	+1	Accepted

2	+1	+1	+1	+1	Accepted
3	+1	+1	+1	+1	Accepted
4	+1	+1	+1	+1	Accepted
5	+1	+1	+1	+1	Accepted



IOC Result of the Semi-Structured Interview Questions

Questions	Rating by Experts			IOC Average	Remarks
	Expert 1	Expert 2	Expert 3		
1	+1	-1	+1	0.33	Unaccepted
2	+1	+1	+1	+1	Accepted
3	+1	+1	+1	+1	Accepted
4	+1	+1	+1	+1	Accepted
5	+1	+1	+1	+1	Accepted



The image features a large, faint watermark of the Rangsit University logo in the background. The logo consists of a central flame-like symbol above a circular arrangement of radiating lines, with the university's name in Thai and English below it.

Appendix D

Cronbach's Alpha Reliability Analysis

มหาวิทยาลัยรังสิต Rangsit University

Cronbach's Alpha Reliability Analysis

Items	<i>Corrected Item-Total Correlation (CITC)</i>	Cronbach's Alpha
1	0.699	0.756
2	0.662	0.756
3	0.563	0.756
4	0.638	0.756
5	0.603	0.756
6	0.532	0.756
7	0.598	0.756
8	0.674	0.756
9	0.657	0.756
10	0.671	0.756
11	0.701	0.756
12	0.772	0.756
13	0.666	0.756
14	0.652	0.756
15	0.740	0.756
16	0.733	0.756
17	0.744	0.756
18	0.735	0.756
19	0.681	0.756
20	0.533	0.756
21	0.853	0.756
22	0.783	0.756
23	0.536	0.756
24	0.625	0.756
25	0.833	0.756

26	0.788	0.756
27	0.646	0.756
28	0.547	0.756
29	0.609	0.756
30	0.503	0.756
31	0.533	0.756
32	0.853	0.756
33	0.783	0.756
34	0.536	0.756
35	0.625	0.756
36	0.833	0.756
37	0.533	0.756
Average Cronbach's Alpha : 0.756		

The image features a large, faint watermark of the Rangsit University logo in the center. The logo consists of a stylized flame or sunburst shape at the top, a circular emblem with radiating lines in the middle, and the university's name in Thai and English at the bottom. The text 'มหาวิทยาลัยรังสิต' is written in Thai script, and 'Rangsit University' is written in English, both in a light purple color.

Appendix E

Qualitative Data Analysis

Qualitative Data Analysis

Teacher A-H		Interview Data	Coding	Categories	Concepts
Teacher A	22	<p>- I have realized over time that the interactive electronic whiteboard is very easy to use in the English classroom, and it helps me to find many examples and photos to show.</p> <p>-I think interactive electronic whiteboard is an effective tool for teaching English.</p>	Effective English Tools (2)	<p><u>Value of Use</u></p> <p>Effective Aids</p> <p>Enrich Teaching Content.</p>	Teachers' Beliefs
		<p>- The use of interactive electronic whiteboard allows teachers to flexibly call electronic courseware, video, audio, animation, and images can become my teaching materials, no longer a single blackboard and book materials, different forms of courseware can be used to easily explain some abstract and difficult to</p>	Enrich Teaching Content (1)		

	understand knowledge points.			
	- Teaching vocabulary through interactive electronic whiteboards can help students understand what they are learning more easily and conveniently.	Children can easily understand what they are learning (1)	<u>Benefits of Use</u> Attracts Attention Helps with comprehension and memory.	Reasons for Use
	-Personally, an interactive electronic whiteboard can focus students' attention quickly. - My preference for using the interactive electronic whiteboard depends on the fact that the interactive electronic whiteboard appeals to my students. Whenever I use the interactive electronic whiteboard to deliver a lesson, they are curious about what is happening on the interactive electronic whiteboard and can focus more on the class.	Quickly focus students' attention (2)		

	<p>-Interactive electronic whiteboards can provide students with a more vivid, intuitive, and diverse learning experience. By using the whiteboard, I can give students a deeper understanding of the course content and present multimedia resources more easily.</p> <p>-Interactive electronic whiteboard can increase the fun of teaching and learning.</p>	Fun (2)		
	<p>- Students can remember the meaning of the words they learn faster.</p> <p>- By teaching this method for a period, I found that the students' efficiency in memorizing vocabulary increased.</p>	Quickly remember words (2)		
	<p>-It is difficult for me to use the interactive electronic whiteboard in teaching</p>	Teachers lack expertise and are afraid of making mistakes (3)	<p><u>Using Skills</u></p> <p>Lack of Expertise</p> <p>Lack of self-</p>	Teachers' Practices

	<p>because I don't have enough expertise.</p> <p>-Most of the questions about interactive electronic whiteboards, I need to ask other people, and it is a burden for me to use interactive electronic whiteboards.</p> <p>- For me, the interactive electronic whiteboard was a teaching tool that I had only recently started, so I did not have a lot of expertise related to the interactive electronic whiteboard yet</p>		Confidence	
	<p>- As I had only recently started to use the interactive electronic whiteboard, I often feel fear about using the interactive electronic whiteboard in my classes.</p> <p>-I feel very unconfident when using the interactive electronic</p>	Lack of self-Confidence (3)		

	<p>whiteboard because I am always afraid that there will be problems that I cannot solve when using the interactive electronic whiteboard.</p> <p>-I feel very unsure about using the interactive electronic whiteboard, and whenever I use the interactive electronic whiteboard, the classroom becomes very chaotic, and I don't know what to do.</p>			
	<p>I usually used an interactive electronic whiteboard to teach vocabulary. For me, used an interactive electronic whiteboard, I could quickly display the meaning of the words I had learned so that students could understand the vocabulary more clearly.</p> <p>-I use interactive electronic</p>	<p>Teaching Vocabulary (4)</p>	<p><u>Lesson Content</u></p> <p>Teaching Vocabulary</p> <p>Student-centered teaching method</p>	

	<p>whiteboards in my classroom to help students learn vocabulary</p> <p>-I usually use an interactive electronic whiteboard when teaching vocabulary because it helps students understand the content more easily.</p> <p>-Teachers often use interactive electronic whiteboards to teach vocabulary in their activities.</p>			
	<p>I thought the use of interactive electronic whiteboard in the classroom was in line with the concept of student-centered teaching. In class, I could use the interactive electronic whiteboard to organize some classroom activities for students to participate in.</p>	<p>Student-centered teaching method (1)</p>		
	<p>In the process of using the interactive electronic</p>	<p>Play games (1)</p>	<p><u>The Class Interaction</u></p> <p>Interactive</p>	

		whiteboard, I used the interactive electronic whiteboard to organize the students to play games, and I interacted with the students whenever they play games.		game teaching	
Teacher B	24	<p>-I realize that interactive electronic whiteboards are a classroom aid in the teaching process.</p> <p>- For me, the interactive electronic whiteboard helped me to organize the warm-up session for the children, which they enjoyed and were very willing to participate in.</p> <p>-I believe that teachers need to continuously refine their skills in using interactive electronic whiteboards in the classroom because they are an effective tool for teaching English.</p> <p>-I can diversify</p>	Classroom Aids (3)	<p><u>Value of Use</u></p> <p>Effective Aids</p> <p>Enriching teaching content</p>	Teachers' Beliefs
			Diversification		

	<p>my teaching content by using interactive electronic whiteboard in the classroom.</p> <p>-I can enrich my teaching content in the process of using interactive electronic whiteboard. In my case, I use the search engine in the interactive electronic whiteboard to help students expand their knowledge during teaching.</p> <p>- In the process of teaching, I no longer only explain the knowledge, but also choose to use interactive electronic whiteboard for interactive games, which children love to learn through interaction and games.</p>	of teaching content (3)		
	<p>- After I use the interactive electronic whiteboard, students are more active in answering questions and participating in</p>	Children enjoy lessons (3)	<p><u>Benefits of Use</u></p> <p>Attracts attention</p> <p>Helps with comprehension and memory</p>	Reasons for Use

	<p>activities, and almost no students talk small talk.</p> <p>-For younger children, using an interactive electronic whiteboard to teach lessons is more in line with children's needs.</p> <p>-Children are easily distracted, but interactive electronic whiteboards are different and are very popular and appropriate for children to learn.</p>			
	<p>-I display pictures and videos directly on the whiteboard during the interactive electronic whiteboard process to better present the content. Students can understand the concepts and examples in the course visually.</p> <p>-Vocabulary is a difficult subject for students to learn, and using an interactive</p>	<p>Quickly matching vocabulary with photos (3)</p>		

	<p>electronic whiteboard makes it easier for students to understand what they are learning.</p> <p>-In teaching animal vocabulary in China, using interactive electronic whiteboards children can quickly relate the animal to the picture that the word corresponds to and understand it quickly.</p>			
	<p>- For me, used an interactive electronic whiteboard was a good way to teach vocabulary. In the process of vocabulary teaching, I could use the interactive electronic whiteboard to help students remember the meaning of words with the most intuitive pictures. In addition, in the process of using the interactive electronic whiteboard, I</p>	<p>Picture Matching Vocabulary (3)</p>	<p><u>Lesson Content</u></p> <p>Teaching Vocabulary</p> <p>Student-centered teaching method</p>	<p>Teachers' Practices</p>

	<p>could use its audio function to standardize the pronunciation of students' words.</p> <p>-I found using interactive electronic whiteboards for teaching vocabulary.</p> <p>-Usually, I use an interactive electronic whiteboard when teaching vocabulary. Vocabulary is a difficult subject for students to learn and using an interactive electronic whiteboard makes it easier for students to understand what they are learning.</p>			
	<p>The presence of an interactive electronic whiteboard satisfies a student-centered approach, where I stopped being the interpreter of knowledge in the classroom and became the transmitter of knowledge. The use of interactive</p>	<p>Student-centered teaching method (1)</p>		

	<p>electronic whiteboard in class cultivates students' ability to learn independently.</p>			
	<p>-I often had difficulty controlling the students during games using the interactive electronic whiteboard. Students would often not follow my instructions and would draw or scribble on the interactive electronic whiteboard, which would cause chaos in the classroom and I had no way to control the class.</p> <p>-The students also enjoyed playing games on the interactive electronic whiteboard, but often when using the interactive electronic whiteboard, the students would get too excited, and the classroom atmosphere would often get out of control.</p>	<p>Difficulty controlling students (2)</p>	<p><u>The Class's Atmosphere</u></p> <p>Classes are out of control</p> <p>Class's Atmosphere</p>	

	<p>-Students also enjoy playing games on the interactive electronic whiteboard, and every time a game is organized, the students in the class are very active.</p> <p>-The students are interested in the interactive electronic whiteboard lessons and they actively participate in the lesson games.</p>	<p>Students were very interested in the interactive electronic whiteboard course (2)</p>		
	<p>-I constantly emphasize the importance of student interaction in the teaching and learning process.</p> <p>-In my use of interactive electronic whiteboards, I often interact with my students.</p>	<p>Student-centered teaching method (2)</p>	<p><u>The lesson</u> Student-centered teaching method</p>	
	<p>For me, I still spent a lot of time preparing for my classes, and even before class I spent a lot of time in the classroom working on the interactive electronic</p>	<p>Lack of Expertise (1)</p>	<p><u>Using Skills</u> Lack of Expertise Lack of self-Confidence</p>	

	<p>whiteboard, Because I did not think I have enough professional knowledge of interactive electronic whiteboard.</p>			
	<p>I was afraid to use the interactive electronic whiteboard in the classroom, even if I go to the classroom before class and operate the interactive electronic whiteboard according to the course schedule, but I still felt afraid because I was afraid of using the interactive electronic whiteboard during the class.</p>	<p>Lack of self-Confidence (1)</p>		
	<p>In the process of using the interactive electronic whiteboard, I used the interactive electronic whiteboard to organize the students to play games, and I interacted with the students whenever they play games.</p>	<p>Game teaching (1)</p>	<p><u>The teacher interaction</u></p> <p>Game teaching</p>	

Teacher C	22	<p>- The interactive electronic whiteboard is very efficient because I can quickly find the content associated with the lesson and show it to the children. For example, the children have difficulty in distinguishing the words lion and cheetah, so the interactive electronic whiteboard can quickly find the relevant photos and match them, which is very efficient.</p> <p>-Interactive electronic whiteboards are very effective teaching aids that can increase student engagement.</p> <p>-The interactive electronic whiteboard works really well for children and can help them learn English effectively</p>	Significant teaching effect (3)	<p><u>Value of Use</u></p> <p>Effective Aids</p> <p>Enrich Teaching Content.</p>	Teachers' Beliefs
		-Audio, animation, and the children's favorite videos	Enrich Teaching Content (1)		

	are all easily combined with the interactive electronic whiteboard.			
	<p>-The interactive electronic whiteboard can integrate a variety of multimedia resources such as PPT, PDF, web pages, etc., allowing kindergarten teachers to present relevant content more easily. With the use of multiple multimedia resources, students can gain a deeper understanding of relevant points.</p> <p>- My students love that I use the interactive electronic whiteboard when teaching vocabulary. When I talk to them, they tell me that they can understand the meaning of the words faster and remember the meaning of the words quickly because of the interactive electronic whiteboard.</p>	Students understand fast (2)	<p><u>Benefits of Use</u></p> <p>Helps with comprehension and memory.</p> <p>Concentration</p>	Reasons for Use

	<p>-The interactive electronic whiteboard is a very quick way to help learn to understand what is being taught in a graphic way.</p>			
	<p>- I use the interactive electronic whiteboard a lot in my teaching. It is a great tool to keep students more focused on the class content. By using the whiteboard, I can present the course content in a more vivid, interesting and diverse way. In addition, the students enjoy using the whiteboard to interact and share their ideas, which makes them more engaged in the class.</p> <p>-Interactive electronic whiteboard really helps me to focus on the children's attention.</p> <p>-In teaching video and audio,</p>	<p>Focus on teaching content (3)</p>		

	<p>the kids are interested, and they can focus on the lesson content.</p>			
	<p>-Interactive electronic whiteboard is a suitable teaching tool for children and using interactive electronic whiteboard in the classroom can enrich my teaching content.</p> <p>-For children from 3 to 6, using an interactive electronic whiteboard for teaching work is really a good choice.</p>	<p>Suitable for children's teaching work (2)</p>		
	<p>My used of an interactive electronic whiteboard in the classroom helped me design my schedule around my students and prevents me from neglecting them.</p> <p>-Most of the games I designed were designed around the students, treating them as</p>	<p>Students as the main body of teaching (3)</p>	<p><u>The lesson</u></p> <p>Student-centered teaching methods</p> <p>Vocabulary Teaching</p>	<p>Teachers' Practices</p>

	<p>the subject of the lesson.</p> <p>-I need to increase my interaction with students in the process of using the interactive electronic whiteboard and always remember the concept of student-centered teaching</p>			
	<p>- In the process of using the interactive electronic whiteboard, I thought it was the most effective in the process of vocabulary teaching. I could use the search function of the interactive electronic whiteboard to help students expand their vocabulary and help students master more knowledge in the limited time.</p>	Vocabulary Teaching (1)		
	<p>-I really like using interactive electronic whiteboards in teaching English to children</p> <p>-I really like using interactive</p>	Very willing to use (2)		

	<p>electronic whiteboards, the students think it's very cool.</p>			
	<p>-I enjoy designing games that increase interaction with students when I use interactive electronic whiteboards.</p> <p>-I usually design many interactive games with the interactive electronic whiteboard that add fun to my teaching.</p> <p>-The students are very interested and learn quickly when I use the interactive electronic whiteboard to teach games.</p> <p>I could use an interactive electronic whiteboard to organize games for students. I could create a relaxed and fun learning environment for students, not only that, but also increased student engagement and motivation.</p>	<p>Students love teaching games (3)</p>	<p><u>The teacher's interaction with student</u></p> <p>Teaching Games</p>	

	<p>When I first started teaching kindergarten English, the school did not emphasize the need to use interactive electronic whiteboard in kindergarten English classroom, but with the increasing popularity of multimedia education, I realized the role of interactive electronic whiteboard in kindergarten English teaching, so I now start to learn how to use interactive electronic whiteboard in the classroom, But I still lacked the expertise to use interactive electronic whiteboards.</p>	<p>Lack of Expertise (1)</p>	<p><u>Using Skills</u></p> <p>Lack of Expertise</p> <p>Lack of self-Confidence</p>	
	<p>Since I had only recently started learning how to use an interactive electronic whiteboard, I was not confident in using it and I was afraid that something will</p>	<p>Lack of self-Confidence (1)</p>		

		go wrong or that I used it incorrectly.			
Teacher D	20	<p>-The school strongly encourages teachers to use interactive electronic whiteboards in the classroom, and we believe that they are considered an effective tool for teaching English.</p> <p>-Interactive electronic whiteboard as a teaching tool should be a tool to assist the classroom process</p> <p>-The interactive electronic whiteboard is really convenient and effective. I can quickly show videos and pictures on the board and the children love watching the videos and the repetition helps them to identify and remember the content</p>	Encourage use (3)	<p><u>Value of Use</u></p> <p>Effective Aids</p> <p>Enrich Teaching Content.</p>	Teachers' Beliefs
		- I like to use music to introduce warm-up games, such	Enrich Teaching Content.(1)		

	<p>as the "ABC song", which is significantly more effective when combined with music and animations for movement and singing along than simply identifying and recognizing letters.</p>			
	<p>Interactive electronic whiteboards can also be used to show videos, display pictures and audio and other multimedia resources, which can better stimulate students' interest and curiosity and make them more focused on the course content.</p> <p>-In my use in I also think that using the interactive electronic whiteboard can improve my teaching and also help the students to focus and I am happy to use the interactive electronic whiteboard in my classroom.</p>	<p>Help to focus on learning (3)</p>	<p><u>Benefits of Use</u></p> <p>Helps with comprehension and memory.</p> <p>Concentration</p>	<p>Reasons for Use</p>

	<p>-Children focus on the content presented on the interactive electronic whiteboard.</p>			
	<p>- I often use interactive electronic whiteboards to design various interactive tasks, such as filling in the blanks, connecting lines, dragging and dropping, etc., so that students can participate more actively in the classroom. This interactive approach allows students to gain a deeper understanding of the course content through hands-on practice.</p> <p>-It is a great educational tool for children.</p> <p>- Children can read aloud and repeatedly playing the audio can help them pronounce the words.</p>	<p>Suitable for children's memorization and comprehension (3)</p>		
	<p>- Generally, I use interactive electronic whiteboards when teaching</p>	<p>Teaching Vocabulary (3)</p>	<p><u>The Lesson</u></p> <p>Teaching Vocabulary</p>	<p>Teachers' Practices</p>

	<p>vocabulary. Vocabulary is a difficult subject for students, and using an interactive electronic whiteboard makes it easier for students to understand what they are learning.</p> <p>- I think vocabulary is a very boring point of knowledge, so when I use interactive electronic whiteboard to teach vocabulary knowledge, I usually show a lot of pictures for students to follow and understand.</p> <p>- I will use the interactive electronic whiteboard to standardize students' vocabulary pronunciation</p>		Student-centered	
	<p>-The students enjoy being little teachers and I enjoy helping them learn in this way.</p> <p>I have to admit</p>	Student-centered (2)		

	<p>that the student-centered approach is very effective, and the children are learning very quickly.</p> <p>- For me, used an interactive electronic whiteboard in my classroom had prevented me from having to rely too much on PowerPoint, and my classes had gradually shifted to a student-centered class.</p>			
	<p>- Students become very excited and active in the classroom when using the interactive electronic whiteboard</p> <p>- Whenever I use the interactive electronic whiteboard, the children become extra active.</p>	Active classroom atmosphere (2)	<u>The Class's Atmosphere</u>	Interactive teaching
	<p>- I was not given training by the school for the difficulties I encountered in the teaching process.</p> <p>- The interactive electronic</p>	Lack of expertise (1)	<u>Using Skills</u>	Lack of expertise No self-confidence

	<p>whiteboard was a new teaching tool for me. Although the school had organized how to use the interactive electronic whiteboard in kindergarten English classes, I felt I still lacked the professional knowledge about it.</p>			
	<p>- The difficulties I encountered in teaching the school did not give me the training I needed to use the interactive electronic whiteboard, which caused me to resist using it at times.</p> <p>-The school constantly emphasized that teachers should use interactive electronic whiteboard in the classroom. However, I encountered many problems in the process of using interactive electronic whiteboard, such as out-of-control class,</p>	<p>Not confident (2)</p>		

		students' inattention and so on. However, I did not know how to deal with these problems, which made me feel very unsure about using interactive electronic whiteboard in English class			
Teacher E	18	<p>- I use the interactive electronic whiteboard in many ways in my teaching. I display multimedia resources such as pictures, videos and audio on the whiteboard to better present the lesson content. I also write, draw, and design interactive activities on the whiteboard to get students more actively involved in the classroom.</p> <p>- As a teacher I must admit that interactive electronic whiteboards provide us with diverse teaching resources. Interactive</p>	Effective Aids (2)	<u>Use Value</u> Effective Aids Enriching teaching content	Teachers' Beliefs

	<p>electronic whiteboards can integrate various teaching resources such as animations, pictures, videos, etc., making teaching more vivid, visual, and intuitive.</p>			
	<p>-I use the diverse features of interactive electronic whiteboards to help my children learn</p> <p>-It is true that interactive electronic whiteboards can be used in different ways to help students learn.</p> <p>-Interactive electronic whiteboards allow for variety in teaching and learning.</p> <p>-Students learn quickly with the interactive electronic whiteboard and master the words quickly.</p>	Diversify teaching content (3)		
	<p>-Interactive electronic whiteboards can provide a more interactive and fun learning</p>	Fun for children (3)	<p><u>Benefits of use</u></p> <p>Helps with comprehension and memory.</p>	Reasons for Use

	<p>experience for children. This is because whiteboards can be presented in a variety of formats such as pictures, animations, and videos. In addition, interactive electronic whiteboards can facilitate the development of children's thinking and creativity as it allows them to participate more actively in the classroom and present their ideas and opinions.</p> <p>-Students love interactive electronic whiteboards, they are curious about them.</p> <p>- My preference for using the interactive electronic whiteboard depends on the fact that the interactive electronic whiteboard appeals to my students. Whenever I use the interactive</p>		Concentration	
--	---	--	---------------	--

	<p>electronic whiteboard to deliver a lesson, they are curious about what is happening on the interactive electronic whiteboard and can focus more on the class.</p>			
	<p>- I often use interactive electronic whiteboards to create courseware and explain and explain in detail the text, images, and videos in the courseware. Students can understand the lesson content both aurally and visually.</p> <p>-Using an interactive electronic whiteboard will repeatedly show pictures and sounds that they remember quickly by reinforcing their memory.</p> <p>-Using an interactive electronic whiteboard, they always remember quickly and for a long time.</p>	<p>Quick to remember (4)</p>		

	<p>-Interactive electronic whiteboards can combine pictures and content so that students can remember quickly.</p>			
	<p>- Students would not listen to my instructions when they were playing games, and some would keep touching the interactive electronic whiteboard, caused chaos in the class.</p>	<p>Hard for children to control (1)</p>	<p><u>Class's Atmosphere</u></p> <p>Out of control</p>	<p>Teachers' Practices</p>
	<p>-I like to use interactive electronic whiteboard to assist teaching in the process of vocabulary teaching, because it was relatively difficult and boring for 3-6-year-old children to teach words simply by using books. Used interactive electronic whiteboard could show the words learned by using pictures, and students would be more interested.</p>	<p>Vocabulary teaching (1)</p>	<p><u>The lesson</u></p> <p>Vocabulary teaching</p> <p>Student-centered teaching method</p>	

	<p>- Used the interactive electronic whiteboard in the kindergarten English class created a student-centered classroom environment for me. I could use the interactive electronic whiteboard to organize students to play many games, and I could use the interactive electronic whiteboard to quickly assess students' learning.</p>	<p>Student-centered teaching method (1)</p>		
	<p>- Although I was trained in how to use the interactive electronic whiteboard in kindergarten English class when I was at school, the interactive electronic whiteboard used in school was different from the one I was trained to use, so I still felt fear about using the interactive electronic whiteboard.</p>	<p>Teachers are not confident (1)</p>	<p><u>Using Skills</u> Lack of expertise Teachers are not confident.</p>	
	<p>- learned about how to use</p>	<p>Lack of</p>		

		interactive electronic whiteboard in class when I was in university, but I have forgotten some professional knowledge due to too long time	expertise (1)		
		Students can remember what they have learned quickly by playing games, and I can observe how well they have mastered what they have learned.	Interactive Game Teaching (1)	<u>The interaction</u> Interactive game teaching	
Teacher F	16	-Interactive electronic whiteboard helps me go about my teaching work through video and audio. - I can interact and communicate with students through the interactive electronic whiteboard, making the class more interactive and interesting, allowing students to participate more actively, and improving classroom interactivity.	Auxiliary tools (2)	<u>Seeing the Value</u> Auxiliary tools	Teachers' Beliefs

	<p>- Teachers can show relevant educational videos on the interactive electronic whiteboard, such as animations, documentaries, etc. This can give students a deeper understanding of the relevant points. Teachers can also use the interactive electronic whiteboard to record videos of their own lectures for students to review and learn from.</p>	Enrich Teaching Content (1)		
	<p>After I use the interactive electronic whiteboard, students are more active in answering questions and participating in activities, and almost no students talk small talk.</p> <p>-Whenever the interactive electronic whiteboard is used, the students are excited, and they express</p>	Attracting children (4)	<p><u>Benefits of use</u></p> <p>Helps with comprehension and memory.</p> <p>Concentration</p>	Reasons for Use

	<p>their enjoyment.</p> <p>-The interactive electronic whiteboard is very engaging for the students.</p> <p>-Interactive electronic whiteboard as a teaching tool, teachers need to be actively involved in classroom activities.</p>			
	<p>- Most often use word spelling games: I will design word spelling games on the interactive electronic whiteboard, such as having students spell words based on pictures or audio prompts, or having students drag letters around the whiteboard to spell words. This interactive approach allows students to memorize the words in a game, which increases their interest and motivation in learning.</p> <p>-Interactive</p>	Helps children understand (3)		

	<p>electronic whiteboard helps children to understand by illustrating.</p> <p>-These games can help make it easier to understand what is being learned and are great for children.</p>			
	<p>-I could use an interactive electronic whiteboard to organize games for students. I could create a relaxed and fun learning environment for students, not only that, but also increased student engagement and motivation.</p>	Game Teaching (1)	<p><u>The Teacher Interaction</u></p> <p>Interactive game teaching</p>	Teachers' Practices
	<p>- When students did writing exercises on the interactive electronic whiteboard, some students scribbled on the interactive electronic whiteboard, others copy it, and I could not move on to the rest of the class.</p>	The child is out of control (1)	<p><u>The atmosphere</u></p> <p>Classes are out of control</p>	
	<p>- In my opinion, it was the best teaching method</p>	Vocabulary teaching (1)	<p><u>The lesson</u></p> <p>Vocabulary</p>	

	<p>for children aged 3-6 to use interactive electronic whiteboard in the process of vocabulary teaching. The interactive electronic whiteboard was in line with the cognitive characteristics of children aged 3-6. In particular, the use of pictures, audio and other materials in the class could help students understand what they had learned and connect it with real life</p>		<p>teaching</p> <p>Student-centered teaching method</p>	
	<p>- Used an interactive electronic whiteboard in the classroom helped me create a student-centered teaching philosophy where students could participate in every class activity. Such teaching methods could help students improve student efficiency.</p>	<p>Student-centered teaching method (1)</p>		
	<p>- The interactive electronic whiteboard was</p>	<p>Lack of Expertise (1)</p>	<p><u>Using Skills</u></p> <p>Lack of</p>	

		<p>a new teaching tool for me, and although I had over 6 years of teaching experience, However, the teaching experience of using interactive electronic whiteboard in kindergarten English classroom was 0.</p>		<p>Expertise</p> <p>Teachers are not confident.</p>	
		<p>The interactive electronic whiteboard was a new educational tool for me, and I did not feel confident that my previous English teaching method, which was based on books, had suddenly changed to a multimedia device.</p>	<p>Lack of self-Confidence (1)</p>		
Teacher G	13	<p>Students' interest in learning is crucial to teaching: interactive electronic whiteboards can provide diverse teaching contents and teaching formats, making students more interested and</p>	<p>Auxiliary tools (2)</p>	<p><u>Use Value</u></p> <p>Teaching enrichment</p> <p>Auxiliary tools</p>	<p>Teachers' Beliefs</p>

	<p>improving their motivation and initiative</p> <p>- Using interactive electronic whiteboard can really improve teaching efficiency. You can create teaching courseware quickly through interactive electronic whiteboard to facilitate teaching preparation, and also record students' homework, grades and other information quickly.</p>			
	<p>- Instructors can use the interactive electronic whiteboard for real-time presentations and drawings, such as diagrams, sketches, schematics, etc., which allow students to understand the content more visually.</p> <p>-Using interactive electronic</p>	Teaching content enrichment (2)		

	whiteboards in the classroom can enrich my teaching content.			
	<p>-Interactive electronic whiteboards are fun for children Suitable for children</p> <p>- I use the interactive electronic whiteboard a lot in my teaching. It is a great tool to keep students more focused on the class content. By using the whiteboard, I can present the course content in a more vivid, interesting and diverse way. In addition, the students enjoy using the whiteboard to interact and share their ideas, which makes them more engaged in the class.</p>	<p>-Interactive electronic whiteboards are fun for children Suitable for children (2)</p>	<p><u>Benefits of use</u></p> <p>Helps with comprehension and memory.</p> <p>Concentration</p>	Reasons for Use
	- In addition, I think you can use the interactive electronic whiteboard to create word memory cards that match	Memorize Words (1)		

	words with corresponding pictures or audio, allowing students to memorize words by looking, listening, and speaking.			
	- In the process of using the interactive electronic whiteboard, I thought it was the most effective in the process of vocabulary teaching. I could use the search function of the interactive electronic whiteboard to help students expand their vocabulary and help students master more knowledge in the limited time.	Vocabulary Teaching (1)	<u>The lessons</u> Vocabulary Teaching Student-centered teaching method	Teachers' Practices
	Used an interactive electronic whiteboard in the classroom helped me create a student-centered teaching philosophy where students could participate in every class activity. Such teaching methods could	Student-centered teaching method (1)		

	<p>help students improve student efficiency.</p>			
	<p>- The school continued to emphasize the importance of using interactive electronic whiteboard in kindergarten English classes but has not given me relevant training on interactive electronic whiteboard. Even if there is training, the content of the training is only about the characteristics of interactive electronic whiteboard, so I still lack professional knowledge of interactive electronic whiteboard.</p>	<p>Lack of expertise (1)</p>	<p><u>Using Skills</u></p> <p>Lack of expertise</p> <p>Teachers are not confident</p>	
	<p>- The school constantly emphasized that teachers should use interactive electronic whiteboard in the classroom. However, I encountered many problems in the process of using interactive electronic whiteboard,</p>	<p>Teachers are not confident (1)</p>		

		such as out-of-control class, students' inattention and so on. However, I did not know how to deal with these problems, which made me feel very unsure about using interactive electronic whiteboard in English class.			
		- I was able to use an interactive electronic whiteboard to provide visual stimulation to students to make them more focused and engaged in the teaching process.	Interactive game teaching (1)	<u>The interaction</u> Interactive game teaching	
		- Whenever I taught using the interactive electronic whiteboard, the students were only interested in the content they like. Other times they were not focused, and the class got out of control.	Classes are out of control (1)	<u>Class atmosphere</u> Classes are out of control	
Teacher H	14	-Interactive electronic whiteboard is an effective tool for teaching English. I	Effective Aids (3)	<u>Use Value</u> Effective Aids Enriching teaching and	Teachers' Beliefs

	<p>strongly agree with the statement that using interactive electronic whiteboards in the teaching process can improve teachers' teaching skills.</p> <p>- Teachers need to develop a belief in the use of interactive electronic whiteboards in the classroom. Interactive electronic whiteboards as an educational tool can provide teachers with a level of teaching</p>		learning	
	<p>-I think using interactive electronic whiteboard can enrich my teaching content</p> <p>- Instructors can design a variety of interactive tasks on the interactive electronic whiteboard, such as fill-in-the-blank, connect the dots, drag, and drop, etc., to get students more actively involved in the</p>	Enriching teaching and learning (2)		

	<p>classroom. This interactive approach allows students to have a deeper understanding of the course content through hands-on practice and also enriches the teaching content.</p>			
	<p>-Interactive electronic whiteboards can also be used to show videos, display pictures and audio and other multimedia resources, which can better stimulate students' interest and curiosity and make them more focused on the course content.</p> <p>- Interactive electronic whiteboards can provide a more interactive and fun learning experience for children. This is because whiteboards can be presented in a variety of formats such as pictures, animations, and videos. In</p>	<p>Attracts attention (2)</p>	<p><u>Reasons for o Use</u></p> <p>Helps with comprehension and memory.</p> <p>Concentration</p>	<p>Reasons for o Use</p>

	<p>addition, interactive electronic whiteboards can facilitate the development of children's thinking and creativity as it allows them to participate more actively in the classroom and present their ideas and opinions.</p>			
	<p>- Play an audio file on the interactive electronic whiteboard and have students dictate the words. This way can help students to memorize words through auditory way is also a good way.</p>	<p>Memorize Words through Auditory (1)</p>		
	<p>- I was able to use an interactive electronic whiteboard to provide visual stimulation to students to make them more focused and engaged in the teaching process.</p>	<p>Games for teaching (1)</p>	<p><u>Teacher interaction</u></p> <p>Game Teaching</p>	<p>Teachers' Practices</p>
	<p>- Every time I used an interactive electronic</p>	<p>The classroom is out of control (1)</p>	<p><u>Class atmosphere</u></p> <p>Classes are out</p>	

	whiteboard, students tended to imitate the sounds that appear on the interactive electronic whiteboard, which could make the class very confusing.		of control	
	- For the process of vocabulary teaching, the use of interactive electronic whiteboard was the most reasonable teaching method. I can use an interactive electronic whiteboard to assess students' mastery, so that I could adjust my teaching progress at any time.	Vocabulary teaching (1)	<u>The lessons</u> Vocabulary teaching Student-centered teaching method	
	- Used the interactive electronic whiteboard in the kindergarten English class created a student-centered classroom environment for me. I could use the interactive electronic whiteboard to organize students to play many games,	Student-centered teaching method (1)		

	and I could use the interactive electronic whiteboard to quickly assess students' learning.			
	- The interactive electronic whiteboard was a new teaching tool for me. Although the school had organized how to use the interactive electronic whiteboard in kindergarten English classes, I felt I still lacked the professional knowledge about it.	Lack of Expertise (1)	<u>Using Skills</u> Lack of Expertise Teachers are not confident	
	- The school constantly emphasized that teachers should use interactive electronic whiteboard in the classroom. However, I encountered many problems in the process of using interactive electronic whiteboard, such as out-of-control class, students' inattention and so on. However, I did not know how to deal with	Teachers are not confident (1)		

		these problems, which made me feel very unsure about using interactive electronic whiteboard in English class.			
--	--	--	--	--	--



The image features a large, faint watermark of the Rangsit University logo in the background. The logo consists of a stylized flame or sunburst shape at the top, with a circular base made of radiating lines. Below the logo, the university's name is written in Thai and English: "มหาวิทยาลัยรังสิต Rangsit University".

Appendix F

Certificate of Approval by Ethics Review Board of Rangsit University

COA. No. RSUERB2023-032



**Certificate of Approval
By
Ethics Review Board of Rangsit University**

COA. No.	COA. No. RSUERB2023-032
Protocol Title	Using Interactive Whiteboards in English Language Teaching: Beliefs and practices of Kindergarten English Teachers
Principle Investigator	Xiangrong Li
Co-Investigator	Asst. Prof. Dr. Anchalee Chayanuvat
Affiliation	Suryadhep Teachers College, Rangsit University
How to review	Expedited Review
Approval includes	1. Project proposal 2. Information sheet 3. Informed consent form 4. Data collection form/Program or Activity plan
Date of Approval:	15 March 2023
Date of Expiration:	15 March 2025

The prior mentioned documents have been reviewed and approved by Ethics Review Board of Rangsit University based Declaration of Helsinki, The Belmont Report, CIOMS Guideline and International Conference on Harmonization in Good Clinical Practice or ICH-GCP

Signature.....

(Associate Professor Dr. Panan Kaechanaphum)

Chairman, Ethics Review Board for Human Research



Ethics Review Board of Rangsit University, 5th floor, Arthit Ourairat Building (Bldg.1) Rangsit University

Tel. 0-2791-5728 Email: rsuethics@rsu.ac.th

Biography

Name	Xiangrong Li
Date of birth	September 14, 1997
Place of birth	Kunming City, Yunnan
Education background	Anqing Normal University, China Bachelor of Teaching Chinese to Speakers of Other Languages, 2021 Rangsit University, Thailand Master of Bilingual Education and English Language Teaching, 2023
Address	201/19, G, Muang Ek Condo Villa,
Email Address	1424456142@qq.com
Place of work	EF Kunming
Work position	Teacher's Assistant

