TEACHERS' PERCEPTIONS OF BLENDED LEARNING IN TEACHING BASIC CHINESE TO THAI KINDERGARTEN STUDENTS

BY

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Abstract

This study investigated the use of blended learning in teaching basic Chinese to Thai kindergarten students, focusing on how teachers integrated technology, the impact of blended learning on students' learning achievement, and teachers' perceptions of the advantages and disadvantages of this approach. A mixed-methods design was employed, combining quantitative surveys and qualitative semi-structured interviews with 50 teachers from the Nonthaburi Project in Thailand. The research explored how teachers used multimedia tools, interactive games, and online platforms to enhance language learning. The findings suggested that blended learning was viewed positively by teachers, with a high level of agreement (mean = 4.42, SD = 0.67) on its impact on student engagement and participation. Teachers reported improvements in vocabulary retention (mean = 4.44, SD = 0.73) and speaking skills (mean = 4.32, SD = 0.62). However, challenges such as varying levels of digital literacy, technical difficulties, and limited resources were identified. The study also highlights the flexibility of blended learning, with teachers emphasizing its ability to accommodate diverse learning needs. These findings indicated that while blended learning was seen as beneficial, further professional development and infrastructure support were essential for maximizing its potential in early childhood education.

(Total 165 pages)

Keywords: Blended Learning, Kindergarten Chinese Education, Teacher Perceptions, Technology Integration, Student Engagement, Nonthaburi Project

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Chapter 1

Introduction

This chapter presents the background of the study, statement of the problem, research objectives, research questions, research scope, conceptual framework of the study, limitations of the study as well as definitions of the key terms.

1.1 Background of the Study

Blended learning, which combines traditional face-to-face teaching with online components, has undergone a significant evolution in recent years, largely driven by the COVID-19 pandemic (Pozo, Pérez Echeverría, Cabellos & Sánchez, 2021; Zalat, Hamed & Bolbol, 2021). Before the pandemic, educational institutions across the world were increasingly exploring blended learning to enhance flexibility and widen access to learning resources (Du, 2023). This model allowed students to engage with supplementary digital materials outside of class time, providing additional opportunities to consolidate their understanding and extend their learning (Gulmira et al., 2022; Wulandari, Sabarun & Qamariah, 2023). For instance, many schools incorporated online discussion forums, recorded lectures, and digital assignments as optional resources, allowing students to learn at their own paces. However, in most cases, these online components played a secondary, supportive role to in-person instruction, with classroom teaching remaining the primary mode of delivery (Bećirović, Brdarević-Čeljo & Delić, 2021).

The COVID-19 pandemic, however, marked a turning point, as educators worldwide were suddenly forced to shift to online instruction to maintain learning continuity amid widespread school closures (Pozo et al., 2021). This situation highlighted the necessity of blended learning, as schools quickly adapted to synchronous (live) and asynchronous (flexible timing) online methods (Tulasi & Suchithra, 2020; Kahanurak, Dibyamandala & Mangkhang , 2023). During this period, the synchronous approach allowed teachers to conduct real-time classes, mirroring the interactivity of in-person learning as much as possible (Bećirović et al., 2021; Maja, 2023;). Students could participate in discussions, ask questions, and receive immediate feedback. Meanwhile, asynchronous resources, such as recorded lessons and digital assignments, enabled students to review content at their own pace, providing a valuable complement to synchronous classes (Wulandari et al., 2023). This blend of approaches became essential to support varied learning styles, improve accessibility, and mitigate the challenges posed by sudden changes in learning environments (Almaiah, Al-Khasawneh & Althunibat, 2020). As restrictions began to ease, many institutions retained aspects of blended learning, recognizing its potential to support student-centered learning through a flexible, adaptable framework that could be applied long-term (Wagi, 2021).

The Nonthaburi Project, established by Chulalongkorn University in collaboration with the Nonthaburi Provincial Administration Organization, represents a large-scale educational initiative aimed at enhancing foreign language instruction in Nonthaburi Province, Thailand. Launched with the objective of equipping students with critical language skills, particularly in English and Mandarin Chinese, the project spans 61 schools under the Nonthaburi Primary and Secondary Education Area Offices. This initiative is intended to provide students from kindergarten through high school with foreign language exposure, laying a foundation for effective communication skills that will enable them to participate actively in the ASEAN Community and the broader global environment. By focusing on language skills essential for international

communication, the Nonthaburi Project aligns with Thailand's national educational goals and the increasing emphasis on multilingual competence as a vital skill for economic and cultural exchange (Chula Unisearch, n.d.).

The project's implementation involves recruiting qualified foreign teachers to deliver English and Mandarin instruction. These teachers are supported through regular training on Thai culture, professional ethics, and educational methods to ensure they are well-prepared to teach in Thai schools. Additionally, the project fosters collaboration between Thai and foreign teachers, creating a culturally enriching environment for both educators and students. This focus on immersive language education from a young age is a core element of the project's mission, as early exposure to foreign languages is known to enhance long-term language proficiency and cross-cultural understanding (Herodotou et al., 2019).

In response to the disruptions caused by the COVID-19 pandemic, the Nonthaburi Project initially adopted a blended learning model to maintain continuity in English and Mandarin Chinese instruction. During the height of the pandemic, synchronous online learning enabled teachers to deliver live classes when in-person instruction was not feasible. This real-time online approach allowed teachers to interact directly with students, preserving engagement and providing immediate feedback, which is particularly beneficial in language learning where interaction and real-time practice are essential (Khoirudin, 2023). Through video conferencing and other online tools, students could continue their studies with minimal interruption, maintaining a sense of normalcy and consistency in their educational progress.

As pandemic restrictions eased, schools reopened, and students gradually returned to in-person classrooms. The Nonthaburi Project embraced this transition back to face-to-face learning, reinstating the traditional classroom environment that is

particularly valuable for young language learners who benefit from immediate, hands-on teacher guidance and the social interactions that classroom settings provide (Rukanda, 2020). With students physically present, teachers could again incorporate group activities, interactive exercises, and collaborative learning experiences that foster language immersion, a crucial component of effective language acquisition (Wong, 2023).

Despite the return to in-person instruction, the Nonthaburi Project retained some online components, shifting from synchronous online learning to asynchronous digital resources that complement face-to-face classes. This transition reflects a balanced approach, where in-person instruction remains the foundation of teaching while asynchronous resources offer students additional opportunities to review materials at their own pace outside of school hours. These resources, including pre-recorded lessons, practice exercises, and digital language activities, are designed to reinforce in-class learning and allow students to deepen their understanding through self-paced study (Sundaram & Ramesh, 2022). By maintaining these digital supports, the project ensures that students have continuous access to learning materials, promoting independent learning habits and providing flexible support tailored to diverse learning needs.

This blended approach, combining the strengths of in-person classroom interaction with the flexibility of asynchronous resources, aligns with the Nonthaburi Project's goals of enhancing language education for non-native learners. By re-establishing face-to-face instruction as the primary mode while integrating supplementary digital tools, the project aims to create a rich, interactive, and supportive environment that maximizes students' language learning potential (Bakar, 2021).

To ensure that teachers are well-equipped to implement blended learning effectively, the Nonthaburi Project provides comprehensive professional development

training for all Chinese teachers each semester. These training sessions cover essential skills such as digital resource creation, designing interactive content, and effectively integrating traditional teaching methods with modern technology. This consistent professional support enables teachers to adapt to evolving educational needs and stay current with new teaching methods (Krishnan, Norman & Yunus, 2022). Furthermore, the project has established a collaborative platform for teachers to exchange experiences, share innovative ideas, and collectively improve instructional practices. Through this professional development framework, teachers are not only able to meet the challenges of blended learning but also contribute to enhancing the overall quality of Chinese language instruction within the Nonthaburi Project.

1.2 Statement of the Problem

Blended learning has become a widely adopted approach in education, combining digital tools with traditional classroom instruction to create a more flexible, interactive learning environment (Xue, 2022; Qiao, Chu & Yeung, 2023). This model has proven beneficial across various fields, particularly during the COVID-19 pandemic, when it enabled continuous learning through both synchronous and asynchronous formats (Rasheed, Kamsin & Abdullah, 2020a; Puspaningtyas & Ulfa, 2020). However, implementing blended learning for early childhood language education—specifically for teaching basic Chinese to Thai kindergarten students—presents unique challenges that remain inadequately addressed in current research (Dipendra & Jomphong, 2022).

In Thai kindergarten settings, the transition from synchronous online learning during the pandemic to asynchronous blended learning in the post-pandemic era has highlighted specific issues with engaging young learners, ensuring equitable access to digital resources, and preparing teachers for effective digital integration (Khoirudin, 2023; Shudueva, Budnikov & Akhmadov, 2023). The Nonthaburi Project—an initiative

led by Chulalongkorn University aimed at providing English and Chinese language education to Thai students—has embraced this blended learning model to adapt to new educational demands (Chula Unisearch, n.d.). Initially, the project relied on synchronous online sessions to maintain student engagement, yet as it transitioned to an asynchronous model post-pandemic, new challenges emerged in maintaining consistent learning outcomes (Soon et al., 2021).

Technological disparities are a primary challenge within the Nonthaburi Project, as students from diverse socio-economic backgrounds experience unequal access to the necessary digital resources for asynchronous learning (Dipendra & Jomphong, 2022; Afzal, Khan, Daud, Ahmad & Butt, 2023). This inequality limits some students' ability to fully benefit from the program, leading to varied language proficiency levels that affect overall educational equity (Rasheed, Kamsin & Abdullah, 2020b). Current studies primarily focus on older students in secondary or higher education, who have greater autonomy in using digital platforms (Noor, Younas, Saleh Aldayel, Menhas, & Xu, 2022; Serwornoo, Danso, Azanu, Semarco & Aidoo, 2024; Venugopal, 2024; Guan, 2023). The needs of young children—who require more structured, interactive, and teacher-led activities—are often overlooked, creating a gap in understanding how best to implement blended learning in early childhood contexts (Kumar et al., 2021).

Teacher preparedness is another critical factor influencing the success of blended learning in early childhood education. While digital literacy programs and workshops are available, many educators in the Nonthaburi Project face challenges in adapting to and integrating digital tools effectively (Rasheed et al., 2020a). Developing quality content that aligns with traditional teaching goals and navigating technical complexities require substantial time and training, which are not always accessible to all teachers (Van Der Westhuizen & Hannaway, 2021; Sundaram & Ramesh, 2022).

Current literature suggests that teacher readiness significantly affects blended learning success, but few studies delve into early childhood educators' specific needs in a blended language-learning environment (Shudueva et al., 2023).

Finally, student engagement and motivation are essential to the success of blended learning, particularly for young learners (Muksin & Makhsin, 2021). Without real-time interaction and immediate feedback, which were possible in synchronous settings, many young students struggle to maintain focus and motivation in an asynchronous format (Wagi, 2021; Yasa, 2023). Studies indicate that digital learning environments often lack the hands-on and interactive elements that are crucial for engaging young children (Holbrey, 2020; Qiao et al., 2023). This challenge is exacerbated in language education, where in-person cues and interactive activities play a vital role in facilitating language acquisition (Grenfell, 2015; Kim et al., 2022).

The Nonthaburi Project provides an ideal context for examining these challenges, given its extensive use of blended learning in Thai kindergarten Chinese language education. Observations from educators within the project reveal mixed outcomes: while digital tools add an interactive dimension to classes, their inconsistent impact on achieving core language learning objectives underscores the need for a more tailored approach to blended learning in early childhood settings. This study aimed to bridge these gaps by exploring the perceptions of educators in the Nonthaburi Project on the benefits and limitations of blended learning for teaching basic Chinese. By identifying key factors that influence the effectiveness of this model, the research seeked to provide actionable insights that will inform more effective blended learning practices, ultimately supporting young learners' language development.

1.3 Research Objectives

This study aims to investigate the perceptions of practicing teachers when utilizing blended learning to teach basic Chinese to kindergarten students in Thailand. Therefore, the specific research objectives are as follows:

1) To investigate how teachers integrate technologies in teaching basic Chinese to Thai kindergarten students

2) To study teachers' perceptions on the impact of blended learning on students' learning achievement

3) To identify teachers' perceptions of the advantages and disadvantages in using blended learning in teaching basic Chinese to Thai kindergarten students

1.4 Research Questions

1) How do teachers integrate technologies in the implementation of blended learning?

2) What are teachers' perceptions on the impact of blended learning on the learning achievement of Thai kindergarten students in basic Chinese?

3) What are teachers' perceptions of the advantages and disadvantages of using blended learning in teaching basic Chinese to Thai kindergarten students?

1.5 Conceptual Framework

Based on the characteristics of blended learning, the conceptual framework of this study can be shown in the following figure:

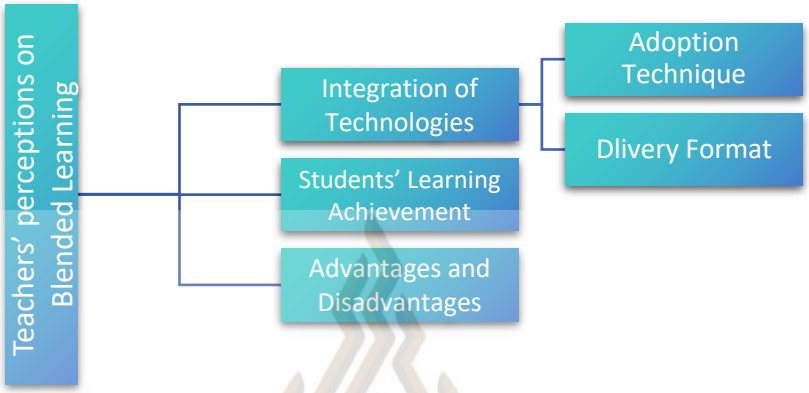

Figure1.1 The Conceptual Framework

1.6 Significance of the Study

The significance of the present study is grounded in its practical contributions to the field of early childhood education, specifically in the context of teaching Chinese to Thai kindergarten students through blended learning. This study provides detailed insights into how teachers can effectively integrate digital tools with traditional teaching methods. By identifying specific techniques that have been successful, it offers practical guidance to educators who are looking to adopt or improve blended learning in their classrooms. This can lead to more engaging and effective teaching strategies, directly benefiting students' learning experiences.

Additionally, the research highlights the importance of targeted teacher training programs that focus on the use of blended learning. By understanding the challenges and successes experienced by teachers, the study can inform the design of professional development programs that address specific needs, such as the use of

interactive digital content and managing blended classrooms. This can help educators become more proficient and confident in using technology to enhance learning.

The findings of the study provide empirical evidence that can support educational administrators and policymakers in making informed decisions about resource allocation. By demonstrating the impact of blended learning on student engagement and achievement, the study underscores the need for investing in digital infrastructure, educational technologies, and continuous teacher support. This can lead to more effective policy frameworks that facilitate the successful implementation of blended learning across schools.

Moreover, by evaluating the effects of blended learning on students' language acquisition and overall learning outcomes, the study provides valuable data on its effectiveness. This information can help educators refine their instructional approaches to maximize student engagement and achievement, ultimately contributing to better educational outcomes for young learners.

Finally, the study realistically identifies the practical challenges faced by teachers in implementing blended learning, such as technical difficulties, varying levels of digital literacy among students and teachers, and the need for adequate support and resources. By clarifying these challenges through surveys and interviews and providing recommendations based on the findings, the study offers actionable insights that can assist schools and educators in navigating the complexities of blended learning.

1.7 Research Gap

Despite the valuable insights provided by current literature on blended learning and language education, a notable research gap exists concerning the teaching

of basic Chinese in Thai kindergarten environments. While various studies have explored the benefits and challenges of blended learning, there is limited research specifically targeting its application and impact within the distinct context of Thai kindergarten education. This gap underscores the need for further investigation into how blended learning strategies can be effectively tailored and implemented to support young learners in Thailand.

Present research has yet to thoroughly examine the specific practices of blended learning that are most suitable for Thai kindergarten settings, especially regarding teaching basic Chinese. This gap in the literature offers a unique opportunity for this study to make a significant contribution. By in-depth exploration of educators' perceptions, this investigation seeks to uncover their insights on the benefits and challenges of utilizing blended learning for teaching basic Chinese to Thai kindergarten students, thereby aiming to fill this existing void in research.

By recognizing and tackling this research gap, the study enriches the current body of knowledge, offering insights and implications directly relevant to the specified educational setting. This focused research endeavor will enhance the understanding of both the challenges and prospects associated with incorporating blended learning tools into Thai kindergarten language education, contributing to the development of more effective and contextually appropriate language teaching strategies.

1.8 Limitations of the Study

It is essential to acknowledge the limitations of this study. The sample size and characteristics, as well as the chosen methodology, may restrict the generalizability of the findings. The study's dependence on specific technologies and potential biases in data collection warrants careful consideration. Additionally, the research is conducted

within a specific cultural and regional context, which may limit the broader applicability of the results.

1.9 Definitions of Key Terms

To ensure clarity and precision in the discussion, key terms in this study are defined as follows:

Blended Learning: In this research, blended learning refers to the integrated use of both traditional classroom techniques and digital technologies to support basic Chinese language instruction in Thai kindergarten settings. During the COVID-19 pandemic, blended learning included synchronous online sessions, where teachers conducted live classes to ensure real-time interaction with students. However, post-pandemic, the approach shifted toward asynchronous online learning, enabling students to access pre-recorded lessons and digital resources at their own pace. This transition highlights blended learning's flexibility in adapting to evolving educational needs, combining face-to-face teaching with digital tools to enrich the learning experience for young learners.

Perceptions: For this study, perceptions are understood as the viewpoints, attitudes, and subjective evaluations of educators about employing blended learning techniques in their instruction of basic Chinese to kindergarten students. This includes their thoughts on the benefits and challenges tied to this educational approach. Perceptions will be gathered from educators involved in teaching basic Chinese under the Nonthaburi Project, reflecting on their experiences with blended learning methodologies in early childhood education settings across Nonthaburi Province. This

focus ensures clarity in understanding how frontline educators perceive the integration of traditional and digital teaching methods.

Teaching Basic Chinese: This term describes the process of imparting foundational Chinese language skills to Thai kindergarten students. It involves teaching basic vocabulary, correct pronunciation, basic Chinese characters and introductory sentence structures, with the aim of establishing a robust foundation for further language development.

Thai Kindergarten Students: This group consists of children aged three to six years old who are enrolled in kindergarten programs at schools participating in the Nonthaburi Project. These young learners are the primary subjects of the study, which aims to assess the impact of blended learning strategies on their early Chinese language development. By focusing on these students, the research seeks to understand how blended learning can enhance the educational experiences and outcomes for kindergarten students in the context of the Nonthaburi Project.

Blended Learning Integration: Blended learning integration refers to the comprehensive approach of combining traditional classroom teaching methods with digital technologies and online resources. This integration aims to enhance the educational experience by utilizing a variety of instructional methods and tools, thereby supporting diverse learning styles and improving student engagement and outcomes.

Adoption Technique: Adoption technique involves the strategies and methods used by educators to incorporate blended learning into their teaching practices. This includes selecting appropriate digital tools, creating interactive content, and seamlessly integrating these resources with traditional teaching methods to facilitate effective learning.

Delivery Format: Delivery format refers to the various ways in which blended learning content is presented to students. This includes face-to-face instruction, online platforms, multimedia presentations, interactive games, and quizzes. The delivery format is designed to make learning more engaging and accessible, catering to the needs of kindergarten students.

Students' Learning Achievement: Students' learning achievement encompasses the measurable outcomes of students' academic performance as a result of blended learning. This includes improvements in language skills, comprehension, participation, and overall academic progress in the context of learning basic Chinese in kindergarten.

Advantages and Disadvantages: Advantages and disadvantages refer to the perceived benefits and challenges of implementing blended learning as identified by educators. Advantages may include increased student engagement, flexible learning opportunities, and enhanced learning outcomes. Disadvantages may include technical difficulties, resource limitations, and the varying levels of digital literacy among teachers and students.

Chapter 2

Literature Review

This chapter delves into the literature surrounding blended learning, focusing on its application in language education, specifically in teaching Chinese to Thai kindergarten students. It covers the definition of blended learning, its implementation in language teaching, and educators' perceptions, including the advantages and disadvantages of this approach. Additionally, the chapter identifies gaps in current research and examines studies related to both blended learning and traditional methods in language education. This review aims to provide a foundational understanding of blended learning's role and potential in early childhood language instruction.

2.1 Definitions of Blended Learning

Blended learning is a forward-thinking educational strategy that merges traditional classroom teaching with electronic technologies to enhance both teaching and learning experiences (Shuplat & Noskova, 2020). This approach aims to combine the benefits of direct, face-to-face instruction with the versatility and resource-rich environment of online learning. The section will detail the concept and evolution of blended learning, providing a foundational framework for its application in teaching basic Chinese to Thai kindergarten students. By exploring the development and key characteristics of blended learning, the potential for transformative educational practices, particularly in early childhood language education, becomes evident.

2.1.1 Definition and Evolution of Blended Learning

"Blended Learning" integrates multiple teaching methodologies and technologies to support and enhance learning processes (Cleveland-Innes & Wilton, 2018). This term encompasses a range of practices that combine face-to-face classroom methods with online instructional strategies (Kumar et al., 2021). This blend aims to leverage the strengths of both traditional and digital learning environments, fostering a more engaging and flexible educational experience.

Blended learning is often characterized by a teaching mode that harmoniously combines online and in-person instruction, enabling students to benefit from digital courses while still participating in classroom interactions (Puspaningtyas & Ulfa, 2020). This approach mitigates the need for exclusive reliance on physical presence or campus-based resources (Kumar et al., 2021).

The definition of blended learning has evolved alongside technological innovations and advancements in instructional methods. As discussed, refined definitions focus on the pedagogical aspect, viewing blended learning as an approach where "digital technology complements traditional teaching methods (Vetitnev, Maznichenko, Lopatinskiy & Aksenov, 2020)." This highlights the crucial influence of educational strategies in determining the effectiveness of blended learning, emphasizing the integration of digital resources to enhance and not just replace traditional classroom experiences.

Despite varying interpretations and applications, the core principles of blended learning remain consistent, utilizing technology to augment the educational experience. This approach promotes accessibility and flexibility in learning environments and addresses the personalized needs of learners (Shuplat & Noskova,

2020). Blended learning holds significant potential to transform learning and teaching paradigms, combining the strengths of digital and traditional methods to create more adaptable and engaging educational pathways.

Blended learning, as defined in this study, involves the strategic use of electronic technologies like computers, tablets, and online platforms alongside traditional classroom interactions to support the teaching and learning of basic Chinese in Thai kindergarten environments. This approach includes a variety of digital tools and resources aimed at enhancing the educational experience. By offering interactive, accessible, and customized learning opportunities, blended learning seeks to optimize both face-to-face teaching and digital methodologies, ensuring a comprehensive and engaging educational journey for young learners.

From the study of Caird and Roy (2021), the development of blended learning can be traced back to early computer-based instruction in the mid-20th century. Initially, it was marked by straightforward programmed learning and computer-assisted instruction. Over time, blended learning has undergone significant evolution, adapting to rapid technological progress. The integration of multimedia elements, interactive simulations, and the introduction of online learning platforms represent a move towards more dynamic and engaging learning environments. This evolution reflects the gradual merging of traditional classroom teaching with innovative digital technologies, shaping a more interactive and effective educational landscape.

The evolution of blended learning signifies a pedagogical shift, moving away from exclusively traditional classroom environments towards more flexible, technology-enhanced methods. As blended learning continues to develop, its influence on educational practices, especially in the domain of language learning among young students, grows more profound (Sholihah, Hidayat, Srinawati, Syakhrani & Khasanah,

2021). Grasping the history and varied approaches of blended learning is essential for evaluating its suitability and effectiveness in the scenario of instructing basic Chinese to Thai kindergarten pupils. This understanding allows for a nuanced assessment of how integrating online and onsite educational strategies can optimally support language acquisition.

2.1.2 Trends and Developments in Blended Learning

Fueled by a combination of driving forces and emerging opportunities, blended learning has undergone significant evolution, defining its current trends and future directions. The swift advancement of digital technology serves as a primary engine for this growth. High-speed internet accessibility, the widespread use of smart devices, and the incorporation of multimedia elements have all contributed to the development of blended learning strategies that are both interactive and easily accessible (Caird & Roy, 2019). Moreover, the global expansion of educational needs has increased the demand for learning models that are adaptable and scalable, catering to a broader audience (Kabanda, 2021). Blended learning stands as both a method and a tool for delivering a globalized educational experience, overcoming physical distances and offering learners the chance to participate in varied virtual learning settings (Grenfell, 2015). This approach aligns with the contemporary educational imperative for inclusivity and adaptability, showcasing blended learning's pivotal role in the future of global education.

Simultaneously, the shift in teaching paradigms towards more learner-centered approaches has notably influenced the application of blended learning. There is a growing emphasis on creating personalized learning experiences that cater to the varied learning styles and preferences of individuals, an aspect that is particularly important in teaching language skills to young learners (Yasa, 2023). Blended learning

endeavors to foster an inclusive educational environment that addresses the distinct needs of diverse learners, ensuring that teaching strategies are adaptable and encompass a wide range of student requirements. These advancements contribute to the development of various models of blended learning application, including the integration of gamification to boost engagement and the adoption of flexible learning pathways. Together, these trends underscore the evolving nature of blended learning as a dynamic and responsive approach to education in the digital age.

2.1.3 Blended Learning in Early Childhood Education

The integration of blended learning into early childhood education has attracted significant interest, prompting researchers to examine its effects on different facets of young learners' development (Wong, 2023). Studies focusing on early childhood language learning combined with blended learning approaches suggest a positive relationship between the use of digital tools and enhancements in language acquisition. This emerging body of research highlights how blending traditional teaching methods with innovative digital resources can support and enrich the language learning process for young children.

During the pandemic, synchronous learning allowed young learners to participate in real-time interactions, which are crucial for maintaining engagement and receiving immediate feedback (Speer & Eichler, 2022). However, as asynchronous learning gained prominence in the post-pandemic era, challenges arose, particularly for young children who require more structured and interactive learning environments (Zeng, 2023). The combination of synchronous and asynchronous methods in blended learning offers potential solutions but requires careful integration to ensure consistent engagement and learning outcomes.

Kocour's (2019) research examines the impact of blended learning on student engagement within an early childhood classroom. The study suggests that incorporating digital tools alongside traditional learning methods can enhance the educational experience for young learners by fostering greater engagement and facilitating personalized learning opportunities.

Kusen's (2022) study identifies a significant need for blended learning models in early childhood education to cultivate character values and learning motivation. The research highlights the potential of blended learning to provide adaptable and interactive learning experiences, essential for the comprehensive development of young children.

These research efforts highlight the capacity of blended learning to bolster language acquisition in early childhood. By offering interactive, engaging, and personalized learning experiences, blended learning stands out as a significant element in nurturing language development in young students. Nonetheless, it's crucial to ensure the judicious and effective use of digital tools within this approach to achieve the intended educational objectives.

Some research has highlighted concerns regarding screen time for young children, pointing out the need for careful consideration in its application (Canadian Paediatric Society, 2017). These perceptions emphasize the necessity of striking a balance between digital exposure and enriching learning experiences. Another challenge involves tailoring blended learning content to suit early learners. Educators are tasked with selecting content that is both age-appropriate and conducive to developmental needs within blended learning curriculums (Donegan-Ritter & Kohler, 2017). These issues underline the complexity of integrating technology in early childhood education and the importance of thoughtful implementation to support young learners effectively.

These literature reviews illuminate the promise of blended learning in fostering positive language learning experiences for young children. As the educational community delves deeper into this evolving field, these findings provide a critical base for further exploration and innovation at the nexus of technology and early childhood education. This ongoing inquiry is essential for refining strategies that leverage the best of digital and traditional educational practices to support the developmental needs of young learners.

2.2 Blended Learning in Language Education

Blended learning has transformed the landscape of language education, offering a blend of traditional and innovative teaching methods that enhance language learning processes. This section will explore the multifaceted role of blended learning within language education, with a particular emphasis on its application in Chinese language instruction for young learners.

2.2.1 Multimodal Integration in Language Teaching

The essence of blended learning in language education lies in its ability to amalgamate various learning modes, thus facilitating a dynamic, responsive, and inclusive educational experience. From interactive whiteboards in classrooms to mobile apps for language drills, the spectrum of tools at the disposal of educators and students is vast and varied. Each method brings a unique dimension to the learning process, catering to different learning styles and preferences (Normawati, 2021; Sholihah et al., 2021; Sundaram & Ramesh, 2022;). This adaptability is particularly beneficial in the instruction of Chinese, a language known for its linguistic and tonal complexity. Blended learning strategies cut across:

2.2.1.1 Diverse Learning Materials

Blended learning environments tap into an array of learning materials including electronic textbooks, interactive simulations, and virtual tools. These resources not only cater to varied learning preferences but also bolster comprehension through diverse formats. The integration of digital resources provides students with a rich database of content that can be accessed and manipulated to fit different learning contexts, aiding in the retention and understanding of complex language concepts (Nakhriyah & Wibowo, 2020; Guan, 2023; Albatti, 2023; Esina, 2023; Wu, Zhou & Xia, 2023).

2.2.1.2 Flipped Classroom Model

Blended learning facilitates the flipped classroom model where students are introduced to new material at home and the classroom time is dedicated to practical application and interactive activities. This shift encourages deeper learning and more personalized interaction between students and teachers as classroom time becomes a space for collaborative problem-solving and active learning (Grenfell, 2015; Jiang et al., 2022; Zou et al., 2022;).

2.2.1.3 Customized Learning Pathways

Blended learning supports the creation of tailored learning pathways, allowing students to progress through course materials at their own pace based on their individual skill levels and interests. By allowing learners to focus on content they find most relevant or challenging, this can drive engagement and motivation (Maksimova, 2022; Tong et al., 2022; Xin, 2022; Albatti, 2023; Qiao et al., 2023).

2.2.1.4 Peer Collaboration Platforms

Online platforms for fostering peer collaboration, which include forums, group chats, and collaborative projects, are highlighted within blended learning. These tools help establish a community of learners who support each other's educational journeys, significantly enhancing collective knowledge construction (Soon, Chua, Yusof & Saputra, 2021; Albatti, 2023; Guan, 2023).

2.2.1.5 Real-time Feedback and Analytics

The use of real-time feedback mechanisms in blended learning offers immediate responses to student inputs through quizzes and interactive activities. Furthermore, educators can leverage analytical tools to monitor progress and tailor instruction to meet each student's needs, thereby optimizing the learning outcomes (Guan, 2023; Liang & Li, 2023; Albatti, 2023).

2.2.1.6 Role-Playing and Simulations

Role-play and simulation-based learning are introduced as a part of language instruction to allow students to practice language skills in realistic and contextually relevant settings. These methods enhance linguistic competence and cultural proficiency, making the acquisition of new languages a more engaging experience (Kumar et al., 2021; Van Der Westhuizen & Hannaway, 2021).

2.2.1.7 Integration of Artificial Intelligence (AI)

The discussion involves how AI is utilized in blended learning to offer personalized learning experiences, adaptive assessments, and language practice with

intelligent chatbots that simulate natural conversations. These AI implementations can dramatically improve the efficiency of learning and provide tailored support to individual students (Kim et al., 2022; Alshahrani, 2023; Xiang & Ma, 2023).

2.2.1.8 Cross-Cultural Exchanges

Blended learning fosters cross-cultural communication through virtual interactions with students or native speakers from other countries. This exposure enriches the learning experience and offers authentic practice opportunities for language learners, broadening their cultural understanding (Yang & Kuo, 2023; Li, X., He, Song & Gao, 2023).

2.2.1.9 Professional Development for Educators

Blended learning platforms are also mentioned as beneficial for educators, providing them with professional development opportunities on innovative teaching strategies and digital tools. This access to ongoing learning helps teachers stay at the forefront of educational technology (Saboowala & Manghirmalani Mishra, 2021; Lockee, 2021; Park, 2021; Kelly & McNair, 2021; Patabang, Limbong & Sunaryo, 2023).

2.2.1.10 Accessibility and Inclusivity

Blended learning makes language education more accessible and inclusive for students with disabilities. Using adaptive technology to tailor learning materials can meet different needs, ensuring that all learners can fully participate in the educational experience (Myravyova, Zhurbenko & Artyushina, 2021; Koutheair Khribi, 2022; Zhou & Zhang, 2022).

2.2.2 Blended Learning in Chinese Language Teaching

Blended learning has had a transformative impact on Chinese language education, introducing innovative methods to the instruction of the Chinese language (Chan, 2021; Wu & Wang, 2022). The melding of blended learning strategies with Chinese language teaching has garnered considerable attention in research circles, shedding light on numerous facets of its application and effects. This integration has been pivotal in exploring new avenues for engaging students and enhancing their learning experiences in the realm of Chinese language study.

Blended learning strategies have been highlighted for their effectiveness in Chinese language education, especially through interactive online courses that significantly boost language proficiency. The lively format of these courses provides a more engaging learning environment than traditional classroom settings. Platforms for virtual language exchange are especially valuable for improving Chinese oral skills, as real-time interactions facilitate genuine language usage and deepen cultural insights (Soon et al., 2021). Mobile apps also play a crucial role in learning Chinese, offering anytime, anywhere access to lessons, drills, and vocabulary games, thus enabling continuous and convenient practice (Dai & Qin, 2021). Furthermore, online learning communities dedicated to Chinese language study are vital in building a supportive learner network. These communities encourage dialogue, the exchange of resources, and joint projects, all of which boost motivation and peer learning (Holbrey, 2020; Chan, 2021; Kumar et al., 2021; Soon et al., 2021; Jalinus, Verawardina, Nabawi & Darma, 2021; Esina, 2023; Feng, Wang, & Duan, 2023; Guan, 2023; Wu et al., 2023). These advancements underscore the diverse and dynamic approaches within blended learning that enrich Chinese language education.

Employing multimedia tools in blended Chinese language instruction significantly bolsters language competencies, offering a holistic learning journey that encompasses the cultural depth of the language. Thus, blended learning presents a more profound advantage for Chinese language education over conventional methods, integrating cultural context and linguistic practice in a way that traditional classroom settings may not fully capture. This approach underscores the importance of leveraging technology to provide a richer, more nuanced understanding of the Chinese language and culture (Chen, 2020; Liu, Huang & Wang, 2021).

2.3 Perceptions of Chinese Language Educators on Blended Learning

Understanding the perceptions of educators teaching Chinese on blended learning is essential for highlighting the effects and possible obstacles of integrating technology into educational practices. This section investigates the perceptions of teachers involved in Chinese language instruction, focusing on the advantages and challenges they identify with blended learning within the realm of teaching the Chinese language.

2.3.1 Advantages of Blended Learning in Teaching Chinese

Many Chinese language educators' perceptions on blended learning reveal a spectrum of advantages that contribute to the effectiveness and enrichment of teaching Mandarin Chinese.

Moloney and Xu (2018) conducted a case study to explore the application of digital technologies by secondary school teachers in their practice, effectively implementing blended learning approaches. The study investigated the changes in Chinese language teaching and learning prompted by this application. The findings

indicated that new technologies significantly enhanced student agency, offering personalized learning opportunities that allowed students to make choices, created tasks, used games, interacted with others, explored media, and engaged in language and cultural simulations. This demonstrates the benefits that blended learning can bring to both students and teachers in the context of Chinese language education.

Ding (2022), in his study, demonstrated that the use of information technology in Teaching Chinese as a Second Language (TCSL) could enhance teaching quality and innovate instructional models. By employing a blended learning approach, both offline and online teaching methods reaped substantial benefits.

Furthermore, blended learning provides access to an extensive array of multimedia resources, including online videos, interactive simulations, and virtual cultural experiences, substantially enriching the Chinese language learning journey. Zhang (2021) pointed out in his research that these resources not only improved language skills but also offered deep insights into Chinese culture and context, thereby enhancing the overall educational experience.

Additionally, numerous educators teaching Chinese recognize the flexibility that blended learning offers regarding scheduling. This approach allows students to engage with Chinese language materials at their own pace, accommodating various learning styles and personal schedules. Such flexibility is especially beneficial for learners inclined towards self-directed study, enabling them to optimize their language acquisition process according to their individual needs (Lau, 2021; Yuan & Wang, 2021; Lan & Yu, 2023; Zeng, 2023).

In conclusion, a significant number of educators involved in Chinese language instruction view the integration of blended learning into their teaching practices as

highly advantageous. From improving accessibility to facilitating personalized learning journeys, these insights highlight blended learning's capacity to elevate both the effectiveness and inclusivity of Chinese language education.

2.3.2 Disadvantages of Blended Learning in Teaching Chinese

While educators teaching Chinese appreciate the benefits of blended learning in language instruction, they also identify various challenges and disadvantages linked to this digital approach to education.

Teacher training is a critical component of successful blended learning implementation. However, many educators face challenges in allocating sufficient time for training and resource development, particularly in non-native language teaching contexts (Van Der Westhuizen & Hannaway, 2021). In the case of early childhood Chinese language education, the creation of age-appropriate digital content and mastery of technology tools require significant professional development support, which is often limited in scope and accessibility (Shuplat & Noskova, 2020).

While the challenges faced by teachers primarily stem from professional development gaps and resource limitations, students encounter a different set of barriers. Technological disparities and accessibility issues disproportionately impact young learners in blended learning environments, especially in socio-economically diverse settings.

Firstly, technological barriers pose a notable challenge for educators involved in teaching Chinese. In settings where reliable Internet access and electronic devices are scarce, certain students might find it difficult to fully engage with blended learning materials. This digital divide can create inequalities in learning opportunities. Moreover,

the variance in technological skills among students presents challenges for educators. While some students may adeptly navigate blended learning platforms, others may encounter obstacles, impacting their ability to fully participate in online activities and assessments (Guruleva, 2020; Bahari, 2021; MacKinnon & MacLean, 2023).

Secondly, numerous educators teaching Chinese have voiced concerns regarding potential distractions within the blended learning environment. Students might face temptations to multitask, browse unrelated websites, or struggle with maintaining focus during online sessions. This issue highlights the critical need for devising strategies aimed at keeping students engaged and minimizing distractions to ensure a productive learning atmosphere (Zhang, 2019; Dai & Qin, 2021; Jiang, 2021; Lau, 2021; Inozemtseva & Yovkova, 2022).

Additionally, some research suggests that there might be an overreliance on blended learning among Chinese language educators, which could inadvertently diminish the importance of traditional teaching elements like physical activities, group work, and hands-on experiences. For example, the study by Lyu & Qi (2020) raises concerns about the potential overuse of digital learning tools. Traditional language teaching methods frequently include engaging activities that play a significant role in effective learning. However, an undue emphasis on blended learning strategies might lead some educators to overlook these beneficial components of conventional educational approaches.

Furthermore, researchers highlight the potential limitations that blended learning might impose on opportunities for spontaneous communication. Traditional classroom settings naturally encourage immediate verbal interactions and unplanned discussions, which are crucial for practicing spontaneous language use. In contrast, within a blended learning environment, the emphasis on the platform's capability to

present high-quality instructional materials and support knowledge acquisition might lead some educators to underappreciate the importance of language output from students. This oversight can result in missed chances for spontaneous communication, an essential component of language learning (Zhang, 2021; Yuan & Wang, 2021).

Acknowledging these challenges, educators involved in teaching Chinese should thoughtfully integrate blended learning tools and strategies to address these issues effectively and maximize the benefits of digital language instruction. Achieving a balance between technological resources and instructional objectives is key to enhancing participation and effectiveness within blended learning environments for Chinese language education.

2.4 Related Studies

In examining the perceptions of the benefits and drawbacks associated with blended learning in teaching basic Chinese to Thai kindergarten students, various related studies shed light on this specialized field, enriching the comprehension of this specific educational context.

Zheng's (2020) study, “Distance Education Technology in Teaching Chinese as a Foreign Language,” examined how distance education technology enhanced Chinese language learning for foreign students. The study emphasized the flexibility and accessibility offered by distance learning, allowing students to learn at their own pace using multimedia resources such as videos and online courses on platforms like Zoom, Skype, and Moodle. These technologies enriched teaching content, enabled personalized learning, and ensured continuity during disruptions like the COVID-19 pandemic. The research concluded that integrating distance education technology was

crucial for modernizing Chinese language education, making it more effective and adaptable for international learners.

Lyu and Qi (2020) reviewed research on technology-assisted teaching and learning of Chinese as a second or foreign language from 2008 to 2018. The review analyzed 33 studies to identify key research topics and technologies used in this field. It found that technology, such as computer-assisted language learning, mobile learning, and online platforms, significantly enhanced language learning efficiency and engagement. They analyzed research methods, results, and conclusions, and proposed future research directions. Lyu and Qi suggested focusing on the effectiveness of different technologies, factors influencing effectiveness, and developing guidelines for using technology in Chinese language teaching.

Ren and Kongjit's (2020) study, "An Analysis of Thai Students' Negative Proficiency in Chinese Characters," examined the challenges that Thai students faced in mastering Chinese characters. The study identified key issues such as insufficient exposure to Chinese, differences in phonetic systems, and inadequate teaching methods. It emphasized the need for tailored teaching strategies that incorporated more interactive and engaging methods, such as multimedia tools and contextual learning, to improve students' proficiency and motivation. The research suggested that enhancing the learning environment and providing additional resources could significantly improve Thai students' mastery of Chinese characters, ultimately contributing to better overall language proficiency.

Chen's (2020) study, "Application of New Teaching Techniques and the Innovation of Chinese International Education," explored the integration of multimedia technology in teaching Chinese as a foreign language. Conducted at Mazar Middle School in Khon Kaen Province, Thailand, the research highlighted the benefits of

multimedia tools in enhancing teaching methods, student engagement, and classroom structure. The study, involving surveys and interviews with students and teachers, found over 80% satisfaction with multimedia use. By incorporating software like Microsoft Word, Excel, and PowerPoint, and utilizing audio, video, and animation, teachers could create interactive and effective learning environments. The study concluded that multimedia technology significantly improved the efficiency and enjoyment of teaching and learning Chinese.

Xue and Churchill's (2020) study, "Educational Affordances of Mobile Social Media for Language Teaching and Learning: A Chinese Teacher's Perspective," explored how mobile social media could be integrated into Chinese language teaching in higher education. Using a qualitative single-case study approach, the research identified five key affordances: creating a motivating environment, facilitating resource access and sharing, offering evaluation and feedback, managing learning administration, and enabling content generation. While the teacher's use of these technologies evolved, it did not fully shift to student-centered designs. The study underscored the need for comprehensive teacher training and further research to maximize the benefits of mobile social media in enhancing language learning.

Wang's (2020) study, "On the Problems and Development Suggestions of Chinese Teaching in Thai Middle Schools," explored the challenges in Chinese language education at Srinagarindra the Princess Mother School in Sisaket, Thailand. Key issues included insufficient teaching resources, such as a lack of materials and multimedia support, only two Chinese teachers, and disrupted schedules due to frequent school activities. Students exhibited low motivation, partly due to inconsistent teaching and a perceived lack of practical use for Chinese. The Thai emphasis on freedom and student-centered learning also complicated classroom management. To address these problems, Wang suggested standardizing teaching materials, developing syllabuses,

focusing on teacher training and localization, and creating flexible lesson plans with clear rules. Engaging content, cultural introductions, and interactive methods were recommended to boost motivation. For better discipline, clear rules, a reward and punishment system, and group activities were advised. The study called for immediate attention to these issues to enhance the effectiveness of Chinese teaching in Thai middle schools.

The study by Guo, Shin, and Shen (2020), titled "The Commodification of Chinese in Thailand's Linguistic Market," investigated how Chinese language education promotes social sustainability in Chiangmai, Thailand. Using methods such as linguistic landscape surveys, questionnaires, virtual ethnography, and semi-structured interviews, the study examined the commodification of Chinese language education among local learners. The findings revealed that the commodification of Chinese, particularly in tourism, commerce, and services, provided accessible and affordable educational opportunities, especially for low-income families. This commodification enhanced career prospects and added value to employees in various industries, promoting social sustainability. The study concluded that, contrary to concerns about linguistic imperialism, the commodification of Chinese in this context contributed positively to higher education accessibility and social integration, suggesting a dynamic relationship between language commodification and social sustainability.

Yuan's (2020) study, "The Application of Children's Songs in Primary School Chinese Teaching," published in Frontiers in Educational Research, examined the use of children's songs to enhance Chinese language education for young learners in Thailand. Conducted at Anuban Sikhoraphum School, the research highlighted that integrating children's songs helped address classroom management challenges and boosted student engagement. The rhythmic and simple melodies of children's songs

aligned well with the cognitive and physical characteristics of Thai primary school students, improving their interest and participation in learning Chinese. The study emphasized selecting songs that matched students' language proficiency and developmental stages, demonstrating that this approach made lessons more enjoyable and effective. Despite challenges in conveying deeper cultural meanings and maintaining classroom order, the use of children's songs significantly enhanced students' enthusiasm and language skills, proving to be an effective strategy for engaging young Thai learners and fostering a positive learning environment.

Yuan and Wang's (2021) study, "A Review of Research on Technology Enhancing Chinese Learning," presented at the 2021 International Conference on Internet, Education, and Information Technology (IEIT), examined the impact of digital technologies, including educational games and intelligent tutoring systems (ITS), on Chinese language learning. Analyzing research from 2017 to 2022, the study found that these technologies effectively boosted student motivation, self-efficacy, learning progress, and satisfaction. The review emphasized the importance of integrating advanced technologies to improve Chinese language education and called for further research to optimize their implementation for foreign learners.

Li's (2021) study, "Application of TTS Technology in Online Teaching of Chinese as a Foreign Language," explored the integration of Text-to-Speech (TTS) technology in online Chinese language education. With the rapid development of information technology, various online teaching models for international Chinese education have emerged. TTS technology, known for its convenience and efficiency in synthesizing speech, had yet to be widely adopted in educational settings. This paper discussed the significant advantages of TTS applications in online Chinese teaching, emphasizing its potential to enhance the innovation and effectiveness of Chinese language education for foreign learners. The study highlighted how TTS technology

could improve the learning experience by providing clear and consistent pronunciation models, aiding in listening comprehension and pronunciation practice, thus contributing to the modernization and accessibility of Chinese language education.

Zeng and Jiang's (2021) study, “Barriers to Technology Integration into Teaching Chinese as a Foreign Language: A Case Study of Australian Secondary Schools,” examined the challenges of integrating technology in Chinese language instruction. The study identified technological barriers, such as hardware issues, software problems, and high costs; user-related barriers, including teachers' lack of preparation time, insufficient technological knowledge, traditional teaching beliefs, and students' distracting behaviors; and school-related barriers like inadequate professional development, lack of instructional support, insufficient funding, and discouraging management practices. The study called for better support systems, including improved access to technology, comprehensive teacher training, and increased funding, to enhance the effectiveness of technology-integrated Chinese teaching in Australian secondary schools.

Gao's (2021) study, “The Impact of Modern Technology on Chinese Education,” examined the influence of modern technology on Chinese pedagogy in four key areas: smart classrooms, the evolving role of teachers, the responsibilities and anxieties of parents in the context of Internet teaching, and targeted poverty alleviation through “Internet + Education.” The study highlighted how the integration of technologies like the Internet and smart classroom tools enhanced teaching efficiency, student engagement, and learning outcomes. It also addressed the challenges teachers and parents faced in adapting to these new educational models. The research suggested improving teachers' digital skills, guiding parents to understand the benefits of Internet education, and promoting educational equity through the widespread adoption of digital

resources. This comprehensive approach aimed to modernize Chinese education and address educational disparities.

Jiang's (2021) study, “Application of Modern Educational Technology in Teaching Chinese as a Foreign Language: Take Mobile Phone Software Zoom Platform as an Example,” published in the 2021 International Conference on Internet Technology and Educational Informatization, explored the integration of modern educational technology, specifically the Zoom platform, in teaching Chinese to foreign students. The study highlighted how Zoom's features facilitated interactive and effective learning experiences, overcoming geographical and physical constraints. The research demonstrated that using Zoom enhanced student engagement, provided flexible learning opportunities, and supported various multimedia teaching methods. Jiang concluded that incorporating such technology in language education significantly improved the teaching and learning process, making it more accessible and dynamic.

The article “Modern Pedagogical Technologies in Teaching the Chinese Language” by Salakhova and Tretyakova (2021) explored the use of advanced educational methods to enhance Chinese language learning. The study emphasized the importance of integrating modern information technologies, such as virtual classrooms and mobile applications, to develop students' communicative competencies and immerse them in Chinese culture. The article employed methods of analysis, synthesis, comparison, and historical analysis to present effective pedagogical strategies. These strategies aimed to optimize the teaching process by designing, developing, using, evaluating, and managing educational resources and learning outcomes. The research highlighted the significant role of modern teaching tools in creating an engaging virtual environment that enhanced the learning experience and educational outcomes for students learning Chinese.

Ding's (2022) study, “Application of Information Technology in Teaching Chinese as a Second Language,” explored how information technology enhanced the teaching of Chinese as a foreign language (TCFL). The study proposed a multi-platform approach, integrating mobile apps and virtual reality to create immersive and interactive learning environments. This approach aimed to address the limitations of traditional teaching methods, improve student engagement, and make learning more flexible and accessible. The research underscored the importance of combining new technologies with traditional teaching to optimize educational outcomes and promote Chinese language education globally.

Wei's (2022) study, “Self-Efficacy of Chinese Language Teachers in a Private Tutoring Institution,” examined the self-efficacy and cultural dimensions of Chinese language teachers in a Bangkok private tutoring institution. Using a mixed-method approach, the study involved 20 teachers and 14 participants (teachers, students, and parents). The findings revealed high levels of self-efficacy among teachers, especially in classroom management, instructional strategies, and student engagement. Cultural dimensions like in-group collectivism and humane orientation were also high, reflecting alignment with Thai cultural values. Despite their high competency, teachers faced challenges with student behavior, cultural differences, and maintaining motivation. Parents were generally satisfied with their children's progress but noted the lack of a Chinese-speaking environment outside the classroom. The study underscored the need for ongoing teacher training and improved teacher-parent communication to support effective Chinese language education.

Xue's (2022) study, “Research on the Application and Influence of Digital Technology in International Chinese Language Education,” examined the integration of digital technology in international Chinese education. The research highlighted the use of various digital tools and platforms, such as comprehensive Chinese learning websites,

targeted learning apps, and intelligent teaching systems. These technologies enhanced the learning process, improved intelligent education evaluation, and supported teacher assistants. The study identified significant impacts of digital technology, including transforming education forms, fostering the dissemination of Chinese knowledge, innovating digital resource supply, and enhancing the perceptual experience of learning participants. Digital technologies promoted more flexible and accessible learning, improved resource availability, and created an integrated learning environment, demonstrating their potential to revolutionize international Chinese language education.

Maksimova's (2022) systematic review, "A Systematic Review of Research on the Use and Impact of Technology for Learning Chinese," examined recent studies on the use of educational games and intelligent tutoring systems (ITS) in Chinese language learning. Covering research from 2017 to 2022, the review analyzed 29 selected studies from ScienceDirect and Scopus databases. The findings indicated that both games and ITS were effective tools for enhancing motivation, self-efficacy, progress, and learning satisfaction among Chinese language learners. These technologies supported immersive and interactive learning experiences, contributing positively to students' engagement and educational outcomes. However, the review highlighted the need for more in-depth research on the optimal implementation of these tools in teaching Chinese to non-native speakers. The study underscored the growing role of digital technology in language education, driven by the Covid-19 pandemic, and called for further exploration of how these methods can be best utilized to improve Chinese language instruction globally.

The study by Xu, Zhang, Sukjairungwattana & Wang (2022) investigated the impact of motivation, anxiety, and learning strategies on the achievement of Thai learners of Chinese as a foreign language in an online learning context. Conducted with 90 Thai undergraduates, the research utilized the questionnaires to assess motivation,

anxiety, learning strategies, and Chinese proficiency through self-reports and a vocabulary size test. The results indicated that anxiety was the most stable predictor of Chinese language achievement, negatively impacting self-rated proficiency. Learning strategies and intrinsic motivation also played significant roles, though to a lesser extent. The study found that these factors significantly predicted self-rated Chinese proficiency but not performance on the vocabulary size test. These findings highlighted the importance of addressing individual differences in online language learning environments, suggesting that reducing anxiety and enhancing learning strategies could improve language learning outcomes in Thai learners of Chinese.

The study entitled "The Training Mode of Local Chinese Language Teachers in Thailand: An Exploratory Analysis," conducted by Xin (2022), investigates the challenges and training needs of local Chinese language teachers in Thailand. This research involved a survey of 60 local teachers, utilizing tools such as the questionnaires, literature reviews, interviews, and case studies. The findings indicated that 48% of teachers prioritized improving teaching methodologies, 24% desired a better understanding of modern China and Chinese culture, and 8% focused on classroom management, educational technology, and textbook teaching. Challenges identified included difficulties in teaching Chinese characters and phonetics, maintaining student interest, classroom management, and applying educational technology. To address these issues, the study proposed the QCLIF training model, encompassing "question-oriented, case-study-based, learning and teaching, input and output, and flipped classroom" approaches. This model enhances teaching effectiveness through a combination of traditional and innovative methods, focusing on phonetics teaching, Chinese character teaching, and modern China and culture education. It incorporates a flipped classroom approach, micro-teaching, diagnostic training, and task-based cultural experiences to improve cultural literacy. The QCLIF model showed a 90% satisfaction rate, effectively enhancing teaching abilities and professional qualities, although the study noted that

ongoing professional development is essential for sustained improvement in teaching practices.

Zhou's (2022) study, “Language Teaching Methods for Thai Reading Comprehension of Chinese College Students,” explored effective strategies to improve Thai reading comprehension among Chinese college students. Despite engaging in various language training activities, students often faced challenges with reading comprehension. The study suggested methods such as imitation and retelling to encourage active learning and consolidate knowledge, situational teaching using multimedia to create real-life scenarios for practical application, and speech activities to enhance comprehension and expression. These strategies aimed to make learning more engaging and effective, ultimately cultivating high-quality Thai language proficiency. The study emphasized the importance of flexible teaching methods, professional knowledge, and creating opportunities for practical language use to enhance Thai language education.

The study “Design and Practice of Blended Teaching in Smart Classroom Environment” by Feng et al. (2023) explored how smart classroom technologies enhanced blended teaching, combining online and offline methods to create interactive and effective learning environments. The three-stage model included pre-class online preparation, interactive in-class activities using multi-screen displays and intelligent platforms, and post-class review and assignments. This approach increased student engagement, learning autonomy, and teaching effectiveness by integrating advanced technologies and diverse methods, such as group discussions and project-based learning. The study concluded that smart classrooms significantly improved the efficiency and student-centered nature of blended teaching, providing a comprehensive and personalized learning experience.

Li's (2023) study, “A Case Study of English as Foreign Language Chinese Teachers' Use of Computer-Based Technology,” explored the experiences of four Chinese university teachers of English as a Foreign Language (EFL) in implementing computer-based technologies in their classes. The study identified seven key themes through both within-case and cross-case analyses: the encouragement and support from schools for using auxiliary educational platforms, the impact of computer-based technologies on student learning and teaching methods, enhanced teaching effectiveness and efficiency, technical difficulties, and the accelerated adoption of these technologies due to the COVID-19 pandemic. The research highlighted both the benefits, such as increased student engagement and instructional flexibility, and the challenges, including technical issues and the need for better integration of these technologies in EFL instruction. The study concluded that computer-based technologies significantly contributed to modernizing English language education in China, but effective implementation required addressing technical barriers and providing adequate support for teachers.

Xie's (2023) study, “Opportunities and Challenges Brought by Artificial Intelligence to Second Language Teaching: A Case Study of International Chinese Language Education,” explored the transformative impact of AI, particularly ChatGPT, on Chinese language education. AI enhanced students’ self-learning supported teachers with advanced instructional tools, and facilitated the development and dissemination of teaching resources. However, challenges included the disruption of traditional teaching methods, potential over-reliance on AI reducing creativity and critical thinking, and inaccuracies in AI-generated content. The study suggested implementing guidelines for AI use, integrating AI tools effectively, encouraging critical evaluation, and maintaining a focus on cultural education to maximize benefits while addressing drawbacks.

Rong, Zhou, and Chen's study, entitled “Unraveling the Impact and Challenges of Online Learning in Chinese Education,” examined the evolution, benefits, and challenges of online education in China. The research highlighted how online learning expanded access to education, improved flexibility, and enhanced student performance. It also addressed significant challenges, such as technological and infrastructure issues, pedagogical concerns regarding engagement and content quality, and sociocultural and equity issues. The study emphasized the need for investment in digital infrastructure, effective online teaching strategies, professional development for educators, and inclusive policies to overcome these challenges and maximize the potential of online learning in China.

The study by Liang and Li (2023), entitled “Issues and Recommendations Regarding the Chinese Language Proficiency Examination in Thailand,” examined the challenges of the Chinese Language Proficiency Examination (CLPE) since its introduction in 1998 as an elective subject in Thailand's national college entrance examination. Despite high participation, candidate performance remained low, attributed to institutional issues such as system instability, lack of score standards, and limited examination format diversity. Examination paper-related problems included a lack of diversity among question setters, absence of scientific guidelines, limited question variety, and high difficulty levels. Additionally, there were some discrepancies between assessment and teaching, with insufficient emphasis on practical language skills. The study recommended stabilizing the examination system, developing clear score standards, diversifying examination formats, enhancing the diversity of question setters, creating scientific test guidelines, and making examination papers culturally relevant and contextually appropriate. Addressing these issues could improve the CLPE's effectiveness and fairness, aiding in the development of Chinese language talents in Thailand.

Fei's (2023) study, “Research on the Development of Chinese Teaching Resources in Thailand,” reviewed the historical and contemporary development of Chinese teaching resources in Thailand. The research highlighted that Chinese education in Thailand, although rapidly growing since the early 21st century, still faced significant challenges such as a lack of top-level design and policy implementation, insufficient teaching resources in higher education, and the need to improve the quality of vocational education materials. Fei suggested enhancing Sino-Thai cooperation to develop localized teaching resources, strengthening macro-level collaboration, and improving “Chinese + vocational education” resources. These measures aimed to address the gaps in teaching materials and ensure sustainable development in Chinese education in Thailand.

Zeng's (2023) study, “The Application of Linguistry on International Chinese Education Supported by Information Technology,” explored the integration of linguistic theories and information technology into international Chinese education in the post-pandemic era. Focusing on intermediate and advanced Chinese courses at Beijing Normal University and Cardiff University, the study found that blended learning, combining online and offline modes, enhanced student engagement and learning efficiency. The research emphasized the need for precise grading of students' language proficiency and cognitive abilities to design targeted courses. The study concluded that integrating linguistic theory with language teaching, supported by information technology, not only improved students' understanding and interest in Chinese but also enhanced teaching effectiveness, international communication, and resource sharing among educators.

The study by Luo, Chano, Chittranun, Shu, & Nithideechaiwarachok (2023), titled “The Development of an Instructional Model to Promote Chinese Reading and Writing Skills for University Students,” explored ways to enhance Chinese language

proficiency among Thai university students at Mahasarakham University. The research developed an instructional model based on second language acquisition theories, focusing on reading and writing skills. Implemented through a three-cycle action research process with 50 second-year Chinese major students, the model included components such as syntax and sequence, social system, principle of reaction, support system, and instructional effect. The study found significant improvements in students' reading and writing skills and positive attitudes towards the model. The research suggested that integrating theories like sociocultural theory, meaningful verbal learning, input hypothesis, affective-filter hypothesis, and contrastive analysis hypothesis effectively enhanced language skills. The study recommended applying this model to both online and offline teaching to further improve Chinese language education for university students.

The study by Ouyang, Chusorn & Chantarasombat (2023), entitled "Development of Indicators and Approach for Enhancing Chinese Language Teacher Leadership of Secondary Schools in the Northeast," explored the components and methods to enhance the leadership of Chinese language teachers in northeastern Thailand. Utilizing a mixed-methods approach, the research identified four main leadership components and twelve indicators through expert evaluation and empirical data analysis. The components included self-development, being a teaching role model, participation in development, and change leadership. Key findings highlighted that teachers should have a clear vision for self-improvement, create positive learning atmospheres, collaborate on development goals, and employ systematic thinking. The study's implementation yielded positive results, showing high levels of appropriateness, feasibility, and usefulness in enhancing teacher leadership. These insights can inform planning and development programs to improve the effectiveness and efficiency of Chinese language teachers in the region.

2.5 Conclusion

The literature review, in particular related research, has indicated several key insights and benefits on blended learning in language education, for teaching Chinese to Thai kindergarten students. More importantly, it provides a comprehensive understanding of how blended learning integrates traditional classroom methods with digital technologies to create an engaging and flexible educational environment (Shuplat & Noskova, 2020). By examining various studies, researchers can learn about the evolution and effectiveness of blended learning, which has been shown to enhance language acquisition in early childhood education (Wong, 2023; Kocour, 2019).

One significant insight is the potential of blended learning to support and enrich language learning processes using diverse digital tools and methodologies. For example, the integration of multimedia elements and interactive simulations can create more dynamic and engaging learning environments (Caird & Roy, 2019; Kabanda, 2021). Additionally, the flipped classroom model, where students are introduced to new material at home and apply their knowledge in class, has been shown to foster deeper learning and personalized interaction (Jiang et al., 2022).

The literature also highlights the importance of tailoring blended learning content to suit the developmental needs of young learners. This includes ensuring the judicious use of digital tools to achieve educational objectives and addressing concerns about screen time and content appropriateness (Canadian Paediatric Society, 2017; Donegan-Ritter & Kohler, 2017).

Furthermore, the review identifies gaps in current research, particularly the limited studies focusing on the application and impact of blended learning in Thai kindergarten settings. This gap presents an opportunity for researchers to explore and

develop specific strategies that effectively support young learners in Thailand, thus contributing to the broader understanding of blended learning's role in early childhood language education.

By examining educators' perceptions on the advantages and challenges of blended learning, researchers can gain valuable insights into how this approach can be effectively implemented. For instance, the review discusses the flexibility and accessibility provided by blended learning, which allows students to engage with materials at their own pace and according to their individual learning styles (Lau, 2021; Yuan & Wang, 2021; Zeng, 2023; Lan & Yu, 2023;). However, it also addresses the challenges posed by technological barriers and the potential for digital distractions, emphasizing the need for thoughtful integration of technology (Zhang, 2019; Dai & Qin, 2021; Jiang, 2021; MacKinnon & MacLean, 2023).

In conclusion, this literature review equips researchers with a foundational understanding of blended learning's potential in language education, highlights best practices, identifies research gaps, and offers a roadmap for future studies to optimize blended learning strategies for young learners in diverse educational contexts.

Chapter 3

Research Methodology

This chapter introduces the methodology of the research, which includes research design, population and samples, research instruments, data collection, data analysis and ethical considerations.

3.1 Research Design

The design of this study is twofold: firstly, the questionnaire was used as the quantitative method to investigate teachers' perceptions of blended learning in teaching Chinese to Thai kindergarten students. To gather data on teachers' experiences, methods, and views regarding blended learning, a structured questionnaire was administered. The questionnaires are considered an effective tool for gathering data on attitudes and practices from a large sample, allowing participants to report their perceptions directly (Young, 2015). To analyze the quantitative data, descriptive statistical methods, including frequencies, percentages, and means, were used to identify common trends in teachers' responses.

Secondly, semi-structured interviews served as the qualitative method in this study, providing a more subjective perspective to complement the quantitative results. A qualitative approach was chosen to gain deeper insights into teachers' experiences and perceptions, capturing the personal and contextual factors that influence their views on blended learning. Semi-structured interviews allowed for open-ended responses,

enabling participants to elaborate on their experiences and provide nuanced details that added depth to the quantitative findings (Wilson, 2014). This mixed-methods design ensured a comprehensive analysis of teachers' perceptions on blended learning in a kindergarten language education setting.

3.2 Scope of the study

This section provides an overview of the context of study, research participants, research questions, instruments, the pilot questionnaire, and data analysis methods, as detailed below：

3.2.1 Context of the Study

This study was conducted in selected kindergarten programs within schools participating in the Nonthaburi Project in Thailand, focusing on blended learning in Chinese language education for young Thai students. The Nonthaburi Project, established by the Nonthaburi Provincial Administration Organization in partnership with Chulalongkorn University, supports language learning initiatives across 61 schools, including primary, secondary, and technical institutions. Accredited by the relevant Thai educational authorities, the project emphasizes foreign language instruction, particularly in English and Mandarin Chinese, as part of Thailand's broader educational goals.

The participating kindergarten programs primarily serve Thai students and incorporate blended learning approaches to support foundational language acquisition. Through a combination of traditional face-to-face instruction and digital learning resources, these programs provide young learners with an engaging and flexible language learning environment. This blended approach allows students to benefit from

interactive classroom experiences while also accessing supplementary digital resources that reinforce learning outside of the classroom.

3.2.2 Research Participants

The participants in this study were 50 Chinese language teachers who teach kindergarten students as part of the Nonthaburi Project in Thailand. These teachers were randomly selected by the project coordinator to minimize researcher bias. This selection approach ensured a representative sample of educators with direct experience in teaching basic Chinese to young learners through blended learning methods.

In this study, all 50 participants are currently employed as kindergarten Chinese language teachers within the Nonthaburi Project schools in Nonthaburi province. They have practical experience in blended learning, integrating both face-to-face and digital resources in early childhood language education. Their selection is relevant to the study's focus on understanding teachers' perceptions on the effectiveness and challenges of blended learning in early language acquisition.

The two main reasons for choosing these participants are as follows:

Firstly, these teachers are experienced in delivering Chinese language instruction to young Thai students, which aligns with the study's objectives. Their familiarity with early childhood language acquisition and blended learning methods provides valuable insights into the impact of these approaches on kindergarten-level education.

Secondly, all participants are actively teaching in Nonthaburi Project schools, where blended learning is increasingly emphasized as a teaching strategy. Their daily

teaching environments include both traditional and digital resources, making them well-suited to offer perceptions on the practical benefits and limitations of blended learning for young language learners.

This selection of participants, based on their relevant teaching experience and direct involvement in the Nonthaburi Project, provides a solid foundation for exploring the advantages and challenges of blended learning in Thai kindergarten Chinese language education.

3.2.3 Research Questions

In this research, there are three primary questions:

3.2.3.1 How do teachers integrate technologies through adoption techniques and delivery formats in the implementation of blended learning?

This question examines the specific ways in which teachers incorporate technology within blended learning. Adoption techniques refer to the strategies and tools selected by teachers to enhance the learning experience, while delivery formats address the modes through which content is delivered to students, such as through online platforms, face-to-face interactions, or a combination of both.

3.2.3.2 What are teachers' perceptions on the impact of blended learning on the learning achievement of Thai kindergarten students in basic Chinese?

This question explores teachers' views on how blended learning influences student outcomes, focusing on areas such as vocabulary acquisition, comprehension, and overall progress.

3.2.3.3 What are teachers' perceptions of the advantages and disadvantages of using blended learning in teaching basic Chinese to Thai kindergarten students?

This question investigates the benefits and challenges teachers perceive in using blended learning, identifying both strengths and limitations associated with adopting digital tools and flexible delivery formats in supporting language acquisition for young learners.

3.2.4 Instruments

This research employed a mixed-methods methodology. The questionnaire and semi-structured interviews were used to collect data for the study.

3.2.4.1 The questionnaire

In this study, the questionnaire was adapted from previous studies and the literature review to align with the research questions and the backgrounds of the participants. The questionnaire consisted of two main parts:

Part 1: Personal Information

This part gathered basic demographic data from participants, including: Gender, Teaching experience (choices: less than 1 year, 1–2 years, more than 2 years), Blended learning experience (choices: beginner with less than 1 year, intermediate with 1–3 years, advanced with more than 3 years).

Part 2: Teachers' Perceptions of Blended Learning

This part consists of four subsections, each designed to measure different aspects of teachers' perceptions regarding blended learning. Participants could indicate their level of agreement on a five-point scale (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree. Options were assigned a value of 1-5 to indicate the degree of inclination that showed the participants' preference for the questionnaire items. The subsections and their items were as follows:

1) Adoption Technique: Items 1–7 assessed teachers' confidence in using digital tools, training received, integration of digital resources, support from school administration, and access to appropriate digital tools.

2) Delivery Format: Items 8–14 explored teachers' views on the effectiveness of combining face-to-face and online teaching, accessibility, student engagement, and adaptation to different learning styles.

3) Students' Learning Achievement: Items 15–22 examined the impact of blended learning on students' language skills, comprehension, participation, academic progress, and overall learning outcomes.

4) Advantages and Disadvantages: Items 23–30 investigated the perceived benefits of blended learning, such as flexibility and engagement, as well as challenges related to technical difficulties, digital literacy, and resource limitations.

3.2.4.2 Semi-Structured Interviews

To obtain more detailed information about participants' opinions and experiences, semi-structured individual interviews were conducted. 10 teachers volunteered to participate in these interviews, which covered key themes such as:

1) Overall experience with blended learning

2) Technology use and support

3) Interaction between teachers and students

4) Learning outcomes and assessment

5) Challenges faced and strategies for resolution

6) Future development and recommendations

The semi-structured format allowed participants to elaborate on their responses, providing deeper insights into their perceptions and experiences.

3.2.4.3 Validity and Reliability of the Instruments

The questionnaire and semi-structured interview questions were reviewed by three professional experts with doctoral degrees in language teaching and working in three different universities, utilizing the Item Objective Congruence (IOC) Activity. This process ensured that each item was relevant and aligned with the research objectives, as evaluated by experts in the field of language education. The experts rated each item on a scale of relevance (+1 for relevant, 0 for unclear, and -1 for irrelevant). Only items with an IOC score of 0.67 or higher were retained, while those below this threshold were revised or removed.

Table 3.1 Summary of IOC Values for Survey and Interview Questions

Section	**Number of Items**	**IOC Value Range**
Part 1: Personal Information	3	1
Part 2: Survey Questionnaire	30	0.67 - 1.00
Semi-Structured Interview Questions	12	0.67 - 1.00

All items in the questionnaire achieved an IOC value of 0.67 or higher, indicating strong alignment with the study's research objectives. Items that scored 0.67 were flagged for minor revisions to enhance clarity. The IOC evaluation confirmed that

the content of the questionnaire is highly relevant to the research objectives. The expert reviews have ensured that the items accurately measured the intended constructs, validating the questionnaire's content for assessing teachers' perceptions of blended learning in Thai kindergartens.

Next, a pilot test of the questionnaire was conducted before the main study to ensure validity and reliability. Approximately 30 of a group of teachers of similar characteristics participated in the pilot test, enabling the researcher to adjust for clarity and relevance.

The reliability of the questionnaire was further assessed using Cronbach's Alpha in SPSS. The resulting value was 0.911, indicating high internal consistency across the 30 items.

Table 3.2 Reliability of Questionnaire

Statistic	Cronbach's Alpha	Number of Items	Valid Cases
Value	0.911	30	30

This reliability score confirmed that the questionnaire was reliable.

3.2.5 Data Collection

Data collection for this study involved the use of an online questionnaire and semi-structured interviews to gather insights into early childhood Chinese teachers' perceptions of blended learning for teaching Basic Chinese to Thai kindergarten students.

3.2.5.1 Instrument 1--The Questionnaire

The questionnaire, along with a consent form, was distributed online through a secure platform (Tencent Questionnaire). A cover letter was provided, explaining the study's purpose, the voluntary nature of participation, and the estimated time required to complete the survey. The survey link was shared with early childhood Chinese teachers participating in the Nonthaburi Project.

The questionnaire remained open for a specified period, during which reminders were sent to encourage participation. Responses were anonymized and securely stored, and the collected quantitative data was exported to statistical software for analysis.

3.2.5.2 Semi-Structured Interviews

Following the survey, one-on-one semi-structured interviews were conducted to gain more in-depth perceptions. From the 50 survey respondents, invitation was sent to all the questionnaire respondents to participate in the subsequent activity, that is, the semi-structured interview. 10 participants volunteered and appointments for the interviewed were planned and delivered. Participants were informed of the interview details and provided with flexible scheduling options.

The interviews were conducted virtually via WeChat, using open-ended questions to allow participants to freely share their experiences with blended learning. The interviews were conducted in Chinese, the participants' native language, to ensure accurate expression. Each interview was audio-recorded with participants' consent and later transcribed verbatim.

To ensure data accuracy, the transcriptions were sent back to participants for verification. Besides, the researcher consulted his advisor for approval of his data

analysis. Additionally, the interview content was translated into English and validated by a bilingual teacher with a master's degree to confirm translation accuracy.

3.2.6 Data Analysis

The data analysis in this study involved both quantitative and qualitative methods, allowing for a comprehensive exploration of the research questions. Quantitative data from the questionnaires were analyzed using descriptive statistics, while qualitative data from semi-structured interviews underwent content analysis into themes, which was adapted from Neal, J. W., Neal, Z. P., VanDyke & Kornbluh (2015) and Banha, Flores & Coelho (2022).

For quantitative data, Microsoft Excel was utilized to calculate frequencies, means, percentages, and the range of scores for each questionnaire item, providing a clear summary of response patterns.

For qualitative data, a systematic analysis was performed to identify themes and patterns from the interview responses, following these steps:

3.2.6.1 The interviews were audio-recorded and initially transcribed verbatim into Chinese to maintain the accuracy of participants' responses. After transcription, the Chinese text was carefully translated into English for analysis, ensuring that the original meaning was preserved.

3.2.6.2 The translated responses were then transferred into digital format in Microsoft Word, with comments added to highlight key points or initial insights. Responses were organized into groups based on themes for easier management and reference throughout the analysis.

3.2.6.3 Comparisons were made across participants' responses. This involved identifying similar statements across different participants and noting any variations in their experiences or perceptions. These comparisons facilitated the identification of recurring ideas and unique viewpoints.

3.2.6.4 Sets of excerpts that expressed the same core ideas or concepts were identified and coded into categories. This coding process organized the data into thematic categories, allowing for a structured overview of common themes across responses.

3.2.6.5 The main categories were then linked together through selective coding to highlight the central findings of the study. These findings represent the core themes of teachers' experiences, challenges, and perceptions of blended learning, providing insight into the research questions.

Finally, the analyzed data from both the questionnaires responses and the emerging themes from the semi-structured interview data would be analyzed and synthesized to answer the research questions.

3.3 Research Framework

This research framework outlined a structured approach to investigating teachers' perceptions of blended learning in teaching Chinese to Thai kindergarten students. The framework followed a systematic process divided into the following key steps:

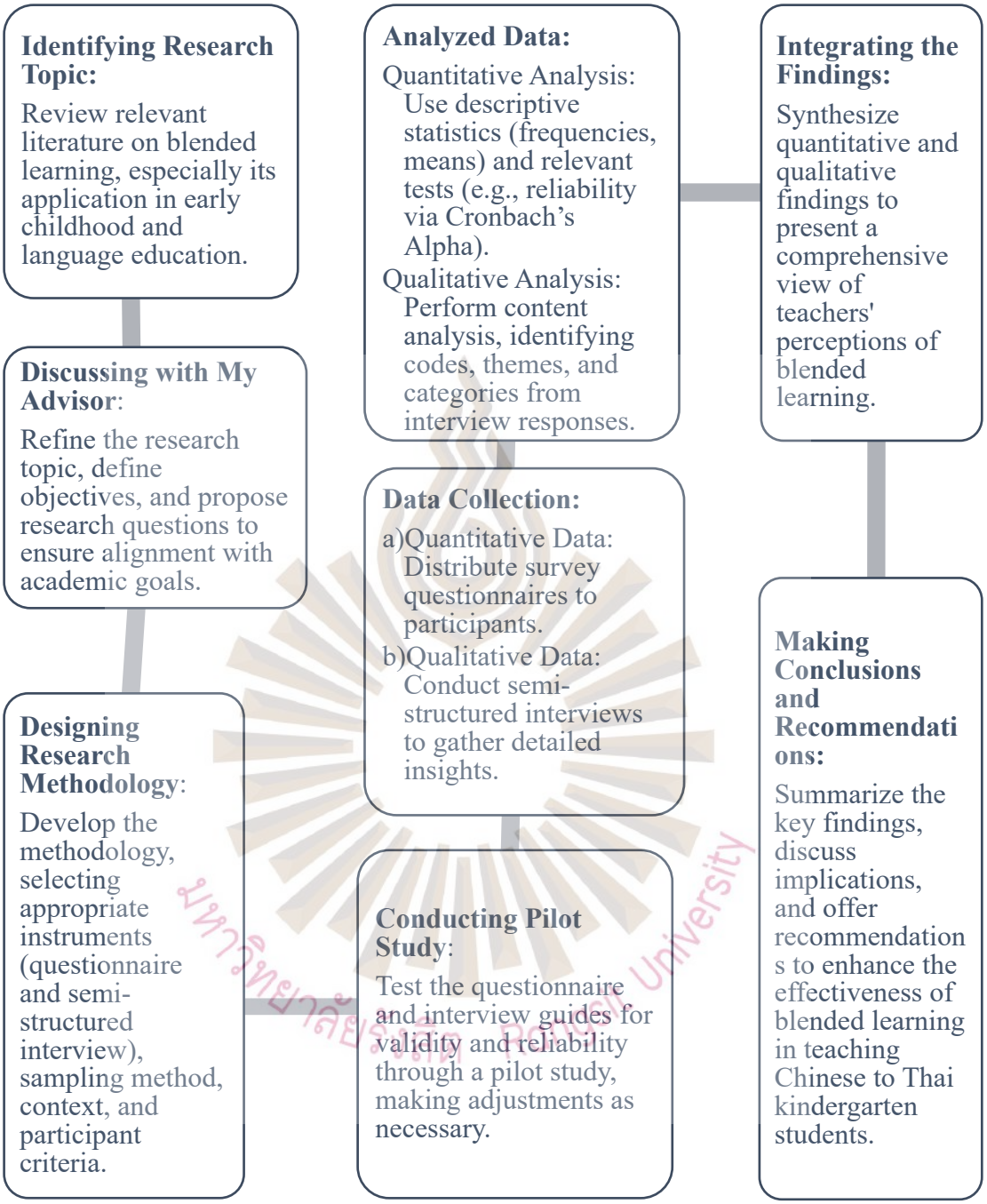

Figure 3.1 Research Framework

3.4 Ethical Considerations

3.4.1 Consent Statement and Ethical Considerations

In this study, the consent statement played a crucial role in informing participants about the research's objectives, benefits, and potential risks before the data collection began. Participants had the right to freely participate or withdraw from the study at any time without facing any negative consequences. To ensure the confidentiality of participants, all collected data was securely stored with access restricted to authorized researchers only. Personal identifiers were either removed or replaced with pseudonyms to protect participants' identities. Electronic data was kept in password-protected files, while any physical documents were stored in secured cabinets.

The data collected was strictly used for research purposes, and any public reports or publications utilized aggregated and anonymous data to maintain participant anonymity. Privacy was carefully maintained throughout the presentation of research findings.

3.4.2 Ethics Approval

Before commencing data collection, an application for ethics approval (RSU-ERB2024/167.0708) was submitted to the Ethics Review Board. The application outlined the research objectives, methodology, consent procedures, and measures for ensuring participant confidentiality and data security. The Ethics Review Board reviewed the application to ensure compliance with ethical standards and guidelines. Data collection only commenced after receiving official approval, as reflected in the Ethics Approval Certificate. This approval process was critical in maintaining the integrity of the research and safeguarding the rights and well-being of all participants. The study’s data collection was conducted under the ethical guidelines established by the approved protocol (RSU-ERB2024/167.0708).

Chapter 4

Research Results and Analysis

This chapter presents the findings of the study derived from quantitative and qualitative data analyses, aiming to answer the following research questions:

1) How do teachers integrate technologies in the implementation of blended learning?

2) What are the effects of these technologies on kindergarten Chinese education?

3) What do teachers perceive as the advantages and disadvantages of blended learning?

The data collected for this study include the Likert scale questionnaire responses and semi-structured interview transcriptions. Quantitative data were analyzed using IBM SPSS Statistics to reveal teachers' perceptions of technology integration, student learning outcomes, and the perceived advantages and disadvantages of blended learning. Qualitative data were analyzed through content analysis, using methods adapted from Young (2015) and Wilson (2014), to gain deeper insights into the practical application of blended learning in the Nonthaburi Project.

This chapter is organized into four sections:

Section 4.1: Demographic Characteristics of Participants – This section provides background information on the participants of this study, including the 50

teachers who responded to the online questionnaire and the 10 teachers selected for semi-structured interviews.

Section 4.2: Technology Integration in Blended Learning – This section examines how teachers integrate digital tools and resources into their teaching practices as part of blended learning.

Section 4.3: Effects of Blended Learning on Kindergarten Chinese Education – This section evaluates the impact of blended learning on students' learning achievement, focusing on engagement, participation, and language skill development.

Section 4.4: Advantages and Disadvantages of Blended Learning – This section explores teachers' perceptions of the strengths and challenges of implementing blended learning in early childhood education.

Each section includes a presentation of descriptive statistical analyses, thematic qualitative findings, and an integrated discussion of the results, providing a comprehensive understanding of blended learning implementation and its impact within the Nonthaburi Project.

4.1 Demographic Characteristics of Participants

The data for this study were collected through an online questionnaire and semi-structured interviews. The questionnaire, which targeted Chinese language teachers, yielded responses from 50 participants who were involved in blended learning within the Nonthaburi Project. To gain deeper insights into their experiences, 10 participants (20% of the total respondents) were randomly selected for semi-structured interviews.

In this section, the general demographic information of the 50 questionnaire respondents and the 10 interviewees is summarized. Detailed demographic information concerning the participants' gender, teaching experience, and blended learning experience is presented in Table 4.1 and Table 4.2. These tables aim to provide a comprehensive overview of the participants, facilitating a deeper understanding of the study's context.

Table 4.1 Demographic information of 50 participants (Question = Q, Number = N)

Demographic Information		Number (N = 50)	Percent （%）
Q1. Gender	Male	12	24
	Female	38	76
Q2. Teaching Experience	Less than 1 year	18	36
	1-2 years	5	10
	More than 2 years	27	54
Q3. Blended Learning Experience	Beginners with less than 1 year	18	36
	Intermediate with 1-3 years	11	22
	Advanced with more than 3 years	21	42

Table 4.2 Basic information for 10 interviewees

Interviewee	Gender	Teaching Experience	Blended Learning Experience
A	Female	More than 2 years	Advanced with more than 3 years
B	Male	More than 2 years	Advanced with more than 3 years
C	Female	Less than 1 year	Beginners with less than 1 year

Table 4.2 Basic information for 10 interviewees (cont.)

Interviewee	Gender	Teaching Experience	Blended Learning Experience
D	Male	More than 2 years	Advanced with more than 3 years
E	Female	More than 2 years	Intermediate with 1-3 years
F	Female	Less than 1 year	Beginners with less than 1 year
G	Male	More than 2 years	Advanced with more than 3 years
H	Female	More than 2 years	Advanced with more than 3 years
I	Male	More than 2 years	Advanced with more than 3 years
J	Male	More than 2 years	Intermediate with 1-3 years

The results are summarized as follows:

From Table 4.1, there are significantly more female participants (76%) than male participants (24%), reflecting the gender composition typically observed in early childhood education.

Regarding teaching experience, most participants (54%) have more than two years of experience, followed by those with less than one year (36%) and those with 1–2 years (10%). This indicates that most participants are experienced educators who may have a greater familiarity with teaching methodologies and blended learning.

Blended learning experience, as shown in Table 4.1, is distributed across three levels. Participants with advanced blended learning experience (more than three

years) make up the largest group (42%), followed by beginners with less than one year (36%) and those with intermediate experience (22%).

From Table 4.2, the 10 interviewees are evenly distributed by gender (5 males and 5 females). Most interviewees (8 out of 10) have more than two years of teaching experience, and six are categorized as having advanced blended learning experience. The remaining four are evenly split between beginners and intermediate users, ensuring a balanced representation of perceptions.

As most participants have more than two years of teaching experience (54%) and advanced blended learning experience (42%), the findings of this study may primarily represent the perceptions of experienced educators rather than novice teachers.

4.2 Technology Integration in Blended Learning

To answer RQ 1, "How do teachers integrate technologies in the implementation of blended learning?" The findings from both quantitative and qualitative data are presented.

The analysis of the quantitative data from the online questionnaire provides a comprehensive overview of teachers' practices in integrating technology into blended learning environments. The qualitative data, obtained through semi-structured interviews, offers a deeper understanding of the practical strategies, challenges, and perceptions of teachers in implementing these technologies.

From previous studies, the effective integration of technology in education is influenced by several factors, including teachers' confidence in using digital tools (Amhag, Hellström & Stigmar, 2019; Speer & Eichler, 2022), the availability of training

and professional development (Mayantao & Tantiado, 2024), and the accessibility of resources (Adeshina, 2024). Challenges such as limited technical skills, insufficient infrastructure, and resistance to change have also been documented as significant barriers (Adeshina, 2024; Alenezi, Ihmeideh & Alshaboul, 2023; Chan, 2021; Kumar et al., 2021). Despite these challenges, when appropriately supported, technology integration can enhance teaching effectiveness, foster interactive learning, and increase student engagement (Chiu, 2021; Jiang et al., 2021; Shuplat & Noskova, 2020).

In this section, the researcher presents findings from both the questionnaire and semi-structured interviews to address the integration of technology in blended learning environments. Q1 to Q7 from the questionnaire explore teachers' confidence, access to tools, and the sufficiency of training for integrating technology. Q8 to Q14 examine how technology is applied in blended learning delivery formats and its effectiveness in fostering student engagement.

The questionnaire items include both positive and negative traits. For positive traits (Qs 1-7 and Qs 8-14), scoring 5 indicates strong agreement with the integration of technology, whereas scoring 1 represents strong disagreement. The qualitative data complements these findings by highlighting specific examples, challenges, and best practices shared by teachers during the interviews.

4.2.1 Findings from Questionnaire

The findings from the questionnaire of Integrate Technologies part are categorized into two main themes: Adoption Technique and Delivery Format. These themes highlight teachers' experiences and perceptions regarding the integration of technology in blended learning environments.

4.2.1.1 Adoption Technique

This section presents the quantitative analysis of teachers' perceptions and experiences in adopting technology for blended learning, highlighting their confidence, training, and challenges in creating interactive content.

Table 4.3 Summarizes the quantitative data related to Adoption Technique

Question	**Mean**	**Std. Dev**
Q1. I feel confident using digital tools	4.16	0.68
Q2. I have received sufficient training	4.00	0.88
Q3. I can seamlessly integrate digital resources	3.96	0.83
Q4. Adoption of blended learning has improved teaching	4.14	0.57
Q5. I find it easy to create interactive content	3.74	0.94
Q6. Blended learning adoption is well supported	3.98	0.89
Q7. I have access to appropriate digital tools	4.20	0.83
Total	4.03	0.80

The results indicate that teachers generally have a positive perception of their abilities to adopt technologies for blended learning (overall mean = 4.03, SD = 0.80). The highest mean score was for Q7 (“I have access to appropriate digital tools”), with M = 4.20 (SD = 0.83), reflecting that most teachers feel confident in their access to technology. However, Q5 (“I find it easy to create interactive content”) had the lowest mean score (M = 3.74, SD = 0.94), suggesting challenges in developing interactive materials.

These findings suggest that while teachers are confident in their ability to use digital tools, additional support and training are needed to address difficulties in creating interactive content and seamlessly integrating technologies into their teaching practices.

4.2.1.2 Delivery Format

This section presents the quantitative analysis of teachers' perceptions of the blended learning delivery format, emphasizing its effectiveness in enhancing student engagement and learning while also highlighting accessibility challenges.

Table 4.4 Summarizes the quantitative data related to Delivery Format

Question	**Mean**	**Std. Dev**
Q8. The blended learning delivery format is easy for my students to understand.	4.36	0.60
Q9. I can effectively combine face-to-face instruction with online activities.	4.22	0.65
Q10. Multimedia presentations enhance my students' learning experience.	4.62	0.49
Q11. Interactive games and quizzes are effective in teaching Chinese to my students.	4.56	0.54
Q12. The delivery format of blended learning keeps my students engaged.	4.54	0.61
Q13. Blended learning formats are accessible to all my students.	4.04	0.90
Q14. I am able to adapt the delivery format to cater to different learning styles.	4.42	0.67
Total	4.39	0.64

The overall mean score for the Delivery Format was M = 4.39 (SD = 0.64), indicating positive perceptions from most teachers. Q10 (“Multimedia presentations enhance my students' learning experience”) recorded the highest mean score (M = 4.62, SD = 0.49), highlighting the effectiveness of multimedia tools in improving students’ understanding and engagement. However, Q13 (“Blended learning formats are accessible to all my students”) had the lowest mean score (M = 4.04, SD = 0.90), reflecting potential challenges in ensuring equal access to resources for all students.

These findings suggest that while teachers acknowledge the benefits of blended learning in enhancing student engagement and learning outcomes, there are concerns regarding accessibility and the balance between face-to-face and online instruction.

4.2.2 Findings from Semi-Structured Interviews

The semi-structured interviews, conducted during the week of September 14–20, 2024, via WeChat, included ten teachers. Their responses offered detailed insights into the integration of technologies in blended learning classrooms, highlighting both benefits and challenges. The findings were categorized into sub-themes, with each teacher's relevant demographic information, including their blended learning experience, noted alongside their responses. Based on the data, the findings are categorized into the following sub-themes:

4.2.2.1 Tech Assists Learning

All interviewees emphasized that technology plays a crucial role in enhancing learning. Teachers frequently use multimedia tools, such as videos and animations, to simplify complex concepts and engage students through multisensory learning. This

aligns with the broader observation that technology can make lessons more interactive and effective.

Teacher A (Female, more than 2 years of teaching, Advanced blended learning experience: more than 3 years) shared:

> "Multimedia tools help kids understand difficult concepts and make the lessons more engaging." (Teacher A, personal communication, September 16, 2024)

Teacher J (Male, more than 2 years of teaching, Intermediate blended learning experience: 1-3 years) added:

> "Using visuals and audio enhances learning, making lessons more interactive and retaining students' focus longer." (Teacher J, personal communication, September 19, 2024)

4.2.2.2 Challenges in Technology Use

Several teachers identified challenges in adapting to new tools and addressing the lack of technical skills. This problem was particularly noted by those who felt the need for more training and support to integrate technology seamlessly into their lessons.

Teacher D (Male, more than 2 years of teaching, Advanced blended learning experience: more than 3 years) mentioned:

> “I’m not very familiar with new technologies, and learning how to use them takes a lot of time and effort.” (Teacher D, personal communication, September 17, 2024)

Teacher G (Male, more than 2 years of teaching, Advanced blended learning experience: more than 3 years) explained:

> “While I can see the benefits, the process of adapting to new tools is challenging without proper training.” (Teacher G, personal communication, September 18, 2024)

4.2.2.3 Limited Resources/Access

Half of the teachers noted limitations in resources, such as insufficient devices or access to reliable internet. These challenges were evident in both schools and students' homes, affecting the equity of blended learning experiences.

Teacher B (Male, more than 2 years of teaching, Advanced blended learning experience: more than 3 years) shared:

> “Some students don’t have phones, so they can’t participate in app-based activities. This creates an unequal learning environment.” (Teacher B, personal communication, September 15, 2024)

Teacher F (Female, less than 1 year of teaching, Beginners blended learning experience: less than 1 year) also highlighted:

> “Access to suitable resources is sometimes limited, which can hinder the full potential of blended learning.”(Teacher F, personal communication, September 16, 2024)

4.2.2.4 Impact on Interaction

Some teachers discussed the mixed impact of technology on interaction. While it facilitates student engagement, it can also detract from the quality of teacher-student connections in certain contexts.

Teacher E (Female, more than 2 years of teaching, Intermediate blended learning experience: 1-3 years) noted:

> “Blended learning helps me interact more with students, but it’s harder to manage when they misuse devices.” (Teacher E, personal communication, September 14, 2024)

Teacher F (Female, less than 1 year of teaching, Beginners blended learning experience: less than 1 year) added:

> “Online tools are helpful, but they can’t fully replace the personal connections we establish in face-to-face interactions.” (Teacher F, personal communication, September 16, 2024)

4.2.2.5 Tech Facilitates Assessment

One teacher highlighted the potential of technology for real-time assessments. The ability to quickly evaluate student understanding and provide feedback was seen as a significant advantage of using digital tools.

Teacher H (Female, more than 2 years of teaching, Advanced blended learning experience: more than 3 years) stated:

> "Digital tools like online quizzes allow me to quickly assess students' progress and adjust my teaching accordingly." (Teacher H, personal communication, September 18, 2024)

4.2.2.6 Improved Engagement

Several teachers emphasized how technology enhances student engagement. Interactive elements such as games, multimedia content, and app-based learning activities were particularly effective in capturing and retaining students' attention.

Teacher C (Female, less than 1 year of teaching, Beginners blended learning experience: less than 1 year) shared:

> "Students stay more engaged when we use videos or interactive quizzes. It keeps their attention and helps them understand concepts better." (Teacher C, personal communication, September 16, 2024)

Teacher J (Male, more than 2 years of teaching, Intermediate blended learning experience: 1-3 years) added:

"Interactive tools make students more excited to participate in lessons, even during online classes." (Teacher J, personal communication, September 19, 2024)

4.2.2.7 Summary of SSI Findings

The interviews reinforced the importance of technology in blended learning environments. Teachers consistently reported its role in improving engagement and enhancing the learning experience. However, challenges such as insufficient resources, technical skill gaps, and the need for better training were evident. Additionally, while technology facilitates real-time assessments and improves participation, it also poses risks to teacher-student interaction quality and equitable access.

The insights gathered emphasized the need for structured support systems, including enhanced training and access to resources, to maximize the potential of technology integration in blended learning.

4.2.3 Summary of Technology Integration in Blended Learning

From the quantitative and qualitative data analysis, it can be concluded that technology integration in blended learning involves a combination of significant benefits and persistent challenges.

Quantitative findings indicated that teachers generally felt confident in integrating technology into their teaching practices, as reflected by a mean score of 4.16 (SD = 0.68) for their ability to use digital tools effectively. This aligns with the qualitative findings, where all interviewed teachers emphasized that technology

supports learning by enabling multisensory experiences, enhancing student motivation, and fostering interaction.

Challenges, however, are evident. Qualitative data revealed that six teachers (Teachers B, C, D, G, H, and J) reported difficulties related to adapting to new technology, insufficient training, and limited technical skills. This aligns with the quantitative findings, where the ability to create interactive content scored a mean of 3.74 (SD = 0.94), highlighting the need for additional support in this area.

Furthermore, five teachers (Teachers A, B, C, F, and I) raised concerns about limited access to resources and digital tools, both in classrooms and at home. This is consistent with quantitative findings, where the accessibility of blended learning formats scored a mean of 4.04 (SD = 0.90), indicating disparities in access to necessary technologies.

The impact of technology on teacher-student interaction emerged as a mixed factor. While some teachers noted improvements in engagement, others expressed concerns about reduced interaction quality due to reliance on digital tools. This is reflected in the quantitative data, where the ability to adapt technology for diverse learning styles achieved a mean score of 4.42 (SD = 0.67).

Additionally, the potential for technology to facilitate real-time assessments remains underutilized, as identified by one teacher (Teacher H). However, three teachers (Teachers A, C, and J) emphasized that technology enhances student engagement, particularly through interactive quizzes and multimedia tools. This aligns with the quantitative results, where the effectiveness of multimedia in improving learning outcomes scored the highest mean of 4.62 (SD = 0.49).

In summary, the integration of technology in blended learning demonstrates clear advantages, particularly in enhancing engagement, motivation, and interaction. However, challenges such as technical difficulties, insufficient training, and resource limitations persist. Addressing these challenges through targeted training, improved access to resources, and strategic administrative support will be essential for maximizing the potential of blended learning.

4.3 Effects of Blended Learning on Kindergarten Chinese Education

This section addresses Research Question 2: What are teachers' perceptions on the impact of blended learning on the learning achievement of Thai kindergarten students in basic Chinese? The findings integrated both quantitative survey data and qualitative interview insights to provide a comprehensive understanding of the effects of blended learning on students' language acquisition, engagement, and overall educational outcomes.

4.3.1 Findings from the questionnaire

Table 4.5 Summarizes the quantitative data related to Students' Learning Achievement

Question	Mean	Std. Dev
Q15: Blended learning has improved my students' Chinese language skills.	4.42	0.64
Q16: My students' comprehension of Chinese has increased due to blended learning.	4.44	0.73
Q17: Blended learning encourages higher participation in class activities.	4.46	0.65

Table 4.5 Summarizes the quantitative data related to Students' Learning Achievement (cont.)

Question	Mean	Std. Dev
Q18: My students show better academic progress with blended learning	4.24	0.66
Q19: Blended learning helps improve students' listening skills in Chinese	4.4	0.7
Q20: My students have better retention of Chinese vocabulary through blended learning.	4.42	0.61
Q21: Blended learning has enhanced my students' speaking abilities in Chinese.	4.32	0.62
Q22: Overall blended learning positively impacts my students' learning outcomes	4.42	0.67
Total	4.39	0.66

From the data analysis of the questionnaire, teachers reported that blended learning had a positive impact on various aspects of student learning. Students were perceived to actively participate in classroom activities, as indicated by the high mean score of 4.46 (SD = 0.65) for "Blended learning encourages higher participation in class activities." This suggests that blended learning fosters greater engagement among students during lessons.

Blended learning was also viewed as effective in improving students' listening skills and vocabulary retention. The statement "Blended learning helps improve students' listening skills in Chinese" received a mean score of 4.40 (SD = 0.70), while "My students have better retention of Chinese vocabulary through blended learning" had a mean score of 4.42 (SD = 0.61). These findings highlight the role of multimedia

tools and interactive activities in enhancing students' language comprehension and vocabulary acquisition.

However, the perceived impact on academic progress varied slightly, as reflected by the lower mean score of 4.24 (SD = 0.66) for "My students show better academic progress with blended learning." While most teachers agreed on its benefits, some responses indicated that the extent of academic improvement might differ among students.

In summary, the questionnaire findings suggest that blended learning is effective in increasing student participation, enhancing listening skills, and supporting vocabulary retention, though the results for overall academic progress reflect a degree of variability.

4.3.2 Findings from Semi-Structured Interviews

This section provides qualitative insights into the effects of blended learning on kindergarten Chinese education. The findings, drawn from semi-structured interviews, highlight key themes such as improved engagement, enriched learning experiences, quick feedback and assessment, increased motivation, enhanced learning outcomes, and support for student participation.

4.3.2.1 Improved Engagement

Eight teachers (Teachers A, B, C, E, F, H, I, and J) reported that blended learning significantly enhances student engagement. Teachers noted that multimedia tools, such as interactive videos and digital games, play a central role in sustaining students' attention. Teacher A remarked:

> "Interactive tools keep the children engaged for longer periods. They enjoy the lessons and participate more actively." (Interviewee A, personal communication, September 16th, 2024).

Similarly, Teacher J emphasized how technology motivates students to be more attentive during lessons:

> "Multimedia resources make students excited to learn. They stay focused and respond better in class." (Interviewee J, personal communication, September 19th, 2024).

These findings align with quantitative data, which demonstrated high agreement among teachers regarding the effectiveness of blended learning in increasing engagement.

4.3.2.2 Technology Enrichment

Five teachers (Teachers A, C, F, G, and I) stated that technology enriches the learning process by making lessons more interactive and accessible. Teacher C observed:

> "Digital tools simplify difficult topics, helping students understand concepts they might otherwise struggle with." (Interviewee C, personal communication, September 16th, 2024).

Teacher F added that the inclusion of multimedia fosters a more dynamic classroom environment:

> “Students find lessons more enjoyable when technology is integrated, making learning a fun experience.” (Interviewee F, personal communication, September 16th, 2024).

This theme underscores the role of technology in enhancing comprehension and engagement, echoing the quantitative findings on improved learning outcomes.

4.3.2.3 Quick Feedback and Assessment

Three teachers (Teachers B, E, and H) highlighted that blended learning enables real-time feedback and assessments, helping teachers gauge student understanding more efficiently. Teacher H explained:

> “I can assess student performance immediately and adjust my teaching based on their needs.” (Interviewee H, personal communication, September 18th, 2024).

This capacity for timely intervention supports improved learning outcomes and ensures students stay on track with their lessons.

4.3.2.4 Increased Student Motivation

Two teachers (Teachers F and I) noted that students were more motivated when multimedia elements were included in the lessons. Teacher I shared:

> “Students are excited to participate when interactive videos and games are used. They show more interest in learning.” (Interviewee I, personal communication, September 20th, 2024).

This reflects the potential of blended learning to foster enthusiasm and maintain student focus throughout lessons.

4.3.2.5 Enhanced Learning Outcomes

Two teachers (Teachers G and I) observed that blended learning positively impacts students' ability to retain and apply knowledge. Teacher G remarked:

> "The use of multimedia reinforces what students learn, making it easier for them to remember and use the material." (Interviewee G, personal communication, September 18th, 2024).

This complements the quantitative findings that highlight significant improvements in learning outcomes through blended learning.

4.3.2.6 Assists Student Participation

Two teachers (Teachers D and J) emphasized that blended learning supports student participation, especially for those who are typically less active in traditional classroom settings. Teacher D explained:

> "Technology reduces pressure on shy students, encouraging them to participate more comfortably." (Interviewee D, personal communication, September 17th, 2024).

Teacher J noted that digital tools cater to diverse learning styles, providing all students with opportunities to engage:

"Multimedia activities ensure that every child, regardless of their learning preferences, can participate meaningfully." (Interviewee J, personal communication, September 19th, 2024).

4.3.2.7 Summary of Semi-Structured Interviews findings

The semi-structured interviews reveal that blended learning has a multifaceted impact on kindergarten Chinese education. Teachers consistently reported improved engagement, enriched learning experiences, increased motivation, and enhanced participation among students. Additionally, the ability to provide real-time feedback and address individual needs contributes to better learning outcomes. These findings align with the quantitative data, reinforcing the value of blended learning in fostering a dynamic and inclusive learning environment.

4.3.3 Summary of Effects of Blended Learning on Kindergarten Chinese Education

The analysis of both quantitative and qualitative data highlights the significant impact of blended learning on kindergarten Chinese education, with improvements observed in key areas such as student engagement, participation, comprehension, and overall learning outcomes.

From the quantitative findings, high mean scores across multiple metrics indicate that teachers perceive blended learning as an effective tool for enhancing student participation (mean = 4.46, SD = 0.65), improving comprehension (mean = 4.44, SD = 0.73), and fostering retention of Chinese vocabulary (mean = 4.42, SD = 0.61). Teachers also reported that blended learning positively influences students' academic

progress and speaking abilities, though variability in responses suggests that challenges remain in ensuring consistent improvement across all student groups.

The qualitative insights further corroborate these findings, with teachers emphasizing how multimedia tools and interactive activities sustain student engagement and make learning more enjoyable. Teachers highlighted the role of blended learning in creating a dynamic classroom environment, supporting diverse learning styles, and motivating students to actively participate in lessons. They also noted the benefits of real-time feedback and assessment, which allow for timely interventions and adjustments to teaching strategies.

Despite these positive effects, some challenges persist. Teachers pointed out disparities in technology access, variability in student readiness, and the need for further support to maximize the potential of blended learning. These issues underline the importance of addressing infrastructural and pedagogical gaps to ensure that all students can benefit equitably.

In conclusion, blended learning has demonstrated considerable benefits for kindergarten Chinese education, improving student outcomes across multiple dimensions. However, continuous efforts to enhance accessibility, provide targeted support, and address challenges will be essential to fully realize the advantages of this innovative teaching approach.

4.4 Advantages and Disadvantages of Blended Learning

This section examines the advantages and disadvantages of implementing blended learning in kindergarten Chinese education, addressing Research Question 3: “What are teachers’ perceptions of the advantages and disadvantages of using blended

learning in teaching basic Chinese to Thai kindergarten students?" The analysis integrates quantitative survey data and qualitative insights from teacher interviews, presenting a balanced view of the impact of blended learning.

4.4.1 Findings from the Questionnaire

The quantitative data highlights teachers' perceptions of the benefits and challenges of blended learning in their teaching practices.

Table 4.6 Teachers' Perceptions of the Advantages and Disadvantages of Blended. Learning

Question	Mean	Std. Dev
Q23: Blended learning increases student engagement.	4.48	0.65
Q24: Blended learning provides flexible learning opportunities for students.	4.54	0.61
Q25: find blended learning to be a beneficial addition to traditional teaching methods.	4.24	0.89
Q26: Technical difficulties are a common challenge in blended learning.	4.60	0.64
Q27: The varying levels of digital literacy among students affect the success of blended learning.	4.42	0.61
Q28: Blended learning requires more preparation time than traditional methods.	4.38	0.78
Q29: Resource limitations hinder effective implementation of blended learning.	4.4	0.83
Q30: The advantages of blended learning outweigh its disadvantages.	4.32	0.71
Total	4.42	0.72

The analysis of the questionnaire reveals that teachers perceive blended learning as a valuable tool for improving student engagement, flexibility in learning opportunities, and enhancing teaching methods. The overall mean scores for most items suggest a positive view of blended learning, with high levels of agreement among participants.

Blended learning was highlighted for its flexibility (Q24, mean = 4.54, SD = 0.61), making it one of the most appreciated aspects. Teachers also recognized its ability to increase student engagement (Q23, mean = 4.48, SD = 0.65), demonstrating its effectiveness in keeping students actively involved in lessons.

Challenges were also evident, particularly technical difficulties (Q26, mean = 4.60, SD = 0.64), which were identified as a common obstacle in implementing blended learning. Additionally, resource limitations (Q29, mean = 4.40, SD = 0.83) and varying levels of digital literacy among students (Q27, mean = 4.42, SD = 0.61) were reported as significant barriers that hinder seamless integration.

In summary, while teachers overwhelmingly see the advantages of blended learning, such as increased engagement and flexibility, they also emphasized the need to address technical and resource-related challenges to maximize its potential.

4.4.2 Findings from Semi-Structured Interviews

The semi-structured interviews provided detailed insights into the advantages and disadvantages of blended learning. Teachers highlighted its significant benefits in enhancing learning outcomes and improving classroom engagement while also identifying several challenges and limitations.

4.4.2.1 Advantages of Blended Learning

All ten teachers emphasized the advantages of integrating technology into their teaching. Teachers noted that technology significantly enriches the learning experience by making lessons more interactive, engaging, and effective. For instance, Teacher A shared:

> "Technology allows me to deliver lessons more effectively. Multimedia tools. keep students engaged and help explain complex concepts better."
> (Interviewee A, personal communication, September 16, 2024).

Teacher J similarly noted:

> "Interactive activities and online platforms make students more motivated and interested in learning."
> (Interviewee J, personal communication, September 19, 2024).

Additionally, several teachers mentioned that technology enables quicker feedback and assessment, helping them monitor students' progress more effectively. Teacher B explained:

> "Using online tools, I can assess students' understanding immediately and. adjust my teaching approach accordingly."
> (Interviewee B, personal communication, September 15, 2024).

Teachers also recognized that technology provides flexibility in lesson planning and enables a more personalized approach to meet students' diverse learning needs.

4.4.2.2 Disadvantages of Blended Learning

While teachers acknowledged the benefits of blended learning, they also reported various challenges. Seven teachers (Teachers A, B, C, D, G, I, and J) expressed the need for more technical support and training. Teacher C mentioned:

> "I struggle to use some tools effectively because I haven't received adequate. training."
> (Interviewee C, personal communication, September 16, 2024).

Teacher G added:

> "The lack of ongoing technical support makes it harder to use new. technologies consistently."
> (Interviewee G, personal communication, September 18, 2024).

Half of the teachers (Teachers B, D, E, H, and J) highlighted that technology can sometimes act as a distraction in the classroom. Teacher E remarked:

> "Students often use their devices for non-educational purposes during class, which affects their focus."
> (Interviewee E, personal communication, September 14, 2024).

Additionally, resource limitations, such as outdated equipment and insufficient devices, were identified as significant barriers. Teacher F noted:

> "The limited availability of proper devices for all students restricts the full. potential of blended learning."
> (Interviewee F, personal communication, September 16, 2024).

Furthermore, some teachers found it challenging to manage students' use of technology effectively. Teacher J observed:

> "Students sometimes misuse digital tools, and it becomes difficult to ensure. they stay focused on the lesson."
> (Interviewee J, personal communication, September 19, 2024).

These findings suggest the need for better infrastructure, training, and management strategies to overcome these obstacles.

In summary, the interviews highlighted that while teachers perceive blended learning as a powerful tool for enhancing student engagement and learning outcomes, several challenges, including technical difficulties, resource limitations, and classroom management issues, need to be addressed. These findings align with the quantitative data, indicating a balanced perspective on the advantages and disadvantages of blended learning.

4.4.3 Summary of Advantages and Disadvantages of Blended Learning

From the analysis, blended learning demonstrates several advantages, including its ability to increase student engagement, enhance flexibility in learning, and improve teaching efficiency. Teachers consistently emphasized that technology enriches the learning experience, making lessons more interactive and helping students better comprehend complex content. The integration of multimedia and digital tools also enables quick feedback and facilitates effective assessment.

However, challenges remain in the implementation of blended learning. Teachers highlighted technical difficulties, resource limitations, and the need for

additional training and support as significant barriers. Managing student use of technology in classrooms also emerged as a concern, with some teachers noting that devices can act as distractions or lead to reduced focus among students.

Overall, while blended learning is perceived as beneficial for enriching the teaching and learning process, its effectiveness is hindered by technical and logistical constraints that require attention to optimize its potential.

4.5 Summary

The analysis of data collected from 50 teachers involved in the Nonthaburi Project has been conducted to explore their perceptions of blended learning in kindergarten Chinese education, focusing on the integration of technology, its effects on education, and the perceived advantages and disadvantages of this approach. Additionally, 10 teachers were randomly selected from the 50 participants who completed the questionnaire and voluntarily participated in semi-structured interviews, providing deeper insights into their experiences.

Based on the data analysis of the questionnaire, most teachers recognized the positive impact of blended learning on student engagement, participation, and overall learning outcomes. The quantitative findings highlighted that blended learning enhances flexibility, increases motivation, and supports students' comprehension. However, challenges such as technical difficulties, resource limitations, and varying digital literacy levels among students were also identified.

The semi-structured interviews confirmed these findings and offered additional perceptions. Teachers emphasized the advantages of technology enrichment, including improved engagement and interaction, while also pointing out challenges

related to technical support, resource accessibility, and managing student use of technology effectively. These qualitative insights reinforced the need for additional training and support to fully optimize blended learning practices.

In summary, the findings illustrate that while blended learning offers significant benefits, there are persistent challenges that require targeted interventions to maximize its potential. These results are discussed in greater detail in the following chapter.

Chapter 5

Conclusion, Discussion and Recommendations

This chapter presents the conclusion, discussion, and recommendations based on the three research questions as follows: 1) How do teachers integrate technologies in the implementation of blended learning? 2) What are teachers' perceptions on the impact of blended learning on the learning achievement of Thai kindergarten students in basic Chinese? 3) What are teachers' perceptions of the advantages and disadvantages of using blended learning in teaching basic Chinese to Thai kindergarten students? This chapter builds on the key findings, discussing their pedagogical and research implications, contributions, and resulting recommendations.

5.1 Conclusion

This section summarizes the findings of the study, addressing the research questions regarding the integration of technologies in blended learning, its impact on kindergarten Chinese education, and the perceived advantages and disadvantages of this teaching approach. The findings, based on both quantitative and qualitative data, are summarized below.

5.1.1 Research Question 1

How do teachers integrate technologies in the implementation of blended learning?

The findings revealed that teachers adopted various strategies to integrate technologies into their teaching practices, focusing on tools and methods that enhance engagement and learning outcomes. A widely used approach was the incorporation of multimedia tools, including videos, audio clips, and images, which were commonly employed to simplify abstract concepts and make learning more accessible for young students. For example, animated videos were often utilized to introduce new Chinese characters, helping students visualize and retain the information more effectively. Teachers noted that the combination of visual and auditory elements significantly improved student comprehension and memory retention.

Another important strategy involved the use of interactive online tools, such as games and quizzes, which were frequently included to maintain student engagement and assess understanding in real time. These tools were particularly valued for their ability to create a fun and interactive learning environment, fostering active participation even among less confident learners. One teacher highlighted how platforms like Kahoot helped to gamify learning, making it more enjoyable and effective. Survey results reflected this sentiment, with the item on interactive tools receiving a high mean score of 4.56 (SD = 0.54).

In addition to multimedia and interactive elements, many teachers utilized online platforms to deliver content and extend learning beyond the classroom. Blending face-to-face instruction with digital resources, such as recorded lessons and supplementary exercises, allowed students to revisit materials at their own pace. This hybrid approach effectively combined the strengths of traditional and digital teaching methods, providing students with a more dynamic and flexible learning experience. The survey data supported this observation, with the corresponding item showing a mean score of 4.22 (SD = 0.65). These practices underscore the diverse ways in which teachers

integrate technology to enrich the learning experience and support students' academic growth.

5.1.2 Research Question 2

What are teachers' perceptions on the impact of blended learning on the learning achievement of Thai kindergarten students in basic Chinese?

Teachers generally held positive views regarding the impact of blended learning on the learning achievement of Thai kindergarten students in basic Chinese. Many teachers highlighted that the integration of multimedia resources, such as videos with subtitles and interactive digital tools, enhanced students' comprehension of complex concepts. For instance, one teacher noted that students were able to grasp abstract ideas more easily when provided with visual and auditory aids, which reinforced their understanding of new Chinese vocabulary and grammar. This perspective aligns with the observed improvements in vocabulary retention and comprehension skills, as digital tools allowed students to repeatedly engage with the material, creating more effective learning opportunities.

Teachers also emphasized that blended learning fostered higher levels of participation and engagement among students. Interactive elements, such as games and quizzes, were widely regarded as effective in maintaining students' attention and encouraging active participation. One teacher commented that students appeared more enthusiastic and willing to contribute during lessons when engaging with digital tools, creating a more dynamic and enjoyable learning environment. This increased engagement was viewed as a key factor in supporting the overall learning achievement of young learners (Jiang et al., 2021).

Furthermore, blended learning was perceived to contribute significantly to the development of speaking and listening skills. Through tools that provided opportunities for pronunciation practice and exposure to native Chinese speakers, students showed notable progress in their ability to communicate orally. Teachers noted that these technologies allowed students to practice in a low-pressure environment, which helped build their confidence and fluency over time.

Despite these benefits, some teachers also expressed concerns about the challenges of ensuring equitable access to digital resources outside the classroom. Variability in students' digital literacy and access to devices sometimes hindered the consistent implementation of blended learning strategies. Nonetheless, teachers agreed that the overall impact of blended learning on students' academic achievement in Chinese was highly positive, particularly in enhancing vocabulary retention, comprehension, and communicative competence.

5.1.3 Research Question 3

What are teachers' perceptions of the advantages and disadvantages of using blended learning in teaching basic Chinese to Thai kindergarten students?

Teachers recognized several advantages of using blended learning in teaching basic Chinese to Thai kindergarten students. A key benefit was the flexibility it provided, allowing students to revisit lessons and access materials at their own pace. This approach was seen as particularly effective for young learners, who often require repeated exposure to fully grasp new vocabulary and language concepts. Teachers also noted that interactive tools, such as multimedia resources and digital quizzes, significantly enhanced student engagement and motivation during lessons, creating a more dynamic and enjoyable learning environment. Additionally, blended learning was

perceived to improve learning outcomes, with teachers observing better retention of vocabulary and progress in listening and speaking skills.

On the other hand, teachers identified several disadvantages associated with blended learning. Technical difficulties, including connectivity issues and device malfunctions, were common challenges that disrupted the flow of lessons. Another concern was the varying levels of digital literacy among students, which sometimes hindered their ability to engage fully with online activities. Teachers also highlighted the increased workload involved in preparing digital content and ensuring equitable access to resources. Finally, limitations in technical support and availability of digital tools were perceived as barriers to the consistent and effective implementation of blended learning.

In summary, teachers viewed blended learning as a valuable approach with notable advantages for engaging students and improving learning outcomes, but they also emphasized the need to address technical and logistical challenges to fully realize its potential.

5.2 Discussion

This section discusses the findings of the research in relation to existing literature, focusing on how teachers integrate technologies in blended learning, the impact of blended learning on kindergarten students' Chinese language achievement, and teachers' perceptions of its advantages and disadvantages.

From the findings, teachers employed various methods to facilitate the integration of technologies, primarily using multimedia tools like videos and interactive quizzes to enhance engagement and comprehension. These methods align with existing

research emphasizing the effectiveness of multisensory learning in early childhood education (Kocour, 2019; Zhang, 2021; Wong, 2023; Shuplat & Noskova, 2020; Maksimova, 2022). Studies have also highlighted the importance of selecting appropriate adoption techniques, such as gamified platforms and interactive simulations, to support diverse learning needs (Caird & Roy, 2019; Kabanda, 2021; Lau, 2021; Yuan & Wang, 2021; Zeng, 2023). However, challenges such as limited access to devices and insufficient technical support were prevalent, mirroring studies by Li (2023) and Zeng & Jiang (2021), which identified resource gaps as a significant barrier to effective technology integration. Additionally, refining delivery formats to balance synchronous and asynchronous learning remains a crucial area for overcoming these barriers (Bahari, 2021; Shuplat & Noskova, 2020; Liang & Li, 2023; Jiang, 2021; Zhou & Zhang, 2022).

The study also revealed that blended learning positively impacts students' learning outcomes, particularly in vocabulary retention, comprehension, and participation. Teachers observed that the adoption techniques of interactive digital tools not only engaged students but also supported their ability to grasp and apply new concepts effectively. These observations align with research findings that highlight the role of technology in fostering interactive and student-centered learning environments (Ilham, Rahman, Sari & Annisaturrahmi, 2023; Wang & Na, 2023; Sundaram & Ramesh, 2022; Tong, Uyen & Ngan, 2022; Maksimova, 2022). Further, studies have shown that flexible delivery formats, incorporating gamification and adaptive platforms, can enhance engagement and support individualized learning (Soon et al., 2021; Albatti, 2023; Guan, 2023; Qiao et al., 2023; Xin, 2022). Despite these benefits, the variability in students' digital literacy and access to resources presents challenges, echoing concerns raised by Guan (2023) and Bahari (2021) about unequal access to educational technologies. This disparity emphasizes the need for equitable access and adaptable delivery formats to ensure inclusivity (MacKinnon & MacLean, 2023; Liang & Li, 2023; Zeng, 2023; Zhang, 2019; Dai & Qin, 2021).

A unique contribution of this study is its focus on the application of blended learning in teaching Chinese to kindergarten students, an area less explored in existing literature. While much research has focused on secondary or higher education, this study highlights how integration of technologies with age-appropriate tools and strategies can make blended learning effective for young learners. Teachers emphasized the importance of adoption techniques that tailor multimedia content to suit the developmental stages of kindergarten students, a perspective that extends the applicability of blended learning to early childhood education (Donegan-Ritter & Kohler, 2017; Wong, 2023; Canadian Paediatric Society, 2017; Ding, 2022; Liu et al., 2021). Additionally, research has shown how innovative delivery formats combining synchronous and asynchronous methods can support engagement and developmental needs in young learners (Sholihah et al., 2021; Jiang, 2021; Lau, 2021; Yuan & Wang, 2021; Zeng, 2023).

Teachers' perceptions of the advantages and disadvantages of blended learning reflected common themes in the literature. They appreciated the flexibility and engagement facilitated by digital tools but also noted significant challenges, including technical difficulties, increased preparation time, and the need for more professional training. These findings emphasize the importance of structured adoption techniques and professional development to help educators adapt to evolving technologies (Saboowala & Mishra, 2021; Lockee, 2021; Jiang et al., 2022; Feng et al., 2023; Patabang et al., 2023). The research also underscores the need for refining delivery formats to balance the demands of blended learning while maintaining high levels of teaching effectiveness (Liang & Li, 2023; Bahari, 2021; Fei, 2023; Zhou & Zhang, 2022; Maksimova, 2022).

In addition to aligning with existing studies, this research revealed unique insights from teachers that differed from or extended the current literature. Teachers in

this study highlighted the necessity of integration of technologies that prioritize linguistic and cultural appropriateness for non-native learners. Unlike existing literature, which focuses on the general effectiveness of digital tools (Zhang, 2021; Kocour, 2019; Wong, 2023; Donegan-Ritter & Kohler, 2017; Fei, 2023), teachers expressed concerns about their cultural adaptability. For example, Teacher C stated, “Many digital stories and animations are designed for native speakers, making the content too fast-paced or complex for kindergarten non-native learners.” This finding underscores the importance of localized adoption techniques and the refinement of delivery formats to bridge the gap between general resource availability and learner-specific needs (Shuplat & Noskova, 2020; Bahari, 2021; Fei, 2023; Liang & Li, 2023; Guan, 2023).

Furthermore, while previous research often identifies technical support and infrastructure as the main barriers to successful integration of technologies (Zhou & Zhang, 2022; Li, 2023; Shuplat & Noskova, 2020; Bahari, 2021; Maksimova, 2022), teachers in this study highlighted a less-discussed challenge: the varying levels of parental involvement and acceptance of technology. Teacher A observed, “Parents in some households lack familiarity with digital tools, which limits their ability to assist children in using them effectively.” This perspective emphasizes the importance of designing adoption techniques that include strategies to engage parents and support home-based learning environments. Further, effective delivery formats should account for parental involvement to ensure the seamless integration of blended learning practices (Ding, 2022; Canadian Paediatric Society, 2017; Yuan & Wang, 2021; Zeng, 2023; Donegan-Ritter & Kohler, 2017).

This divergence between teachers’ perspectives and the existing literature illustrates the unique challenges and opportunities of applying blended learning in teaching basic Chinese to kindergarten students, offering valuable insights for future resource development and policy implementation.

5.3 Recommendations

The findings of this study provide valuable insights into the use of blended learning in teaching Chinese as a foreign language to Thai kindergarten students. Based on these findings, several recommendations are made for educators, educational institutions, and policymakers to improve the integration of blended learning technologies and address the challenges identified in the study.

First, educators should prioritize the integration of multimedia tools and interactive games into their teaching practices. The study found that these resources significantly increased student engagement and supported language development, particularly in vocabulary retention and speaking skills. Educators should take advantage of multimedia tools like videos, animations, and audio resources, as they help young learners better understand abstract concepts. Additionally, interactive games and quizzes were effective in maintaining student participation and fostering a dynamic learning environment. By incorporating these tools into lessons, educators can create multisensory experiences that cater to the developmental needs of children, keeping them motivated and actively involved in their learning.

However, while technology has proven effective, it also brings challenges, particularly regarding access to digital resources and varying levels of digital literacy among students. As highlighted in the study, nearly all teachers reported that digital literacy was a significant challenge. To address this, schools and educational institutions must ensure equitable access to technology, providing necessary infrastructure, such as up-to-date devices, reliable internet, and technical support. This is especially crucial in resource-constrained environments, where disparities in access can hinder the effective implementation of blended learning. Policymakers should invest in these areas to level

the playing field and ensure all students can benefit from technology-enhanced education.

In addition to infrastructure support, teacher professional development plays a key role in the successful integration of technology. While many teachers in the study expressed confidence in using digital tools, a significant number still faced technical challenges. This underscores the importance of providing teachers with ongoing training that not only focuses on how to use digital tools but also addresses the pedagogical strategies needed to integrate technology seamlessly into traditional teaching methods. Teachers should be equipped with strategies to overcome issues such as lesson preparation time and technical difficulties. By enhancing teachers' technological and pedagogical skills, schools can better support the integration of blended learning into their classrooms.

Finally, future research should build upon the findings of this study by exploring several key areas to further optimize blended learning in early childhood education. Longitudinal studies would be beneficial in understanding the long-term impact of blended learning on students' language acquisition and overall academic development. Additionally, further research could investigate how personalized learning approaches can be incorporated into blended learning environments, tailoring content to meet the unique needs of each student. This would help educators provide more targeted support, especially for students at different proficiency levels or with varying learning styles.

Moreover, it would be valuable to explore how early exposure to digital tools influences not only language learning but also broader cognitive skills and overall academic achievement. By better understanding the role of technology in early childhood education, policymakers and educators can develop more effective strategies

to integrate digital tools in ways that enhance learning outcomes and prepare students for future academic challenges. These recommendations aim to strengthen the implementation of blended learning, ensuring that it effectively supports both language acquisition and broader educational development for young learners.

References

Adeshina, A. E. (2024). The transformative role of digital resources in teaching and learning. *Open Journal of Educational Development*, *5*(1), 1–9. https://doi.org/10.52417/ojed.v5i1.520

Afzal, A., Khan, S., Daud, S., Ahmad, Z., & Butt, A. (2023). Addressing the digital divide: Access and use of technology in education. *Journal of Social Sciences Review*, *3*(2), 883–895. https://doi.org/10.54183/jssr.v3i2.326

Albatti, H. (2023). Blended learning in English language teaching and learning: A focused study on a reading and vocabulary building course. *World Journal of English Language*, *13*(5), 121. https://doi.org/10.5430/wjel.v13n5p121

Alenezi, H., Ihmeideh, F. M., & Alshaboul, Y. (2023). Kindergarten teachers' challenges in teaching English as a foreign language to children. *International Journal of Early Years Education*, *31*(3), 722–737. https://doi.org/10.1080/09669760.2022.2137782

Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. *Education and Information Technologies*, *25*(6), 5261–5280. https://doi.org/10.1007/s10639-020-10219-y

Alshahrani, A. (2023). The impact of ChatGPT on blended learning: Current trends and future research directions. *International Journal of Data and Network Science*, *7*(4), 2029–2040. https://doi.org/10.5267/j.ijdns.2023.6.010

Amhag, L., Hellström, L., & Stigmar, M. (2019). Teacher educators' use of digital tools and needs for digital competence in higher education. *Journal of Digital Learning in Teacher Education*, *35*(4), 203–220. https://doi.org/10.1080/21532974.2019.1646169

References (Cont.)

Bahari, A. (2021). Affordances and challenges of teaching language skills by virtual reality: A systematic review (2010–2020). *E-Learning and Digital Media*, *19*(2), 163–188. https://doi.org/10.1177/20427530211036583

Bakar, R. A. (2021). Blended learning—An innovative process. *International Journal of Advanced Research in Education and Society*, *3*(4), 52–55. https://doi.org/10.55057/ijares.2021.3.4.6

Bećirović, S., Brdarević-Čeljo, A., & Delić, H. (2021). The use of digital technology in foreign language learning. *SN Social Sciences*, *1*(10), 246. https://doi.org/10.1007/s43545-021-00254-y

Caird, S. P., & Roy, R. (2019). Blended learning and sustainable development. In W. Leal Filho (Ed.), *Encyclopedia of Sustainability in Higher Education*. (pp. 107-116). https://doi.org/10.1007/978-3-319-63951-2_197-1

Canadian Paediatric Society, O., Digital Health Task Force, Ottawa. (2017). Screen time and young children: Promoting health and development in a digital world. *Paediatrics & Child Health*, *22*(8), 461–468. https://doi.org/10.1093/pch/pxx123

Chan, K. T. (2021). Embedding formative assessment in blended learning environment: The case of secondary Chinese language teaching in Singapore. *Education Sciences*, *11*(7), 360. https://doi.org/10.3390/educsci11070360

Chen, D. (2020). Application of new teaching techniques and the innovation of Chinese international education. *International Conference on Educational Science*, 656–664. https://doi.org/DOI: 10.38007/Proceedings.0000357

Chiu, T. K. F. (2021). Digital support for student engagement in blended learning based on self-determination theory. *Computers in Human Behavior*, *124*, 106909. https://doi.org/10.1016/j.chb.2021.106909

References (Cont.)

Chula Unisearch. (n.d.). *Nonthaburi project: Project to recruit foreign teachers to teach foreign languages (English and Chinese) for educational institutions in Nonthaburi.* Retrieved from http://www.unisearch.chula.ac.th/index.php/en/our-service-2/special-projects/non-project

Cleveland-Innes, M., & Wilton, D. (2018). *Guide to blended learning* Retrieved from Commonwealth of Learning. https://doi.org/10.56059/11599/3095

Dai, J., & Qin, T. (2021). Blended teaching with mobile applications in smart classroom: A new method for Chinese language teaching for international medical students in the post epidemic era. In *Proceedings of the 2021 2nd International Conference on Artificial Intelligence and Education (ICAIE)* (pp. 720–723). https://doi.org/10.1109/ICAIE53562.2021.00158

Ding, L. (2022). Application of information technology in teaching Chinese as a second language. *MATEC Web of Conferences*, *365*, 01001. https://doi.org/10.1051/matecconf/202236501001

Dipendra, K., & Jomphong, M. (2022). *E-learning in Thailand: Mapping the digital divide*. International Telecommunication Union Development Sector. Retrieved from https://www.itu.int/dms_pub/itu-d/opb/pref/d-pref-them.28-2022-pdf-e.pdf

Donegan-Ritter, M., & Kohler, F. W. (2017). Preparing early childhood educators for blending practices in inclusive classrooms. *Journal of the American Academy of Special Education Professionals*, 104–117. Retrieved from https://eric.ed.gov/?id=EJ1164847

Du, M. (2023). The impact of the COVID-19 on digital technology-based teaching and learning in English language education: A systematic review. *Lecture Notes in Education Psychology and Public Media*, *2*, 516–527. https://doi.org/10.54254/2753-7048/2/2022366

References (Cont.)

Esina, L. (2023). Synchronous and asynchronous online teaching of a foreign language. *Humanities and Social Sciences. Bulletin of the Financial University*, *c* (13), 47–50. https://doi.org/10.26794/2226-7867-2023-13-c-47-50

Fei, H. (2023). Research on the development of Chinese teaching resources in Thailand. *BCP Education & Psychology*, *10*, 297–308. https://doi.org/10.54691/bcpep.v10i.5398

Feng, L., Wang, X., Li, F., & Duan, X. (2023). Design and practice of blended teaching in smart classroom environment. In B. Fox, C. Zhao, & M. T. Anthony (Eds.), *Proceedings of the 2022 3rd International Conference on Artificial Intelligence and Education (IC-ICAIE 2022)* (Vol. 9, pp. 7–12). Atlantis Press International BV. https://doi.org/10.2991/978-94-6463-040-4_3

Gao, M. (2021). The impact of modern technology on Chinese education. *Advances in Social Science, Education and Humanities Research*, *571*. https://doi.org/10.2991/assehr.k.210806.106

Grenfell, J. (2015). Blended learning and the flipped classroom: The affordances of cloud-based, located, and virtual world environments to support student learning. *Workshop Proceedings of the 11th International Conference on Intelligent Environments*, *19*. https://doi.org/10.3233/978-1-61499-530-2-333

Guan, A. (2023). Impact of blended learning on EFL learning and teaching. *Lecture Notes in Education Psychology and Public Media*, *18*(1), 304–310. https://doi.org/10.54254/2753-7048/18/20231348

Guo, S., Shin, H., & Shen, Q. (2020). The commodification of Chinese in Thailand's linguistic market: A case study of how language education promotes social sustainability. *Sustainability*, *12*(18), 7344. https://doi.org/10.3390/su12187344

References (Cont.)

Guruleva, T. L. (2020). Information technology in teaching Chinese: Analysis and classification of digital educational resources. In E. Tareva, & T. N. Bokova (Eds.), *Dialogue of Cultures - Culture of Dialogue: from Conflicting to Understanding* (Vol. 95, pp. 208–218). European Publisher. https://doi.org/10.15405/epsbs.2020.11.03.23

Herodotou, C., Sharples, M., Gaved, M., Kukulska-Hulme, A., Rienties, B., Scanlon, E., & Whitelock, D. (2019). Innovative pedagogies of the future: An evidence-based selection. *Frontiers in Education*, *4*, 113. https://doi.org/10.3389/feduc.2019.00113

Holbrey, C. E. (2020). Kahoot! Using a game-based approach to blended learning to support effective learning environments and student engagement in traditional lecture theatres. *Technology, Pedagogy and Education*, *29*(2), 191–202. https://doi.org/10.1080/1475939X.2020.1737568

Ilham, M., Rahman, F., Sari, D. D., & Annisaturrahmi, A. (2023). Enhancing preschool English vocabulary through multimedia tools: Insights from a mixed-methods study. *Al-Athfal: Jurnal Pendidikan Anak*, *9*(2), 93–102. https://doi.org/10.14421/al-athfal.2023.92-02

Inozemtseva, N. V., & Yovkova, N. N. (2022). Modern internet resources and mobile applications as a means of motivating students to learn Chinese. *Vestnik Orenburgskogo gosudarstvennogo universiteta*, *2* (234), 20–25. https://doi.org/10.25198/1814-6457-234-20

Jalinus, N., Verawardina, U., Nabawi, R. A., & Darma, Y. (2021). Developing blended learning model in vocational education based on 21st century integrated learning and industrial revolution 4.0. *Turkish Journal of Computer and Mathematics Education*, *12*(9), 1276–1291.

References (Cont.)

Jiang, Y. (2021). Application of modern educational technology in teaching Chinese as a foreign language: Take mobile phone software Zoom platform as an example. In *Proceedings of the 2021 3rd International Conference on Internet Technology and Educational Information (ITEI)* (pp. 5–8). https://doi.org/10.1109/ITEI55021.2021.00010

Jiang, Y., Chen, Y., Lu, J., & Wang, Y. (2021). The effect of the online and offline blended teaching mode on English as a foreign language learners' listening performance in a Chinese context. *Frontiers in Psychology*, *12*, 742742. https://doi.org/10.3389/fpsyg.2021.742742

Kabanda, M. N. (2021). Globalization and curriculum in the 21st century: A case for flexible and dynamic curriculum. *Asian Journal of Interdisciplinary Research*, *4*(3), 18–29. https://doi.org/10.34256/ajir2132

Kahanurak, S., Dibyamandala, J., & Mangkhang, C. (2023). Digital storytelling and intercultural communicative competence through English as a foreign language for multilingual learners. *Journal of Curriculum and Teaching*, *12*(1), 14–26. https://doi.org/10.5430/jct.v12n1p14

Kelly, J., & McNair, V. (2021). Re-imagining blended learning 3.0 in education – Defining a new technology-enabled experience led approach to accelerate student future skills development. *The European Conference on Education 2021: Official Conference Proceedings*, 207–220. https://doi.org/10.22492/issn.2188-1162.2021.16

Khoirudin, Moch. A. (2023). The urgency of the role and concept of digital literacy in education in the disruption era (21st century). *JIIP - Jurnal Ilmiah Ilmu Pendidikan*, *6*(9), 7458–7463. https://doi.org/10.54371/jiip.v6i9.3088

References (Cont.)

Kim, J., Lee, H., & Cho, Y. H. (2022). Learning design to support student-AI collaboration: Perspectives of leading teachers for AI in education. *Education and Information Technologies*, *27*(5), 6069–6104. https://doi.org/10.1007/s10639-021-10831-6

Kocour, N. (2019). *How blended learning impacts student engagement in an early childhood classroom* (Master's thesis, Northwestern College). Retrieved from https://nwcommons.nwciowa.edu/education_masters/125/

Koutheair Khribi, M. (2022). Toward accessible online learning for visually impaired and blind students. *Nafath*, *6*(19). https://doi.org/10.54455/MCN.19.02

Krishnan, S. D., Norman, H., & Yunus, M. M. (2022, September). English language teachers' professional competencies enhanced through online gamified learning using Classcraft. *In Tenth Pan-Commonwealth Forum on Open Learning (PCF10).* Commonwealth of Learning. https://doi.org/10.56059/pcf10.9852

Kumar, A., Krishnamurthi, R., Bhatia, S., Kaushik, K., Ahuja, N. J., Nayyar, A., & Masud, M. (2021). Blended learning tools and practices: A comprehensive analysis. *IEEE Access*, *9*, 85151–85197. https://doi.org/10.1109/ACCESS.2021.3085844

Kusen, K. (2022). Analysis of the need for development of blended learning model in early childhood education programs in the Rejang Lebong region. *AL-ISHLAH: Jurnal Pendidikan*, *14*(1), 611–618. https://doi.org/10.35445/alishlah.v14i1.1198

Lan, X., & Yu, Z. (2023). A critical review of telecollaboration in Chinese as a second language education: A post-COVID-19 outlook. *Chinese as a Second Language Research*, *12*, 205–234. https://doi.org/10.1515/caslar-2023-2002

References (Cont.)

Lau, K. (2021). Using E-learning activities to support classical Chinese learning in the out-of-class context. In *Proceedings of the 2021 International Symposium on Educational Technology (ISET)* (pp. 65–68). https://doi.org/10.1109/ISET52350.2021.00023

Li, T. (2021). Application of TTS technology in online teaching of Chinese as a foreign language. In *Proceedings of the 2021 3rd International Conference on Internet Technology and Educational Information (ITEI)* (pp. 38–41). https://doi.org/10.1109/ITEI55021.2021.00018

Li, X. (2023). Efficacy of usage of social media on critical thinking disposition of prospective Chinese language teachers in the post era of COVID-19. In C. F. Peng, L. Sun, Y. Feng, & S. H. Halili (Eds.), *Proceedings of the 2022 International Conference on Educational Innovation and Multimedia Technology (EIMT 2022)* (pp. 412–420). Atlantis Press International BV. https://doi.org/10.2991/978-94-6463-012-1_46

Li, X., He, Y., Song, H., & Gao, G. (2023). Applying the ADDIE model to optimize blended foreign language teaching practice: A case study of the "Sino-Japanese intercultural communication" course. *Academic Journal of Management and Social Sciences*, *4*(2), 63–67. https://doi.org/10.54097/ajmss.v4i2.12128

Liang, Y., & Li, Y. (2023). Issues and recommendations regarding the Chinese language proficiency examination in Thailand. *International Journal of Sociologies and Anthropologies Science Reviews*, *3*(4), 121–130. https://doi.org/10.60027/ijsasr.2023.3035

Liu, L., Huang, X., & Wang, Y. (2021). Research on the market development of teaching Chinese as a foreign language based on computer-aided education. In *Proceedings of the 2021 4th International Conference on Information Systems and Computer-Aided Education*. https://doi.org/10.1145/3482632.3482660

References (Cont.)

Lockee, B. B. (2021). Shifting digital, shifting context: (Re)considering teacher professional development for online and blended learning in the COVID-19 era. *Educational Technology Research and Development*, *69*(1), 17–20. https://doi.org/10.1007/s11423-020-09836-8

Luo, M., Chano, J., Chittranun, T., Shu, Y., & Nithideechaiwarachok, B. (2023). The development of an instructional model to promote Chinese reading and writing skills for university students. *Frontiers in Education*, *8*, 1189016. https://doi.org/10.3389/feduc.2023.1189016

Lyu, B., & Qi, X. (2020). A review of research on technology-assisted teaching and learning of Chinese as a second or foreign language from 2008 to 2018. *Front Educ China*, *15*(1), 142–163. https://doi.org/10.1007/s11516-020-0006-8

MacKinnon, G., & MacLean, T. (2023). Emergency remote teaching: The challenges associated with a context of second language instruction. *Canadian Journal of Learning and Technology*, *49*(1), 1–23. https://doi.org/10.21432/cjlt28277

Maja, M. (2023). Teachers' perceptions of integrating technology in rural primary schools to enhance the teaching of English first additional language. *Journal of Curriculum Studies Research*, *5*(1), 95–112. https://doi.org/10.46303/jcsr.2023.8

Maksimova, A. (2022). A systematic review of research on the use and impact of technology for learning Chinese. *International Journal on Cybernetics & Informatics*, *11*, 67–78. https://doi.org/10.5121/ijci.2022.110405

Mayantao, R., & Tantiado, R. C. (2024). Teachers' utilization of digital tools and confidence in technology. *International Journal of Multidisciplinary Research and Analysis, 07*(05). https://doi.org/10.47191/ijmra/v7-i05-16

References (Cont.)

Moloney, R., & Xu, H. L. (2018). The use of digital technologies in quality teaching of Chinese. In M. Singh & J. Han (Eds.), *Teaching and Learning Chinese in Schools. Palgrave Studies in Teaching and Learning Chinese. Palgrave Pivot, Cham.* (pp. 73–90). https://doi.org/10.1007/978-3-319-89372-3_4

Muksin, S. N. B., & Makhsin, M. B. (2021). A level of student self-discipline in E-Learning during pandemic Covid-19. *Procedia of Social Sciences and Humanities*, *1*, 278–283. https://doi.org/10.21070/pssh.v1i.59

Myravyova, N., Zhurbenko, N., & Artyushina, G. (2021). Blended learning for teaching professionally oriented foreign and native languages. *Arab World English Journal*, *7*(1), 126–139. https://doi.org/10.24093/awej/call7.9

Nakhriyah, M., & Wibowo, H. (2020). Investigating blended learning impact on students' vocabulary achievement. *Lingua*, *16*(2), 46–55. https://doi.org/10.34005/lingua.v16i2.1121

Noor, U., Younas, M., Saleh Aldayel, H., Menhas, R., & Xu, Q. (2022). Learning behavior, digital platforms for learning and its impact on university student's motivations and knowledge development. *Frontiers in Psychology*, *13*, 933974. https://doi.org/10.3389/fpsyg.2022.933974

Normawati, A. (2021). The implementation of blended learning in teaching reading. *English Language and Education Spectrum*, *1*(2), 45–51. https://doi.org/10.53416/electrum.v1i2.26

Ouyang, Y., Chusorn, P., & Chantarasombat, C. (2023). Development of indicators and approach for enhancing Chinese language teacher leadership of secondary schools in the Northeast. *International Journal of Higher Education*, *12*(3), 60–67. https://doi.org/10.5430/ijhe.v12n3p60

References (Cont.)

Park, S. E. (2021). Planning for blended learning for the post-pandemic era. *American Journal of Biomedical Science & Research*, *13*(3), 268. https://doi.org/10.34297/AJBSR.2021.13.001868

Patabang, A., Limbong, M., & Sunaryo, T. (2023). Management of blended learning and digital skills and their influence on the learning independence of vocational students. *Jurnal Pedagogi Dan Pembelajaran*, *6*(1), 106–113. https://doi.org/10.23887/jp2.v6i1.48894

Pozo, J.-I., Pérez Echeverría, M.-P., Cabellos, B., & Sánchez, D. L. (2021). Teaching and learning in times of COVID-19: Uses of digital technologies during school lockdowns. *Frontiers in Psychology*, *12*, 656776. https://doi.org/10.3389/fpsyg.2021.656776

Puspaningtyas, N. D., & Ulfa, M. (2020). Improving students' learning outcomes in blended learning through the use of animated video. *Kalamatika: Jurnal Pendidikan Matematika*, *5*(2), 133–142. https://doi.org/10.22236/KALAMATIKA.vol5no2.2020pp133-142

Qiao, S., Chu, S. K. W., & Yeung, S. S. (2023). Understanding how gamification of English morphological analysis in a blended learning environment influences students' engagement and reading comprehension. *Computer Assisted Language Learning*, 1–34. https://doi.org/10.1080/09588221.2023.2230273

Rasheed, R. A., Kamsin, A., & Abdullah, N. A. (2020a). Challenges in the online component of blended learning: A systematic review. *Computers & Education*, *144*, 103701. https://doi.org/10.1016/j.compedu.2019.103701

Rasheed, R. A., Kamsin, A., & Abdullah, N. A. (2020b). Students and teachers' challenges of using technology in blended learning environments. In *Proceedings of the 2020 the 3rd International Conference on Computers in Management and Business* (pp. 195–200). https://doi.org/10.1145/3383845.3383875

References (Cont.)

Ren, X., & Kongjit, C. (2020). An analysis of Thai students' negative proficiency in Chinese characters learning. In *2020 Joint International Conference on Digital Arts, Media and Technology with ECTI Northern Section Conference on Electrical, Electronics, Computer and Telecommunications Engineering (ECTI DAMT & NCON)* (pp. 319–323). https://doi.org/10.56028/ijerd.1.1.38

Rong, C., Zhou, X., & Chen, Y. (2023). Unraveling the impact and challenges of online learning in Chinese education. *Research and Advances in Education*, *2*(11), 23–36. https://doi.org/10.56397/RAE.2023.11.04

Rukanda, N. (2020). Efforts to stimulate entrepreneurship character for early childhood through innovative learning methods based on science, technology, engineering, art, and math (STEAM). *Golden Age: Jurnal Pendidikan Anak Usia Dini*, *4*(1). https://doi.org/10.29313/ga:jpaud.v4i1.5369

Saboowala, R., & Manghirmalani Mishra, P. (2021). Readiness of in-service teachers toward a blended learning approach as a learning pedagogy in the post-COVID-19 era. *Journal of Educational Technology Systems*, *50*(1), 9–23. https://doi.org/10.1177/00472395211015232

Salakhova, M. G., & Tretyakova, V. S. (2021). Modern pedagogical technologies in teaching the Chinese language. *Современная Высшая Школа Инновационный Аспект*. http://dx.doi.org/10.7442/2071-9620-2021-13-4-57-64

Serwornoo, M. Y. W., Danso, S., Azanu, B., Semarco, S. K. M., & Aidoo, E. A. K. (2024). Use of digital platforms among university students: A systematic literature review. *Qeios, 6*. https://doi.org/10.32388/SQKGT5.2

Sholihah, H. I., Hidayat, A. W., Srinawati, W., Syakhrani, A. W., & Khasanah, K. (2021). What linguistics advice on teaching English as a foreign language learning using blended learning system. *Linguistics and Culture Review*, *5*(1), 342–351. https://doi.org/10.21744/lingcure.v5n1.1620

References (Cont.)

Shudueva, Z., Budnikov, D., & Akhmadov, A. (2023). Problems and opportunities for introducing educational technologies for the sustainable development of the quality of education. *E3S Web of Conferences*, *451*, 06010. https://doi.org/10.1051/e3sconf/202345106010

Shuplat, A., & Noskova, M. (2020). Measuring the effectiveness of blended learning implementation in context of the modern educational process. *Scientific bulletin of South Ukrainian National Pedagogical University named after K D Ushynsky*, *2020*(2 (131)), 38–44. https://doi.org/10.24195/2617-6688-2020-2-5

Soon, G. Y., Chua, N. A., Yusof, C. M. Z., & Saputra, J. (2021, March 7). Active blended learning in the teaching of Chinese as foreign language: Facing pandemic challenge. In *Proceedings of the International Conference on Industrial Engineering and Operations Management*. 11th Annual International Conference on Industrial Engineering and Operations Management. https://doi.org/10.46254/AN11.20210831

Speer, A., & Eichler, A. (2022). Developing prospective teachers' beliefs about digital tools and digital feedback. *Mathematics*, *10*(13), 2192. https://doi.org/10.3390/math10132192

Sundaram, S., & Ramesh, R. (2022). Effectiveness of joyful game-based blended learning method in learning chemistry during COVID-19. *International Journal of Evaluation and Research in Education (IJERE)*, *11*(4), 2140. https://doi.org/10.11591/ijere.v11i4.22427

Tong, D. H., Uyen, B. P., & Ngan, L. K. (2022). The effectiveness of blended learning on students' academic achievement, self-study skills and learning attitudes: A quasi-experiment study in teaching the conventions for coordinates in the plane. *Heliyon*, *8*(12), e12657. https://doi.org/10.1016/j.heliyon.2022.e12657

References (Cont.)

Tulasi, B., & Suchithra, R. (2020). Blended learning effectiveness in higher education. *International Journal of Engineering and Advanced Technology*, *9*(3), 105–108. https://doi.org/10.35940/ijeat.C4801.029320

Van Der Westhuizen, L. M., & Hannaway, D. M. (2021). Digital play for language development in the early grades. *South African Journal of Childhood Education*, *11*(1). https://doi.org/10.4102/sajce.v11i1.925

Venugopal, A. (2024). Impact of digital learning platforms on student academic performance. *Medicon Engineering Themes, 6*(5), 19–21. https://doi.org/10.55162/MCET.06.208

Vetitnev, A. M., Maznichenko, M. A., Lopatinskiy, D. B., & Aksenov, I. A. (2020). Traditional and digital technologies in professional education: Integration opportunities. *Journal of Physics: Conference Series*, *1691*(1), 012135. https://doi.org/10.1088/1742-6596/1691/1/012135

Wagi, M. A. (2021). Blended learning and student performance. *Towards Excellence, 13*(3), 19–21. http://dx.doi.org/10.37867/TE130321

Wei, Y. (2022). Self-efficacy of Chinese language teachers in a private tutoring institution. *Asia Social Issues*, *15*(4), 251268. https://doi.org/10.48048/asi.2022.251268

Wilson, C. (2014). *Semi-structured interviews*. In C. Wilson (Ed.), *Interview techniques for UX practitioners* (pp. 23–41). Morgan Kaufmann. https://doi.org/10.1016/B978-0-12-410393-1.00002-8

Wong, J. (2023). Adopting agile-blended learning approach in an early childhood research course. *36th Asian Association of Open Universities Conference*, 364–373.

References (Cont.)

Wu, J., Zhou, R., & Xia, W. (2023). Improving English listening and speaking abilities in online interactive platforms. *International Journal of Emerging Technologies in Learning (iJET)*, *18*(18), 35–49. https://doi.org/10.3991/ijet.v18i18.43501

Wu, Y., & Wang, J. (2022). Three-stage blended Chinese teaching online and offline for international students: A case study on Chinese teaching for international students in S university. *Journal of Higher Education Research*, *3*(2), 207. https://doi.org/10.32629/jher.v3i2.758

Wulandari, W., Sabarun, S., & Qamariah, Z. (2023). Development of an information technology-based English curriculum today. *SOKO GURU: Jurnal Ilmu Pendidikan*, *3*(1), 21–30. https://doi.org/10.55606/sokoguru.v3i1.2034

Xiang, J., & Ma, C. (2023). Modeling the effectiveness of blended learning promotion with artificial intelligence adaptive learning system. *Journal of Logistics, Informatics and Service Science*, *10*(3). https://doi.org/10.33168/JLISS.2023.0307

Xie, J. (2023). Opportunities and challenges brought by artificial intelligence to second language teaching: A case study of international Chinese language education. *Advances in Engineering Innovation*, *3*(1), 41–46. https://doi.org/10.54254/2977-3903/3/2023045

Xin, T. (2022). The training mode of local Chinese language teachers in Thailand: An exploratory analysis. *Teacher Education and Curriculum Studies*, *7*(2), 57. https://doi.org/10.11648/j.tecs.20220702.12

Xu, W., Zhang, H., Sukjairungwattana, P., & Wang, T. (2022). The roles of motivation, anxiety and learning strategies in online Chinese learning among Thai learners of Chinese as a foreign language. *Frontiers in Psychology*, *13*, 962492. https://doi.org/10.3389/fpsyg.2022.962492

References (Cont.)

Xue, M. (2022). Research on the application and influence of digital technology in international Chinese language education. *Academic Journal of Humanities & Social Sciences*, *5*(3). https://doi.org/10.25236/AJHSS.2022.050319

Xue, S., & Churchill, D. (2020). Educational affordances of mobile social media for language teaching and learning: A chinese teacher's perspective. *Computer Assisted Language Learning*, *35*, 918–947.

Yang, Y.-F., & Kuo, N.-C. (2023). Blended learning to foster EFL college students' global literacy. *Computer Assisted Language Learning*, *36*(1–2), 81–102. https://doi.org/10.1080/09588221.2021.1900874

Yasa, I. G. B. K. (2023). Teachers' and students' perception of animation video by Animaker in blended learning. *International Journal of English Education and Linguistics (IJoEEL)*, *5*(1), 109–119. https://doi.org/10.33650/ijoeel.v5i1.5483

Young, T. J. (2015). Questionnaires and surveys. In Z. Hua (Ed.), *Research Methods in Intercultural Communication* (1st ed., pp. 163–180). Wiley. https://doi.org/10.1002/9781119166283.ch11

Yuan, H., & Wang, Z. (2021). A review of research on technology enhancing Chinese learning. *2021 International Conference on Internet, Education and Information Technology (IEIT)*, 462–467.

Yuan, T. (2020). The application of children's songs in primary school Chinese teaching. *Frontiers in Educational Research*, *3*(15). https://doi.org/10.25236/FER.2020.031514.

Zalat, M. M., Hamed, M. S., & Bolbol, S. A. (2021). The experiences, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university medical staff. *PLOS ONE*, *16*(3), e0248758. https://doi.org/10.1371/journal.pone.0248758

References (Cont.)

Zeng, J. (2023). The application of linguistry on international Chinese education supported by information technology. *Advances in Education, Humanities and Social Science Research*, *7*(1), 265. https://doi.org/10.56028/aehssr.7.1.265.2023

Zeng, Y., & Jiang, W. (2021). Barriers to technology integration into teaching Chinese as a foreign language: A case study of Australian secondary schools. *World Journal of Education*, *11*(5), 17. https://doi.org/10.5430/wje.v11n5p17

Zhang, S. (2019). Chinese-as-a-foreign-language learners' use of self-regulated learning in flipped/blended learning environments: A descriptive study. *Studies in Self-Access Learning Journal*, 181–204. https://doi.org/10.37237/100205

Zhang, S. (2021). A systematic review of pedagogical research on teaching Chinese as a foreign language in the United States – from 1960 to 2020. *Chinese as a Second Language Research*, *10*(2), 207–238. https://doi.org/10.1515/caslar-2021-2003

Zheng, W. (2020). Distance Education Technology in Teaching Chinese as a Foreign Language. *2020 International Conference on Educational Training and Educational Phenomena (ICETEP2020)*, 107–110. https://doi.org/10.38007/Proceedings.0000920

Zhou, H. (2022). Language teaching methods for Thai reading comprehension of Chinese college students. *International Journal of Educational Research and Development*, *1*(1), 38. https://doi.org/10.56028/ijerd.1.1.38

Zhou, T., & Zhang, W. (2022). Effectiveness study on online or blended language learning based on student achievement: A systematic review of empirical studies. *Sustainability*, *14*(12), 7303. https://doi.org/10.3390/su14127303

Zou, D., Luo, S., Xie, H., & Hwang, G.-J. (2022). A systematic review of research on flipped language classrooms: Theoretical foundations, learning activities, tools, research topics and findings. *Computer Assisted Language Learning*, *35*(8), 1811–1837. https://doi.org/10.1080/09588221.2020.1839502

Appendices

Appendix A

Letter of Invitation for IOC Experts

RSU มหาวิทยาลัยรังสิต RANGSIT UNIVERSITY

มหาวิทยาลัยรังสิต Rangsit University T. (66) 2997 2200-30
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STC.4800/1263

11 June 2024

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

Dear Dr. Thanyapatra Soisuwan,

Mr. Wenlong Li student number 6305203, a student in the Master of Education (Bilingual Education) who has already completed his coursework and thesis proposal defense on 10 January 2024. His research is entitled "Perceptions of Blended Learning in Teaching Basic Chinese to Thai Kindergarten Students". Currently, he is in the stage of collecting and analyzing data Asst. Prof. Dr. Anchalee Chayanuvat is his advisor.

Mr. Wenlong Li has finished designing his research instruments. Thus, the college would like to invite you to validate these instruments. The package has been attached herewith.

I truly appreciate your kind support in this matter and hope that you will accept my invitation.

Sincerely yours,

Anchalee Chayanuvat

Assistant Professor Anchalee Chayanuvat, Ed.D.
Program Director of Bilingual Education
Suryadhep Teachers College
Rangsit University

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STC.4800/1264

11 June 2024

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

Dear Assistant Professor Dr. Pairin Srisinthorn,

Mr. Wenlong Li student number 6305203, a student in the Master of Education (Bilingual Education) who has already completed his coursework and thesis proposal defense on 10 January 2024. His research is entitled "Perceptions of Blended Learning in Teaching Basic Chinese to Thai Kindergarten Students". Currently, he is in the stage of collecting and analyzing data Asst. Prof. Dr. Anchalee Chayanuvat is his advisor.

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Assistant Professor Anchalee Chayanuvat, Ed.D.
Program Director of Bilingual Education
Suryadhep Teachers College
Rangsit University

Memorandum

STC 4800/1265

11 June 2024

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

Dear Dr. Juldis Khantap,

Mr. Wenlong Li student number 6305203, a student in the Master of Education (Bilingual Education) who has already completed his coursework and thesis proposal defense on 10 January 2024. His research is entitled "Perceptions of Blended Learning in Teaching Basic Chinese to Thai Kindergarten Students". Currently, he is in the stage of collecting and analyzing data Asst. Prof. Dr. Anchalee Chayanuvat is his advisor.

Mr. Wenlong Li has finished designing his research instruments. Thus, the college would like to invite you to validate these instruments. The package has been attached herewith.

I truly appreciate your kind support in this matter and hope that you will accept my invitation.

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Anchalee Chayanuvat

Assistant Professor Anchalee Chayanuvat, Ed.D.
Program Director of Bilingual Education
Suryadhep Teachers College
Rangsit University

Appendix B

Survey Questionnaire& Semi-Structured Interviews

Section	Item	Strongly Agree to Strongly Disagree (5-point Likert scale)				
		Strongly Agree(5)	Agree(4)	Neutral(3)	Disagree(2)	Strongly Disagree(1)
Adoption Technique	1. I feel confident using digital tools in my teaching.					
	2. I have received sufficient training to incorporate blended learning in my classroom.					
	3. I can seamlessly integrate digital resources with traditional teaching methods.					
	4. The adoption of blended learning techniques has improved my teaching practice.					
	5. I find it easy to create interactive content for my lessons.					
	6. Blended learning adoption is well-supported by my school administration.					
	7. I have access to appropriate digital tools for blended learning.					
Delivery Format	8. The blended learning delivery format is easy for my students to understand.					
	9. I can effectively combine face-to-face instruction with online activities.					
	10. Multimedia presentations enhance my students' learning experience.					
	11. Interactive games and quizzes are effective in teaching Chinese to my students.					

	12. The delivery format of blended learning keeps my students engaged.					
	13. Blended learning formats are accessible to all my students.					
	14. I am able to adapt the delivery format to cater to different learning styles.					
Students' Learning Achievement	15. Blended learning has improved my students' Chinese language skills.					
	16. My students' comprehension of Chinese has increased due to blended learning.					
	17. Blended learning encourages higher participation in class activities.					
	18. My students show better academic progress with blended learning.					
	19. Blended learning helps improve students' listening skills in Chinese.					
	20. My students have better retention of Chinese vocabulary through blended learning.					
	21. Blended learning has enhanced my students' speaking abilities in Chinese.					
	22. Overall, blended learning positively impacts my students' learning outcomes.					
Advantages and	23. Blended learning increases student engagement.					
	24. Blended learning provides flexible learning opportunities for students.					
	25. I find blended learning to be a beneficial addition to traditional teaching methods.					

	26. Technical difficulties are a common challenge in blended learning.					
	27. The varying levels of digital literacy among students affect the success of blended learning.					
	28. Blended learning requires more preparation time than traditional methods.					
	29. Resource limitations hinder effective implementation of blended learning.					
	30. The advantages of blended learning outweigh its disadvantages.					

The following are questions for the semi-structured interviews:

Overall Experience with Blended Learning：

How would you describe your teaching experience within a blended learning environment?

What impact do you think blended learning has had on your teaching methods?

Technology Use and Support：

What are the main technological challenges you have encountered while using technology to support blended learning?

What technological resources or support does the school provide to assist you in implementing blended learning?

Interaction between Teachers and Students：

How have you observed blended learning changing the way you interact with your students?

What changes have you noticed in student engagement and activity levels in a blended learning environment?

Learning Outcomes and Assessment：

How do you assess student learning outcomes in a blended learning setting?

Has blended learning helped students achieve better outcomes in certain areas? Please provide specific examples.

Challenges Faced and Strategies for Resolution：

What teaching challenges have you faced in the implementation of blended learning?

How have you addressed these challenges? Please share some effective strategies.

Future Development and Recommendations：

Based on your experience, what do you think should be the future direction of blended learning?

What suggestions do you have for improving and optimizing the blended learning model?

Appendix C

IOC for Survey Questionnaire& Semi-Structured Interviews

Item	Statement	Expert 1	Expert 2	Expert 3	IOC Value
PART 1 PERSONAL INFORMATION					
1	I am □ Male □ Female	1	1	1	1
2	My teaching experience is ……□ less than 1 year □ 1-2 years □ more than 2 years.	1	1	1	1
3	My blended learning experience is …… □ beginners with less than 1 year □ intermediate with 1-3 years □ and advanced with more than 3 years	1	1	1	1
PART 2 THE SURVEY QUESTIONNAIRE FOR TEACHERS' PERCEPTIONS					
4	I feel confident using digital tools in my teaching.	1	1	1	1
5	I have received sufficient training to incorporate blended learning in my classroom.	1	1	1	1
6	I can seamlessly integrate digital resources with traditional teaching methods.	1	1	1	1
7	The adoption of blended learning techniques has improved my teaching practice.	1	0	1	0.67

8	I find it easy to create interactive content for my lessons.	1	1	1	1
9	Blended learning adoption is well-supported by my school administration.	1	1	0	0.67
10	I have access to appropriate digital tools for blended learning.	1	1	1	1
11	The blended learning delivery format is easy for my students to understand.	1	1	1	1
12	I can effectively combine face-to-face instruction with online activities.	1	1	1	1
13	Multimedia presentations enhance my students' learning experience.	1	0	1	0.67
14	Interactive games and quizzes are effective in teaching Chinese to my students.	1	1	1	1
15	The delivery format of blended learning keeps my students engaged.	1	1	1	1
16	Blended learning formats are accessible to all my students.	1	1	1	1
17	I am able to adapt the delivery format to cater to different learning styles.	1	1	1	1
18	Blended learning has improved my students' Chinese language skills.	1	1	1	1

19	My students' comprehension of Chinese has increased due to blended learning.	1	0	1	0.67
20	Blended learning encourages higher participation in class activities.	1	1	0	0.67
21	My students show better academic progress with blended learning.	1	0	1	0.67
22	Blended learning helps improve students' listening skills in Chinese.	1	0	1	0.67
23	My students have better retention of Chinese vocabulary through blended learning.	1	0	1	0.67
24	Blended learning has enhanced my students' speaking abilities in Chinese.	1	1	1	1
25	Overall, blended learning positively impacts my students' learning outcomes.	1	1	1	1
26	Blended learning increases student engagement.	1	1	1	1
27	Blended learning provides flexible learning opportunities for students.	1	1	1	1
28	I find blended learning to be a beneficial addition to traditional teaching methods.	1	1	1	1
29	Technical difficulties are a common challenge in blended learning.	1	1	1	1

30	The varying levels of digital literacy among students affect the success of blended learning.	1	1	1	1
31	Blended learning requires more preparation time than traditional methods.	1	0	1	0.67
32	Resource limitations hinder the effective implementation of blended learning.	1	1	1	1
33	The advantages of blended learning outweigh its disadvantages.	1	1	1	1
Semi-Structured Interview Questions for Teachers					
1	How would you describe your teaching experience within a blended learning environment?	1	1	1	1
2	What impact do you think blended learning has had on your teaching methods?	1	1	1	1
3	What are the main technological challenges you have encountered while using technology to support blended learning?	1	1	1	1
4	What technological resources or support does the school provide to assist you in implementing blended learning?	1	1	1	1

5	How have you observed blended learning changing the way you interact with your students?	1	1	1	1
6	What changes have you noticed in student engagement and activity levels in a blended learning environment?	1	1	1	1
7	How do you assess student learning outcomes in a blended learning setting?	1	0	1	0.67
8	Has blended learning helped students achieve better outcomes in certain areas? Please provide specific examples.	1	1	1	1
9	What teaching challenges have you faced in the implementation of blended learning?	1	1	1	1
10	How have you addressed these challenges? Please share some effective strategies.	1	1	1	1
11	Based on your experience, what do you think should be the future direction of blended learning?	1	0	1	0.67
12	What suggestions do you have for improving and optimizing the blended learning model?	1	1	1	1

Appendix D

Interview Data Presentation

Teacher A			
Category	**Key Themes/Codes**	**Examples/Quotes**	**Interpretation**
Technology Integration	- Tech_Assists_Learning - Limited_Equipment - Home_Limitations - Improved_Engagement	"Multimedia tools help kids understand difficult concepts." "The equipment is too big and difficult to manage."	Teacher A use multimedia tools to enhance language understanding but face challenges with equipment and home resources.
Effects on Education	- Tech_Enrichment - Improved_Engagement - Tech_Enhances_Focus	"Technology helps keep the kids' attention longer." "It enriches the classroom environment."	The use of multimedia positively affects student focus, engagement, and the classroom learning experience.
Advantages and Disadvantages	- Positive_Experience - Tech_Challenge - Tech_Support_Needed	"Multimedia is great for engagement, but we need better equipment."	Teacher A appreciate the benefits of blended learning but stress the need for improved equipment and support.

Teacher B			
Category	**Key Themes/Codes**	**Examples/Quotes**	**Interpretation**
Technology Integration	-Tech_Assists_Learning - Tech_Challenge -Limited_Device_Access	"Some students don't have phones, so they can't participate in app-based activities." "Multimedia tools help explain things I	Teacher B integrates technology like apps and multimedia to assist with explanations but faces challenges

		can't clarify well.”	with students' lack of access to devices.
Effects on Education	- Improved_Engagement - Tech_Enables_Quick_Assessment	“With apps, I can quickly see if students understand the lesson.” “Some students still don’t participate despite the technology.”	Technology allows for faster assessment and feedback, though it doesn’t always lead to increased student participation.
Advantages and Disadvantages	- Positive_Experience - Tech_Distraction - Tech_Support_Needed	“Technology helps, but students can get distracted by their phones.” “I wish there was more training for new tools.”	Teacher B sees the benefits of technology but highlights the distractions it can create and the need for more training.

Teacher C			
Category	**Key Themes/Codes**	**Examples/Quotes**	**Interpretation**
Technology Integration	- Tech_Assists_Learning - Tech_Challenge - Limited_Access_to_Resources	“Multimedia makes lessons more interesting for students.” “Finding suitable resources for young students is difficult.”	Teacher C integrates multimedia to make lessons more engaging but finds it challenging to access appropriate resources for young learners.

Effects on Education	- Tech_Enrichment - Improved_Engagement - Tech_Enhances_Learning	"Students understand better when there's a video or audio to explain abstract concepts." "Technology keeps students focused longer."	Technology helps students grasp abstract concepts more easily and improves classroom engagement and focus.
Advantages and Disadvantages	- Positive_Experience - Resource_Limitations - Tech_Support_Needed	"Multimedia enriches the classroom, but finding the right content is a challenge." "More training would be useful."	Teacher C appreciates the benefits of multimedia in enriching lessons but struggles with finding suitable content and desires more support.

Teacher D			
Category	**Key Themes/Codes**	**Examples/Quotes**	**Interpretation**
Technology Integration	- Tech_Assists_Learning - Tech_Limited_Experience - Tech_Integration_Difficulty	"I'm not very familiar with new technologies, so it takes time to learn how to use them." "Technology can really help with explanations."	Teacher D uses technology for better explanation but faces challenges due to limited experience and difficulty in integrating new tools.
Effects on Education	- Tech_Enhances_Learning - Tech_Assists_Student_Participation	"Technology can make learning more interactive, but some students	Technology has a positive impact on lesson delivery and

		still don't engage fully." "It helps me gauge understanding quickly."	assists with assessing student understanding, though it doesn't always fully engage all students.
Advantages and Disadvantages	- Positive_Experience - Tech_Distraction - Need_for_Tech_Training	"Using apps makes learning more fun for students, but some use it to get distracted." "We need more training to use these tools properly."	Teacher D sees the benefits of using technology but struggles with managing distractions and desires more training to integrate it effectively.

Teacher E			
Category	**Key Themes/Codes**	**Examples/Quotes**	**Interpretation**
Technology Integration	- Tech_Assists_Learning - Tech_Improves_Interaction - Tech_Limits_Interaction_Quality	"Blended learning helps me interact more with students, but it's harder to manage when students misuse devices."	Teacher E finds technology useful for enhancing interaction, but it also introduces challenges with managing student behavior and proper device use.

Effects on Education	- Tech_Increases_Participation - Tech_Enhances_Engagement - Tech_Facilitates_Faster_Feedback	"Using multimedia increases student participation and engagement." "I can give feedback faster with these tools."	Technology improves both participation and engagement, while also allowing faster feedback to students.
Advantages and Disadvantages	- Positive_Experience - Tech_Challenge - Need_for_Better_Student_Management	"Multimedia is very helpful, but students get distracted and need better guidance." "Managing technology use is hard sometimes."	Teacher E acknowledges the advantages of multimedia but highlights the difficulty in managing student use of technology effectively.

Teacher F			
Category	**Key Themes/Codes**	**Examples/Quotes**	**Interpretation**
Technology Integration	- Tech_Assists_Learning - Tech_Improves_Student_Motivation - Limited_Resources	"Technology like multimedia helps make learning more fun for students." "However, access to resources is limited in some cases."	Teacher F believes that technology, especially multimedia, increases student motivation, but limited access to resources is a challenge.

Effects on Education	- Tech_Improves_Engagement - Tech_Makes_Learning_Interactive	"Using technology makes learning more interactive and engaging." "Students pay more attention when multimedia is used."	Technology positively impacts student engagement by making learning more interactive and helping retain their attention during lessons.
Advantages and Disadvantages	- Positive_Experience - Tech_Limitations - Need_for_More_Resources	"Technology makes teaching easier, but limited resources can hinder its full potential." "More resources would help."	Teacher F appreciates the positive impact of technology but highlights that limited access to resources restricts its full benefits in the classroom.

Teacher G			
Category	**Key Themes/Codes**	**Examples/Quotes**	**Interpretation**
Technology Integration	- Tech_Assists_Learning - Tech_Improves_Teaching_Efficiency - Limited_Technical_Skills	"Multimedia tools help me explain difficult concepts faster." "Sometimes, I struggle with using new technology."	Teacher G uses technology to improve teaching efficiency but faces challenges due to

			limited technical skills and difficulties in adapting to new tools.
Effects on Education	- Tech_Improves_Student_Focus - Tech_Enhances_Learning_Outcomes	"Technology keeps students focused for longer." "Students seem to learn better when using multimedia."	Technology has a positive impact on maintaining student focus and improving learning outcomes by making lessons more engaging.
Advantages and Disadvantages	- Positive_Experience - Tech_Support_Needed - Limited_Technical_Expertise	"Using technology has improved my lessons, but I need more support to use it effectively." "It's hard to keep up with new tools."	Teacher G sees the benefits of technology but emphasizes the need for more support and training due to limited technical expertise.

Teacher H			
Category	**Key Themes/Codes**	**Examples/Quotes**	**Interpretation**
Technology Integration	- Tech_Assists_Learning - Tech_Facilitates_Assessment - Tech_Integration_Challenges	"Using multimedia helps students understand	Teacher H integrates technology to support

		better.” “I can quickly assess students’ progress with online tools.”	learning and uses it to facilitate quick assessment, but faces challenges in seamlessly integrating it into lessons.
Effects on Education	- Tech_Improves_Engagement - Tech_Speeds_Up_Feedback	“Students are more engaged with technology.” “I can give faster feedback using online tools.”	Technology enhances student engagement and allows for quicker, more efficient feedback, improving the overall learning experience.
Advantages and Disadvantages	- Positive_Experience - Tech_Distraction_Risk - Need_for_Improved_Integration	“Technology improves learning, but sometimes students get distracted.” “We need better ways to integrate technology smoothly.”	Teacher H sees the advantages of using technology but acknowledges the potential for student distraction and the need for more seamless integration.

Teacher I

Category	Key Themes/Codes	Examples/Quotes	Interpretation
Technology Integration	- Tech_Assists_Learning - Tech_Increases_Teaching_Efficiency - Limited_Access_to_Resources	"Multimedia makes explanations easier and faster." "However, finding suitable resources is sometimes difficult."	Teacher I uses technology to improve the efficiency of their lessons but struggles with finding suitable resources, especially for younger learners.
Effects on Education	- Tech_Improves_Engagement - Tech_Enhances_Student_Motivation	"Students are more motivated when multimedia is involved." "They pay better attention with interactive tools."	Technology significantly improves student engagement and motivation, making lessons more interactive and enjoyable for students.
Advantages and Disadvantages	- Positive_Experience - Resource_Limitations - Tech_Challenge	"Multimedia enhances the classroom experience, but the challenge is finding appropriate content." "We need better access to resources."	Teacher I sees the benefits of multimedia in making lessons more engaging but acknowledges the challenge of limited resources and

			the need for better access to tools.

Teacher J			
Category	**Key Themes/Codes**	**Examples/Quotes**	**Interpretation**
Technology Integration	- Tech_Assists_Learning - Tech_Facilitates_Multi-Sensory_Learning - Tech_Adaptation_Challenges	"Technology helps students learn through visuals and audio, which is more engaging." "Adapting to new tech is sometimes difficult."	Teacher J uses technology to create a multi-sensory learning experience, making lessons more engaging, but faces challenges adapting to new tools.
Effects on Education	- Tech_Improves_Engagement - Tech_Enhances_Student_Participation	"Students participate more when we use multimedia." "They stay focused longer with interactive tools."	Technology leads to improved student engagement and participation, helping to maintain focus during lessons.
Advantages and Disadvantages	- Positive_Experience - Tech_Distraction_Risk - Need_for_Improved_Technical_Skills	"Multimedia is great for learning, but students can get distracted." "I need to	Teacher J acknowledges the advantages of multimedia

		improve my skills with new tools.”	but highlights the potential for distractions and the need for better technical skills to optimize usage.

Appendix E

Sample of Interview Process

Original version

Interview Process of Teacher A

采访者： 我们之前做过一个问卷调查，了解了一些信息。现在想通过访谈，深入了解一些细节。您可以描述一下您在混合式学习环境中的教学体验吗？比如您的教学模式、课堂组织方式、上课流程，甚至学生的反馈等方面都可以提到。

Teacher A： 整体体验还是不错的。我主要是教幼儿园的小朋友，日常的问答环节相对及时，比如有些问题学生可以很快地反馈。但是，如果是在线上课，时间一长，反应可能就会有点慢。不过，学习比较好的孩子还是可以很快反应过来。总的来说，混合学习的效果还可以。

采访者： 您提到的是混合学习，那么您是如何理解混合式学习的？

Teacher A： 混合式学习包含两个方面。一方面是面对面的传统教学，比如课堂上老师亲自教学。另一方面是数字化的学习体验，比如学生在家里通过看视频来学习。这些内容在课外和课堂上结合起来，形成一个整体。

采访者： 混合式学习对您的教学方法有影响吗？如果有，能具体谈谈吗？

Teacher A： 其实对教学有一定帮助。我们教的是外语，中文对他们来说是第二语言。如果我们在教学中加入多媒体内容，比如图片和视频，学生能更好地理解我们教的内容。这对他们的学习非常有利，课程内容变得更丰富、容易理解。我觉得这是多媒体教学的一个好处，利大于弊。

采访者： 技术方面的帮助更多吗？在使用过程中，您遇到过什么困难吗？

Teacher A： 技术设备取决于学校。如果是小型设备，比如蓝牙音箱，用来播放音乐是没有问题的。但是，一些政府学校的孩子家庭条件有限，可能没办法在课外搜索和使用中文相关的内容。所以，我尽量在课堂内提供更多资源，让课堂更加丰富。

采访者： 您觉得学校在技术支持上给您提供了哪些帮助？这些帮助是否足够？

Teacher A： 学校配备了投影仪和电视机，尤其是在幼儿园的唱歌跳舞环节，这些设备非常有帮助。通过电视展示，可以让孩子们看到更丰富的画面，不只是老师一个人在前面带领。这样他们的注意力更容易集中。如果再配合一些简单的电子游戏，课堂效果会更好。

采访者： 您觉得课堂效果体现在哪些方面？

Teacher A： 幼儿园的小朋友集中注意力的时间比较短，但如果有声音和画面结合的多媒体内容，他们的注意力可以延长，参与度也会更高。多媒体能够帮助提升课堂积极性。

采访者： 那么，您认为混合式学习是否改变了您和学生的互动方式？

Teacher A： 确实有一些改变。多媒体的加入让课堂更有趣，但在幼儿园阶段，我发现手工教具同样有效。有时传统的手工游戏和活动对孩子们也有很大帮助。不过，如果要利用多媒体教学，需要更高的语言表达能力，因为你需要解释很多内容。我在这方面经验比较多，能够和孩子们沟通得比较好。所以，我认为多媒体和传统教具相比，帮助更大一些。

采访者： 您觉得这种帮助如何反映在学生的表现上？

Teacher A： 整堂课下来，学生的参与度和积极性都提高了很多，特别是他们对新鲜事物感到好奇，课堂效果明显更好。

采访者： 您觉得当前教学中最大的挑战是什么？

Teacher A： 最大的挑战其实不完全在学校，而是在家庭的配合。教育不能只依赖学校，家庭的辅助同样重要。幼儿园虽然没有作业，但一些简单的数字，比如 1 到 10，三到五岁的孩子应该能掌握。如果家里能稍微帮助巩固一下，效果会更好。但如果只是依赖老师，每周只有五节课，孩子可能不够时间去掌握这些内容。

采访者： 您觉得家长在帮助孩子学习数字这些基础知识方面发挥了多大作用？

Teacher A： 如果家长能稍微配合，比如帮孩子巩固数字，他们会很快掌握。我有一些学生能很快学会 1 到 10 的数字，因为他们的家长在家里花时间帮助他们。家长的参与对孩子学习效果的提升非常重要。

采访者： 那么您认为改进的方向是家长需要更多地参与进来？

Teacher A： 是的，我觉得家长需要更多参与。只要简单配合学校，孩子在家巩固课堂上学的内容，进步会很快。有些孩子因为家庭不重视，连基本的书写技能都没有掌握，到了 K2 阶段还是不会正确握笔。这些问题其实在家里可以得到改善。

采访者： 还有什么想补充的吗？

Teacher A： 如果是小学以上的孩子，我觉得混合式学习的帮助会更明显，利大于弊。幼儿园的孩子还比较小，可能效果不是那么突出，但在小学阶段，这种学习模式的效果会更好。

Interview Process of Teacher B

采访者：好的，感谢您接受这次访谈。我们之前做过问卷调查，现在想进一步了解一些关于混合式学习的细节。您可以先简单介绍一下您在混合式学习环境中的教学体验吗？

B 老师：嗯，混合式学习就是传统教学和电子教学的结合。随着时代的发展，现在的孩子越来越多地接触多媒体工具，所以我觉得这种教学方式已经是一种趋势了。多媒体的使用方式很多，确实对教学有帮助。不过我认为要掌握一个”度”，你可以用它，但不能过度依赖它。

采访者：明白，那您觉得目前这种混合式学习对您的教学方法有什么具体的影响吗？

B 老师：有些情况下，当我解释不清楚某些内容时，多媒体可以帮我很大忙。比如，难以用语言解释的概念，借助图片或视频，学生能更快地理解。所以在某些方面，技术确实能够解决一些问题。

采访者：那在使用这些技术的过程中，您有没有遇到过什么问题呢？

B 老师：嗯，问题还是有的。比如，使用手机 APP 进行互动时，有些学生没有手机，没法参与。这是我一直想避免的，但有时确实避免不了。再有就是，学生拿到手机后，除了用来和你互动，他们还可能用手机做其他事情，这也很难控制。

采访者：这确实是一个挑战。那您觉得学校或者我们这个项目在技术支持上，给您提供了足够的帮助吗？

B 老师：老实说，项目对我的影响并不大，主要是我自己对技术的掌握不够熟练。有时候需要自己去学习怎么使用一些新的工具，比如网站的使用、上传资料之类的操作，有时会有点不熟悉。这个过程需要花时间去学习和适应，我觉得学校应该提供更多的帮助。

采访者：您认为学校在技术培训和支持方面做得还不够是吗？

B 老师：是的，可以这么说。

采访者：那么，在使用技术的过程中，您觉得这些工具在教学中的作用最明显体现在哪里呢？

B 老师：主要还是在互动方面。我最近发现，即使使用多媒体进行互动，有些学生的参与度还是不高，不想参与。但在使用这些工具时，我能更快了解到学生对知识的掌握情况，这是个好处。

采访者：您提到能更快了解到学生的掌握情况，这对于教学的帮助是很明显的吧？

B 老师：是的，多媒体工具确实可以帮助我快速评估学生的学习情况，尤其是在评估方面，比传统的方式要更有效。

采访者：听起来这些工具对于评估的帮助更大于教学过程中其他部分，您觉得是这样吗？

B 老师：是的，我觉得多媒体工具主要在评估上发挥了更大的作用。当然，课堂上的互动也有帮助，但评估是更明显的一个好处。

采访者：那么在使用这些新技术的过程中，您觉得遇到的最大挑战是什么呢？

B 老师：最大的挑战就是如何有效利用这些技术，让它们真正为教学服务，而不是为了使用而使用。我希望技术能帮助我产生真正的效果，而不是仅仅让课堂看起来高科技化。

采访者：明白。那么您觉得在目前这种教学模式下，有哪些地方还可以改进呢？

B 老师：我觉得学校可以提供更多的技术培训，帮助我们更好地使用这些工具。此外，教师之间的经验分享也很重要，可能有些老师已经掌握了某些技术，如果能有一个平台让大家共享资源，那会对教学帮助很大。

采访者：非常感谢您的分享！最后，您还有什么要补充的吗？

B 老师：我想到一点，可能跟刚才说的有些不同。关于多媒体的使用，有时候它不仅仅在教学方面有帮助，也可以用在学生自学方面。比如我最近参加了一个关于 AI 的讲座，教授教我们如何使用 AI 生成符合学生水平的阅读材料。这让我对教学方式有了新的思考，AI 确实能够给我们提供更多的便利。

采访者：听起来 AI 在未来的教学中可能会发挥更大的作用。非常感谢您的分享，今天的访谈就到这里了！

Interview Process of Teacher C

采访者：根据之前的问卷调查，我们已经有了一些了解，但现在我们想进一步深入探讨您在混合式学习环境中的一些经验。首先，您认为老师的教学能力是否真正应用到学生身上？学生是否真正吸收到了所教的内容？

教师 C：嗯，有一点，但不算很多。我觉得问题在于，学生是否真正从传统课堂和在线教学中学到了东西。因为混合式的教学，线上和线下结合的效果到底如何？我的经验是，线下上完课，布置了作业，回家做的时候，有些学生能在课堂上偷懒的话就会偷懒。所以，我觉得学习的真实性和系统性很大程度上取决于学生的自控力和参与度。

采访者：那么您觉得线上和线下相结合的模式，学生的反馈如何？

教师 C：嗯，线下的参与度通常会比线上好一些。虽然在课堂上上课的时候，学生的速度不一定特别快，毕竟人数很多，学生可以选择隐藏自己，除非老师叫他们回答问题。整体上来说，我觉得学生的参与度还是不够的。

采访者：您认为混合式教学带来了哪些变化呢？

教师 C：这种方式其实挺多样化的。在语言方面，虽然有一些问题，但学校会提供音频资源来协助教学。互动方式上也有一些优势，比如说讲课的形式可能有点无聊，但如果利用一些音频或资源，能增加趣味性，也能让老师和学生之间的距离拉近。

采访者：这种互动方式会在哪些方面有所提高？

教师 C：比如你让学生画一幅画，单纯让他画可能不太理解或不想画，但如果你放一些动画片或类似的东西，学生会更有兴趣，也会更愿意跟随老师的指示去画。

采访者：您提到互动，那在教中文的过程中，比如数字 1234，学生的反应如何？

教师 C：如果只是简单地教数字，学生可能记不住，但如果配合同桌或者同学一起说，学生就更愿意跟着说。重复性活动也不太好，虽然重复能够帮助记忆，但需要老师提前准备好线下的内容，不能一直重复，最好是换一种活动方式，或者用不同的音频来呈现。

采访者：您如何看待混合式教学的未来发展？

教师 C：我觉得这种教学模式很灵活，老师可以根据自己的节奏安排学生学习，课堂上可以进行更深入的讨论和互动，学生也可以通过协作一起进行利于学习的活动。这种模式的灵活性也让学生能更好地消化知识。

采访者：好的，谢谢您的分享。再见。

教师 C：好的，再见。

English version

Interview Process of Teacher A

Interviewer: We previously conducted a survey and gathered some information. Now, through this interview, we'd like to gain more in-depth insights. Could you describe your experience teaching in a blended learning environment? For example, your teaching methods, classroom organization, lesson flow, or even student feedback.

Teacher A: Overall, the experience has been pretty good. I mainly teach kindergarten children, and the daily Q&A sessions are quite responsive. Some students can answer questions quickly. However, when teaching online for extended periods, the response might slow down. But the students who perform well usually react quickly. Overall, blended learning works well for me.

Interviewer: You mentioned blended learning. How do you understand it?

Teacher A: Blended learning involves two aspects. One is face-to-face traditional teaching, where the teacher leads the lesson in the classroom. The other is a digital learning experience, such as students watching videos at home. These elements combine during class and outside of school, creating a comprehensive learning approach.

Interviewer: Has blended learning impacted your teaching methods? If so, could you share more details?

Teacher A: Yes, it has had some positive effects. We're teaching Chinese as a foreign language, so using multimedia content, like images and videos, helps students better understand what we're teaching. It makes the lessons richer and easier to grasp. I think multimedia has more advantages than disadvantages in this regard.

Interviewer: In terms of technology, have you encountered any difficulties when using these tools?

Teacher A: The availability of technology depends on the school. For smaller devices, like Bluetooth speakers for music, there's no problem. But in some government schools, students' families might not have access to digital resources outside of the classroom. That's why I try to make the classroom experience as resourceful as possible to enrich the lessons.

Interviewer: Do you feel that the school provides enough support with technology? What kind of assistance have they offered?

Teacher A: The school provides projectors and TVs, which are particularly useful for kindergarten. For activities like singing and dancing, having visual displays makes the experience more engaging. The students focus better when there's more to look at, not just me leading them. We also use simple games to enhance classroom performance, which boosts the overall effect.

Interviewer: How has this affected classroom performance?

Teacher A: Since my students are between 3 and 5 years old, their attention spans are quite short. But with the addition of multimedia, combining sound and visuals, their attention lasts longer, and they participate more actively. This helps maintain a higher level of classroom engagement.

Interviewer: Do you think blended learning has changed the way you interact with your students?

Teacher A: Yes, it has led to some changes. The addition of multimedia makes the lessons more interesting. However, in kindergarten, using traditional hand-made teaching aids is just as effective. For example, if I create hand-made games, it works fine. The key difference is that multimedia requires stronger language skills because you need to explain more things. Since I have experience, I can communicate well with the students. In this sense, multimedia is more helpful than traditional methods.

Interviewer: How do you see this improvement reflected in your students?

Teacher A: Throughout the lesson, students' participation and enthusiasm are noticeably higher. They're more engaged, especially when new, exciting content is introduced. It certainly improves classroom outcomes.

Interviewer: What would you say is the biggest challenge in your teaching?

Teacher A: The biggest challenge isn't just in the school—it's also in family support. Education doesn't only happen in the classroom; it requires cooperation from home as well. For example, in kindergarten, we don't give homework, but learning basic things like numbers from 1 to 10 should still be reinforced at home. If parents can help review this, the students will learn faster. Without that, it's difficult for the teacher alone to cover everything in just a few lessons each week.

Interviewer: How do you think parents have contributed to this process, especially when learning basic numbers?

Teacher A: If parents support their children at home, helping them practice, they'll pick things up quickly. I have students who learned to count from 1 to 10 very

fast because their parents practiced with them at home. Parental involvement significantly boosts learning outcomes.

Interviewer: So, you think the direction for improvement is to encourage more parental involvement?

Teacher A: Yes, parents need to get more involved. Even if it's just simple reinforcement at home, children will improve rapidly. Some kids' families don't place enough importance on education, and this shows in their progress. For example, by the time they're in K2, some kids still don't know how to hold a pencil properly. These issues could easily be addressed at home.

Interviewer: Anything else you'd like to add?

Teacher A: If we're talking about older students, I think blended learning offers even more advantages. For elementary students and up, the benefits are greater. At the kindergarten level, the impact isn't as noticeable, but for older students, blended learning is very effective.

Interview Process of Teacher B

Interviewer: Thank you for agreeing to this interview. We previously conducted a survey, and now we would like to gain a deeper understanding of certain aspects regarding blended learning. Could you start by briefly describing your experience in a blended learning environment?

Teacher B: Well, blended learning is the combination of traditional teaching and electronic teaching. With the development of the times, more and more children are using multimedia tools, so I think this teaching method is already a trend. The use of

multimedia has many advantages and can indeed help with teaching. However, I believe we need to maintain a balance—you can use it, but don't overly rely on it.

Interviewer: Understood. How do you feel blended learning has impacted your teaching methods?

Teacher B: In some cases, when I find it difficult to explain something clearly, multimedia helps a lot. For instance, concepts that are hard to explain with words can be presented with images or videos, which helps students understand more quickly. So, in certain aspects, technology really helps solve problems.

Interviewer: Have you encountered any challenges while using these technologies?

Teacher B: Yes, there are some challenges. For example, when using mobile apps for interaction in class, some students don't have phones, so they can't participate. I've always tried to avoid this, but sometimes it's unavoidable. Another issue is that students might use their phones not only for class interaction but also for other things, which can be hard to control.

Interviewer: That's indeed a challenge. Do you feel that the school or this project has provided enough support in terms of technology?

Teacher B: Honestly, the project hasn't had much of an impact on me. It's more about my own familiarity with technology. Sometimes, I need to teach myself how to use new tools, like websites or how to upload materials. Occasionally, I find it a bit challenging due to unfamiliarity. This process requires time to learn and adapt. I think the school should offer more support.

Interviewer: So, do you think the school's training and support for technology use are insufficient?

Teacher B: Yes, you could say that.

Interviewer: When using these tools, where do you think they have the most significant impact on your teaching?

Teacher B: Mainly in terms of interaction. Recently, I noticed that even when using multimedia for interaction, there's still a small group of students who are not very engaged and don't want to participate. But the benefit of using these tools is that I can quickly understand how well students have grasped the material.

Interviewer: You mentioned that you can assess students' understanding more quickly. That sounds like a major benefit for teaching, right?

Teacher B: Yes, multimedia tools do help me quickly evaluate students' learning, especially when it comes to assessments. It's more effective than traditional methods.

Interviewer: It sounds like these tools are more helpful for evaluation than other parts of the teaching process. Would you agree?

Teacher B: Yes, I think the main advantage of multimedia tools is in evaluation. Of course, they also help with classroom interaction, but the benefits in assessment are more noticeable.

Interviewer: What is the biggest challenge you've encountered while using these new technologies?

Teacher B: The biggest challenge is how to use these tools effectively to truly benefit the teaching process, rather than just using them for the sake of using them. I want the technology to help achieve real results, not just make the class look high-tech.

Interviewer: I see. So, in this teaching model, what do you think can be improved?

Teacher B: I think the school could provide more technical training to help us better utilize these tools. Also, sharing experiences among teachers is important. Some teachers might already be skilled with certain technologies, and if we had a platform for sharing resources, it would benefit everyone's teaching.

Interviewer: Thank you for your insights! Lastly, is there anything else you'd like to add?

Teacher B: One thing comes to mind, though it might differ slightly from what we've discussed. Regarding the use of multimedia, sometimes it's not just about helping with teaching but also aiding in students' self-learning. Recently, I attended a lecture by an American professor about using AI in education. It gave me a new perspective on teaching. AI can provide us with reading materials suited to students' levels, which can be really convenient.

Interviewer: It sounds like AI might play a bigger role in education in the future. Thank you again for your time today. That concludes our interview!

Interview Process of Teacher C

Interviewer: Based on the previous questionnaire survey, we already have some understanding, but now we would like to delve deeper into your experiences with

blended learning environments. First, do you think the teacher's teaching ability is truly applied to the students? Have the students really absorbed what has been taught?

Teacher C: Well, a little, but not much. I think the issue is whether the students have truly learned from both traditional classrooms and online teaching. Since it's blended learning, combining online and offline, the question is whether the students are really learning. My experience is that when students are in a physical class, and then given homework to do at home, some will try to slack off if they can. So, I believe the authenticity and systematic nature of learning depend a lot on the students' self-control and participation.

Interviewer: How do you feel about the feedback from students in this blended learning approach?

Teacher C: Well, the participation rate in offline classes is generally better than online. Even in face-to-face classes, students may not be very fast because there are so many of them, and they can hide unless the teacher specifically calls on them to answer. Overall, I feel that the level of participation is still not enough.

Interviewer: In your opinion, what changes has blended learning brought?

Teacher C: The approach is quite diverse. In terms of language learning, although there are some challenges, the school provides audio resources to support teaching. The interaction method also has some advantages. For example, just lecturing can get a bit monotonous, but incorporating some audio or other resources can make the lesson more engaging and bring the teacher and students closer.

Interviewer: In which areas do you think this interaction has improved?

Teacher C: For example, if you ask students to draw a picture, they might not fully understand or be reluctant to draw. But if you play a cartoon or something similar, they'll become more interested and more willing to follow your instructions.

Interviewer: You mentioned interaction—when you're teaching Chinese, for instance, numbers like 1, 2, 3, 4—how do the students respond?

Teacher C: If I simply teach the numbers, the students might not remember them. But if I pair them up with a classmate or get them to say the numbers together, they're more willing to follow along. Repetitive activities aren't always great. Although repetition can help with memory, teachers need to prepare offline content in advance and not just rely on repeating things over and over. It's better to change the activity or use different audio materials.

Interviewer: What's your perspective on the future development of blended learning?

Teacher C: I think this teaching model is very flexible. Teachers can pace the learning according to their schedule, and in class, they can have deeper discussions and more interaction with students. Students can also collaborate on activities that benefit their learning. The flexibility of this model allows students to better digest the material.

Interviewer: Thank you for sharing your insights. Goodbye.

Teacher C: You're welcome. Goodbye.

Appendix F

Certificate of Approval by Ethics Review Board of Rangsit University

COA. No. RSUERB2024-147

RSU-ERB

RSU ETHICS REVIEW BOARD

Certificate of Approval

By

Ethics Review Board of Rangsit University

COA. No.	COA. No. RSUERB2024-147
Protocol Title	Teachers' Perceptions on Blended Learning in Teaching Basic Chinese to Thai Kindergarten Students
Principle Investigator	Li Wenlong
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: 28 August 2024 Date of Expiration: 28 August 2026

Date of Renewal: within 28 July 2026

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

RSU-ERB 28 AUG 2024

Signature.....

(Associate Professor Dr. Panan Kanchanaphum)

Chairman, Ethics Review Board for Human Research

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