

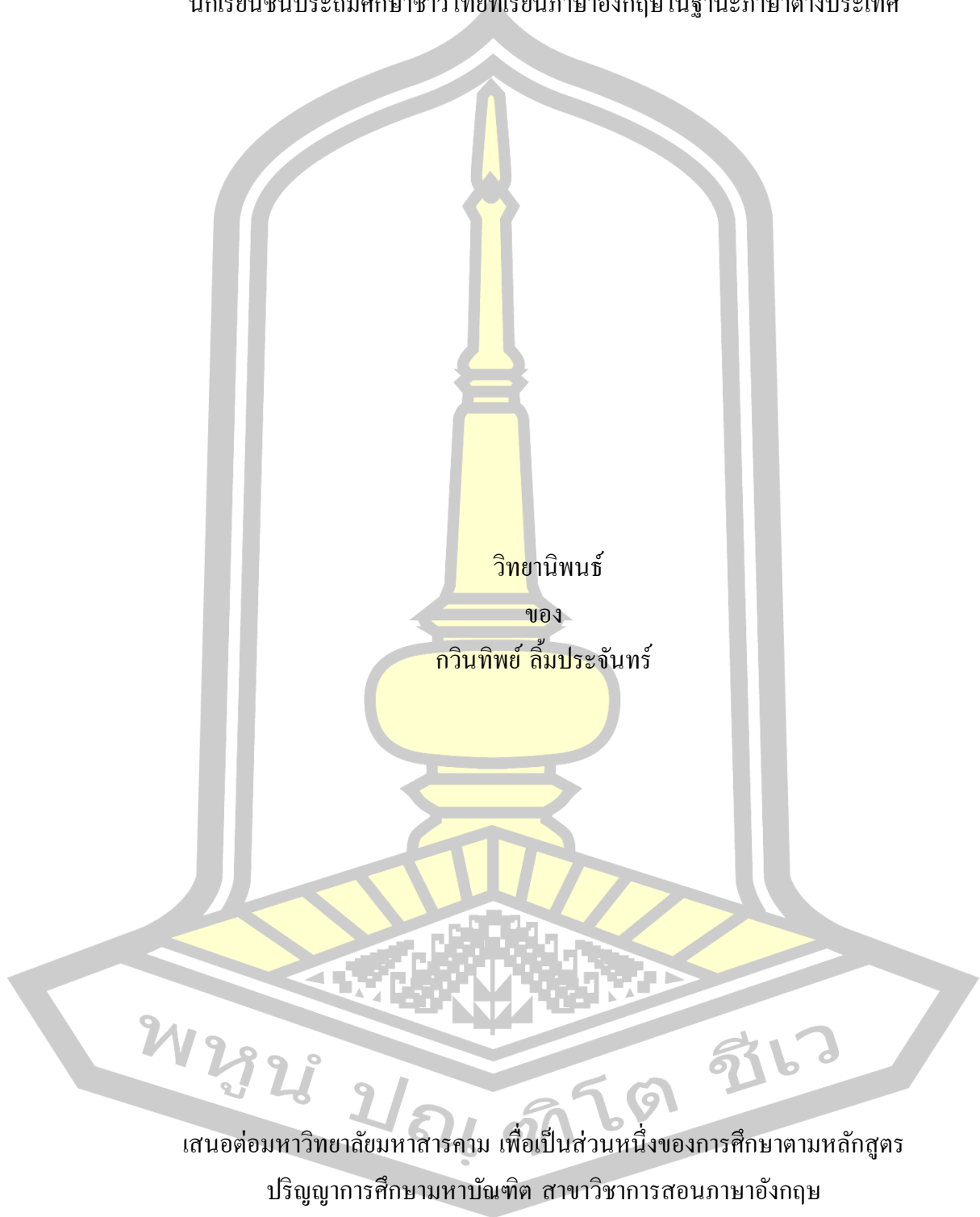
Using Multisensory Phonics Instruction in Enhancing Phonemic Awareness among
Thai EFL Primary Learners

Kawintip Limprachan

A Thesis Submitted in Partial Fulfillment of Requirements for
degree of Master of Education in English Language Teaching
July 2025

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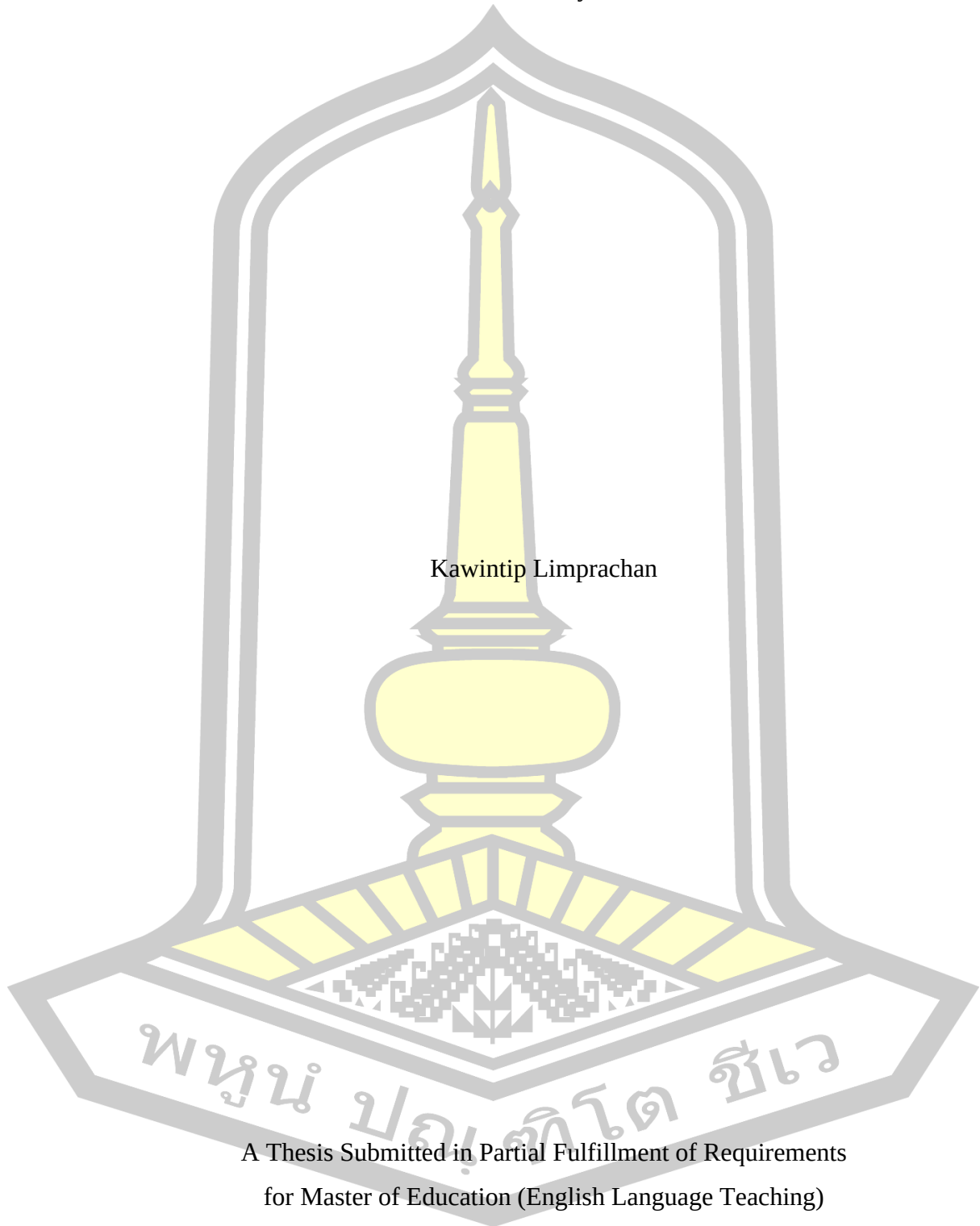
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TITLE	Using Multisensory Phonics Instruction in Enhancing Phonemic Awareness among Thai EFL Primary Learners		
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ABSTRACT

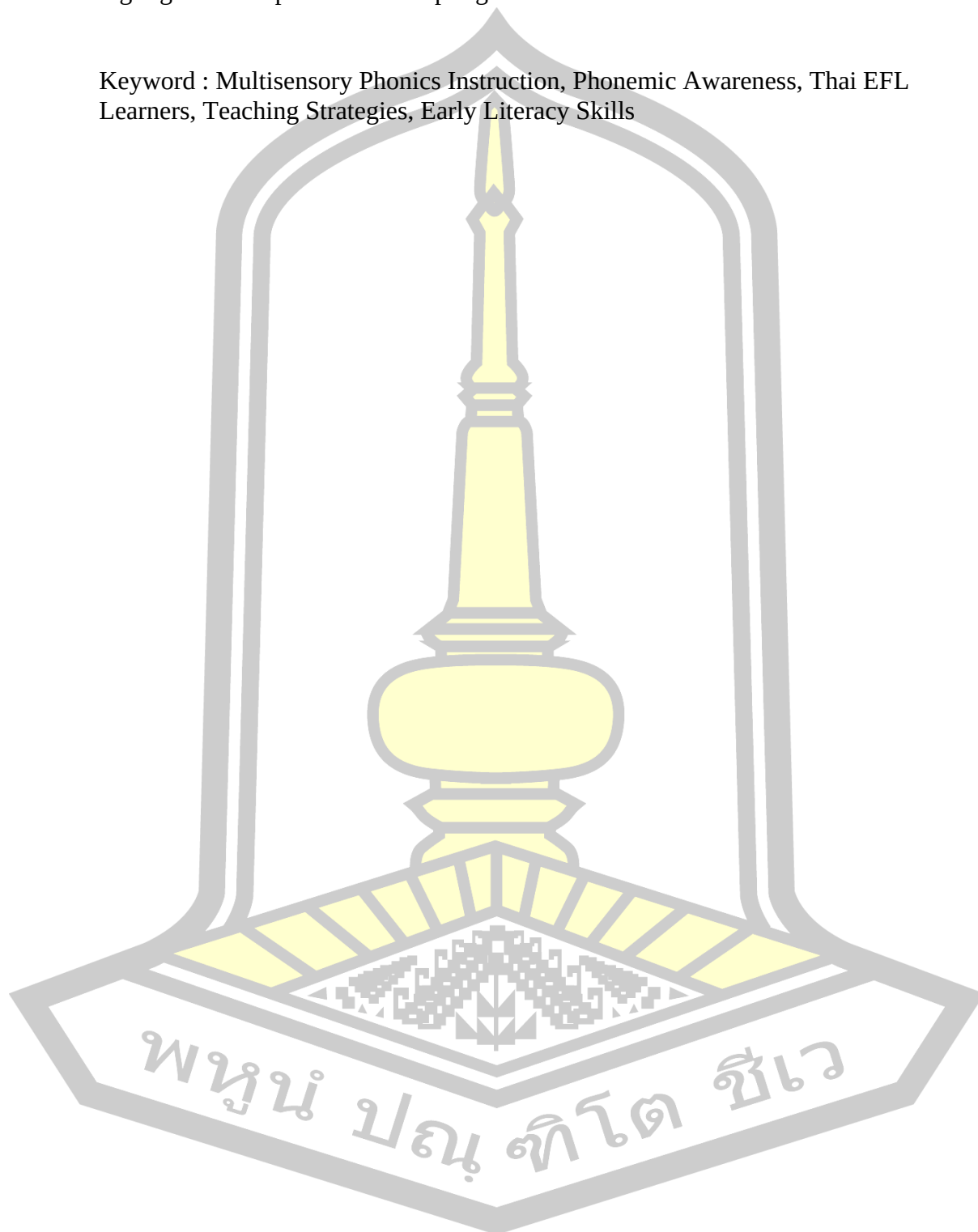
The benefits of multisensory phonics instruction on learning outcomes have been widely recognized by both educational practitioners and cognitive researchers across various contexts. However, there remains a significant lack of research examining its effectiveness in enhancing phonemic awareness among Thai EFL primary learners. This study addresses this gap by investigating the effects of multisensory phonics instruction on the phonemic awareness of Thai EFL first-grade students.

A quasi-experimental design was employed, involving two intact first-grade classes with a total of 40 participants, 20 in the experimental group and 20 in the control group. Prior to the intervention, both groups completed a phoneme identification pretest and a phoneme segmentation pretest to assess baseline phonemic awareness. Over a six-week period, the experimental group received multisensory phonics instruction, while the control group was taught using a traditional textbook-based method. Posttests were then administered to both groups. Quantitative data were analyzed using paired-samples t-tests and independent-samples t-tests. The findings revealed that although both groups improved, the experimental group showed significantly greater gains. On the phoneme identification test, the experimental group's mean score increased from 2.95 to 14.05, while the control group's mean score rose from 3.05 to 11.35. Similarly, on the phoneme segmentation test, the experimental group's mean score improved from 2.10 to 14.15, compared to the control group's increase from 2.05 to 11.40. These results indicate a significant positive impact of multisensory phonics instruction on enhancing phonemic awareness.

To complement the quantitative data, qualitative insights were gathered through a focus group interview with six students selected from high, mid, and low proficiency levels. Thematic analysis revealed both strengths and challenges of the instructional approach. Reported advantages included a cheerful learning atmosphere, emotional benefits, and memory enhancement. However, some students expressed a lack of confidence in speaking, particularly during oral activities. Overall, the study provides empirical support for the effectiveness of multisensory phonics instruction in

improving phonemic awareness among EFL primary learners in Thailand and highlights the importance of adapting instruction to meet diverse learner needs.

Keyword : Multisensory Phonics Instruction, Phonemic Awareness, Thai EFL Learners, Teaching Strategies, Early Literacy Skills



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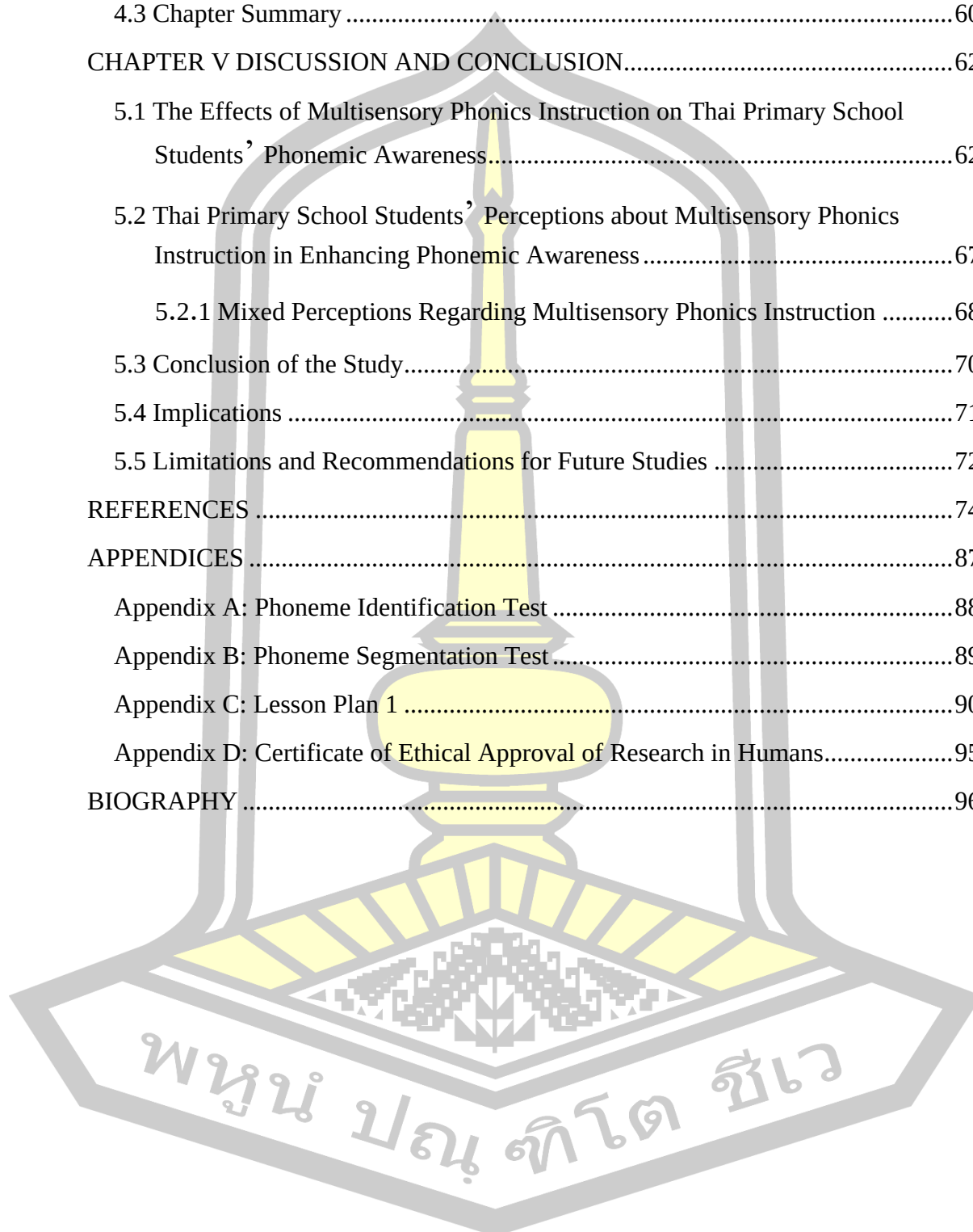
Kawintip Limprachan

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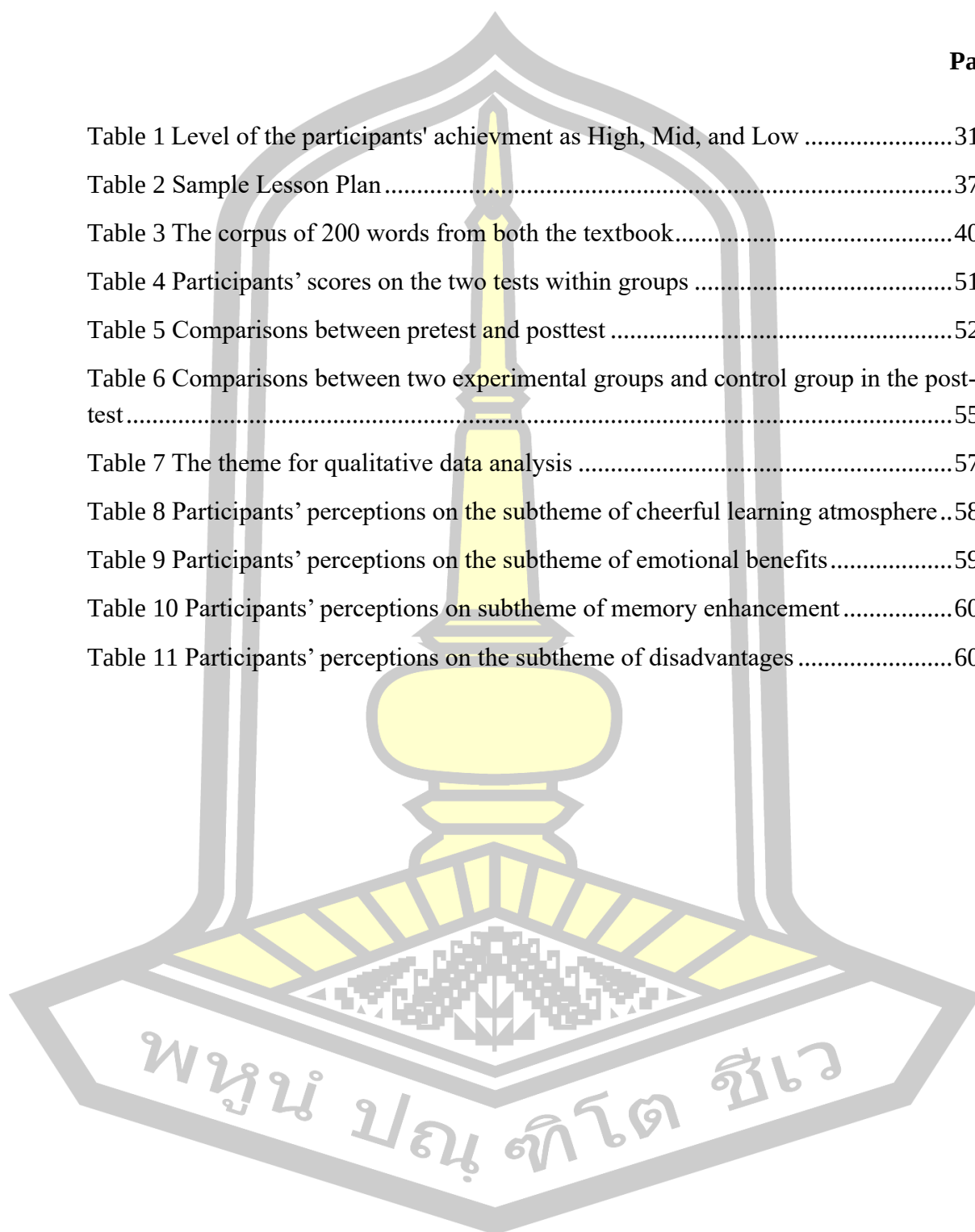
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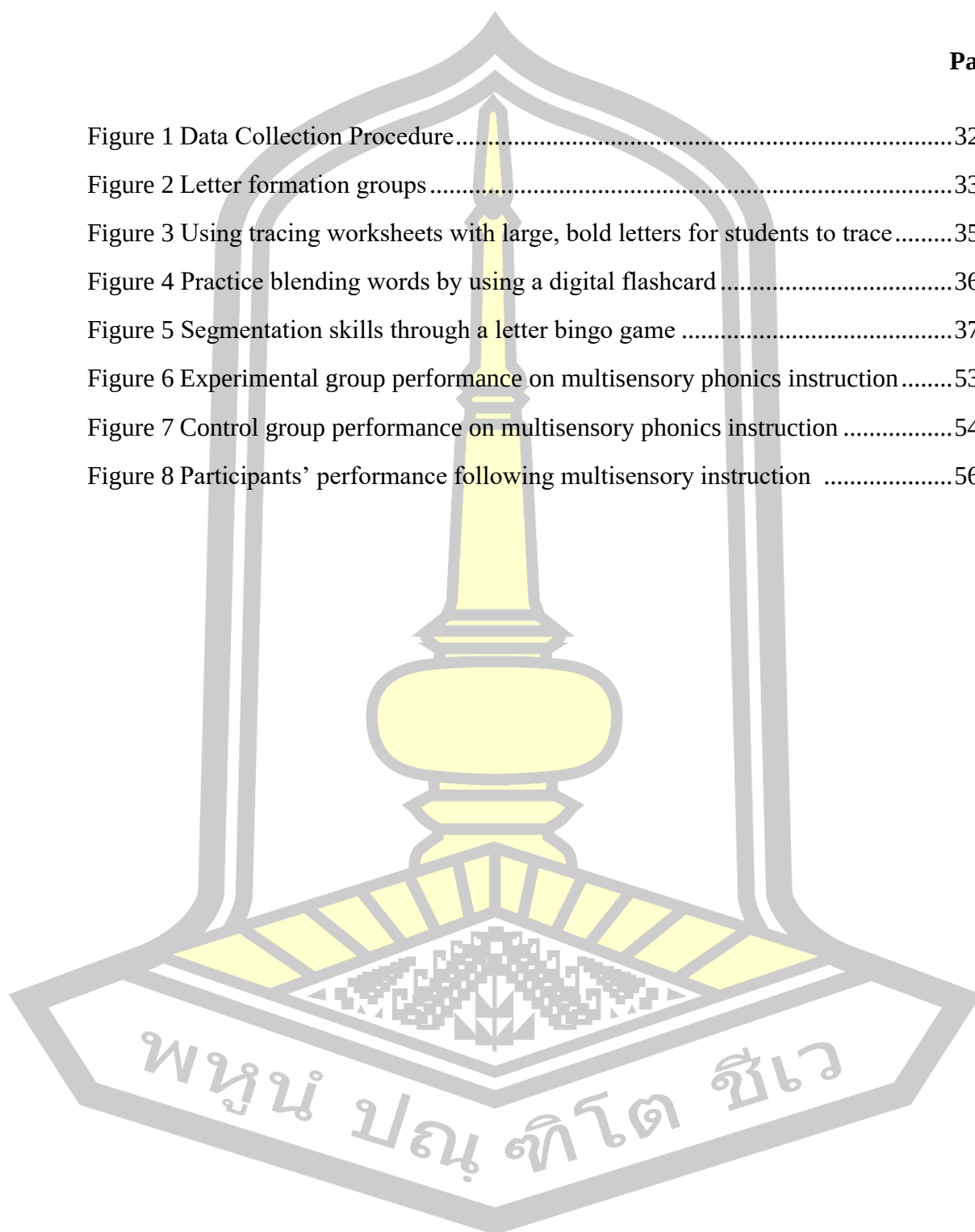
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CHAPTER I

INTRODUCTION

This chapter presents an overview of this study. The chapter begins with the background of the study, followed by the purposes of the study, the research questions, the significance of the study, and the scope of the study. Next, the key terms of this study are defined. Finally, an outline of this thesis proposal is provided.

1.1 Background of the Study

Research consistently highlights early literacy as foundational for improving language skills, with literacy and language development being closely intertwined. The National Institute for Literacy (NIFL) identified several key components, such as oral language development, alphabetic knowledge, phonemic awareness, and phonological awareness, as directly contributing to strong early literacy. These components include the ability to correctly name letters, associate letters with sounds, manipulate spoken language sounds, identify small sound units, recognize words, write simple words and letters, and comprehend spoken content (NIFL, 2008; Lonigan, 2006; Adams, 1990). Mastery of these skills leads to stronger early literacy outcomes for learners (NIFL, 2008; Snow et al., 1998).

Phonemic awareness is the ability to recognize, understand, and manipulate the individual sounds (phonemes) in spoken words. It involves skills such as identifying phonemes recognizing the distinct sounds in words, for example, understanding that the word "cat" consists of the sounds /k/, /æ/, and /t/ segmenting phonemes, which involves breaking down words into their individual phonemes, such as segmenting "dog" into /d/, /o/, and /g/ blending phonemes, which is combining separate phonemes to form a word, like blending /s/, /t/, /a/, and /r/ to make "star" and manipulating phonemes, such as adding, deleting, or substituting phonemes in words to create new ones, for instance, changing the /m/ in "mat" to /c/ to form "cat." Phonemic awareness is a crucial component of early literacy development because it helps learners understand that words are made up of individual sounds, which is essential for decoding (reading) and encoding (spelling) words. It supports the development of reading and writing skills by laying the groundwork for understanding the alphabetic principle, the idea that letters and letter combinations represent sounds in spoken language.

Research has consistently demonstrated a strong causal relationship between phonemic awareness (PA) and the development of reading and writing skills. Phonemic awareness, the ability to recognize and manipulate individual sounds in spoken words, is foundational to literacy acquisition. Recent research continues to emphasize the critical role of PA in reading development. For example, studies by Melby-Lervåg, Lyster, and Hulme (2012) and Castles, Rastle, and Nation (2018) provide robust evidence linking phonemic awareness to reading proficiency, demonstrating that children with stronger PA skills tend to have better reading outcomes. According to Roach (2000) and Walton (2002), PA is the ability to recognize individual letters and their corresponding sounds, providing the foundation for decoding spoken words into phonemes, syllables, onsets, and rimes. Adams (1994) further reinforced this connection by highlighting that PA is a critical predictor of reading success, emphasizing its role in helping children understand the alphabetic principle where letters and letter patterns represent sounds in written language. The National Reading Panel (2000) affirmed that PA is crucial for reading development, recommending explicit phonemic awareness instruction as part of effective reading programs. Subsequent research, such as Lane et al. (2009) and Moats (2010), continued to support this view, demonstrating that PA interventions can significantly improve children's reading abilities by enhancing their decoding skills. Recent studies have expanded on these findings, showing the ongoing relevance of PA in literacy development. Overall, this body of research highlights that phonemic awareness is not just correlated with literacy development but causally contributes to it, making it a fundamental element of effective reading and writing instruction.

The Ministry of Education in Thailand highlighted in its latest Basic Education Curriculum that English plays a central role in communication, education, and cultural exchange. The language has been regarded as important in the country for many years, with English instruction starting as early as the primary school level. However, Thai primary students often face specific challenges with phonemic awareness, which can significantly impact their literacy development in English. Key issues include a lack of phonemic awareness in their first language (L1), as Thai is a tonal language with a different phonemic structure compared to English (Baker, 2017; Pruitt, 2018). This discrepancy makes it difficult for students to transfer phonemic skills to English, as Thai

does not emphasize phonemic segmentation and blending as much as English does (Kruidenier, 20129). Additionally, English contains phonemes that are not present in Thai, such as certain consonant clusters and vowel sounds, which can complicate the segmentation and blending of English words (Cunningham, 1990; Lee & Ramamoorthy, 2016). For instance, the English sounds /θ/ and /ð/ (as in "think" and "this") are absent in Thai, leading to pronunciation challenges (Adams, 1994; Moats, 2010). Limited exposure to English phonemic instruction in Thai primary schools, where the emphasis is often more on vocabulary and grammar, exacerbates these difficulties (Foorman et al., 2016; Rehfeld et al., 2022). Irregular English spelling patterns further complicate the association between sounds and letters for Thai students (Melby-Lervag et al., 2012; Snow, 2021). Furthermore, the lack of culturally and linguistically appropriate resources and teacher training in Thailand affects the effectiveness of phonics instruction (Lane et al., 2009; Kuo, 2011). Addressing these challenges requires structured phonemic awareness instruction that takes into account the linguistic background of Thai students, including bilingual approaches, activities bridging Thai and English phoneme systems, and enhanced teacher training.

To enhance phonemic awareness in primary learners, phonics instruction particularly multisensory phonics has gained increasing prominence in global literacy education. Phonemic awareness, the ability to recognize and manipulate individual sounds in spoken words, is a foundational skill for successful reading development. Multisensory phonics instruction supports this development by integrating multiple sensory pathways in the learning process, thereby reinforcing the connection between sounds and letters in a more engaging and memorable way. Research suggests that for phonics instruction to be truly effective, educators must consider students' diverse learning preferences and incorporate multimodal teaching strategies that appeal to a variety of sensory experiences. This individualized approach to instruction is especially crucial in classrooms with learners who exhibit different cognitive, linguistic, and socio-cultural backgrounds. Providing equitable learning opportunities entails designing instruction that activates and combines visual (e.g., letter recognition and color-coding), auditory (e.g., listening to and pronouncing sounds), tactile (e.g., tracing letters in sand or using textured materials), and

kinesthetic (e. g. , incorporating body movements or gestures) modalities. Such engagement allows students to process and retain phonemic information more effectively.

The benefits of multisensory input on learning outcomes have been widely acknowledged by both educational practitioners and cognitive researchers. For instance, a study by Anku (2024) revealed that combining explicit phonemic awareness and phonics instruction had a significant positive impact on reading achievement among learners with reading difficulties. Similarly, Dixon (2023) found that implementing multisensory phonics instruction based on the Orton-Gillingham approach led to improvements in both reading achievement and students' attitudes toward reading. Moreover, the effectiveness of multisensory phonics instruction is not limited to learners with reading difficulties. Ghoneim and Elghotmy (2023) demonstrated that a suggested multisensory phonics program significantly improved kindergarten pre-service teachers' EFL reading accuracy and phonemic awareness. These findings underscore the versatility and broad applicability of multisensory phonics instruction in diverse educational contexts.

Despite extensive research demonstrating the effectiveness of multisensory phonics instruction (Bowey, 2006; Donnell, 2007; Gaskins et al., 1988; Grant, 1998; Johnston & Watson, 2005; Mohler, 2002; Salfer, 2006; Sumbler & Willows, 1996; Trezek et al., 2007), there was a significant lack of studies examining the effectiveness of multisensory phonics instruction in EFL settings. Further research was necessary to assess the effects of multisensory phonics instruction on learners in Thailand with diverse levels of English proficiency and socioeconomic backgrounds. Additionally, gaining insights into Thai students' perceptions of multisensory phonics could help improve teaching strategies. Addressing these research gaps yielded valuable information for enhancing multisensory phonics instruction and improving literacy outcomes for Thai learners.

1.2 Purposes of the Study

This study investigated the use of multisensory phonics instruction to enhance phonemic awareness among Thai EFL primary learners. It hypothesized that multisensory phonics instruction could enhance their phonemic awareness. It also investigated the students' perceptions of multisensory phonics instruction in

enhancing their phonemic awareness. The present study sought to find answers to the following research questions:

1. What is the effect of multisensory phonics instruction on Thai EFL primary learners' phonemic awareness?
2. What are the participants' perceptions of multisensory phonics instruction in enhancing their phonemic awareness?

1.3 Scope of the Study

Using a quasi-experimental research design, this study investigated the effect of a multisensory phonics instruction on Thai EFL first graders' phonemic awareness. In addition, their perceptions regarding the use of a multisensory phonics instruction in improving their phonemic awareness were explored. Participants were 40 first graders selected from two intact classes at a primary school located in a province in the central part of Thailand. Research instruments included two types of phonemic awareness pretest and posttest (i.e. phoneme identification pretest and posttest and phoneme segmentation pretest and posttest) and a focus group interview. The control group with 20 students received a traditional teaching method based on the textbook whereas the experimental group with 20 received multisensory phonics instruction incorporating structured literacy instruction, utilizing multiple senses (visual, auditory, tactile, and kinesthetic) to enhance phonemic awareness. Data collection took place over a six-week period, with three hours of data collection each week, during the second semester of the academic year 2024.

1.4 Significance of the Study

Previous research has consistently emphasized the significance of multisensory phonics instruction in fostering the development of phonemic awareness, particularly among primary school learners. This instructional approach has been shown to significantly enhance students' abilities to recognize, isolate, manipulate, and apply individual phonemes skills that are fundamental for reading fluency, decoding, and accurate spelling. Multisensory instruction achieves this by simultaneously engaging multiple sensory modalities, including visual (seeing letters and words), auditory (hearing and producing sounds), tactile (touching and tracing letters), and kinesthetic (moving the body to represent phonemes). By activating different sensory pathways, this approach not only

reinforces neural connections between sounds and symbols but also helps students retain information more effectively.

This method is particularly beneficial for young learners, who often learn best through concrete, experiential activities. Engaging students in hands on learning such as using manipulatives, sand trays, movement-based games, and rhythmical chanting can make abstract phonemic concepts more accessible and meaningful. Such activities not only enhance memory retention but also increase student motivation and participation, key factors in early literacy success. For students with diverse learning needs, including those with dyslexia, speech language delays, or limited exposure to literacy at home, multisensory phonics offers a more inclusive and supportive learning environment that accommodates different processing styles.

As a result, the findings of this study provide valuable insights for educators, curriculum designers, and parents by offering practical, evidence-based strategies that can be integrated into early literacy instruction both in classrooms and at home. Furthermore, by underscoring the effectiveness of multisensory phonics instruction, this research supports the broader educational shift toward differentiated instruction. It affirms the need to tailor teaching practices to address the unique strengths, preferences, and challenges of each learner, thereby moving away from traditional, one-size-fits-all approaches. Ultimately, incorporating multisensory methods in phonics instruction not only enhances foundational literacy skills but also fosters a more equitable and engaging learning experience for all students.

1.5 Definition of Key Terms

Multisensory phonics instruction refers to the systematic learning of letters, letter sounds, and blending and decoding of letter sounds all form the underpinnings of multi-sensory phonics instruction. This type of instruction incorporates multiple modalities visual, auditory, tactile, and kinesthetic to present letter-sound correspondences.

Phonemic awareness refers to the ability to notice, think about, and work with the individual sounds (phonemes) in spoken words. This includes identifying sounds and segmenting words into sounds.

Thai EFL primary learners refers to forty first graders studying in the Fundamental English class in the second semester of the academic year 2024 in a primary school located in the central part of Thailand.

1.6 Thesis Structure

This thesis is structured as follows:

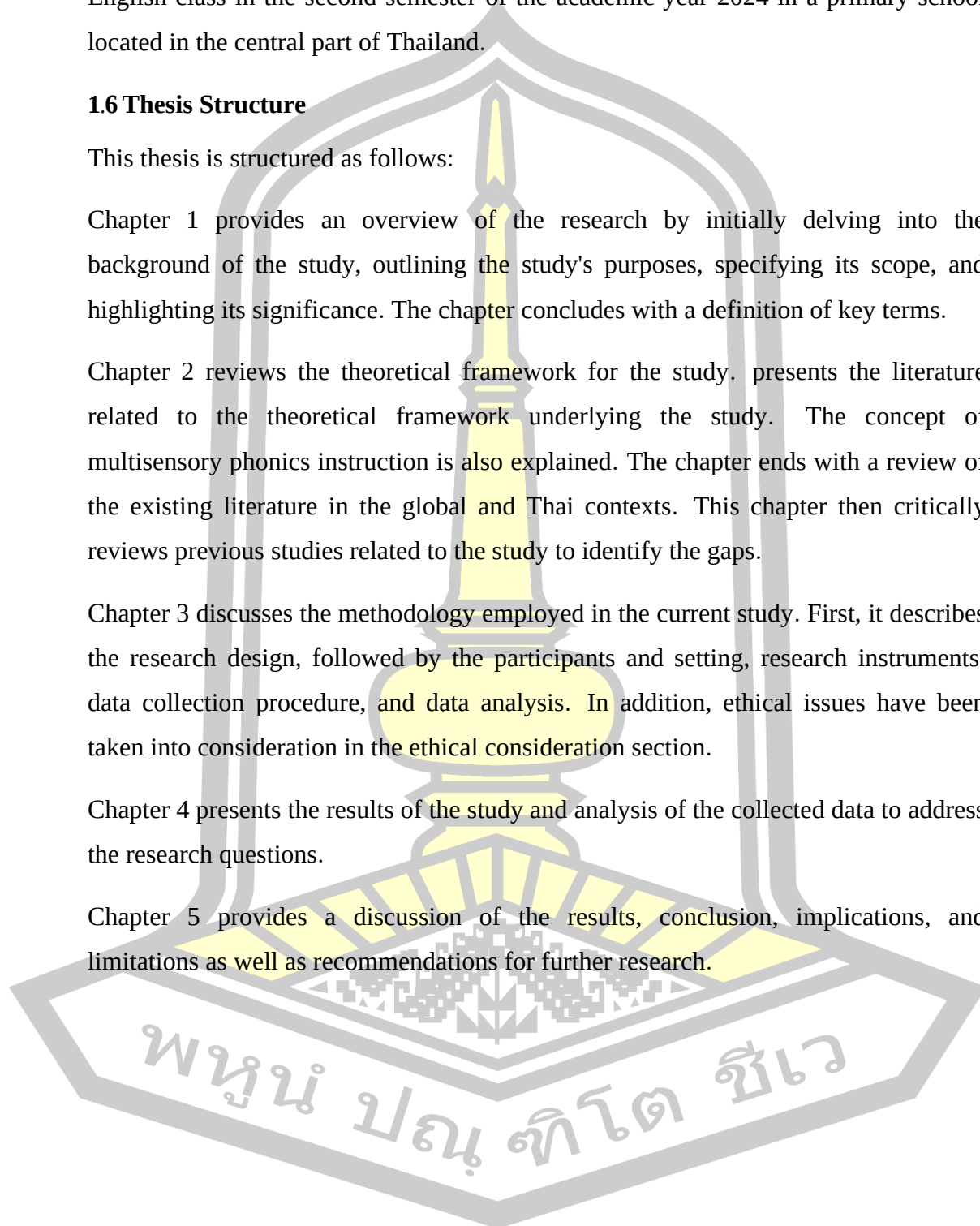
Chapter 1 provides an overview of the research by initially delving into the background of the study, outlining the study's purposes, specifying its scope, and highlighting its significance. The chapter concludes with a definition of key terms.

Chapter 2 reviews the theoretical framework for the study. presents the literature related to the theoretical framework underlying the study. The concept of multisensory phonics instruction is also explained. The chapter ends with a review of the existing literature in the global and Thai contexts. This chapter then critically reviews previous studies related to the study to identify the gaps.

Chapter 3 discusses the methodology employed in the current study. First, it describes the research design, followed by the participants and setting, research instruments, data collection procedure, and data analysis. In addition, ethical issues have been taken into consideration in the ethical consideration section.

Chapter 4 presents the results of the study and analysis of the collected data to address the research questions.

Chapter 5 provides a discussion of the results, conclusion, implications, and limitations as well as recommendations for further research.



CHAPTER II

LITERATURE REVIEW

This chapter presents the literature related to the theoretical frameworks of the multisensory approach to enhancing phonemic awareness, followed by the conceptual framework of literacy development, phonology of EFL context, letter-sound knowledge, phonemic awareness and reading development, Jolly Phonics and phonemic awareness, and assessing phonemic awareness. In addition, teaching principles regarding multisensory phonics instruction are also discussed. The study then reviews previous research on multisensory phonics instruction and phonemic awareness.

2.1 Theoretical Foundations

2.1.1 Dual Coding Theory

Dual Coding Theory, originally proposed by Allan Paivio, posits that human cognition is supported by two distinct but interconnected systems: the verbal system, which processes linguistic information, and the non-verbal system, which handles imagery and visual-spatial information. According to this theory, learning is enhanced when information is encoded simultaneously through both verbal and visual channels, as it increases the likelihood of retrieval and supports deeper cognitive processing (Clark & Paivio, 2021; Paivio, 2014).

In the context of phonemic awareness development, Dual Coding Theory offers a valuable framework for designing instruction that leverages both auditory and visual modalities to enhance early literacy skills. Phonemic awareness is the ability to recognize, differentiate, and manipulate the individual sounds (phonemes) in spoken language is a foundational skill for reading and spelling. Instructional strategies grounded in dual coding emphasize the integration of auditory cues (such as the pronunciation of phonemes) with visual supports (such as graphemes, color-coded letters, or images) to facilitate learning.

Recent research underscores the effectiveness of dual coding in supporting emergent readers. For example, when children are taught to segment and blend sounds while simultaneously viewing corresponding letters or visual representations, their ability to

make sound-symbol associations improves significantly (Ehri, 2022; National Reading Panel, 2000) . This is particularly beneficial in phonics-based instruction, where the simultaneous presentation of spoken phonemes and their visual representations (e. g. , flashcards, interactive apps, or phoneme charts) reinforces phonemic concepts and supports memory retention.

Dual coding also aligns with multisensory instruction, which is widely recognized as effective in developing phonemic awareness, particularly for students with learning difficulties (Birsh & Carreker, 2018) . When learners receive information through multiple pathways auditory, visual, and kinesthetic they are better able to internalize abstract linguistic concepts, such as the blending or segmentation of phonemes. Visual representations, such as Elkonin boxes or manipulatives, serve as non-verbal cognitive anchors that complement auditory input and enhance students' metalinguistic understanding (Moats & Tolman, 2020).

Furthermore, digital learning environments that implement dual coding principles such as phonics games and animated literacy tools have shown promise in increasing phonemic awareness among young learners. These tools typically pair spoken sounds with animations, letter formations, and visual symbols, facilitating dual processing and aiding long-term retention (Neuman & Gambrell, 2022).

However, it is important to note that the effectiveness of dual coding strategies depends on instructional design. Simply adding visuals to verbal instruction is not sufficient; the visual elements must be directly relevant and supportive of the targeted phonemic skills. Irrelevant or excessive visuals may lead to cognitive overload, especially for young learners with limited attentional resources (Sweller, van Merriënboer, & Paas, 2019).

In conclusion, Dual Coding Theory provides a strong theoretical and empirical foundation for enhancing phonemic awareness through integrated verbal and visual instruction. By designing literacy activities that activate both processing systems, educators can facilitate deeper learning and support a broader range of learners. When applied thoughtfully, dual coding strategies not only make phonemic concepts more

concrete and accessible but also strengthen the cognitive pathways essential for reading success.

2.1.2 Operant Conditioning Theory

Operant Conditioning Theory, developed by B.F. Skinner, provides a behaviorist framework for understanding how behaviors are acquired, maintained, and modified through consequences such as reinforcement and punishment. In the context of early literacy education, operant conditioning has significant implications for the development of phonemic awareness a foundational skill involving the ability to recognize, differentiate, and manipulate individual sounds (phonemes) in spoken words.

Phonemic awareness is critical for subsequent reading and spelling success. Operant principles can be effectively applied to support its development in young learners. In phonics based instruction, educators often employ positive reinforcement to strengthen correct phonemic responses. For instance, when a student accurately identifies the initial sound in a word or successfully blends phonemes to form a word, they may receive verbal praise, stickers, or points each serving as a reinforcer that increases the likelihood of the behavior recurring. Over time, such reinforcement shapes students' ability to process and produce accurate phonemic distinctions. Research indicates that systematic phonics instruction, which often incorporates reinforcement strategies, is effective in enhancing early literacy skills among young children.

Operant conditioning also underpins systematic, explicit, and repetitive instruction, where learning is broken down into manageable tasks and reinforced progressively. Through shaping, complex phonemic skills are developed gradually as learners receive reinforcement for successive approximations of the desired behavior. For example, a student might first be reinforced for identifying a single sound, then for blending two sounds, and eventually for decoding entire words. Such structured approaches align with evidence-based practices in phonemic awareness instruction.

Moreover, negative reinforcement can be utilized to motivate students to engage in phonemic tasks to avoid less preferred activities. The use of immediate corrective

feedback a principle derived from operant theory allows students to learn from errors and adjust their responses. This is particularly useful in phonemic drills or digital phonics games, where instant feedback reinforces learning in real time. Studies have shown that immediate feedback in phonemic awareness activities can lead to significant improvements in students' reading abilities.

However, the application of operant conditioning in phonemic awareness instruction is not without limitations. Over-reliance on extrinsic rewards may diminish intrinsic motivation, especially if reinforcement is withdrawn too quickly or inconsistently. Additionally, the theory's emphasis on observable behaviors may underrepresent the role of cognitive processes such as metalinguistic awareness, working memory, or self-regulation, all of which also contribute to phonemic development. Recent research suggests that integrating cognitive strategies with behavioral approaches can enhance the effectiveness of phonemic awareness instruction.

Despite these concerns, operant conditioning remains a valuable pedagogical tool, particularly in structured early literacy programs and interventions for struggling readers. Its principles are widely employed in evidence-based instructional models, such as Direct Instruction and Response to Intervention (RTI) frameworks, which emphasize the use of reinforcement, feedback, and data-driven instruction to build foundational reading skills. The integration of operant conditioning strategies within these models has been associated with improved literacy outcomes.

In summary, operant conditioning theory offers a practical, behaviorally grounded approach to fostering phonemic awareness. When combined with developmentally appropriate, engaging, and responsive instruction, its principles can contribute significantly to early literacy success.

2.2 Phonology of EFL Context

Phonological awareness is a vital component of literacy development for English as a Foreign Language (EFL) learners, encompassing the ability to recognize and manipulate the sound structure of spoken language. This skill set is foundational for learning to read and spell in English. Key aspects of phonological awareness in EFL include phoneme recognition and manipulation, which are crucial for distinguishing

and producing individual sounds that may not exist in a learner's native language. For instance, many languages lack the phonemic distinction between English /l/ and /r/, leading learners to treat both as a single “liquid” category. This impedes accurate pronunciation and listening comprehension (Best & Tyler, 2007; Georgiou, 2022; Millet et al., 2022). Developing phoneme awareness aids learners in producing and recognizing these essential sounds.

Onset and rhyme recognition, along with syllable segmentation and blending, are critical components of phonological awareness. Research shows that segmenting and blending skills are directly linked to decoding and spelling abilities (Brady, 2020). Moreover, understanding onset rhyme patterns predicts reading and spelling acquisition (Reading Rockets, n.d.), aligning with earlier findings (Adams, 1990; National Reading Panel, 2000).

Similarly, Syllable segmentation and blending are fundamental for reading fluency, enabling learners to decompose and then reconstruct words an especially crucial strategy in English, which has a wide variety of syllable structures (Snow, Burns, & Griffin, 1998). Recent studies highlight that syllable awareness significantly predicts reading proficiency: Nag & Snowling (2024) showed it explains much of the variance in children’s reading abilities, particularly in pseudoword decoding. Moreover, syllable-based interventions have been found to effectively boost word recognition in struggling readers (Vadasy et al., 2020), and large-scale fluency assessments continue to underscore the importance of these skills in early literacy (NWEA, 2024)

Rhyming and word families, which require recognizing and producing words with shared ending sounds, play a vital role in phonological development. Longitudinal and experimental research shows that rhyme awareness uniquely contributes to later reading and spelling, even when phoneme-level skills are accounted for (Bryant et al., 1990). The use of rhyme-based analogies enables learners to decode unfamiliar words (Goswami & Bryant, 1990). More recent studies emphasize that rhyme awareness typically emerges first in phonological development and is a reliable early predictor of literacy outcomes (Mills, 2019; Frontiers in Psychology, 2019).

Phonological manipulation, such as substituting, adding, or deleting phonemes, is a core aspect of phonemic awareness, tightly linked to the ability to map spoken sounds onto print. Difficulties with phonological encoding are prevalent among non-native speakers, affecting speech processing. Notably, phonological manipulation skills transfer across languages: awareness in one language predicts decoding in another (Patel et al., 2022), though weaker L1–L2 phonology can impede literacy in the L2.

Research links phonological awareness to reading achievement, emphasizing the importance of integrating phonological instruction with vocabulary development and comprehension activities to enhance overall literacy (National Reading Panel, 2000; Ehri, 2005). Effective teaching strategies involve using phonemic games, songs, and interactive exercises, while ongoing assessment and feedback are crucial for tracking progress and addressing difficulties (Celce-Murcia, Brinton, & Goodwin, 2010; Torgesen et al., 2001). Continuous practice and engagement in phonological activities are essential for maintaining and improving literacy skills over time (Juel, 1996).

In summary, phonological awareness in the EFL context encompasses a range of skills essential for reading and writing. By focusing on phoneme recognition, onset and rime, syllable segmentation, rhyming, and phonological manipulation, EFL learners can enhance their literacy abilities. Effective teaching strategies, understanding the influence of native language, and ongoing assessment and practice are critical for developing strong phonological skills and achieving literacy success.

2.3 Letter-Sound Knowledge

Letter knowledge is a fundamental element of literacy development for primary school students because they must be adept at recognizing, distinguishing between similar-looking letters, and naming each letter in the alphabet. This ability is crucial for forming meaningful connections between letter symbols and their corresponding sounds (Ehri, 2022; Castles, Rastle, & Nation, 2018; National Reading Panel, 2000). Mastery of the alphabetic principle, which involves understanding that spoken words are composed of phonemes represented by letters in written text, is also essential (Ehri, 2022; Castles, Rastle, & Nation, 2018; Piasta & Wagner, 2010). To enhance reading skills effectively, intervention strategies should address multiple aspects of

instruction, including the comparison of practice with words in isolation versus in context and the significance of recognizing word patterns (Foorman et al., 2016; Duke & Cartwright, 2021; National Reading Panel, 2000).

Research indicates that phonemic awareness, decoding abilities, and reading accuracy are critical for comprehension (Foorman et al., 2016; Hoover & Tunmer, 2020; Nation, 2019). Reading accuracy, which involves reading connected text correctly, smoothly, and with appropriate expression, is supported by evidence showing that improving phonemic awareness, letter-sound correspondence, and decoding skills enhances reading accuracy (Ehri, 2022; Foorman et al., 2016; National Reading Panel, 2000; Petscher et al., 2020).

2.4 Phonemic Awareness (PA) and Reading Development

Phonemic awareness, which includes the ability to manipulate phonemes in spoken words (such as syllables and rhymes), is a key component of early literacy development (McCarthy, 2008; Phillips & Torgesen, 2006; Ukrainetz, 2009; Zeece, 2006). Phonics instruction helps learners use alphabetic decoding skills to break down written words (Ehri & Nunes, 2002; Zimmerman et al., 2008). To read words, students need to decode by transforming graphemes into phoneme blends (Ehri et al., 2001; Landerl, 2000; McGee & Ukrainetz, 2009; Scully & Roberts, 2002).

Phonemic awareness plays a pivotal role in reading development, particularly in alphabetic languages like English, as it forms the foundation for decoding and word recognition skills. By recognizing and manipulating individual sounds in spoken language, learners build the necessary skills for phonics, where letters are mapped to sounds. This connection between phonemes and graphemes is essential for learning to read and decode written language effectively. Research shows that phonemic awareness is strongly linked to reading success, as it helps children break down words into their component sounds, facilitating both decoding and word recognition (National Reading Panel, 2000; Torgesen et al., 2006).

In addition to its role in decoding, phonemic awareness significantly enhances spelling and reading fluency. By allowing students to segment words into smaller sound units, it supports the understanding of spelling patterns and helps predict

unfamiliar spellings (Gillon, 2004). Furthermore, as students become more adept at decoding through phonemic awareness, they read words faster and more accurately, which improves fluency (Ehri et al. , 2001) . Fluency, in turn, is crucial for comprehension because it enables students to focus on the meaning of the text rather than on word recognition (Rasinski, 2004). Without sufficient phonemic awareness, students may struggle with these foundational skills, making reading a more laborious process (Snow, 2018).

Moreover, phonemic awareness indirectly influences reading comprehension by freeing cognitive resources for understanding the text. Students with high phonemic awareness are able to decode words with ease, allowing them to engage with more complex texts and comprehend deeper meanings (Perfetti, 2007). This skill is also a predictor of early literacy success, with children who develop phonemic awareness early more likely to become proficient readers (Adams, 1990) . For EFL learners, particularly Thai students, phonemic awareness is crucial due to the differences between the English and Thai phoneme systems (Baker et al., 2006) . Addressing phonemic awareness gaps in the early stages can lead to significant improvements in literacy and overall reading development (Ziegler et al., 2009).

2.4.1 Assessing Phonemic Awareness

Phonemic awareness can be assessed through a variety of tasks, which are primarily distinguished by their focus on analytic or synthetic skills. Phonemic analysis refers to the ability to isolate individual phonemes within words, as highlighted by Yeung and Chan (2012). This skill is fundamental for developing literacy, as it enables learners to recognize the distinct sounds that make up spoken language. In contrast, phonemic synthesis involves the ability to combine isolated phonemes to form recognizable words or even non-words, which is discussed by Saiegh-Haddad (2007) . Understanding these two facets of phonemic awareness is crucial for designing effective literacy instruction. The complexity of phonemic awareness tasks can vary significantly, ranging from basic activities such as identifying rhymes to more advanced exercises that involve manipulating individual phonemes within words. Tasks designed to measure phonemic analysis typically fall into several common categories.

Recognition and production of rhymes: This task involves the ability to identify and produce words that share similar ending sounds. Recognizing rhymes is a fundamental skill in phonemic awareness, as it helps learners understand the auditory patterns in language. For example, a teacher might present a series of words such as “cat,” “hat,” and “bat” and ask students to identify which words rhyme with each other. In addition to identification, learners are encouraged to produce their own rhyming words, fostering creativity and reinforcing their understanding of phonetic similarities. This activity not only enhances phonological processing skills but also promotes vocabulary development and comprehension of sound patterns, laying the groundwork for more advanced literacy skills.

Multiple-choice tasks: In this activity, learners are engaged in a selection process where they choose a word from a set of images that shares the same initial, medial, or final sound as other depicted words. This task challenges their ability to discriminate between sounds and recognize phonetic patterns in words. For instance, they may be presented with images of a “cat,” “bat,” and “hat” and asked to select the image that begins with the same sound as “cat.” This type of task is beneficial for reinforcing the understanding of phonemes and their placement within words. Additionally, it encourages visual processing alongside auditory discrimination, making it an effective tool for developing comprehensive literacy skills.

Elision tasks: These tasks are designed to assess and develop phonemic awareness by prompting EFL (English as a Foreign Language) learners to say a word after removing a specific phoneme. For example, learners might be instructed to say, “Say ‘bat’ without the ‘b’ sound.” This activity encourages students to break words down into their constituent sounds and practice manipulating them, which is crucial for reading and writing development. By focusing on elision, learners not only improve their phonemic awareness but also enhance their ability to decode words and understand how phonemes interact within the structure of language. Such tasks are particularly useful in identifying and addressing gaps in learners' phonological skills.

Phoneme pronunciation tasks: In this task, learners are asked to pronounce the individual phonemes of words separately. For instance, they might be given the word “dog” and instructed to articulate the sounds /d/, /ɒ/, and /g/ individually. This exercise emphasizes the importance of sound segmentation and blending, essential components of reading and spelling. This task not only helps learners refine their own phonological skills.

Phoneme reversal tasks: These tasks challenge learners to identify what word results from saying another word backward. For example, a teacher might ask, “What do you get when you say ‘pat’ backward?” This activity requires learners to think critically about the structure of words and to manipulate sounds in a novel way. Phoneme reversal tasks help develop higher-order phonological processing skills and encourage cognitive flexibility as students work to mentally rearrange sounds. By engaging in these tasks, learners enhance their understanding of phoneme manipulation, which is crucial for literacy development. This type of task not only reinforces their phonemic awareness but also promotes deeper engagement with the sounds and structures of language (Kruse et al., 2015; Noe et al., 2013).

These tasks provide insights into a learner’s phonemic awareness skills, essential for decoding words and overall reading proficiency. They help educators identify areas where learners may need additional support and tailor instruction to improve their phonemic processing abilities.

This study utilized phoneme pronunciation tasks to evaluate participants' phonemic awareness. Two tests specifically assessed participants' skills in phoneme identification and phoneme segmentation. The phoneme identification test consisted of 15 words, enabling the evaluation of participants' abilities to recognize initial, final, and middle sounds in spoken language. In addition, the phoneme segmentation test included 15 words accompanied by corresponding pictures. Participants were asked to deconstruct each word into its smallest phonetic components and verbally articulate each sound in the correct sequence to the researcher.

2.5 Synthetic Phonics Instruction

Synthetic phonics instruction is a method of teaching reading that emphasizes the explicit and systematic teaching of letter-sound relationships and the blending of these sounds to form words. This approach is grounded in the alphabetic principle, which asserts that letters and letter combinations represent specific sounds in spoken language. Synthetic phonics begins with teaching students to recognize and produce individual phonemes (the smallest units of sound) and then blend these phonemes together to form words. For instance, students learn to identify the sounds /s/, /a/, and /t/ and blend them to read the word "sat." This method follows a structured sequence where phonemes and graphemes (letter-sound pairs) are introduced in a logical order, starting with simple, frequently occurring sounds and progressing to more complex ones. Teachers explicitly instruct students on decoding words by segmenting them into individual phonemes and then blending those phonemes to read the word, ensuring that students understand the connection between letters and sounds. Extensive practice with phoneme-grapheme correspondence through activities such as reading decodable texts, writing words, and playing phonics games reinforces the ability to apply phonics knowledge to reading and spelling tasks. Emphasizing decoding, synthetic phonics instruction helps students read unfamiliar words and improve overall reading fluency.

Research supports the effectiveness of synthetic phonics in improving reading outcomes, particularly for early readers and those with reading difficulties, showing that students who receive synthetic phonics instruction tend to achieve higher levels of reading accuracy and fluency compared to other phonics methods (Torgesen et al., 2006; Johnston & Watson, 2005). In summary, synthetic phonics instruction provides a systematic and explicit approach to teaching reading, focusing on blending phonemes to decode words, and is supported by evidence demonstrating its effectiveness in enhancing reading proficiency.

2.5.1 Explicit Systematic Phonics Instruction

The teaching of phonics has become a crucial aspect of literacy development (Jamaludin et al., 2015; Rupley, 2009). Various approaches to phonics instruction include explicit, synthetic, analytic, and embedded methods, all of which focus on

teaching the relationship between phonemes and graphemes (Driver et al. , 2014; Phipps, 2011; Weiser, 2013).

Systematic explicit instruction is often associated with phonics, where “ explicit” describes how lessons are delivered directly and clearly communicating what is being taught. In contrast, “systematic” pertains to the organized format of the curriculum, detailing the orderly progression of phoneme-grapheme instruction (Puolakanaho et al., 2008; Zeece, 2006). Key elements of explicit and systematic phonics instruction include a curriculum with a specific, sequential set of phonics components and instruction that is direct, precise, and unambiguous (Mesmer & Griffith, 2005, p. 369) . Effective phonemic awareness instruction is vital for developing successful readers and should be a central focus in reading education. This understanding is reflected in various reading programs and curricula globally (Lane, 2007; Brownell et al., 2011; Brownell & Leko, 2013; Leko & Brownell, 2011).

2.5.2 Multisensory Phonics Instruction and Phonemic Awareness

Multi-sensory phonics programs (MSPPs) are designed to teach these foundational elements through a combination of visual, auditory, tactile, and kinesthetic methods. By integrating various sensory modalities, these programs aim to enhance students' understanding and retention of phonemic concepts, making reading more accessible and engaging.

Multisensory phonics instruction plays a crucial role in improving reading skills among diverse learners, particularly those who face significant challenges in reading compared to their peers who do not participate in such interventions (Warnick & Caldarella, 2016, p. 327) . This instructional approach is especially beneficial for students with reading difficulties, as it utilizes multiple sensory modalities to enhance learning. By engaging various senses, sight, sound, touch, and speech, multisensory phonics instruction promotes a more holistic understanding of phonemic awareness (PA) , letter-sound correspondence, syllable structure, morphology, syntax, and semantics.

This method is often associated with Jolly Phonics (JP) instruction, which emphasizes the integration of sensory experiences into the learning process. Research indicates that this approach is effective because it accommodates different learning styles, making it more engaging and supportive for students. By allowing learners to manipulate and interact with the material through various sensory channels, it aligns with their individual learning preferences, thus fostering a more inclusive and effective educational environment.

Numerous studies have documented the positive outcomes of multi-sensory phonics instruction, reporting significant improvements in reading abilities among learners with reading difficulties. In terms of phonemic awareness and its role in reading outcomes, Joshi and Hunsader (2022) emphasized its critical importance in early literacy development. Their study confirmed that phonemic awareness is a strong predictor of reading success and showed how integrating phonemic awareness with multisensory phonics instruction can accelerate literacy development. Furthermore, O'Connor and Gee (2023) explored the effects of combining phonemic awareness training with multisensory phonics techniques on students with reading disabilities. Their research indicated that this integrated approach significantly improved both phonemic decoding and reading fluency among students with dyslexia, highlighting the benefits of tailored instructional methods for struggling readers. A longitudinal study conducted by Baker and Duncan (2024) has provided insights into the long-term effects of multisensory phonics instruction. Their study tracked students who received such instruction and found that early exposure not only supports immediate literacy gains but also has enduring positive effects on reading proficiency throughout elementary school.

These findings collectively reinforce the value of multisensory phonics instruction in fostering phonemic awareness and enhancing early reading skills. By engaging multiple senses, these approaches contribute to a more solid foundation for literacy development, ultimately supporting more robust and lasting reading abilities.

2.6 Previous Studies

This section reviews the existing literature that explores the impact of multisensory phonics instruction on phonemic awareness across different settings. Two recent studies have also explored adding a multisensory component to systematic phonics instruction for struggling readers. Snyder and Golightly (2017) and Warnick and Caldarella (2016) each conducted single subject experimental studies to evaluate the effectiveness of multisensory, phonics-based reading interventions. Snyder and Golightly integrated multisensory phonics with a whole-language reading approach for second-grade students with reading difficulties. Their intervention consisted of 14 sessions of multisensory phonics (45 minutes each) and 35 sessions of whole-language lessons (30 minutes each). Warnick and Caldarella applied a multisensory phonics program with adolescents who were poor readers at a residential treatment center. The 30 hour, highly structured intervention was delivered over an 8-week period. Both studies reported significant gains in reading, comprehension, and word identification.

In contrast to the single-subject designs used by Snyder and Golightly (2017) and Warnick and Caldarella (2016), Henry (2020) conducted an action research study to assess the impact of multisensory phonics instruction on fifth and sixth-grade struggling readers. Henry reported improvements in decoding, word identification, sight word recognition, and reading comprehension. However, since there were no comparison groups, it is unclear whether these improvements were due to the multisensory instruction or other factors in the learning environment.

Schlesinger and Gray (2017) conducted an experimental study with a single group to assess the impact of multisensory language instruction. Their sample included second-grade students, both typically developing and those with dyslexia. The students participated in six treatment sessions that incorporated structured, multisensory interventions adapted from the Orton-Gillingham method. The findings revealed that all students showed improved letter name and sound recognition, word reading, and spelling with the multisensory approach.

Holmes (2018) explored the impact of a multisensory approach on improving the decoding skills of kindergarten students. The study found a positive impact on this particular skill. The research followed Mertker's (2014) action research method, which included four stages: planning, acting, developing an action plan, and reflecting on the process for future studies. The planning stage involved identifying the research problem, formulating questions, reviewing relevant literature, and selecting a research design. The acting phase included applying the intervention, collecting data, and analyzing the results. Using the Project Read Primary Phonics program, the findings indicated that this multisensory approach had a positive effect on early learners' educational outcomes.

Similarly, Karpovich (2018) conducted a quantitative quasi-experimental study to explore the relationship between small group interventions and the multisensory method in improving letter knowledge among young learners. The study involved 30 students, who were divided into two groups, each receiving different treatments. The results showed that the group receiving small group intervention with a multisensory approach demonstrated greater improvement compared to the group receiving standard care. The findings suggest that small group intervention is an effective strategy for enhancing kindergarten learners' letter awareness and that incorporating a multisensory method can maximize its effectiveness.

Building on Karpovich's (2018) research, Gahan's 2019 study investigated whether a multimodal instructional approach could effectively enhance the learning of letter names and sounds in pre-kindergarten children. The study utilized an observational checklist and the Pre-Kindergarten Language and Literacy Assessment as assessment tools. After conducting pretests and posttests, along with a five-day intervention, the results indicated that the multimodal learning approach had positive effects on pre-kindergarten education, particularly in learning letter names and sounds. However, the study suggests that further research is needed before generalizing the results.

Feldman (2021) compared the effects of multisensory phonics instruction versus systematic, explicit phonics teaching on the reading improvement of kindergarten and first-grade students. An experimental group of 132 K-1 learners received explicit phonics instruction during the 2016-2017 school year, while another group of the

same size was taught using a multisensory approach in 2017-2018. Data were collected through the Istation test and the Phonological Awareness Literacy Screening Test. Using various assessment tools, including the Mann-Whitney U test, Kruskal-Wallis H test, Cohen's d, and Eta squared, the results showed a significant improvement in scores for the 2017-2018 group. These findings suggest that incorporating multisensory elements into teaching can enhance reading development for K-1 learners.

The multisensory learning method also plays a crucial role in developing students' reading skills, particularly in phonological awareness. Rostan et al., (2021) conducted a study in Sweden, focusing on kindergarten and first-grade students who were at high risk for reading difficulties. In this experimental study, the treatment group showed a significant statistical improvement. The results indicated that phonological awareness and self-efficacy were notably enhanced, contributing to academic progress. However, there was no significant difference in terms of enjoyment and motivation. The literacy program was also found to be cost-effective compared to other academic remedial and tutorial programs. Overall, the multisensory learning method proved to be highly effective in improving reading skills among kindergarten learners.

Carley's (2022) study investigated the effectiveness of multisensory learning in the educational development of kindergarten children. This approach integrates various learning styles, including auditory, visual, and kinesthetic activities. The study found that when children achieved mastery in sight words, they no longer experienced difficulties with word comprehension. By analyzing data gathered from sight word assessments, interviews, and a Likert scale survey, the results demonstrated that multisensory learning had a positive impact on students, leading to notable improvements. Additionally, the engaging activities enhanced the overall learning experience.

In the same year, Beyer (2022) conducted a study to explore the positive and negative effects of the interaction between two key variables. Six learners were selected from the researcher's classroom for a seven-week intervention, based on their previous assessments, particularly in phonemic awareness (O'Brien et al., 2022). The

multisensory approach was implemented through methods such as small group activities, hands-on learning, and teacher-led instruction. Additional strategies included student-made journals, assessments focusing on letter names and sounds, and casual teacher monitoring. After analyzing the results, the study concluded that the multisensory approach effectively enhanced kindergarten learners' ability to recognize letter names and sounds.

Research specifically on the effect of multisensory phonics instruction on phonemic awareness in Thailand is relatively limited, but there are some relevant studies and broader research trends that may inform the topic. Lynch and Chayluxsamee (2022) investigated the impact of multisensory and listen-and-repeat teaching approaches on the word stress competence of Grade 5 students learning English as a foreign language at a public school in Bangkok, Thailand. The study employed a quasi-experimental design, with two groups of students from the 2019 academic year: an experimental group (Class 5/2) taught using the multisensory approach and a control group (Class 5/1) taught using the listen-and-repeat approach. A pre-test and post-test of word stress competence, developed by the researchers, were used to measure the students' performance. The results revealed a significant difference in word stress competence gains between the two groups. Students in the experimental group (multisensory approach) outperformed those in the control group (listen and repeat approach), showing that multisensory techniques were more effective in improving word stress competence in this context.

Baneng, Masoh, and Al-edris (2023) examined the effectiveness of the IQRA' Multisensory Learning Model in improving letter recognition among dyslexic students in an EFL context and explored students' perceptions of the model. The study targeted academically weak fifth-grade English learners who struggled with dyslexia. Over a six-week period, students were taught how to code the sounds of English letters using various multisensory activities and practiced reading with the IQRA mini textbook. Data were analyzed using both descriptive and inferential statistics. The results showed a significant improvement in students' post-test scores compared to their pre-test scores, demonstrating enhanced sound coding and letter recognition after using

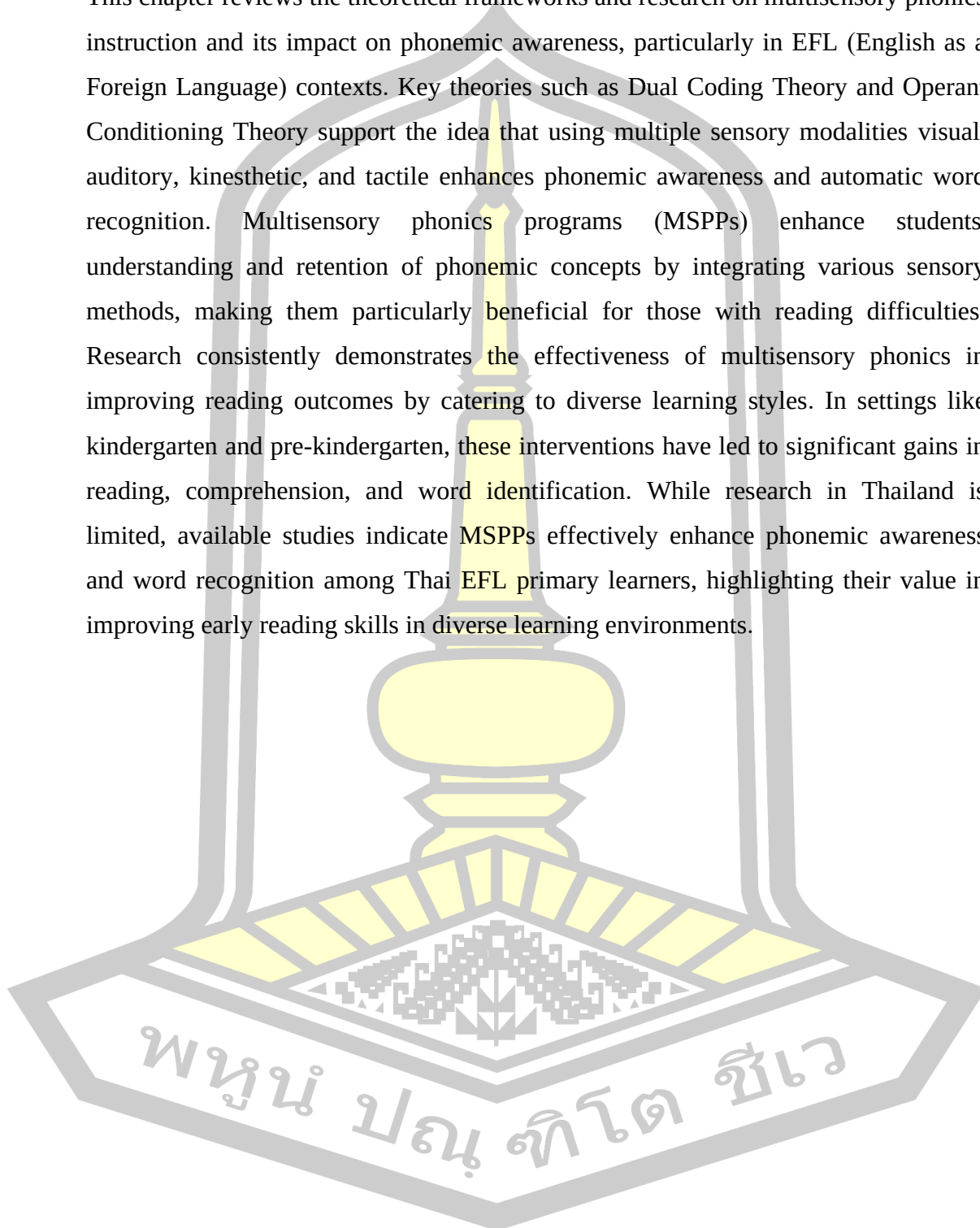
the IQRA multisensory Learning Model. Additionally, students expressed a positive attitude toward learning with this model. The study concluded that the IQRA multisensory Learning Model is an effective approach for supporting struggling readers, particularly those with dyslexia.

Dongsanniwas and Sukying (2024) investigated the effects of Total Physical Response (TPR) tasks on the vocabulary acquisition of Thai primary school students, specifically focusing on word definitions. The study also explored students' attitudes toward learning vocabulary through TPR tasks. These tasks were designed to stimulate three senses visual, auditory, and tactile by incorporating multisensory activities. Using a mixed-methods research design, the study involved 27 second-grade students from a primary school in northeastern Thailand. The research employed three instruments: quantitatively, the Receptive Word Knowledge Test (RWKT) and Productive Word Knowledge Test (PWKT) were administered to assess students' vocabulary knowledge before and after the intervention in a single-group pretest-posttest format. Qualitatively, a focus group interview was conducted to gain deeper insights into students' attitudes toward TPR activities. The quantitative results revealed a significant improvement in both receptive and productive vocabulary knowledge among participants. Additionally, qualitative findings underscored the benefits of TPR tasks, with students expressing heightened enthusiasm, a sense of competition, and enjoyment in vocabulary learning through interactive tasks and peer collaboration.

The previous studies indicated the effectiveness of multisensory phonics instruction on word recognition, pronunciation, spelling, and reading proficiency of students at different education levels and educational settings. Various methods such as Jolly Phonics, SIPPS, CALL, or multisensory programs were used as instruments of those studies conducted in other countries. In Thailand, there was a scarcity of research delving into enhancing phonemic awareness through multisensory phonics instruction. To fill the research gap, this study aimed to investigate the effect of multisensory phonics instruction on phonemic awareness among Thai EFL primary learners at a primary school located in the central part of Thailand.

2.7 Summary of the Chapter

This chapter reviews the theoretical frameworks and research on multisensory phonics instruction and its impact on phonemic awareness, particularly in EFL (English as a Foreign Language) contexts. Key theories such as Dual Coding Theory and Operant Conditioning Theory support the idea that using multiple sensory modalities visual, auditory, kinesthetic, and tactile enhances phonemic awareness and automatic word recognition. Multisensory phonics programs (MSPPs) enhance students' understanding and retention of phonemic concepts by integrating various sensory methods, making them particularly beneficial for those with reading difficulties. Research consistently demonstrates the effectiveness of multisensory phonics in improving reading outcomes by catering to diverse learning styles. In settings like kindergarten and pre-kindergarten, these interventions have led to significant gains in reading, comprehension, and word identification. While research in Thailand is limited, available studies indicate MSPPs effectively enhance phonemic awareness and word recognition among Thai EFL primary learners, highlighting their value in improving early reading skills in diverse learning environments.



CHAPTER III

RESEARCH METHODOLOGY

This chapter provides a comprehensive overview of the research methodology employed in the study. It outlines the research design that guided the overall approach and structure of the investigation. Additionally, it describes the participants and setting, detailing the demographic characteristics and contextual background relevant to the study. The chapter also presents the research instruments utilized for data collection, explaining their purpose, development, and validation processes. Furthermore, it elaborates on the procedures followed during data collection to ensure reliability and consistency. Finally, the chapter discusses the methods of data analysis used to interpret the findings, including both qualitative and quantitative techniques.

3.1 Research Design

A quasi-experimental research design is a type of research method used to establish a cause and effect relationship between an independent variable (the factor being manipulated or observed) and a dependent variable (the outcome being measured) (Cook & Campbell, 1979; Shadish, Cook, & Campbell, 2002). Unlike true experimental designs, quasi-experiments do not involve random assignment of participants to experimental and control groups. Instead, participants are assigned to groups based on non-random criteria, such as pre-existing characteristics or other factors that are not controlled by the researcher (Trochim, 2006). Because of the lack of randomization, quasi-experimental designs are considered less rigorous than true experiments, as they are more susceptible to threats to internal validity (e.g., selection bias) (Shadish et al., 2002). However, they are particularly useful in situations where random assignment is either impossible or unethical, such as in educational research, social policy studies, or medical field studies (Campbell & Stanley, 1963). Quasi-experimental designs often include pre-tests and post-tests, matched groups, or time series analyses to control for some of these validity threats (Harris et al., 2006). Overall, quasi-experimental designs offer a practical alternative to true experiments, allowing researchers to explore causal relationships in real-world settings (Shadish et al., 2002).

This study investigated the effects of multisensory phonics instruction on phonemic awareness in Thai EFL first-grade students, utilizing a quasi-experimental design with two intact classes. The control group, consisting of 20 students, received traditional teaching methods, while the experimental group, with 20 students, was taught using a multisensory phonics approach. Quantitative data were collected through two assessment sets: pretests and posttests for both phoneme identification and phoneme segmentation. Additionally, qualitative data were gathered via a focus group interview with six students chosen based on their posttest results, representing low, moderate, and high proficiency levels. This qualitative data aimed to provide deeper insights into how multisensory phonics instruction improved students' phonemic awareness.

3.2 Participants and Setting

The participants consisted of 40 first graders with mixed abilities, selected from two intact classes, comprising 25 females and 15 males, aged between 6 and 7 years. They had 2 to 3 years of English learning experience in primary school, with approximately 3 hours of English instruction per week. According to Thailand's Basic Education Core Curriculum B.E. 2551 (A.D. 2008), grade 1 students were expected to identify letters and sounds, read and spell words, and read sentences. However, their English learning records indicated that their overall proficiency remained low, partly due to the limited study time, which was insufficient for reaching the expected level of competence. These students faced significant challenges in recognizing English letters, which were fundamentally different from the Thai alphabets in both form and function. This difficulty was compounded by their struggle with English sounds, particularly when these sounds were combined with English letters. The contrast between the Thai and English writing systems created an additional layer of complexity, making it hard for them to master the pronunciation and sound-letter correspondence essential for reading and writing in English.

These students were enrolled in a subject titled Fundamental English in the second semester of the academic year 2024. In this subject, they learned to identify letters and practiced pronouncing them, including vowels and their spellings. They read aloud words, word groups, and sentences, and participated in reading exercises and conversations. They used sentences to share personal information, express personal needs, and provide details about themselves.

3.2.1 Research Context

This quasi-experimental research was conducted with 40 first-grade students enrolled in the Fundamental English class at a public primary school located in the northeastern region of Thailand. These students, who were all native Thais and native speakers of the Thai and Isan languages, had been exposed to English for 2 to 3 years. The participants were taught by the researcher, who worked as an English teacher for first to second-grade students at this school.

In this study, 40 students from two intact classes participated, with 20 students in the control group and 20 students in the experimental group. The control group followed a traditional English learning method focused primarily on word reading. This traditional approach, commonly used in general phonics instruction, relied on whole-word or look-and-say techniques, where students learned language through rote memorization, as emphasized in textbooks. In contrast, the experimental group received multisensory phonics instruction, which focused on letter sounds, letter formation, blending, and segmenting. This approach was anticipated to enhance students' phonemic awareness, fostering foundational skills in phonemic identification and segmentation.

3.2.2 Participant Profile

The participants of this study were 40 first-grade students, including 25 females and 15 males. They were aged between 6 and 7 years old, had 2-5 years of English learning experience from primary school, and received approximately 3 hours of English learning per week. The general ability of these students was rather low according to their English learning records. The limited study time was not enough for them to achieve a satisfactory level of English. These students could not read some English words correctly. For example, they had problems with the letter-sound relationship, which was evident from their limited background knowledge of the English alphabets and sounds. According to Thailand's Basic Education Core Curriculum B.E. 2551 (A.D. 2008), students in grade 1 were expected to be able to identify letters and sounds, read words, spell words, and read sentences.

The participants in this study were selected based on the following criteria: (1) they were first-grade primary school students; (2) they had been studying English for 2–5 years, starting from kindergarten; and (3) they demonstrated limited English proficiency, as observed in their classroom performance and by their teachers. The study adhered to established ethical guidelines, ensuring that participants were informed about the study's purpose and their right to withdraw at any time without consequences.

Additionally, many of these students faced socio-economic challenges, as they were predominantly raised by their grandparents. This caregiving arrangement often resulted from economic pressures that led the children's parents to seek employment in other provinces, leaving the grandparents with the responsibility of raising the children. However, this created gaps in care and limited the children's access to educational support and learning resources at home. While grandparents provided emotional care and stability, the demands of raising young children, combined with financial and household responsibilities, posed significant challenges. This situation hindered the children's literacy development, making them more susceptible to developmental delays, behavioral issues, and lower school engagement compared to their peers raised by their parents.

Both the control and experimental groups were taught the same English consonants, vocabulary, and textbooks in accordance with the Common Framework of Reference, as outlined in Thailand's Basic Education Core Curriculum B.E. 2551 (A.D. 2008).

3.3 Research Instruments

This study included three instruments: a phoneme identification test, a phoneme segmentation test, and a focus group interview. The description of these instruments is described below:

3.3.1 Phoneme Identification Test

A phoneme identification test was developed to assess participants' phonemic awareness. The phoneme identification test consisted of 15 words, enabling the evaluation of participants' abilities to recognize initial, final, and middle sounds in spoken language.

To ensure the reliability and validity of the tests, three experts in English Language Teaching were invited to provide their insights and validation. Based on their feedback, the researcher made the necessary adjustments to enhance the quality of the tests. Once modified, the tests were finalized and prepared for implementation in the main stage of the study. The following score ranges was used to categorize participants' achievement levels as High, Mid, and Low:

Table 1 Level of the participants' achievement as High, Mid, and Low

SCORES	LEVELS
11-15	High
7-10	Mid
0-6	Low

3.3.2 Phoneme Segmentation Test

A phoneme segmentation test was developed to assess participants' phonemic awareness. The phoneme segmentation test consisted of 15 words, each paired with a corresponding picture. Participants were required to break each word down into its smallest phonetic components and verbally articulate each sound in the correct order to the researcher.

To ensure the reliability and validity of the tests, three experts in English Language Teaching were invited to validate them. Following their input, the researcher made necessary adjustments to enhance the tests' quality. Subsequently, the modified tests were prepared and deemed ready for implementation in the main stage of the study. The range of scores below was used to determine the levels of the participants' achievement as High, Mid and Low.

3.3.3 Focus Group Interview

A ten-minute focus group interview was conducted in the post-stage of the study with six students selected based on high and low scores on the posttest. The purpose was to investigate the students' perception of the effect of multisensory phonics instruction. According to Krueger & Casey (2000), a focus group interview is used to gather qualitative data from a group of individuals with specific characteristics, fostering discussions related to the research topic in a relaxed setting, facilitated by a moderator. In this study, six participants were included in a focus group interview to

examine their perception of the implementation of the effect of multisensory phonics instruction in their English classroom. The interview took 15 minutes and was recorded through audio recording. The following were example interview questions that were used to elicit responses from the students.

1. Did using your eyes, ears, hands, and mouth help you learn words?
2. Can you tell me a word you learned?
3. Was learning this way fun?
4. Which part did you like the most looking, listening, touching, or saying the words?
5. Do you feel like it's easier to understand words now?
6. What was your favorite activity today?
7. What made you feel happy or excited during the lesson?
8. What did you like most about today's lesson?

3.4 Data Collection Procedure

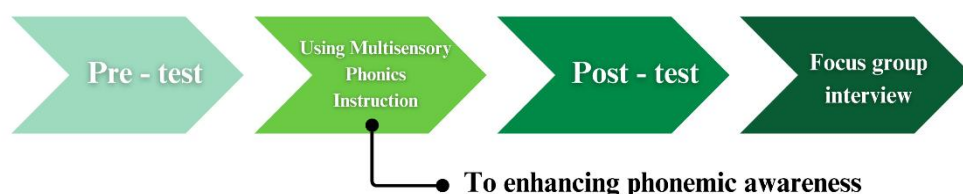


Figure 1 Data Collection Procedure

3.4.1 In the pre-study phase, an orientation of the research project, including the purposes of the study and the types of participation, was given to the participants. Moreover, a consent form was provided for the participants.

3.4.2 The participants of the two groups were administered two tests to assess their knowledge about phonemic awareness before the intervention: a phoneme identification pretest and a phoneme segmentation pretest. This stage demonstrated the students' previous knowledge about phonemic awareness.

3.4.3 Within six weeks of the second semester, the participants of the two groups received two different types of instruction. The control group was instructed using

traditional instruction, which provided classroom activities according to the textbook, while the experimental group was taught through multisensory phonics instruction.

3.4.4 In the post-study phase, the participants of both groups were administered a phoneme identification posttest and a phoneme segmentation posttest to assess the result of the treatment.

3.4.5 Finally, six representative students two from the high, two from the mid, and two from the low proficiency levels, based on their posttest scores were selected to participate in a focus group interview. This allowed for an in-depth exploration of their perceptions regarding the effectiveness of multisensory phonics instruction in enhancing their phonemic awareness.

3.4.1 Teaching Steps Based on Multisensory Phonics Instruction

Step 1: Learning the Letter Sounds

In this study, the multisensory phonics instruction covered 42 sounds derived from 26 letters and digraphs, which were pairs of letters that produced a single sound when read together. These sounds were taught through a variety of multisensory activities. The instruction was organized into seven groups, each designed to help children form words as quickly as possible.

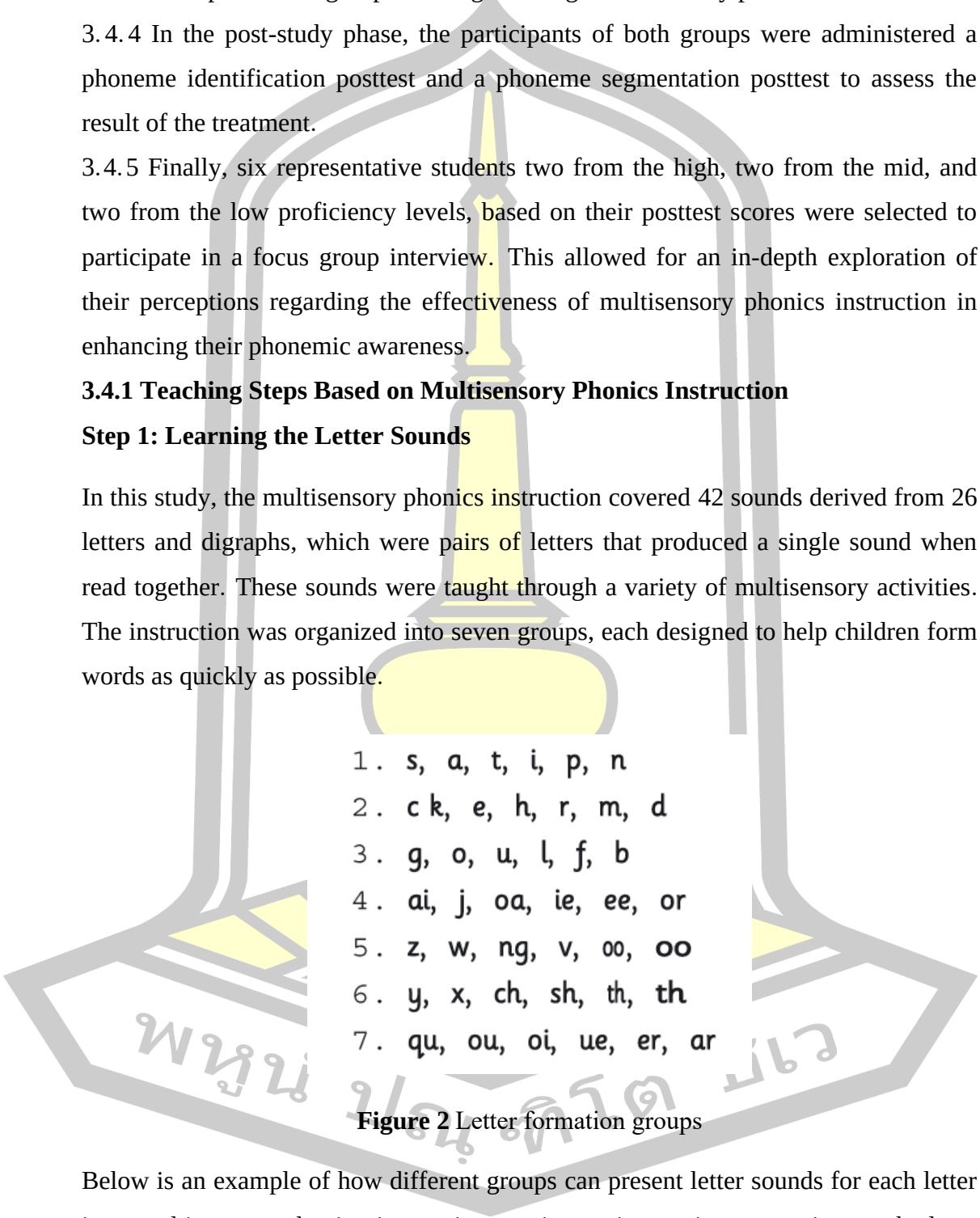
- 
1. s, a, t, i, p, n
 2. c k, e, h, r, m, d
 3. g, o, u, l, f, b
 4. ai, j, oa, ie, ee, or
 5. z, w, ng, v, oo, oo
 6. y, x, ch, sh, th, th
 7. qu, ou, oi, ue, er, ar

Figure 2 Letter formation groups

Below is an example of how different groups can present letter sounds for each letter in a multisensory phonics instruction session, using various engaging methods to enhance learning.

Visual Presentation

- **Letter A:** Show an image of an apple and say, "A says /æ/ as in apple."
- **Letter B:** Display a picture of a ball and say, "B says /b/ as in ball."
- **Letter C:** Present a cat picture and say, "C says /k/ as in cat."

Auditory Presentation

- **Letter D:** Use a drum and tap it while saying, "D says /d/ as in drum."
- **Letter E:** Sing a short song that includes words starting with E, saying, "E says /e/ as in elephant."
- **Letter F:** Make a "f" sound while blowing air, stating, "F says /f/ as in fish."

Tactile Presentation

- **Letter G:** Use clay to form the letter G while saying, "G says /g/ as in goat."
- **Letter H:** Create the letter H with string and say, "H says /h/ as in hat."
- **Letter I:** Have students trace the letter I in sand while saying, "I says /i/ as in igloo."

Kinesthetic Presentation

- **Letter J:** Jump in place while saying, "J says /dʒ/ as in jelly."
- **Letter K:** Perform a karate chop and say, "K says /k/ as in kite."
- **Letter L:** Use arm motions to make an L shape and say, "L says /l/ as in lion."

Step 2: Learning Letter Formation

Students learned letter formation and writing as part of developing their phonemic awareness. Letter sounds were introduced simultaneously during lessons. To enhance the visual aspect of learning, the researcher used tracing worksheets featuring large, bold letters, which included arrows and numbers indicating the correct stroke order. Next, the researcher used visual cues, such as pictures of objects that started with the introduced letter, to help students link the letter to its sound.

For auditory activities, the researcher encouraged students to articulate each letter's sound aloud while writing to reinforce the connection between the sound and its written form. Additionally, the researcher incorporated kinesthetic activities, such as using an interactive whiteboard or tablet, to allow students to practice writing letters

while displaying the correct letter formation on the screen. Finally, the researcher demonstrated this in front of the class to further solidify their understanding, as illustrated in Figure 3.

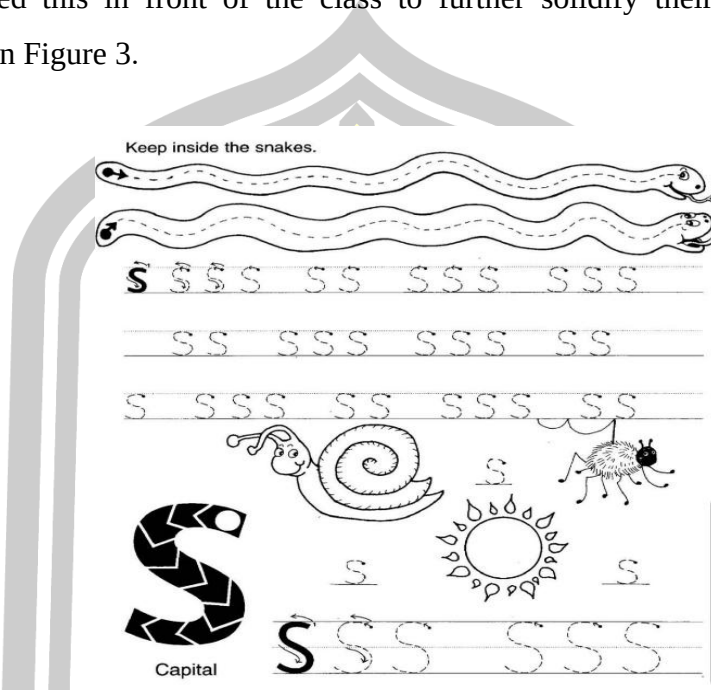


Figure 3 Using tracing worksheets with large, bold letters for students to trace

Step 3: Blending

In the practice step of blending, students combined sounds after learning the individual sounds of each letter, enabling them to read and write new words. The following are some multisensory phonics activities that were designed to help students practice blending sounds and develop phonemic awareness using visual, auditory, and kinesthetic methods.

For visual activities, the researcher utilized blending sound cards to present a series of letter cards, such as "c," "a," and "t," guiding students to focus on the letters while blending the corresponding sounds to form the word, as illustrated in Figure 3.

In auditory activities, the researcher incorporated blending songs by creating songs that involved breaking down sounds into words. For instance, students sang a song that segmented the sounds in a word like "c-a-t," ultimately blending them together to

say "cat." They were encouraged to sing along and repeat the sounds, reinforcing their understanding of the blending process.

For kinesthetic activities, the researcher implemented word stretching using rubber bands or a physical sound blending exercise known as the "Hop and Blend" activity. In this exercise, each letter sound of a word was placed on the floor, and students hopped to each sound, articulating it aloud. Once they reached the end of the word, they blended the sounds together, effectively combining movement with phonemic practice.

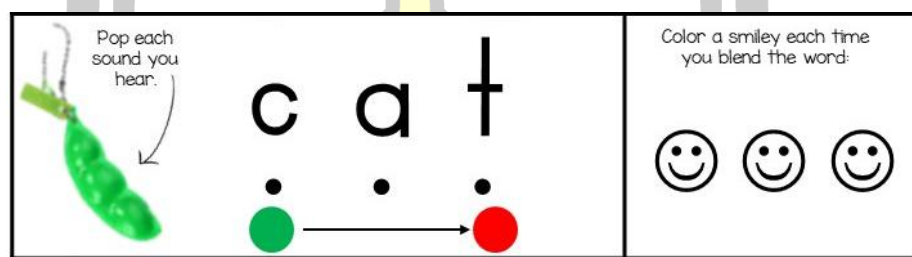


Figure 4 Practice blending words by using a digital flashcard

Step 4: Segmenting

During review lessons, as children began reading words, they also needed to identify the phonetic components that contributed to the pronunciation of each word. By simultaneously teaching blending and segmenting, children gained familiarity with constructing and deconstructing the sounds that comprised words.

In visual activities, picture-sound sorting was employed, providing students with a selection of images that represented various words and asking them to categorize these pictures based on their initial, middle, or final sounds. This task aided students in visually recognizing the distinct sound elements in words, thereby enhancing their phonemic awareness.

For auditory activities, students participated in a BINGO game that featured different sounds or phonemes set to a song, creating an enjoyable learning experience. As the researcher called out each sound, students had to listen attentively and cover the

corresponding sound on their BINGO cards. As illustrated in Figure 4, this activity bolstered sound identification and segmentation skills through careful listening.

For kinesthetic activities, a ball-tossing game was organized with a basket containing letters or sounds. Students tossed a ball into the basket in the order of the sounds that made up a specific word. While throwing the ball, they articulated each sound aloud, reinforcing their ability to isolate sounds while also incorporating physical movement to make the learning process engaging and interactive.

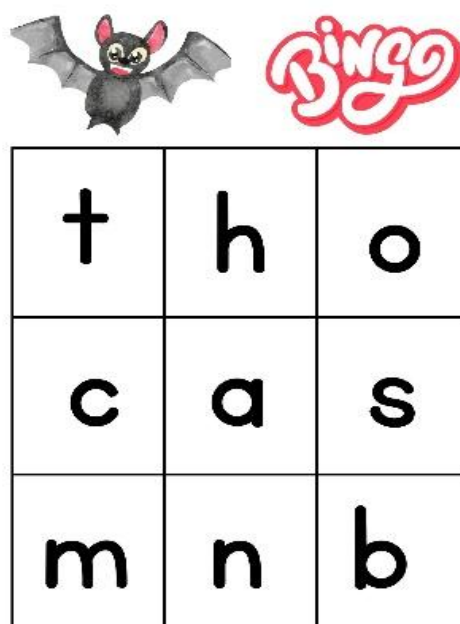


Figure 5 Segmentation skills through a letter bingo game

3.4.2 Sample Lesson Plan

Below is a sample lesson plan showing the differences between traditional instruction and multisensory phonics instruction for enhancing the participants' phonemic awareness in a 60-minute class session.

Table 2 Sample Lesson Plan

Stage	Traditional instruction	The multisensory phonics instruction
Warm-up (5 minutes)	The teacher greets the class and opens the textbook to the phonics section focused on the /s/ sound. and explain that the letter "s" makes the /s/ sound,	The teacher greets the class and introduces the /s/ sound through a short, engaging story or song that features /s/ words. After that, include kinesthetic

Stage	Traditional instruction	The multisensory phonics instruction
	as in "snake" or "sun." Write a few examples of /s/ words on the	activities like air writing, where students write letters in the air with their fingers while saying the
Stage	Traditional instruction	The multisensory phonics instruction
	whiteboard, such as "sun," "sand," and "sock. then Have students repeat the /s/ sound and read the words aloud	sound aloud, combining movement with the auditory experience of hearing the sound (e.g., making a slithering motion like a snake while saying /s/).
Presentation (15 minutes)	Students will read a passage from the textbook that contains multiple /s/ words, identifying and underlining each /s/ word they find. Write a list of /s/ words on the whiteboard and have students copy them into their notebooks. Use flashcards to drill the spelling and pronunciation of /s/ words.	Visual Learning: Show visual aids or pictures corresponding to /s/ words, and have students match the pictures to the correct word. Hands-on Learning: Provide small objects or toys that start with /s/ and have students identify the /s/ sound by interacting with these items (e.g., hold up a small snake toy and say "sss").
Practice (25 minutes)	Have students practice writing a list of /s/ words in their spelling notebooks. Pair up students for a peer review activity, where they check each other's spelling of /s/ words. Conduct a brief quiz where students write down /s/ words that are dictated to them.	Blending Practice: Students will use letter tiles to blend the /s/ sound with other sounds to form words (e.g., "sat," "sip"). Sound Hunt: Conduct a classroom "sound hunt" where students search for objects or pictures that represent /s/ words, physically moving around the room and engaging with the environment.
Production (10 minutes)	Engage in a spelling practice exercise where students write sentences using /s/ words from the textbook.	Group Activity: In small groups, students will create sentences using /s/ words and act them out, reinforcing the sound through movement and collaboration.
Wrap-up (5 minutes)	review the /s/ sound by having students volunteer to read /s/ words from the whiteboard.	Recap the /s/ sound by having students perform the slithering snake action while saying /s/ words.

3.4.3 Selecting the Target Words for the Study

Building the Corpus for Target Words

The selection of target words for this study was a careful process. All target vocabulary was sourced from the textbook “New Aha! English Book,” which was used in the basic English courses for students in grade 1. This textbook, published by Aksorn Charoen Tat ACT. Co., Ltd., was specifically designed to align with the English learning content required by the current core curriculum of Thai primary education. The researchers selected 150 content words from chapters 1 to 6 of the textbook to create a preliminary pool of potential target words.

According to the Basic Education Core Curriculum of Thailand, students completing Grades 1-3 were expected to learn approximately 300-450 English vocabulary words. In addition, Nation (2022) highlighted the significance of focusing on high-frequency vocabulary for L2 learners. These words commonly occurred in both spoken and written language, serving as a crucial foundation for successful communication. These vocabulary items focused on those commonly used in daily life and were intended to support the development of foundational skills in listening, speaking, reading, and writing.

All target words were checked against the school curriculum to ensure their relevance and frequency, and any words not appearing in the list were removed from consideration. Targeting these words paid high dividends for primary learners in their vocabulary acquisition and use in reading and writing. Therefore, the words in this corpus were selected according to the following criteria:

- A. The 200 words were from the school curriculum and in the textbook that participants learned during the semester.
- B. The words were mastered productively within the given semester according to the textbook curriculum.
- C. The words had different derived forms, such as nouns, verbs, and adjectives.
- D. The words frequently occurred in written English and could be readily and commonly used in students’ writing.

Table 3 The corpus of 200 words from both the textbook

Nouns	ant, air, animal, apple, arm, aunt, bag, bat, ball, bed, bee, bell, bike, bin, bird, board, boat, book, box, boy, bread, brother, bus, cake, cap, can, car, card, cat, chair, chicken, circle, cow, cup, dad, desk, dog, doll, door, ear, egg, eye, face, fan, farm, farmer, father, finger, fish, fox, food, foot, gun, hair, hand, hat, head, hen, hip, horse, ice, jam, job, jug, key, king, leg, log, man, map, mat, mom, milk, moon, mother, name, nose, park, pan, pen, pig, pin, rat, rice, ring, room, sand, sea, ship, sister, son, song, sun, tea, toy, umbrella van, wall, wet, wing, wood
Verbs	brush, buy, can, clean, cook, count, cry, cut, dance, drink, eat, give, go, hide, hit, hold, jump, kick, like, listen, lock, love, make, may, meet, move, open, paint, pick, play, put, read, run, say, see, sell, show, sing, sit, sleep, smell, smile, sorry, speak, tell, use, walk, want, wash
Adjectives	bad, beautiful, big, black, blue, brown, cool, eight, enjoy, fall, far, fat, fine, five, four, fun, good, green, gray, happy, hot, kind, left, long, new, nine, old, one, orange pink, purple, quiet, ready, red, relax, right, sad, seven, short, six, small, stick, sweet, tall, ten, three, top, two, ugly, white, wrong, yellow, young

From the 200 words, the final target words were narrowed down to 75 words, 50 words for teaching, and 25 words for testing. Since CVC (Consonant-Vowel-Consonant) words are simple and foundational for early language learning, we selected 25 CVC words from the 25 testing words. The selection includes a balanced mix of: verbs, nouns and adjectives

Words for teaching included ant, apple, bag, bat, book, boy, can, cat, dance, desk, door, ear, eye, face, fish, hair, hand, head, hip, hold, jump, kick, left, leg, listen, make, move, nose, open, pan, put, rat, read, ready, right, run, say, see, show, sing, sit, song, speak, sub, tell, toy, umbrella, use, van, walk.

Words for testing included bad, big, car, cup, dog, eat, fan, fat, fox, hen, hit, hot, man, mat, pen, pin, put, rat, red, run, sad, sit, sun, ten, top.

3.4.4 Establishing Reliability and Validity of the Tests

The reliability and validity of these research instruments were assessed via the Index of Item-Objective Congruence (IOC) method. Three Thai experts who had taught English at the university for over five years were asked to rate the congruence between objectives and items in the test. These ratings were then used to calculate the IOC as follows.

+1 means a test item is considered congruent with the objectives

0 means a test item is considered neutral in terms of whether it is congruent with the object

-1 means a test item is considered not congruent with the objective

The IOC (Index of Item-Objective Congruence) is then used to measure the consistency of each item.

$$IOC = \frac{\sum R}{N}$$

IOC means the index of congruence

R means the total score from the score the opinion of the experts

N means a number of experts

The instruments with an IOC value equal to or higher than 0.5 were retained, and items with a score lower than 0.5 were removed.

The reliability of these research instruments was evaluated through a pilot study involving 20 first graders who were not part of the main study. These students shared similar educational backgrounds with the main study participants. In the pilot study, the students completed two tests: the phoneme identification test and the phoneme segmentation test. The results were analyzed using Cronbach's alpha, which assessed the internal consistency or reliability of the tests.

3.5 Data Analysis

For the two tests, the scores for each test were analyzed using descriptive statistics, including mean ($\bar{X}$) and standard deviation (S.D.), in the Statistical Package for the Social Sciences (SPSS) program. After that, inferential statistics and t-test analysis were used to determine whether test scores were statistically significant.

The focus group interview employed thematic analysis as the primary method for analyzing qualitative data. The entire session was audio-recorded to ensure accuracy and richness of detail, and subsequently transcribed for systematic analysis. Prior to transcription, the researcher, in collaboration with a secondary coder, listened to the complete audio recording in its entirety. This step was undertaken not only to determine the overall duration of the session but also to ensure a comprehensive understanding of the dialogue and interaction dynamics. A preliminary transcript was drafted, followed by careful proofreading and formatting to produce a finalized, accurate version of the transcript suitable for analysis. Thematic analysis was then conducted to systematically identify, analyze, and report patterns or themes within the data. This method involved coding qualitative information to detect repeated ideas, specific words, significant phrases, and underlying concepts that emerged across the dataset. In this study, the process was both inductive and data-driven, meaning that the themes were not pre-determined but rather emerged directly from the content of the transcript. This approach ensured that the findings were grounded in the participants' actual responses and experiences, thus enhancing the validity and authenticity of the results. The coding and theme development process involved multiple readings of the transcript, collaborative discussions between coders to ensure intercoder reliability, and refinement of the coding framework as new insights emerged. Finally, the interpreted data were synthesized into a coherent narrative, and a detailed report was produced to present the key findings in a manner that reflected the complexity and richness of the participants' views.

3.6 Coding Procedures

Step 1: Familiarization with the Data

The familiarization process began with the verbatim transcription of focus group interview recordings that had been conducted with participants after the intervention. Transcribing the interviews word for word ensured the preservation of participants' original expressions and intended meanings. The transcripts were then read multiple times by two independent coders, who aimed to develop a thorough understanding of both the content and context of the responses. During these initial readings, margin notes were used to capture early impressions, recurring ideas, and noteworthy phrases

relevant to students' perceptions of multisensory phonics instruction in enhancing their phonemic awareness. Special attention was paid to remarks that reflected their views on how engaging multiple senses, such as visual, auditory, and kinesthetic, had supported their understanding of the relationship between sounds and letters. This deep immersion in the data enabled the researchers to identify emerging patterns and key aspects of participants' perceptions, which formed the basis for the subsequent coding and theme development stages.

Step 2: Generating Initial Codes

Following familiarization with the interview transcripts, the next step involved systematically generating initial codes from the data. Using an inductive approach, coding was conducted manually by highlighting relevant excerpts and assigning labels that captured key features of the participants' responses. Each transcript was reviewed line by line, and segments that reflected meaningful content related to students' perceptions of multisensory phonics instruction in enhancing their phonemic awareness were coded. The codes were concise and descriptive, capturing both semantic (explicit) and latent (underlying) meanings. Examples of initial codes included:

- “More comfortable” - emotionally at ease during activity.
- “Feel more interested” – increased motivation and enjoyment.
- “Not scared to say now” – reflecting reduced speaking anxiety.
- “Relaxed” – indicating a stress-free learning environment.
- “ Not afraid to make mistakes now” – suggesting greater confidence and openness to learning.
- “Listen and say” – showing active engagement through repetition.
- “My hands help me think” – showing that hands on activity supports thinking, reflecting a multisensory learning approach
- “ Feel nervous when read aloud” – indicating anxiety or lack of confidence during oral reading tasks.

These initial codes were compiled and grouped based on conceptual similarities, forming the basis for identifying broader themes in the next stage of analysis.

Step 3: Searching for Themes

After generating initial codes from the interview transcripts, the next step involved organizing these codes into potential themes that reflected broader patterns of meaning. The codes were carefully reviewed for conceptual similarities and grouped according to recurring ideas found in the participants' responses regarding their experiences with multisensory phonics instruction. This thematic organization aimed to capture how students experienced, interpreted, and emotionally responded to the use of multisensory techniques in their phonemic awareness development. It also addressed the second research question concerning their perceptions of this instructional approach.

For instance, codes such as “feel more interested,” “relaxed,” “enjoyable,” and “more comfortable” were grouped under the preliminary theme “ Cheerful Learning Atmosphere,” as they reflected a positive emotional learning environment created by the multisensory approach. Likewise, codes such as “ my hands help me think,” “ willing to participate,” and “ listen and say” were categorized under the theme “ Emotional Benefits,” as they signaled increased motivation, participation, and emotional engagement during classroom activities. These emerging themes were then refined through iterative analysis to ensure that they meaningfully represented participants' responses and aligned with the second research question regarding learners' perceptions of multisensory phonics instruction.

Initial themes and their corresponding codes were as follows:

Theme	Related Initial Codes
Learning Atmosphere	“emotionally at ease during activity”, “felt relaxed”, “comfortable learning environment.
Skill Development	“improved spelling”, “better pronunciation”, “increased confidence in reading aloud”
Increased Interest	“increased motivation and enjoyment”, “felt more interested”, “curious to learn”
Emotional Benefit	“interesting”, “improving the atmosphere”, “motivated”, “encouraged to participate”
Lack of Confidence	“indicating anxiety or lack of confidence”, “reflecting reduced speaking anxiety”, “shyness”

The thematic map developed at this stage illustrated key areas in which students perceived that multisensory phonics instruction supported their development of phonemic awareness. These preliminary themes were identified through a process of clustering conceptually related codes and were grounded in recurring patterns across participants' responses. The themes captured not only cognitive outcomes such as enhanced sound recognition and blending ability, but also emotional and motivational dimensions of the learning experience.

Following Braun and Clarke's (2006) thematic analysis framework, these preliminary themes were subsequently reviewed and refined to ensure internal coherence within each theme and clear distinctions between themes. This involved re-reading the data extracts associated with each theme to confirm consistency and relevance, as well as revisiting the entire dataset to check that the thematic structure accurately reflected the data as a whole. Themes that were too broad or overlapping were either separated or reorganized to improve clarity and analytical precision. This iterative process helped ensure that each theme captured a specific and meaningful aspect of the participants' perceptions and experiences related to the multisensory phonics instruction.

Step 4: Reviewing Themes

In this phase, the initial themes identified in the previous step were reviewed and refined to ensure that they accurately reflected the coded data and aligned meaningfully with the entire dataset. The review process involved two levels of analysis: (1) examining the coherence and consistency of the coded extracts within each theme, and (2) evaluating the validity of each theme in relation to the broader perspectives expressed by the participants.

First, all data extracts associated with each theme were re-examined to determine whether they formed a consistent and meaningful pattern. For example, the sub-theme "Cheerful Learning Atmosphere" was supported by several recurring codes and responses such as "felt relaxed," "joyful," "had fun," and "emotionally at ease during activities." These consistently illustrated a positive emotional climate fostered by

multisensory phonics instruction. The internal coherence of this sub-theme was strong, with no contradictory or unrelated data segments, reinforcing its validity as a shared perception among the students.

Next, the themes were re-evaluated in relation to the full set of interview transcripts to ensure that they captured the overall narrative of the participants' experiences. During this stage, some themes were refined for clarity, while others were merged or renamed to better represent the data. For instance, codes relating to “fun,” “joy,” and “amazing lessons” were merged into the sub-theme “Cheerful Learning Atmosphere” due to their consistent reference to a motivating and stress-free environment. Likewise, codes reflecting emotions such as “pride,” “interest,” “bravery,” and “motivation” were consolidated under the sub-theme “Emotional Benefits.”

Additionally, one theme initially labeled “Cognitive Development” was renamed “Memory Enhancement” to more accurately describe students' perceived improvements in phonemic recognition, sound blending, and memory for spelling patterns. These revisions helped to ensure that the final themes and sub-themes meaningfully captured both the advantages and challenges reported by the participants, offering a clearer understanding of their experiences with multisensory phonics instruction.

As a result of this review, the refined set of themes included:

- Cheerful Learning Atmosphere
- Emotional Benefits
- Memory Enhancement
- Lack of Confidence to Speak

Each theme was distinct, internally coherent, and meaningfully represented the participants' perceptions of multisensory phonics instruction in the context of their phonemic awareness development.

Step 5: Defining and Naming Themes

In this stage, each theme was carefully defined and named to capture its core meaning and scope. The goal was to articulate what each theme revealed about the participants'

perceptions and how these themes contributed to answering the research questions. Below is a summary of the finalized themes, including their definitions and representative insights:

Theme 1: Advantages

Sub-theme 1: Cheerful Learning Atmosphere

This sub-theme captured participants' perceptions of a positive and enjoyable classroom environment fostered through multisensory phonics instruction. Students frequently described their learning experiences using terms such as fun, relaxing, joyful, and amazing. The use of songs, games, movement, and tactile materials created a light-hearted and engaging atmosphere. This cheerful learning environment contributed to students' emotional comfort and encouraged active participation, helping to reduce learning-related stress and promote a sense of enjoyment in phonemic learning.

Sub-theme 2: Emotional Benefits

This sub-theme reflected the emotional responses of students while participating in multisensory phonics activities. All six participants expressed feelings such as pride, excitement, motivation, and confidence. The integration of varied sensory experiences and supportive feedback from the teacher encouraged learners to take risks, speak up, and enjoy the learning process. Students also reported feeling comfortable, brave, and interested, which enhanced their willingness to participate in class. These emotional benefits created a safe and empowering learning space that nurtured engagement and curiosity.

Sub-theme 3: Memory Enhancement

This sub-theme highlighted how multisensory instruction contributed to participants' ability to retain and recall phonemic knowledge. Students noted improvements in phonemic recognition, sound blending, and spelling memory due to repeated exposure to sensory-rich tasks. Visual aids, auditory cues, kinesthetic actions, and hands-on materials reinforced the connection between letters and sounds. These multimodal strategies supported students in developing better long-term memory for vocabulary,

spelling patterns, and phonics rules, which were essential components of early English literacy.

Theme 2: Disadvantages

Sub-theme: Lack of Confidence to Speak

Despite the overall positive experiences, some participants expressed difficulty in speaking during lessons. This sub-theme captured the challenges associated with nervousness and shyness, particularly in situations that required oral participation. A few students reported feeling uncomfortable reading aloud or responding to the teacher in front of their peers. These feelings affected their engagement in certain activities, suggesting that individual differences in personality and self-confidence influenced students' willingness to speak, even in a supportive and engaging classroom environment.

Each theme was clearly defined to ensure distinctiveness, while collectively they provided a comprehensive understanding of how students perceived the benefits of multisensory phonics instruction in supporting their phonemic awareness development. These themes also serve as a foundation for interpreting the study's implications in the concluding chapter.

Step 6: Producing the Report

The final phase of thematic analysis involved writing a coherent and analytical report that presented the identified themes, supported by direct excerpts from the participants. This report aimed to tell the story of the data in a way that addressed the research question: What are the participants' perceptions of multisensory phonics instruction in enhancing their phonemic awareness?

The themes were presented in a logical order, beginning with students' perceived benefits related to classroom atmosphere and emotional engagement, followed by cognitive outcomes such as memory enhancement, and finally addressing the challenges they faced during the instruction. Each theme was introduced with a brief explanation and was illustrated using verbatim quotes to give voice to the participants and to ground the analysis in the data.

3.7 Ethical Considerations

In this research, priority was given to ensuring the absence of any risks during the data collection processes for all participants. The researcher maintained the highest levels of privacy and confidentiality throughout the study. Comprehensive study details were shared with participants before any procedures commenced. Stringent adherence to confidentiality standards was observed, ensuring non-disclosure of participants' identities. Throughout data collection, coded numbers were employed instead of participants' names, and all gathered information from questionnaires and interviews was securely stored to safeguard confidentiality.

3.8 Summary of the Chapter

This chapter outlines the methodology used in the study. The first section offers an overview of the quasi-experimental research design. Following that, the chapter discusses the participants, research setting, participant profiles, and the research instruments used for data collection, along with the data collection procedure. The final section covers the analysis of both quantitative and qualitative data, as well as the ethical considerations concerning the study's participants.



CHAPTER IV

RESULTS

This chapter presents the findings of the research derived from the analysis of data collected through pre-tests, post-tests, and focus group interviews. The data were examined to evaluate the effectiveness of the multisensory phonics approach in enhancing students' phonemic awareness and to explore their perceptions of this instructional method. The analysis focuses on two key areas: first, the impact of multisensory phonics instruction on students' phonemic awareness, as evidenced by changes in test performance; and second, students' perceptions regarding the instructional experience, as revealed through qualitative data from the focus group interviews. These findings provide insights into both the cognitive and affective outcomes of implementing multisensory strategies in phonics instruction.

4.1 The Effects of Multisensory Phonics Instruction on Phonemic Awareness

This section presents the effect of multisensory phonics instruction on the phonemic awareness of Thai EFL primary students. To measure its effectiveness, two types of assessments were conducted: the phoneme identification test and the phoneme segmentation test. These tests were administered in two stages: pre-tests and post-tests, with all 40 participants completing both. The participants were divided into two groups: an experimental group, which received multisensory phonics instruction, and a control group, which followed the traditional teaching method. To analyze the effects of multisensory phonics instruction, SPSS was used for statistical analysis. This method enabled comparisons of mean scores across different tests within and between the two groups, allowing for a comprehensive assessment of both phoneme identification and phoneme segmentation. A normality test was conducted to determine whether the data followed a normal distribution, ensuring the reliability of the results. The analysis revealed no significant skewness or irregularities, confirming that the data adhered to a normal distribution across all test types.

These statistical measures provide a robust foundation for evaluating the effectiveness of multisensory phonics instruction in enhancing students' phonemic awareness compared to the traditional teaching method.

4.1.1 Phonemic Identification Test and Phonemic Segmentation Test Results

The quantitative data analysis revealed that both experimental and control groups improved their scores. However, the experimental group outperformed the control group in both tests. Specifically, the experimental group had an average pretest score of 19.67% (S.D. = 0.89) on the phoneme identification test and an average posttest score of 93.67% (S.D. = 0.69). In contrast, the control group scored an average of 20.33% (S.D. = 0.83) on the pretest and 75.67% (S.D. = 0.88) on the posttest.

As shown in Table 6, the results indicated that the experimental participants obtained a mean score of 14% (S.D. = 0.79) on the phoneme segmentation test before the intervention, which increased to 94.33% (S.D. = 0.49) after the intervention. In contrast, the control participants obtained a mean score of 13.67% (S.D. = 0.83) before the study and 76% (S.D. = 1.10) after the study. These findings indicate that multisensory phonics instruction had a positive effect on phonemic awareness among Thai primary school participants.

Table 4 Participants' scores on the two tests within groups

Group	Tests	Pretest scores			Posttest scores		
		Mean	(%)	S.D.	Mean	(%)	S.D.
Experimental Group ($n = 20$)	Phoneme Identification Test	2.95	19.67	0.89	14.05	93.67	0.69
	Phoneme Segmentation Test	2.10	14.00	0.79	14.15	94.33	0.49
Control Group ($n = 20$)	Phoneme Identification Test	3.05	20.33	0.83	11.35	75.67	0.88
	Phoneme Segmentation Test	2.05	14.00	0.83	11.40	76.00	1.10

*Note: the total score = 15.00

A dependent samples t-test was also conducted to determine whether there were any significant differences in phoneme identification and phoneme segmentation test scores before and after the treatment within the same group of participants. Effect size (d) analysis was also used to calculate the strength of phonemic awareness.

As shown in Table 5, the phoneme identification scores of the experimental group demonstrated a statistically significant improvement between the pretest and posttest ($t = 54.43$, $p < .001$), with a remarkably large effect size ($d = 14.2$). This suggests that

the instructional intervention had a highly substantial impact on participants' ability to identify phonemes.

Similarly, the phoneme segmentation test revealed a significant post-intervention improvement ($t = 70.98, p < .001$), accompanied by an exceptionally large effect size ($d = 19.15$). These findings strongly indicate that the applied intervention was not only statistically effective but also practically meaningful in enhancing phonemic awareness. The magnitude of the effect sizes observed supports the conclusion that the instructional approach used in the experimental group was highly effective and may contribute significantly to the development of early reading and literacy skills when applied consistently in educational settings.

Table 5 Comparisons between pretest and posttest

	Pretest		Posttest	<i>t</i> -value	Effect size (<i>d</i>)
Experimental group (<i>n</i> = 20)	Phoneme Identification Test	<i>VS</i>	Phoneme Identification Test	54.43	14.2
	Phoneme Segmentation Test	<i>VS</i>	Phoneme Segmentation Test	70.98	19.15
Control group (<i>n</i> = 20)	Phoneme Identification Test	<i>VS</i>	Phoneme Identification Test	26.89	9.82
	Phoneme Segmentation Test	<i>VS</i>	Phoneme Segmentation Test	31.94	9.69

Notes: *** $p < 0.01$, ** $p < 0.01$

The results of the paired-sample *t*-test analysis revealed statistically significant differences between the pretest and posttest scores in both the experimental and control groups, indicating that the intervention had a measurable effect on phonemic awareness. In the experimental group ($n = 20$), participants showed significant improvements in both the phoneme identification test ($t = 54.43, p < .001$) and the phoneme segmentation test ($t = 70.98, p < .001$), suggesting that the instructional approach had a substantial positive impact on their phonemic processing skills.

The control group ($n = 20$) also exhibited statistically significant gains in both assessments—phoneme identification ($t = 26.89, p < .001$) and phoneme segmentation ($t = 31.94, p < .001$)—although the effect sizes were comparatively smaller. These

results suggest that while both groups benefited from instructional exposure, the intervention implemented in the experimental group was more effective in enhancing phonemic awareness.

Although both groups exhibited statistically significant improvements following the intervention, the larger effect sizes observed in the experimental group clearly suggest that the intervention had a greater practical impact compared to that of the control group.

A summary of the paired-sample t-test analysis for the experimental group's performance is presented below. This analysis was conducted to assess the effectiveness of the multisensory phonics instruction on phonemic awareness. As illustrated in Figure 8, the analysis compared the group's performance before (pretest) and after (posttest) the intervention. The results revealed statistically significant improvements in both the phoneme identification and phoneme segmentation tests. The high t-values and large effect sizes indicate substantial gains in performance following the intervention. These findings provide strong evidence that the multisensory phonics instruction had a significant positive effect on phonemic awareness, effectively enhancing both identification and segmentation skills within the experimental group.

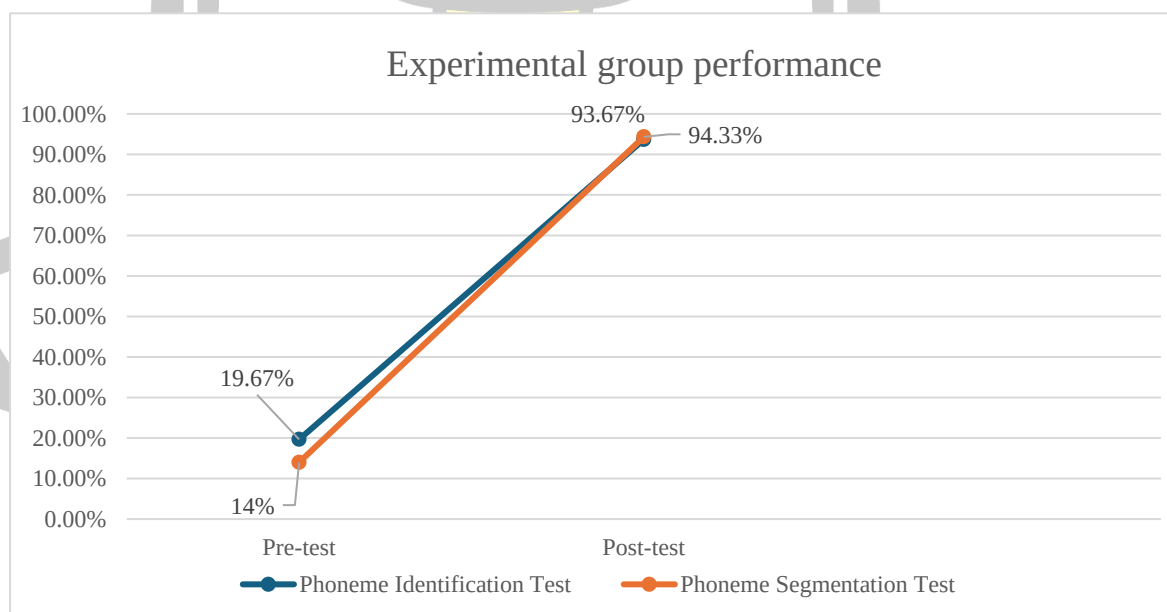


Figure 6 Experimental group performance on multisensory phonics instruction

The paired-sample t-test analysis was conducted to assess the control group's performance following multisensory phonics instruction. As shown in Figure 6, the analysis compared the group's scores before (pretest) and after (posttest) the intervention. The results indicated statistically significant improvements in both the phoneme identification and phoneme segmentation tests. Although the control group exhibited positive changes, the t-values and effect sizes were smaller than those observed in the experimental group. This suggests that while the multisensory phonics instruction positively influenced the control group's phonemic awareness, its impact was less pronounced compared to that of the experimental group. The difference in effect sizes, as illustrated in Figure 7, underscores the greater effectiveness of the intervention for the experimental group relative to the control group.

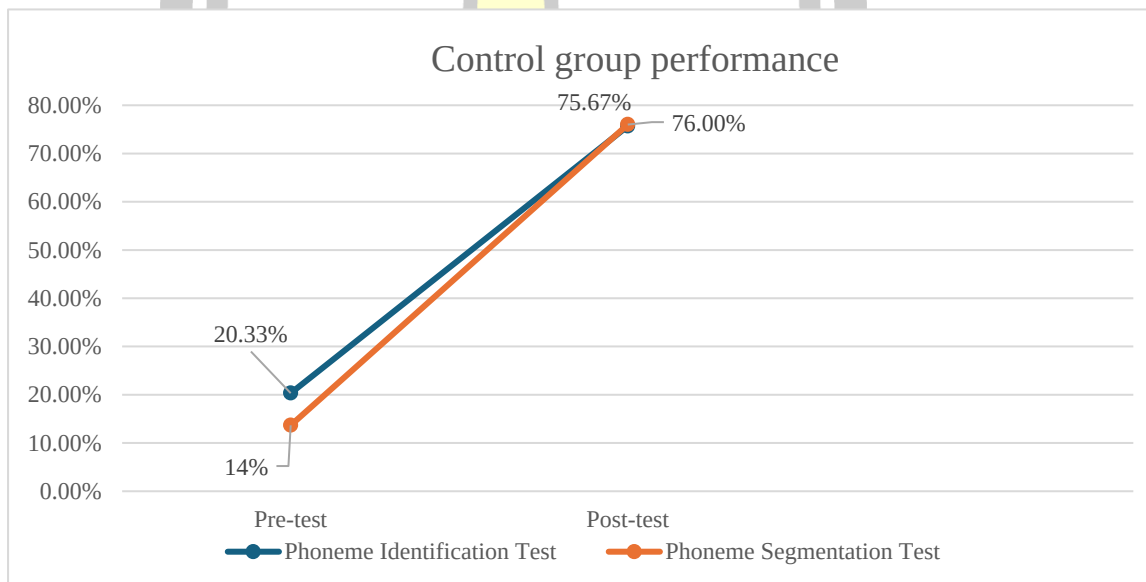


Figure 7 Control group performance on multisensory phonics instruction

An independent sample t-test was conducted to examine whether there was a significant difference between the experimental and control groups at the post-test stage (see Table 6) . The effect size for this comparison was also calculated and reported.

Table 6 Comparisons between two experimental groups and control group in the post-test

Group	Tests	Post-test	
		<i>t</i>	<i>d</i>
Experimental group	Phoneme Identification Test	9.91	3.46
Control group	Phoneme Identification Test		
Experimental group	Phoneme Segmentation Test	10.17	3.27
Control group	Phoneme Segmentation Test		

As illustrated in Figure 8, the analysis provides a comparative evaluation of post-test performance between the experimental and control groups following multisensory phonics instruction. The primary aim was to assess differences in phonemic awareness outcomes between the two groups after the intervention.

For the phoneme identification test, the experimental group yielded a *t*-value of 9.91 and an effect size (*d*) of 3.46, indicating a statistically significant and substantial improvement. In contrast, the control group demonstrated lower performance on the same measure, highlighting the greater effectiveness of the intervention for the experimental group.

Similarly, the phoneme segmentation test results for the experimental group showed a *t*-value of 10.17 with an effect size of 3.27, reflecting a significant enhancement in segmentation skills due to the multisensory phonics approach. The control group did not exhibit comparable gains.

These findings, as depicted in Figure 8, underscore the strong impact of multisensory phonics instruction on improving both phoneme identification and segmentation skills in the experimental group, surpassing the outcomes observed in the control group.

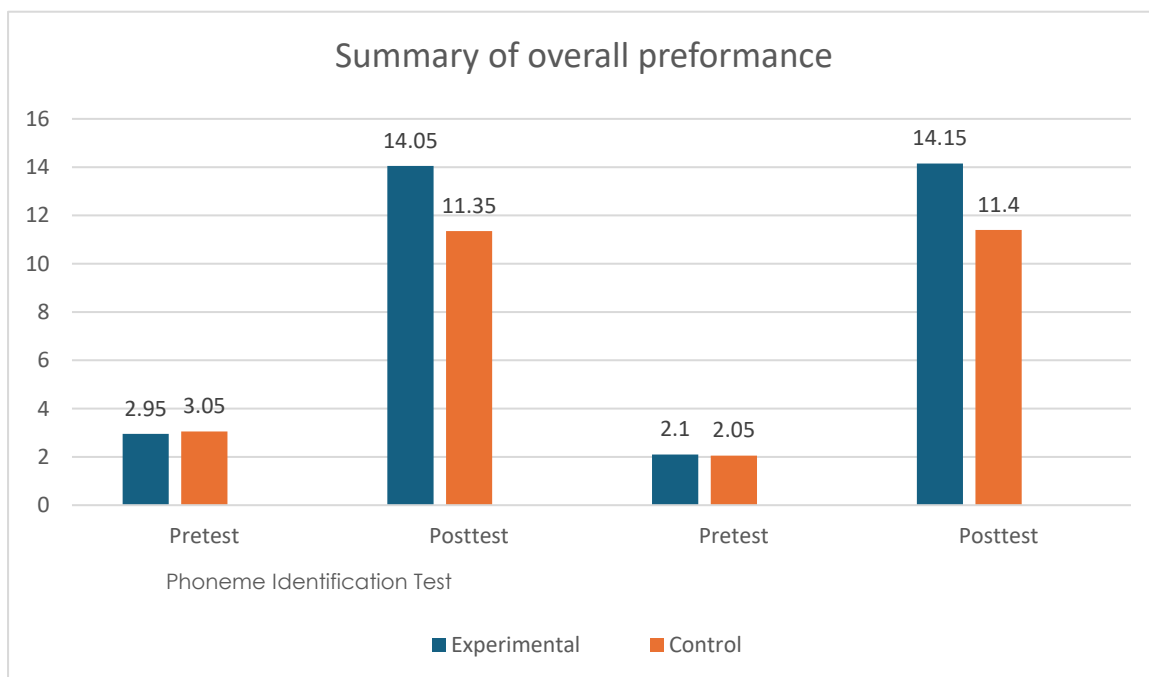


Figure 8 Participants' performance following multisensory instruction

This study underscores the effectiveness of multisensory instruction in enhancing phonemic awareness among Thai primary school students. The findings reveal a clear developmental progression in phonemic awareness following the intervention. Students in the experimental group demonstrated significant gains in both receptive and productive phonemic skills, whereas those in the control group showed only marginal improvements. These results highlight the crucial role of the multisensory teaching approach in reinforcing phonemic awareness, emphasizing the value of dynamic and interactive instructional strategies.

Moreover, the study observed continuous improvement in phonemic awareness among students who received multisensory phonics instruction, with clear advancements in their ability to perceive and produce phonemes over time. In contrast, students in the control group exhibited limited progress, suggesting that conventional teaching methods may be less effective in fostering phonemic awareness.

These findings strongly advocate for the integration of multisensory approaches in language instruction. By engaging learners through multiple sensory modalities—

visual, auditory, tactile, and kinesthetic educators can create a more inclusive, interactive, and stimulating learning environment. Overall, the results provide robust evidence supporting the superiority of multisensory phonics instruction over traditional methods in enhancing phonemic awareness among young learners.

4.2 Qualitative Findings from Focus Group Interview

This section explored the participants' perceptions regarding the use of multisensory phonics instruction in supporting their phonemic awareness development. Based on qualitative data gathered from a focus group interview, the study presented six participants' views on how multisensory phonics instruction contributed to their phonemic awareness. The data were analyzed using thematic analysis to identify key themes that represented the participants' perceptions. These themes revealed that the participants had mixed views of the instruction, which were categorized into *advantages* and *disadvantages*. The 'advantages' theme highlighted the classroom atmosphere during multisensory phonics instruction and students' participation in learning activities. Three sub-themes emerged: cheerful learning atmosphere, emotional benefits, and memory enhancement. The 'disadvantages' theme underscored the challenges participants encountered when engaged in the multisensory phonics instruction, particularly a lack of confidence to speak. The themes and their corresponding sub-themes offer a structured overview of the qualitative findings and are presented in Table 6.

Table 7 The theme for qualitative data analysis

Themes	Sub-themes	Salient characteristics
Advantages	Cheerful learning atmosphere	fun, encouraging, joyful, happy, amazing, enjoyable, relaxing, good
	Emotional benefits	comfortable, interested, brave, proud, excited, motivated, confident, willing to participate
	Memory enhancement	increased awareness of sounds, improved phonemic recognition, better memory of spelling patterns, improved sound blending
Disadvantages	Lack confidence to speak	nervousness, shyness

Advantages

Advantages were examined through the participants' perceptions of their engagement in learning activities, revealing three sub-themes. The first sub-theme, labeled "*cheerful learning atmosphere*," reflected participants' generally positive perceptions of learning about phonemics through multisensory instruction. All six participants expressed mostly positive, though somewhat mixed, feelings about the cheerful learning environment, describing it as fun, happy, and exciting. They characterized multisensory phonics instruction as enjoyable, joyful, encouraging, and amazing, contributing to a supportive and positive classroom atmosphere.

The interactive nature of the instructional approach promoted active engagement and collaboration among students, fostering a sense of relaxation and comfort in the classroom. Additionally, participants found the approach not only enjoyable but also effective in enhancing their phonemic awareness and related literacy skills. The overwhelmingly positive responses highlighted the significant impact of multisensory phonics instruction in creating a cheerful and supportive learning environment. Table 7 provides detailed insights into participants' perspectives on the cheerful learning atmosphere experienced during phonics activities.

Table 8 Participants' perceptions on the subtheme of cheerful learning atmosphere

Participants	Statements or responses
S1	<i>Learning with games and songs is fun! It makes me want to learn more every day.</i>
S2	<i>I feel happy and relaxed because the teacher always uses activities that make learning easy and enjoyable.</i>
S3	<i>The lessons are amazing! I can move, touch, and play while learning. It's not boring at all.</i>
S4	<i>I think this way of learning is very encouraging. I'm not afraid to make mistakes like before.</i>
S5	<i>It's joyful when we learn with music and pictures. I like how we can learn together and help each other.</i>
S6	<i>This class makes me feel good. I enjoy every activity, especially when we learn with actions.</i>

Similarly, in the sub-theme of *emotional benefits*, the participants' responses, as shown in Table 7, indicated that all six participants perceived multisensory phonics instruction as a teaching method that positively influenced their emotional

engagement in the classroom. They reported feeling comfortable and interested during lessons, which helped reduce anxiety and created a more welcoming learning environment. The instruction also fostered feelings of bravery and pride, encouraging them to take risks in speaking and participating. Additionally, emotions such as excitement, motivation, and confidence were commonly expressed, highlighting the method's ability to enhance not only their willingness to participate but also their overall enthusiasm for learning phonemic concepts.

Table 9 Participants' perceptions on the subtheme of emotional benefits

Participants	Statements or responses
S1	<i>I feel more comfortable in class because we do actions while saying the sounds, which helps me understand and remember better.</i>
S2	<i>I feel proud when a teacher says "Good job!" after I say the word.</i>
S3	<i>When we get to stand up and act out the sounds with our bodies, I feel braver to try and not afraid of making mistakes.</i>
S4	<i>I enjoy when the teacher lets us build words with blocks based on the sounds we hear and the picture cues help me feel more confident and willing to participate.</i>
S5	<i>Activities like tapping out the sounds, listening to recordings, and moving to the rhythm make me excited and happy.</i>
S6	<i>I feel proud that I can pronounce the sounds correctly by watching letter images and listening to them repeatedly.</i>

In terms of memory enhancement, participants expressed that multisensory phonics instruction supported their ability to retain vocabulary, spelling, and phonics rules. The integration of visual, auditory, tactile, and kinesthetic elements enabled them to form stronger associations with the learning material, which in turn facilitated the recall of words, spelling patterns, and sounds during classroom activities. Participants also highlighted that repeated exposure to engaging and varied sensory activities reinforced long-term memory retention. These findings underscored the role of multisensory instructional strategies in enhancing memory performance and phonemic awareness, particularly in the early stages of English literacy development. A detailed overview of participant responses regarding multisensory phonics instruction within the category of memory enhancement benefits is presented in Table 10.

Table 10 Participants' perceptions on subtheme of memory enhancement

Participants	Statements or responses
S1	<i>When we do actions with our hands while saying the sounds it helps me recognize the sounds in words better. For example, I can now tell the difference between the 'p' and 'b' sounds by moving my fingers.</i>
S2	<i>I like looking at the pictures of words and the letter cards while we say the sounds. It helps me remember how words are spelled, like 'dog' and 'cat'.</i>
S3	<i>Using my body to move to the rhythm of the sounds helps me hear and recognize the sounds in words, like the 'ch' sound in 'chair' or 'chip'.</i>
S4	<i>The flashcards and letter images help me connect the sound with the letter. For example, when I see the letter 's' and hear the sound /s/, it makes it easier to recognize words like 'sun' and 'sock'.</i>
S5	<i>I like to listen to the teacher say the sounds and then repeat them. It helps me practice blending sounds together, like when I blend 's', 't', and 'ar' to say 'star'.</i>
S6	<i>The activities with sounds and letters on the whiteboard and the clapping help me blend sounds together to form new words. I'm getting better at saying words like 'map' and 'man'.</i>

Disadvantages

This section explored the theme of disadvantages and participants' perceptions of difficulties encountered during multisensory phonics instruction. A distinct sub-theme identified is the lack of confidence to speak. Within this sub-theme, two participants noted that language barriers hindered their confidence and participation. Additionally, one participant mentioned feeling nervous when answering questions in front of the class, leading to limited opportunities for active engagement. A detailed examination of participant responses regarding challenges in the engagement sub-theme is provided in Table 11.

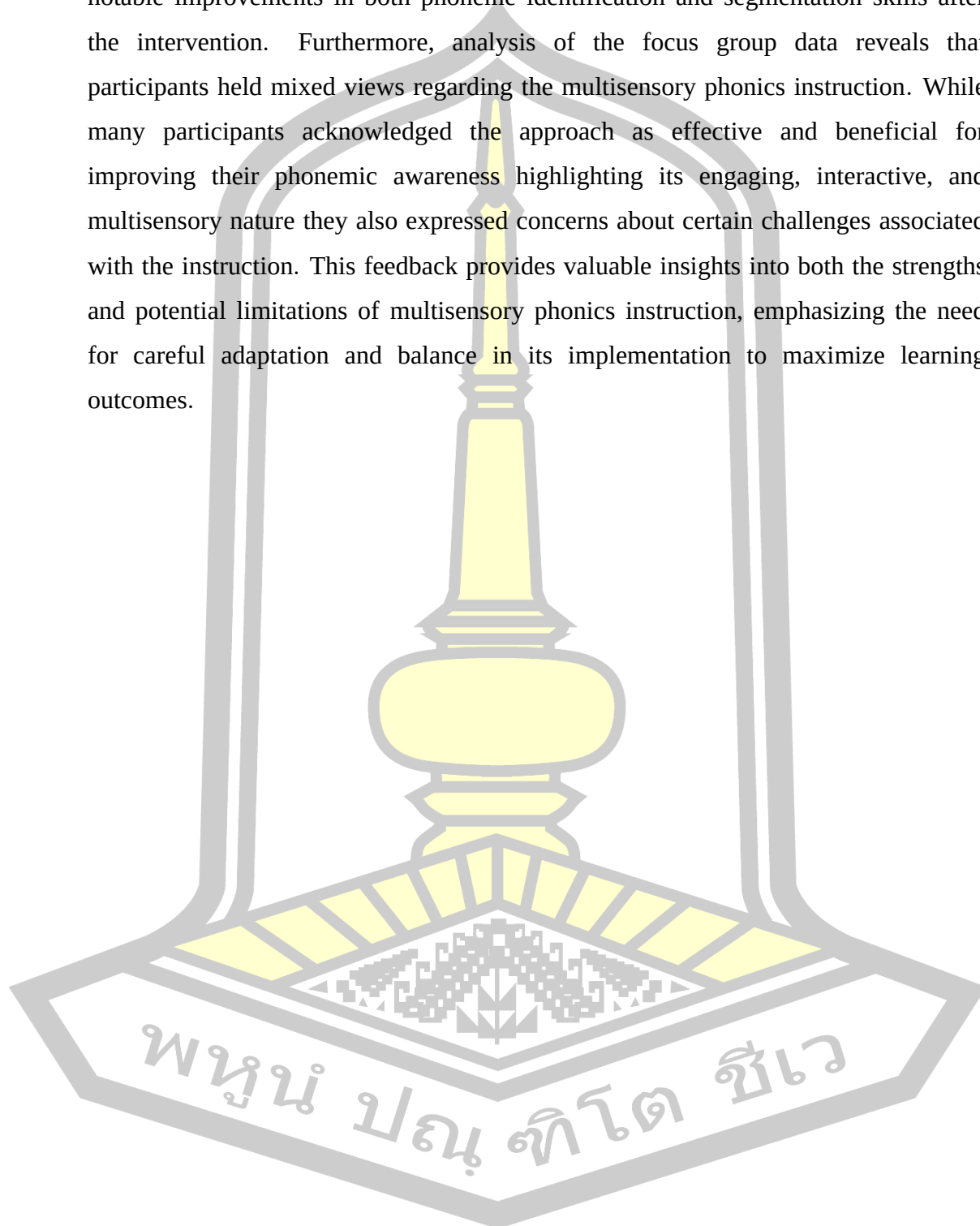
Table 11 Participants' perceptions on the subtheme of disadvantages

Participants	Statements or responses
S1	<i>I'm usually shy, so it takes me some time to feel comfortable joining group activities.</i>
S2	<i>Even though I like the activities, I still feel nervous when the teacher asks me to read aloud.</i>

4.3 Chapter Summary

This chapter presents the quantitative findings derived from pre-tests and post-tests, supplemented by qualitative insights obtained from focus group interviews. The quantitative results clearly indicate that multisensory phonics instruction significantly

enhances phonemic awareness among Thai EFL primary learners, demonstrating notable improvements in both phoneme identification and segmentation skills after the intervention. Furthermore, analysis of the focus group data reveals that participants held mixed views regarding the multisensory phonics instruction. While many participants acknowledged the approach as effective and beneficial for improving their phonemic awareness highlighting its engaging, interactive, and multisensory nature they also expressed concerns about certain challenges associated with the instruction. This feedback provides valuable insights into both the strengths and potential limitations of multisensory phonics instruction, emphasizing the need for careful adaptation and balance in its implementation to maximize learning outcomes.



CHAPTER V

DISCUSSION AND CONCLUSION

This chapter presents and discusses the research findings in relation to the study's theoretical frameworks. The results are analyzed in comparison with previous studies to highlight both similarities and differences. The findings are anticipated to offer valuable insights into the effectiveness of multisensory phonics instruction as a tool for language learning, particularly in enhancing phonemic awareness. Additionally, the chapter provides an in-depth interpretation of the qualitative data to deepen the understanding of learners' perceptions of multisensory phonics instruction within the classroom context. Relevant implications are explored, and recommendations for future research are also presented.

5.1 The Effects of Multisensory Phonics Instruction on Thai Primary School Students' Phonemic Awareness

In response to Research Question 1 (RQ1) , this study examined the effects of multisensory phonics instruction on phonemic awareness among Thai EFL primary school learners. Multisensory phonics instruction is a structured approach that explicitly teaches the phonemic concepts through the integration of multiple modalities visual, auditory, kinesthetic, and tactile. It was hypothesized that this method would enhance the phonemic awareness of Thai EFL learners. Two key instruments the phoneme identification test and the phoneme segmentation test were developed and piloted prior to the main study to assess the impact of the intervention.

Quantitative data analysis revealed that while both the experimental and control groups showed improvement, the experimental group significantly outperformed the control group on both measures. Specifically, the experimental group's mean score on the phoneme identification test increased from 19.67% (SD = 0.88) in the pretest to 93.67% (SD = 0.68) in the posttest. In comparison, the control group's scores increased from 20.33% (SD = 0.82) to 75.67% (SD = 0.87). Similarly, in the phoneme segmentation test, the experimental group's average score rose from 14% (SD = 0.78) before the intervention to 94.33% (SD = 0.48) after the intervention. The control

group's scores increased from 13.66% (SD = 0.82) to 76% (SD = 1.09) over the same period. These results confirm the effectiveness of multisensory phonics instruction in enhancing phonemic awareness. The notable and statistically significant increase in post-test scores of the experimental group can be explained by multiple interrelated factors grounded in both the instructional design and the classroom environment. First, the instruction followed a clearly structured and systematic teaching sequence, which consisted of four key stages: (1) Learning the letter sounds, (2) Learning letter formation, (3) Blending, and (4) Segmenting. These stages were implemented consistently across the six-week intervention period, allowing students to build their phonemic awareness progressively and comprehensively. Each stage was designed to reinforce specific sub-skills necessary for decoding and encoding, thereby fostering a stronger understanding of the sound-symbol relationship essential to early literacy.

The success of this approach is also supported by Dual Coding Theory (Paivio, 2014), which emphasizes the integration of verbal and visual stimuli for enhanced memory encoding and retrieval, and Operant Conditioning Theory (Skinner, 1957), which highlights the role of reinforcement in shaping behavior. In this study, these principles were applied through the use of multisensory activities such as tracing letters in sand (tactile), singing phoneme songs (auditory), performing gestures (kinesthetic), and using visual cues such as colorful flashcards or pictures. These multimodal experiences helped solidify the connection between sounds and symbols in ways that were engaging and developmentally appropriate for young learners.

Moreover, the consistent use of repetition and immediate correction played a crucial role in reinforcing correct phonemic responses. When students mispronounced or misspelled a word, immediate feedback was provided in a supportive manner, helping learners self-correct and internalize the correct patterns. This aligns with research on deliberate practice and corrective feedback as essential components for skill mastery in early literacy development.

The teacher's personal teaching style also contributed significantly to the learning outcomes. As the instructor, the researcher maintained a positive, cheerful, and encouraging demeanor, creating a warm and low-anxiety learning environment. The

lessons were lively and enjoyable, incorporating songs, music, movement, and rewards. These elements boosted student motivation and participation, especially among first-grade learners who benefit from play-based and emotionally supportive learning environments.

Students were praised and rewarded—either through verbal encouragement, additional points, or small prizes—when they demonstrated correct pronunciation, accurate reading, or enthusiasm in participating. This positive reinforcement encouraged active engagement and built student confidence, which is often a major hurdle in EFL classrooms.

In summary, the combination of a structured, theory-informed instructional sequence, multisensory teaching techniques, immediate corrective feedback, and a supportive classroom climate collectively contributed to the dramatic and statistically significant improvement in students' phonemic awareness. These factors not only enhanced cognitive engagement but also emotional and social motivation, which are essential for sustained literacy development among Thai EFL primary learners.

The findings align with previous studies (Baker & Duncan, 2024; Ghoneim & Elghotmy, 2023; Joshi & Hunsader, 2022; O' Connor & Gee, 2023) which support multisensory phonics instruction as an effective pedagogical approach for improving phonemic awareness. These findings provide strong evidence for the effectiveness of multisensory phonics instruction in enhancing phonemic awareness among Thai primary school students. The large effect sizes observed suggest that this instructional approach yields significant improvements in both phoneme identification and phoneme segmentation skills. Similarly, the control group also demonstrated statistically significant gains in both assessments, though with comparatively smaller effect sizes. This highlights the importance of implementing evidence-based strategies that actively engage students through multisensory phonics instruction to foster stronger phonemic awareness. These results align with those of (Caldarella & Warnick, 2016; Golightly & Snyder, 2017), who also found multisensory phonics to be a highly effective intervention for improving phonemic awareness in primary school learners. The substantial improvements recorded in both phoneme

identification and segmentation tests indicate that integrating this approach into Thai educational contexts could substantially support early literacy development.

A key advantage of multisensory phonics instruction lies in its explicit and structured approach to developing students' phonemic awareness, particularly in essential skills such as phoneme identification and phoneme segmentation. By engaging multiple senses visual, auditory, kinesthetic, and tactile his instructional method reinforces the connection between sounds and letters in a meaningful and memorable way. For instance, students might see a letter, articulate its corresponding sound, trace its shape, and perform a related gesture simultaneously, thereby strengthening neural pathways involved in phonemic processing. Such multisensory engagement not only supports diverse learning styles but also enhances students' ability to isolate and manipulate individual phonemes, foundational skills critical for reading and spelling development. Consequently, students become better equipped to decode unfamiliar words and develop stronger literacy skills overall. These findings are consistent with previous research (Caldarella & Warnick, 2016; Golightly & Snyder, 2017) which underscores the effectiveness of explicitly taught multisensory phonics instruction in fostering phonemic awareness particularly in EFL contexts, where learners often face persistent challenges in acquiring phonemic skills despite prolonged exposure to the language.

Furthermore, the study highlights a close theoretical connection between dual coding theory and multisensory phonics instruction, particularly in their shared effectiveness in enhancing phonemic awareness. Dual coding theory, proposed by Paivio (1971), posits—that learning is more effective when information is processed through both verbal and non-verbal systems such as combining auditory input with visual imagery. Multisensory phonics instruction applies this principle by simultaneously engaging visual (letters and images), auditory (spoken sounds), kinesthetic (movement), and tactile (touch) modalities during literacy tasks. For example, when students see a letter, hear its sound, trace its shape, and perform a corresponding gesture, they are encoding information through multiple cognitive pathways, which enhances retention and understanding. This integrated sensory experience strengthens learners' ability to

recognize, isolate, and manipulate phonemes key components of phonemic awareness. These findings are in agreement with earlier studies (Clark & Paivio, 2020; Paivio, 1991), which emphasize the importance of engaging both verbal and non-verbal systems in multisensory phonics instruction to effectively develop phonemic skills.

Moreover, this study underscores a strong connection between operant conditioning theory and multisensory phonics instruction in supporting the development of phonemic awareness. Rooted in the work of B.F. Skinner (1957), operant conditioning emphasizes learning through reinforcement, where desired behaviors are strengthened by positive outcomes. In the context of multisensory phonics instruction, students receive immediate and consistent feedback such as verbal praise, visual cues, or physical rewards when they correctly identify, articulate, or manipulate phonemes. This positive reinforcement encourages repeated engagement with phonemic tasks, gradually shaping more accurate and confident phonemic processing. Additionally, the use of engaging, multisensory activities such as tracing letters while saying sounds or using gestures to represent phonemes creates a stimulating learning environment where correct responses are frequently reinforced. Over time, this conditioning fosters automaticity in phoneme recognition and segmentation. These findings align with previous research by Skinner (1957) and Torgesen et al. (2006), which emphasizes the importance of using reinforcement and repetition to build foundational phonemic awareness skills essential for reading development.

However, this study offers new findings that challenge the conventional understanding of phonemic awareness, which typically holds that phoneme identification is easier than phoneme segmentation. Contrary to this expectation, the participants in the experimental group scored slightly higher on the phoneme segmentation test than on the phoneme identification test. This unexpected result may be attributed to the specific teaching method employed, which emphasized interactive and multimodal learning, as well as the design of the assessment itself, which incorporated pictures to support participants' recall and engagement. These factors likely facilitated better performance in segmentation tasks, suggesting that instructional approach and test format can significantly influence phonemic skill development and assessment outcomes. Moreover, clapping hands supported students

in segmenting and counting phonemes by providing a rhythmic, kinesthetic cue that reinforced phonemic boundaries. Similarly, knocking on a table during phoneme games offered an additional sensory aid, further enhancing their ability to isolate and count individual phonemes.

In summary, this study offers compelling empirical evidence for the efficacy of multisensory phonics instruction in enhancing phonemic awareness among Thai primary school students. Through the development of key phonemic skills, this instructional approach strengthens learners' abilities to identify and segment phonemes with greater accuracy. The results underscore its promise as an effective strategy for overcoming phonemic awareness difficulties in EFL learning environments. Building on these findings, the next section will examine students' qualitative perceptions of multisensory phonics instruction, providing deeper insight into its broader educational impact.

5.2 Thai Primary School Students' Perceptions about Multisensory Phonics Instruction in Enhancing Phonemic Awareness

In response to Research Question 2 (RQ2), this study utilized qualitative data from a focus group interview to explore Thai primary school learners' perceptions of multisensory phonics instruction in enhancing their phonemic awareness. The data were analyzed thematically and organized into two main categories: perceived advantages and disadvantages.

To ensure the validity and reliability of the qualitative analysis, six participants were purposefully selected based on their post-test scores in the phonemic identification test and phonemic segmentation test. The participants were categorized into three performance levels: low, medium, and high, with two representatives from each group. This selection ensured a diverse range of perspectives, allowing for a more comprehensive understanding of learners' experiences and perceptions. The qualitative data offered a deeper understanding of the advantages and disadvantages of multisensory phonics instruction, complementing the quantitative findings. The analysis indicated that multisensory phonics instruction significantly enhances phonemic awareness (Baker & Duncan, 2024; Carley, 2022; Henry, 2020; Schlesinger & Gray, 2017; Snyder & Golightly, 2017; Warnick & Caldarella, 2016) Learners

expressed favorable perceptions of the joyful learning environment, emotional benefits, and enhanced memory retention, all of which contributed significantly to their overall academic achievement. These findings align with previous research highlighting the pedagogical advantages of multisensory phonics instruction in EFL contexts. (Al-edris, Baneng, & Masoh, 2023; Lynch & Chayluxsamee, 2022).

5.2.1 Mixed Perceptions Regarding Multisensory Phonics Instruction

The qualitative data gathered from the focus group interviews indicate that the participants hold mixed perceptions regarding multisensory phonics instruction. While many recognized its advantages, such as creating a cheerful learning environment, improved memory retention, and emotional benefits, some also noted certain disadvantages, including the potential to provoke anxiety and a lack of confidence in speaking. These varied perspectives highlight the complexity of implementing multisensory approaches and underscore the importance of balancing instructional methods to meet diverse learner needs effectively.

All research participants highlighted that multisensory phonics instruction creates a cheerful, engaging learning environment by incorporating various sensory activities that make lessons enjoyable and reduce anxiety. They reported emotional benefits such as increased confidence and motivation, which foster a supportive classroom atmosphere. Additionally, participants experienced improved memory retention through the connection of sounds with visual and physical cues, demonstrating that this approach enhances both cognitive skills and emotional well-being for a more effective learning experience.

Firstly, they reported that the integration of visual, auditory, tactile, and kinesthetic elements made lessons more interactive and enjoyable, which helped reduce anxiety and increased their willingness to participate actively. This lively and supportive environment fostered positive emotions such as enthusiasm and confidence, making the learning process feel less stressful and more motivating. These findings are consistent with previous research indicating that a cheerful and engaging learning atmosphere enhances student participation and phonemic awareness (Chayluxsamee & Lynch, 2022; Gahan, 2019). Moreover, the participants reported that multisensory phonics instruction provided significant emotional benefits throughout the learning

process. They described feeling more confident and less anxious when engaging with the material, attributing these positive emotions to the supportive and interactive nature of the instruction. The combination of sensory modalities helped learners feel more connected and involved, reducing frustration and fostering a sense of achievement with each successful task. Participants also noted that the multisensory approach made learning more enjoyable and rewarding, which boosted their motivation and sustained their interest over time. Overall, these emotional benefits contributed to a more positive attitude toward learning. These findings align with previous research suggesting that emotional benefits enhance student participation and phonemic awareness (Hall et al., 2019).

Finally, the participants emphasized that multisensory phonics instruction greatly enhanced their memory and recall of phonemic concepts. By engaging multiple senses such as sight, sound, and touch, the instruction created stronger neural connections, making it easier for learners to remember and retrieve information. Participants reported that associating sounds with visual cues and physical movements helped reinforce their understanding of letter-sound relationships, which in turn improved their ability to decode and encode words. These findings support previous research demonstrating that improved memory and recall abilities enhance students' phonemic awareness (Dubiner, 2017); Gardner et al., 2012; Hughes & Westgate, 2017)

Multisensory phonics instruction, while engaging and effective for many learners, can sometimes induce anxiety in participants, which may negatively impact their confidence in speaking. This anxiety often arises because the approach requires simultaneous use of multiple senses, such as visual, auditory, and kinesthetic modalities, which can be overwhelming for some learners, especially those who are less familiar or comfortable with multitasking during learning. Additionally, the increased focus on active participation, immediate responses, and group activities may heighten self-awareness and fear of making mistakes in front of peers. This pressure can lead to performance anxiety, causing some participants to doubt their abilities and become hesitant or reluctant to speak. These findings support previous research demonstrating that multisensory phonics instruction may negatively impact their confidence in speaking (Caldarella & Warnick, 2016; Golightly & Snyder, 2017;

Henry, 2020). Therefore, understanding these emotional responses is crucial for educators to adapt multisensory instruction in a way that supports learners' confidence and reduces stress.

5.3 Conclusion of the Study

The study aimed to investigate the effectiveness of multisensory phonics instruction in enhancing phonemic awareness among Thai EFL primary learners. Through the application of a quasi-experimental research design, the study demonstrated that multisensory phonics instruction significantly improved students' ability to recognize, segment, and blend phonemes compared to traditional teaching methods.

The findings revealed that students who participated in multisensory phonics instruction showed marked improvements in phonemic awareness as evidenced by higher post-test scores in phoneme identification and segmentation tasks. This positive outcome underscores the effectiveness of incorporating visual, auditory, tactile, and kinesthetic elements into phonics instruction, as these multimodal strategies fostered more profound phoneme recognition and engagement among learners.

Moreover, the qualitative data from focus group interviews indicated that students found the multisensory approach more enjoyable and less stressful compared to traditional methods. The interactive and hands-on activities promoted a positive learning atmosphere, encouraging students to participate actively and confidently.

However, the study also highlighted some challenges. A few participants reported experiencing initial confusion when combining sensory modalities, suggesting that careful scaffolding and gradual introduction of multisensory elements are essential for maximizing instructional efficacy. Additionally, the study indicated the need for ongoing professional development for teachers to effectively implement multisensory phonics in diverse educational contexts.

In conclusion, the multisensory phonics approach proves to be an effective pedagogical strategy for enhancing phonemic awareness among Thai EFL primary learners. By adopting this method, educators can support diverse learning needs and create a more engaging and interactive learning environment. Future research should focus on exploring long-term impacts and developing strategies to overcome challenges associated with multisensory implementation in EFL contexts.

5.4 Implications

This study makes significant contributions to theoretical frameworks, research, and teaching practices by demonstrating the effectiveness of multisensory phonics instruction in promoting phonemic awareness development among young learners. The results underscore the value of multisensory phonics instruction in letter-sound correspondences, which enhances their phonemic awareness. To optimize these outcomes, educators are encouraged to employ varied instructional approaches that accommodate diverse learning preferences, foster active participation, and strengthen phonemic awareness.

Firstly, the study also underscores the importance of integrating both verbal and non-verbal representations, such as spoken sounds paired with visual cues like letter symbols, mouth movements, or hand gestures, teachers can reinforce memory and understanding of phoneme-grapheme relationships. This multimodal approach aligns with how the brain processes information through two distinct yet interconnected channels, thereby enhancing learners' ability to decode, encode, and retain phonemic structures. Implementing dual coding strategies can lead to deeper cognitive engagement, improved pronunciation accuracy, and stronger literacy foundations, especially when tailored to learners' developmental and linguistic needs.

Secondly, the study also emphasizes the role of reinforcement and feedback in learning. Through the use of positive reinforcement such as praise, rewards, or corrective feedback educators can encourage learners to accurately recognize and produce phonemes, thereby strengthening desired phonemic behaviors. Consistent and immediate feedback helps learners associate correct phoneme identification and segmentation with positive outcomes, increasing motivation and engagement. Additionally, shaping techniques can be used to gradually guide learners from simpler to more complex phonemic tasks, ensuring steady progress. By applying operant conditioning principles, teachers can create a supportive and responsive learning environment that promotes sustained improvement in phonemic awareness skills.

Thirdly, the findings hold significant implications for curriculum design, the development of instructional materials, and assessment practices. Curriculum

planners, educational resource developers, and assessment designers can utilize these insights to improve learning tools and evaluation strategies, ensuring they are tailored to the cognitive and developmental needs of young language learners.

Finally, these findings have the potential to be applied across a range of educational contexts and age groups, including secondary students, adult learners, and individuals from diverse linguistic and cultural backgrounds. The benefits of multisensory phonics instruction are not confined to Thai primary learners but may also be relevant in other EFL and ESL settings, especially where structured multisensory phonics instruction programs have yet to be widely implemented. Educators and policymakers globally may consider incorporating multisensory phonics instruction into language curricula to support broader literacy development. This study contributes meaningfully to the academic discourse while also offering practical insights for promoting phonological awareness across diverse educational settings.

5.5 Limitations and Recommendations for Future Studies

While this study offers valuable insights into the effectiveness of multisensory synthetic phonics instruction in enhancing phonemic awareness, several limitations must be acknowledged. First, the small sample size, limited to Thai EFL primary school students, restricts the generalizability of the findings to broader populations and other EFL contexts. Moreover, the short duration of the intervention focused primarily on immediate learning outcomes, leaving the long-term effects of multisensory phonics instruction on the retention of phonemic awareness and overall literacy development unexplored.

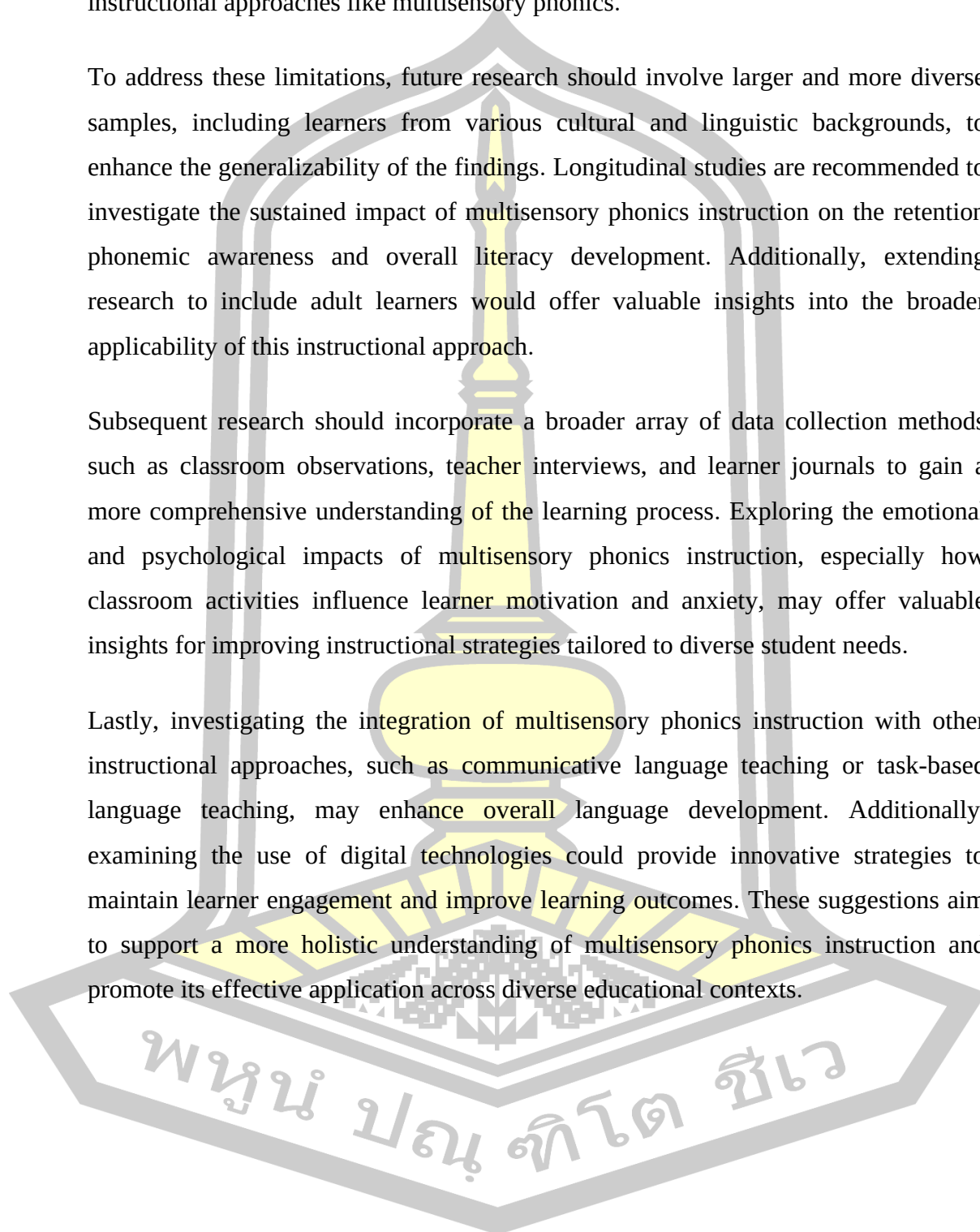
The study's focus on young learners also limits the applicability of its findings to adult EFL learners. Moreover, the reliance on quantitative assessments and data from a small-scale focus group interview may not fully capture the nuanced dynamics of classroom interactions or account for individual differences that influence learning outcomes. Some participants reported experiencing low confidence and feelings of anxiety or reluctance to speak during classroom activities. These emotional challenges underscore the importance of further exploring the affective dimensions of learning,

particularly how emotional factors may shape students' engagement and response to instructional approaches like multisensory phonics.

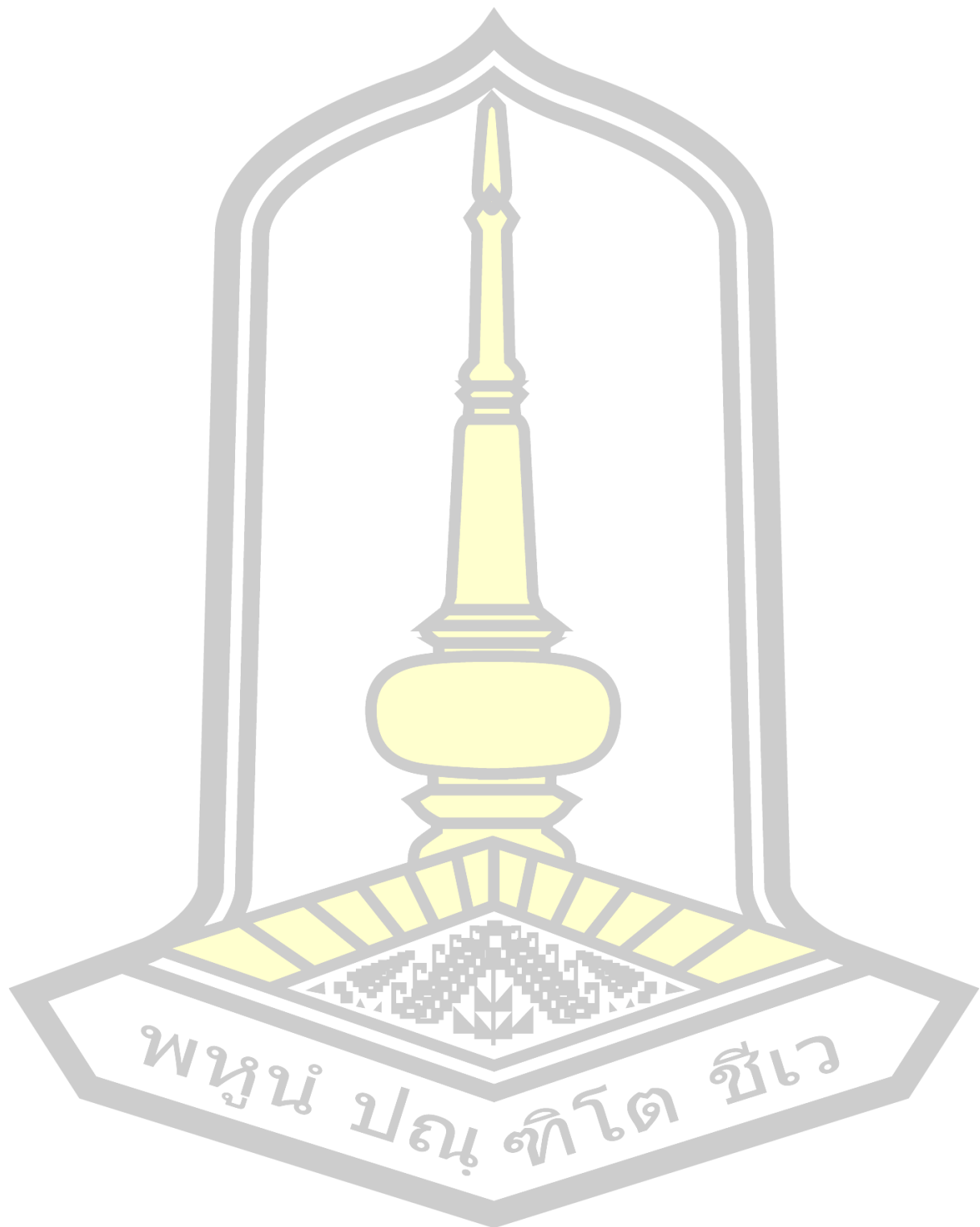
To address these limitations, future research should involve larger and more diverse samples, including learners from various cultural and linguistic backgrounds, to enhance the generalizability of the findings. Longitudinal studies are recommended to investigate the sustained impact of multisensory phonics instruction on the retention phonemic awareness and overall literacy development. Additionally, extending research to include adult learners would offer valuable insights into the broader applicability of this instructional approach.

Subsequent research should incorporate a broader array of data collection methods such as classroom observations, teacher interviews, and learner journals to gain a more comprehensive understanding of the learning process. Exploring the emotional and psychological impacts of multisensory phonics instruction, especially how classroom activities influence learner motivation and anxiety, may offer valuable insights for improving instructional strategies tailored to diverse student needs.

Lastly, investigating the integration of multisensory phonics instruction with other instructional approaches, such as communicative language teaching or task-based language teaching, may enhance overall language development. Additionally, examining the use of digital technologies could provide innovative strategies to maintain learner engagement and improve learning outcomes. These suggestions aim to support a more holistic understanding of multisensory phonics instruction and promote its effective application across diverse educational contexts.



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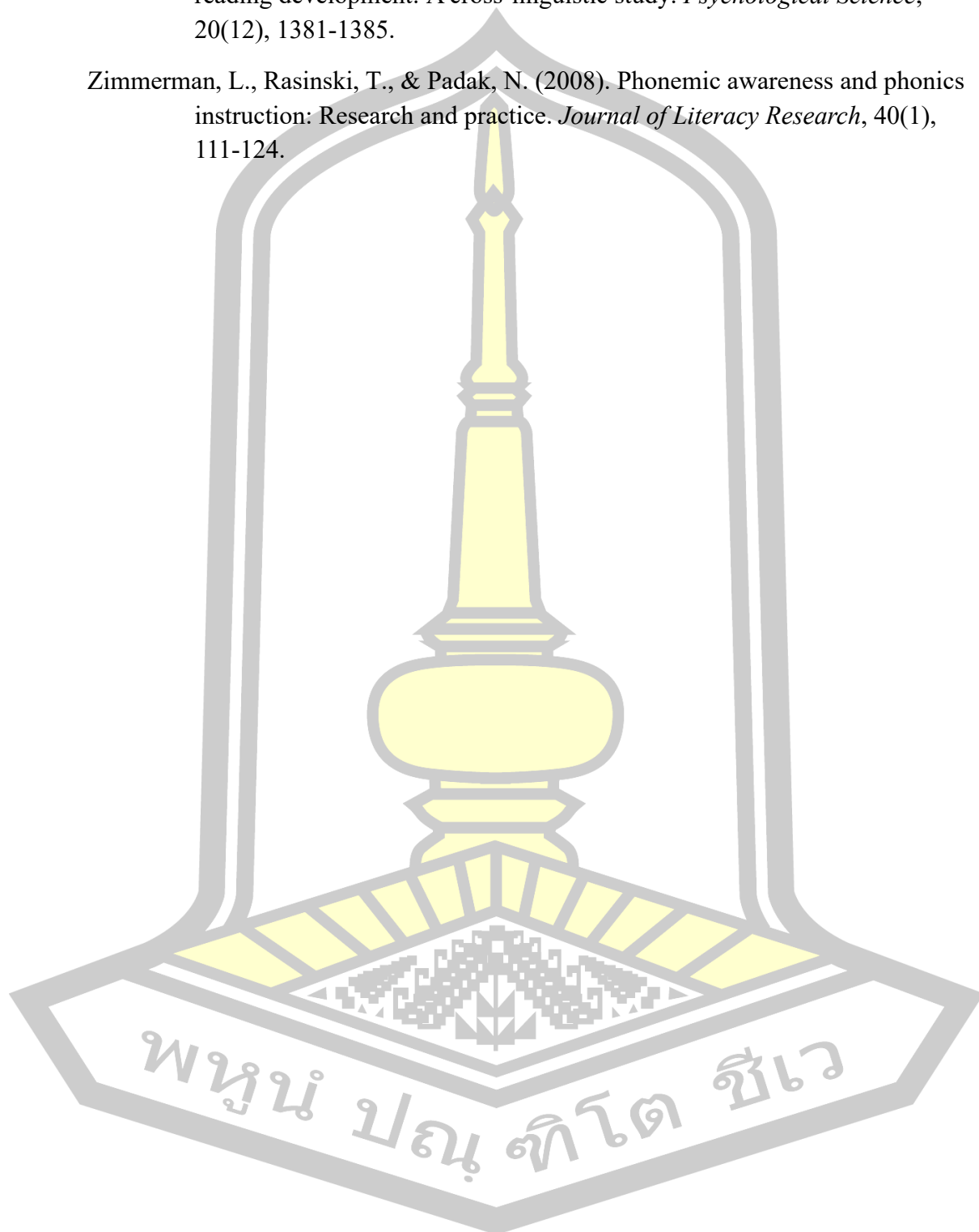
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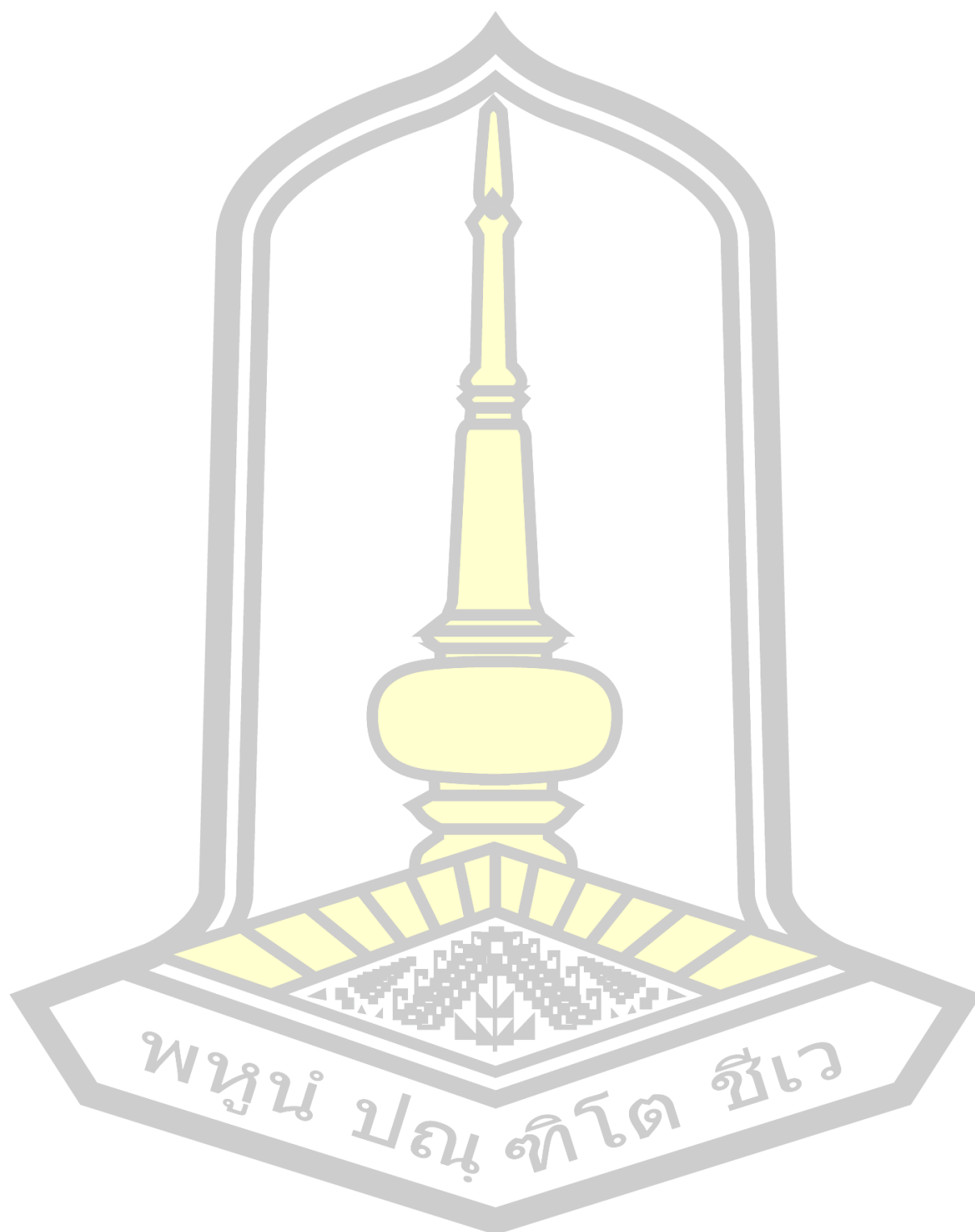
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APPENDICES



Appendix A: Phoneme Identification Test

SKILL 1: PHONEME IDENTIFICATION - BEGINNING SOUND			
Directions: Say the word /*/. Say the first sound in each word.			
Word	Student's response	Correct response	Score
1. bad		/b/	/1
2. mat		/m/	/1
3. put		/p/	/1
4. fan		/f/	/1
5. run		/r/	/1
Total			/5

SKILL 2: PHONEME IDENTIFICATION - ENDING SOUND			
Directions: Say the word /*/. Say the last sound in each word.			
Word	Student's response	Correct response	Score
6. red		/d/	/1
7. big		/g/	/1
8. car		/ar/	/1
9. fat		/t/	/1
10. top		/p/	/1
Total			/5

SKILL 3: PHONEME IDENTIFICATION - MIDDLE SOUND			
Directions: Say the word /*/. Say the middle sound in each word.			
Word	Student's response	Correct response	Score
11. sad		/æ/	/1
12. hen		/e/	/1
13. hit		/i/	/1
14. fox		/o/	/1
15. cup		/u/	/1
Total			/5

Appendix B: Phoneme Segmentation Test

Directions: Today we're going to play a word game. I'm going to say a word and I want you to break the word apart. You are going to tell me each sound in the word in order.

For example, if I say "old," you should say "/o/-/l/-/d/.

- | | | |
|---------------|---|-----------------------------------|
| 1. dog _____ |  | Correct response: /d/ - /o/ - /g/ |
| 2. hot _____ |  | Correct response: /h/ - /o/ - /t/ |
| 3. hit _____ |  | Correct response: /h/ - /ɪ/ - /t/ |
| 4. man _____ |  | Correct response: /m/ - /æ/ - /n/ |
| 5. fan _____ |  | Correct response: /f/ - /æ/ - /n/ |
| 6. sun _____ |  | Correct response: /s/ - /ʌ/ - /n/ |
| 7. rat _____ |  | Correct response: /r/ - /æ/ - /t/ |
| 8. eat _____ |  | Correct response: /-/ - /ē/ - /t/ |
| 9. sit _____ |  | Correct response: /s/ - /ɪ/ - /t/ |
| 10. pen _____ |  | Correct response: /p/ - /ɛ/ - /n/ |
| 11. mat _____ |  | Correct response: /m/ - /æ/ - /t/ |
| 12. ten _____ |  | Correct response: /t/ - /ɛ/ - /n/ |
| 13. hen _____ |  | Correct response: /h/ - /ɛ/ - /n/ |
| 14. pin _____ |  | Correct response: /p/ - /ɪ/ - /n/ |
| 15. sad _____ |  | Correct response: /s/ - /æ/ - /d/ |

Student _____ Grade _____ Number _____

Appendix C: Lesson Plan 1**English****FL 11101****Grade 1****Unit 1 Phonics****Topic: Phonics group 1 s a t i p n****3 Hours****Date****Teacher: Miss Kawintip Limprachan****1. Standard and Learning Standards of Foreign Languages****Strand 1:** Language for Communication

Standard FL1.1 Understanding and ability to interpret what has been heard and read from various types of media, and ability to express opinions with reasons

2. Essential Understanding

Learning the correct pronunciation of the letters in Group 1: /s/ - /a/ - /t/ - /i/ - /p/ - /n/ and being able to pronounce words accurately, whether in the form of words, phrases, or parts of sentences, as well as applying pronunciation principles to read other words that contain the sounds /s/ - /a/ - /t/ - /i/ - /p/ - /n/.

3. Learning Objectives**Knowledge (K):**

1. Students recognize the pronunciation of the letters in Group 1: /s/ - /a/ - /t/ - /i/ - /p/ - /n/.

Skills/Processes (P):

2. Students can correctly pronounce words containing the letters in Group 1: /s/ - /a/ - /t/ - /i/ - /p/ - /n/ according to phonics principles.
3. Students can correctly write words containing the letters in Group 1: /s/ - /a/ - /t/ - /i/ - /p/ - /n/.

Attitudes (A):

4. Students develop a love for learning, self-confidence, willingness to express themselves, responsibility, and a positive attitude toward learning English.

4. Learning Content

Knowledge (K):

- Vocabulary with sounds /s/ - /a/ - /t/ - /i/ - /p/ - /n/

at	sat	nap	tap	sap	tan
an	pat	spat	it	in	tin
spin	pit	sin	pip	pin	tip
sip	nip	spit	its	stint	ant
pan	pant	san	pas	tis	nit

Skills / Processes (P):

- Listening and reading skills

Attitudes (A):

- Diligence and eagerness to learn
- Self-confidence and willingness to express oneself
- A positive attitude toward learning English

5. Core Competencies of Learners:

1. Communication skills
2. Thinking skills
 - Analytical thinking skills
 - Creative thinking skills

6. Desirable Characteristics:

1. Love for learning
2. Commitment to work

7. Assignments

-

8. learning activities

1. Warm-up (Engage Students) – 10 minutes

 Activity: Sing & Move with Phonics Song

☒ Teacher plays a phonics song, and students sing along while performing related actions:

- /s/ – Move hands like a slithering snake
- /a/ – Act scared, as if seeing an ant
- /t/ – Tap fingers like a ticking clock

☒ Students walk around the classroom and find objects that start with a given sound, e.g., "Find something that starts with /s/"

2. Presentation (Introduce the Topic) – 15 minutes

 Activity: See, Hear, Feel & Say

☒ Teacher introduces letter sounds **s, a, t, i, p, n**

- The teacher presents the phonics sounds of the first group of 6 English letters:

/s/, /a/, /t/, /i/, /p/, /n/.

- The teacher holds up each letter card one by one, pronounces the sound, and has the students repeat it.
- Then, the teacher holds up the letter cards again and lets the students read the sounds independently, changing the order to ensure that students correctly recognize the phonemes of all 6 letters.

- The teacher explained to us that the pronunciation of the 6 letters, such as /s/ is pronounced as ส, which is the letter ส,ซ in Thai, /a/ is pronounced as แอะ, which is the vowel อาะ, /t/ is pronounced as ท, /i/ is pronounced as อิ, which is the vowel อิ, /p/ is pronounced as เพอะ, which is พ,ป, and /n/ is pronounced as อีน, which is น.

☒ Students trace letters in sand trays or on rough-textured paper to engage their sense of touch.

☑ Teacher shows flashcards with letters and pictures (e.g., "s for sun", "p for pen") while modeling the correct pronunciation.

☑ Students repeat the sounds while observing the teacher's mouth movements.

3. Practice (Guided Learning) – 20 minutes

✂ Activity: Blending & Word Building

☑ Students use letter cards or magnetic letters to build words:

- Teacher says /s/-/a/-/t/ and students arrange the letters to form **sat**.
- Students swap letters to create new words, such as **pat, pin, sit, nap**.
- The teacher presents 30 words that belong to the /s/ - /a/ - /t/ - /i/ - /p/ - /n/ groups for students to practice spelling

at	sat	nap	tap	sap	tan
an	pat	spat	it	in	tin
spin	pit	sin	pip	pin	tip
sip	nip	spit	its	stint	ant
pan	pant	san	pas	tis	nit

The teacher explained the pronunciation principles: at คือ a+t = แอะ+ท อ่านว่า แอท

sat คือ s+a+t = ซ+แอะ+ท อ่านว่า แซท

spin คือ s+p+i+n = ส+พ+อิ+น อ่านว่า สพิน

☑ Matching game: Students match sounds to words or pictures, e.g., /t/ with **tap**, /p/ with **pin**.

4. Production (Independent Application) – 10 minutes

✍ Activity: Write & Match

☑ Students write the words they learned in the air, on paper, or in sand trays.

☑ Matching activity: Students match words to corresponding pictures, e.g., pin with an image of a pin, tap with a picture of a water tap.

- ☒ Students create simple sentences using the words, such as "I see a pin." or "I tap the pan."

5. Wrap-up (Review & Reflect) – 5 minutes

Activity: Exit Ticket – Read & Say

- ☒ Each student picks one word they learned today, reads it aloud, and acts out the meaning.
- ☒ Teacher reviews the lesson with a fun game like "I Spy", e.g., "I spy something that starts with /p/." (pin).

9. Measurement and evaluation

Skills to be measured	Methods	Tools	Criteria
Knowledge (K) 1. Students know the pronunciation of words, group 1 letters /s/ - /a/ - /t/ - /i/ - /p/ - /n/	Observe	1. Observation form for pronunciation	1. Students pass the criteria by performing activities correctly at 70 % Skills
Skills/Processes (P) 1. Students can read aloud the first group of words /s/ - /a/ - /t/ - /i/ - /p/ - /n/ correct according to the principles of phonics reading. 2. Students can write the words in group 1 /s/ - /a/ - /t/ - /i/ - /p/ - /n/ correctly.	Test	1. Test of pronunciation 2. Test of Dictation	1. Students pass the criteria by performing the activities correctly at 70%. 2. Dictation: Students pass the criteria by completing 70% of the activities correctly.
Attitudes (A) 1. Students are eager to learn, confident in themselves, dare to express themselves, are responsible, and have a good attitude towards English.	Observation	1. Observation form: Behavior participation in the classroom	1. Students pass the criteria by participating in activities and being happy in learning at least 80%.

Appendix D: Certificate of Ethical Approval of Research in Humans





คณะกรรมการและสังคมศาสตร์ มหาวิทยาลัยมหาสารคาม
ร่วมกับ
ศูนย์จริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยขอนแก่น

ขอมอบเกียรติบัตรฉบับนี้ให้ไว้เพื่อแสดงว่า
กวินทิพย์ ลิ้มประจันต์
 เป็นผู้ผ่านการอบรม

“จริยธรรมการวิจัยในมนุษย์” หลักสูตร Social Science and Behavioral Research
ณ ห้องประชุมแม่น้ำของ มหาวิทยาลัยมหาสารคาม ในวันที่ 14 มกราคม 2567

ให้ไว้ ณ 14 มกราคม 2567 พมดอายุ วันที่ 31 มกราคม 2572


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 คณบดีคณะสังคมศาสตร์และสังคมศาสตร์
 มหาวิทยาลัยมหาสารคาม


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