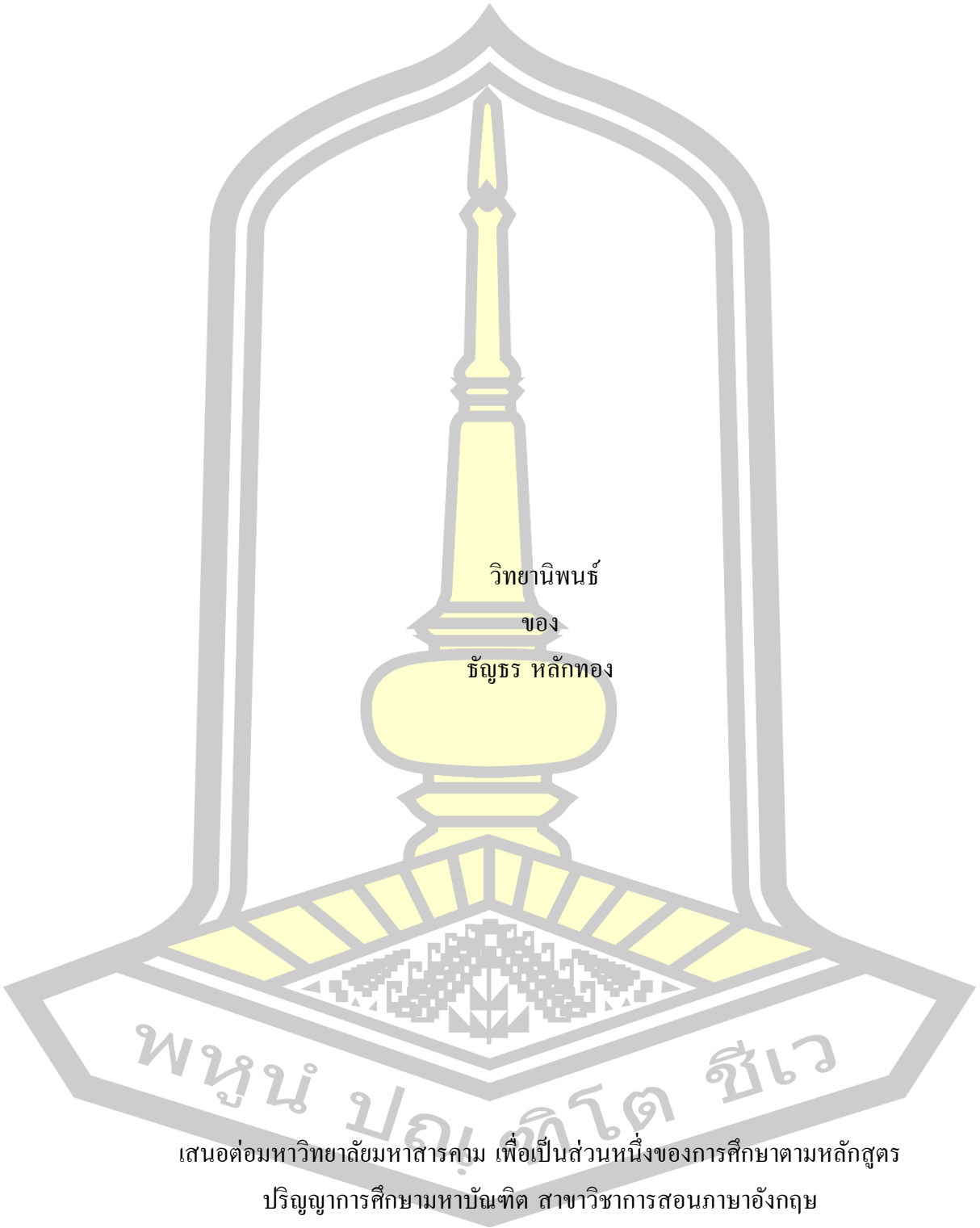
Influence of Synthetic Phonics Instruction in Word Recognition of Thai Primary School Students

Thanyathon Lakthong

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

อิทธิพลของการสอนออกเสียงสังเคราะห์ต่อการจดจำคำศัพท์ของนักเรียนชั้นประถมศึกษาไทย



วิทยานิพนธ์

ของ

ธัญธร หลักทอง

เสนอต่อมหาวิทยาลัยมหาสารคาม เพื่อเป็นส่วนหนึ่งของการศึกษาตามหลักสูตร

ปริญญาการศึกษามหาบัณฑิต สาขาวิชาการสอนภาษาอังกฤษ

มีนาคม 2568

Influence of Synthetic Phonics Instruction in Word Recognition of Thai Primary School Students

Thanyathon Lakthong

A Thesis Submitted in Partial Fulfillment of Requirements

for Master of Education (English Language Teaching)

March 2025

The examining committee has unanimously approved this Thesis, submitted by Miss Thanyathon Lakthong , as a partial fulfillment of the requirements for the Master of Education English Language Teaching at Mahasarakham University

Examining Committee

.....Chairman
(Pilanut Phusawisot , Ph.D.)

.....Advisor
(Asst. Prof. Apisak Sukying , Ph.D.)

.....Committee
(Eric A. Ambele , Ph.D.)

.....External Committee
(Asst. Prof. Denchai Prabjandee , Ph.D.)

Mahasarakham University has granted approval to accept this Thesis as a partial fulfillment of the requirements for the Master of Education English Language Teaching

.....
(Assoc. Prof. Nittaya Wannakit , Ph.D.)
Dean of The Faculty of Humanities and Social Sciences

.....
(Prof. Anongrit Kangrang , Ph.D.)
Acting Dean of Graduate School

TITLE Influence of Synthetic Phonics Instruction in Word Recognition of Thai Primary School Students

AUTHOR Thanyathon Lakthong

ADVISORS Assistant Professor Apisak Sukying , Ph.D.

DEGREE Master of Education **MAJOR** English Language Teaching

UNIVERSITY Mahasarakham University **YEAR** 2025

ABSTRACT

Vocabulary development is fundamental to English language learning, as it supports key language skills, including listening, speaking, reading, and writing. Establishing a strong form-meaning connection is essential for effective vocabulary acquisition, enabling learners to understand and express themselves accurately. However, limited vocabulary knowledge remains a significant challenge for English as a Foreign Language (EFL) students in Thailand, where traditional instruction often relies on rote memorization and grammar-translation methods. This study examines the effects of synthetic phonics instruction on word recognition among Thai primary school students. Synthetic phonics systematically teaches letter-sound relationships to enhance phonemic awareness and decoding ability, which in turn supports vocabulary acquisition.

A quasi-experimental research design involved forty Thai primary school students divided into control and experimental groups. While the control group received traditional instruction, the experimental group participated in eight weeks of synthetic phonics instruction. The study covered ten weeks, including pre-tests, the intervention, and post-tests assessing word recognition abilities. Findings revealed that synthetic phonics instruction significantly improved students' word recognition, with the experimental group outperforming the control group, which demonstrated only minor improvements. These results align with previous research, reinforcing the effectiveness of synthetic phonics in enhancing word recall, decoding skills, and phonological awareness.

Qualitative data from focus group interviews further supported these findings, indicating that students responded positively to synthetic phonics instruction. Although some initially experienced anxiety adjusting to the new approach, they ultimately reported increased engagement, motivation, and confidence in their vocabulary learning. These findings suggest that synthetic phonics is a useful instructional method for improving word recognition and overall vocabulary development among Thai primary school learners.

Keyword : Synthetic phonics, word recognition, phonemic awareness, spelling, Thai primary school learners

พหูน ปณ ฑิโต ชีเว

ACKNOWLEDGEMENTS

First of all, I would like to sincerely thank my research supervisor, Assistant Professor Dr. Apisak Sukying, program chair of the M.Ed. program in English Language Teaching, Faculty of Humanities and Social Sciences, Mahasarakham University, Thailand for allowing me to be his advisee. He has given valuable time for advising, proofreading, revising, and careful attention to correcting my thesis throughout the challenging process of completing the thesis. He has also taught the research methodology, academic language used in academic works, when I struggled in doing research. I have gained much more knowledge about language teaching and have become a more careful person. I would also like to thank him for his beautiful friendship, care, and widening my world. This journey would not have been possible without his direction.

Furthermore, I am extending my thanks to my research committee, Dr. Pilanut Phusawisot, Associate Professor Dr. Denchai Prabjandee, and Dr. Eric A. Ambele for giving insightful comments and valuable perspectives on my research. I also express my gratitude to Mahasarakham University's entire research staff for their kindness in supporting all information and documents.

To my beloved friends, especially M.ed batch 16, I would like to express my thanks for being such good friends to always support and cheer me up. Especially, I would like to thank all of the professors for their intention in the coursework and sincere encouragement during investigating this research.

I would like to acknowledge my family for their love and support me during my master's degree. Whether my father, Mr. Sonthaya Lakthorng, my mother, Mrs. Khodchakamon Aumawong, my stepmother, Mrs. Phurichaya Lakthorng, and my sister, Miss Porntiwa Lakthorng always support me along this journey. Moreover, I express my thanks to my partner for supporting me to overcome obstacles and face various problems.

Finally, I sincerely thank everyone who helped me, directly or indirectly, complete the research work.

Thanyathon Lakthong

พหูน ปณ ฑิโต ชีเว

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER I
INTRODUCTION

The chapter outlines the introduction, background of the study, statement of the problem, proposes of the study, research questions, significance of the study, scope of the study, and definition of key terms. The introductory section provides an overview of the research topic, highlighting its importance and relevance within synthetic phonics instruction in word recognition of Thai primary school students.

1.1 Background to the study

Vocabulary is a fundamental component of language learning, serving as the foundation for proficiency in listening, speaking, reading, and writing (Laufer, 1998; Nation, 2022; Schmidt, 2010). The ability to establish a form-meaning connection is a critical first step in language acquisition. Learners' ability to recognize, comprehend, and accurately use words directly influences their overall language skills (Sinatra, Zygouris-Coe, & Dasinger, 2012). Limited vocabulary knowledge restricts communication, preventing learners from effectively expressing their intended messages (Webb & Nation, 2017). Therefore, vocabulary acquisition is essential for both language development and communicative competence.

Acquiring vocabulary in a foreign language is a time-consuming process that requires repeated exposure and meaningful engagement. Research suggests that the frequency of encounters with new words and the variety of contexts in which they appear significantly influence vocabulary retention (Nation, 1990; Webb & Nation, 2017). Teachers play a crucial role in enhancing vocabulary learning by creating an environment rich in linguistic input and interactive activities, increasing students' exposure to and engagement with words (Krashen, 1982).

According to Nation (2022), vocabulary knowledge consists of three interrelated components: form, meaning, and use. Form includes the phonological and orthographic representations of a word, meaning pertains to its conceptual and referential aspects, and use involves grammatical functions, collocations, and contextual constraints. Effective vocabulary acquisition occurs when instruction integrates all these components in a balanced manner. Nation (2022) also introduced

the four strands framework, which emphasizes meaning-focused input, meaning-focused output, language-focused learning, and fluency development. The first stage, meaning-focused input, involves learning words through listening and reading, which is most effective when learners have sufficient lexical coverage (98% or higher) of the text (Laufer & Ravenhorst-Kalovski, 2010; Nation, 2006, 2022).

A key factor in vocabulary acquisition is phonological awareness, the ability to recognize and manipulate the sound structures of a language. Phonological awareness is a crucial foundation for literacy development, as it directly influences word recognition, spelling, and reading fluency (Adams, 1990; Goswami, 2000; Perfetti, 2007). Learners with strong phonological awareness can decode unfamiliar words more effectively, leading to improved vocabulary retention and reading comprehension (Nation, 2013). Within phonological awareness, the ability to identify and manipulate individual phonemes, plays a significant role in word learning and literacy development (Gillon, 2018; Ehri, 2005; Share, 2004).

One of the most effective approaches for developing phonological awareness is synthetic phonics. This method systematically teaches the relationship between phonemes (sounds) and graphemes (letters), improving word recognition, reading fluency, and spelling accuracy (Bintz, 2011; Wyse & Goswami, 2008). Synthetic phonics explicitly trains learners to blend phonemes to form words and segment words into phonemes, fostering essential decoding skills for literacy acquisition (Phillips et al., 2008; Busink, 1997). By reinforcing phonological processing skills, synthetic phonics enhances receptive vocabulary by improving word recognition and supports productive vocabulary by enabling learners to retrieve and pronounce words accurately (Ball, 1993; Phillips et al., 2008).

Beyond phonological skills, cognitive processes such as noticing, retrieval, and creative application play a significant role in vocabulary acquisition (Hulstijn & Laufer, 2001; Ellis, 2002). Noticing occurs when learners consciously recognize new words and their meanings, while retrieval strengthens vocabulary recall through repeated exposure and application in varied contexts (Bisson et al., 2015; Teng, 2016). Furthermore, creative application enables learners to manipulate and use words in

novel ways, fostering deeper comprehension and long-term retention (Schmitt, 2010; Li, Ellis, & Zhu, 2019).

Given the critical role of phonological awareness in vocabulary acquisition, integrating explicit phonics-based instruction with interactive and multimodal learning strategies is essential for optimizing vocabulary learning (Gass & Selinker, 2008; Luque & Morgan-Short, 2021). Despite the extensive research on phonics instruction in first-language settings, studies on the impact of synthetic phonics in EFL contexts, particularly in Thailand, remain limited (Futrakul, 2020). Investigating how synthetic phonics influences vocabulary acquisition and word recognition among Thai primary school students will provide valuable insights for educators and policymakers seeking to improve English language instruction.

1.2 Problem Statement

Vocabulary knowledge is a critical component of language proficiency, yet many EFL learners struggle with limited vocabulary, hindering their overall language acquisition (Sawangsamutchai & Rattanavich, 2016). In Thailand, primary school students' persistently low English proficiency levels can be attributed to insufficient vocabulary knowledge. This challenge is evident in national assessments such as the Ordinary National Educational Test (O-NET), where students achieve an average vocabulary score of only 37.32% (NIETS, 2024). Traditional vocabulary instruction in Thai schools predominantly relies on rote memorization and grammar-translation methods, which fail to provide the meaningful, contextualized exposure necessary for effective vocabulary acquisition (Afzal, 2019; Alharbi, 2022). As a result, many students struggle to develop a robust vocabulary foundation, impeding their reading, writing, and overall language development (Binmadnee, 2016; Wang-ru, 2016; Zhou et al., 2022).

One major consequence of weak vocabulary knowledge is the prevalence of spelling difficulties among Thai EFL learners. Studies have consistently highlighted that Thai students at both primary and secondary levels face persistent spelling challenges due to insufficient phonological awareness and inadequate knowledge of English spelling conventions (Bancha, 2013; Phisutthangkoon, 2018; Pongsukvajchakul, 2022). For example, Bancha (2013) identified common spelling errors such as consonant and

vowel substitutions, letter omissions, and incorrect inflectional endings among Thai university students, attributing these mistakes to a lack of systematic phonics instruction. Similarly, Phisutthangkoon (2018) found that explicit phonics-based instruction significantly improved students' spelling accuracy, highlighting the role of phoneme-grapheme correspondence in language learning. Pongsukvajchakul (2022) further demonstrated that pronunciation errors and inconsistencies in spelling rules contribute to spelling difficulties, reinforcing the need for structured phonological training from an early stage.

In the context of this study, one of the significant challenges faced by Thai EFL learners is their difficulty in spelling and retaining English vocabulary. Many students struggle with recognizing letter-sound correspondences, leading to frequent spelling errors and difficulties in word recall. This issue stems from inadequate phonological awareness, which affects their ability to decode and encode English words effectively.

Given the critical role of phonological awareness in vocabulary acquisition, integrating explicit phonics-based instruction with interactive and multimodal learning strategies is essential for optimizing vocabulary learning (Gass & Selinker, 2008; Luque & Morgan-Short, 2021). Despite the extensive research on phonics instruction in first-language settings, studies on the impact of synthetic phonics in EFL contexts, particularly in Thailand, remain limited (Futrakul, 2020). Investigating how synthetic phonics influences vocabulary acquisition and word recognition among Thai primary school students will provide valuable insights for educators and policymakers seeking to improve English language instruction.

These spelling challenges not only hinder students' ability to write accurately but also affect their reading comprehension and overall language proficiency. Research indicates that many Thai students struggle with spelling due to fundamental differences between the Thai and English writing systems, limited early exposure to phonics-based instruction, and reliance on rote memorization rather than phonetic decoding strategies (Sattayatham & Honsa, 2017). Addressing these difficulties requires implementing more effective instructional approaches that equip learners with systematic decoding and encoding skills, which are essential for long-term academic success in English.

Phonics instruction can be categorized into several types, including synthetic phonics, analytic phonics, embedded phonics, and analogy phonics. Among these, synthetic phonics has been recognized as one of the most effective methods for improving spelling and reading skills. This approach explicitly teaches phoneme-grapheme correspondences, enabling students to systematically decode words and develop stronger literacy skills (Futrakul, 2020; Wyse & Goswami, 2008). Unlike analytic phonics, which encourages students to recognize words by analyzing common phonetic patterns in familiar words, synthetic phonics introduces letter-sound relationships in isolation and teaches students to blend phonemes to form words. This structured, step-by-step approach allows learners to grasp spelling rules more effectively and enhances their ability to spell unfamiliar words accurately. Additionally, embedded phonics, which integrates phonics instruction into broader reading activities, and analogy phonics, which teaches students to use known word patterns to read new words, may not provide the same level of explicit and systematic instruction needed for overcoming spelling difficulties.

The choice of synthetic phonics for addressing spelling challenges is based on its ability to reinforce phonemic awareness, blending, and segmentation, which are critical for both reading fluency and spelling accuracy (Iyonaga et al., 2018; Perfetti et al., 2008). Research indicates that this method significantly improves spelling proficiency, enhances reading accuracy, and boosts learners' confidence, particularly among those who struggle with literacy skills (Vaughn & Thompson, 2004; Wyse & Goswami, 2008). Moreover, synthetic phonics is particularly effective for learners with dyslexia and other reading difficulties, as it strengthens phonological processing skills and minimizes common spelling errors by providing a clear, systematic framework for learning letter-sound correspondences (Ehri, 2005; Share, 2004).

Despite the well-documented advantages of synthetic phonics, research on its effectiveness in EFL contexts, particularly in Thailand, remains limited (Futrakul, 2020). While studies have extensively explored phonics instruction in English-speaking countries, there is a need for empirical investigations into its impact on word recognition among Thai primary school students. Understanding how synthetic phonics influences early literacy development in an EFL setting can provide valuable

insights for educators, curriculum designers, and policymakers seeking to improve English language instruction in Thailand.

Therefore, this study aims to examine the effects of synthetic phonics instruction on word recognition among Thai primary school students. This research contributes to the growing body of knowledge on effective literacy instruction in EFL contexts by investigating its impact on vocabulary acquisition and spelling accuracy. The findings will provide practical implications for enhancing vocabulary teaching strategies, ultimately supporting young learners in developing stronger English language proficiency.

1.3 Purposes of the research

This study investigated synthetic phonics instruction's influence on word recognition among Thai primary school students. It hypothesized that synthetic phonics teaching could enhance word recognition, improving students' recognition ability. The primary goal was to determine the influence of synthetic phonics instruction on word recognition. Additionally, it explored the attitudes of primary school students towards synthetic phonics instruction in their word recognition acquisition. To achieve these objectives, the following research questions have been formulated:

1. To what extent does synthetic phonics instruction affect Thai primary school students' word recognition?
2. What are Thai primary school students' attitudes towards synthetic phonics in their word recognition?

1.4 Scope of the research

This quasi-experimental study investigated the impact of synthetic phonics instruction on word knowledge among primary school students in grades one to three. The study included 40 students, aged six to nine, from an educational opportunity expansion school located in Sakon Nakhon province, Thailand. These students were native Thai speakers with one to three years of exposure to English. The research was conducted over ten weeks during the second semester of 2024 under the direction of the researcher, an English teacher for grades one through six at the same institution.

Participants were divided into two groups: a control group and an experimental group comprising 20 students. The control group received traditional, teacher-centered instruction, which involves direct teaching methods using English textbooks, notebooks, and printed materials. The experimental group was taught using synthetic phonics instruction, focusing on decoding letter patterns to ascertain word meanings. Both groups used the same English textbook, "Smile Grades One to Three." The study spans eight 50-minute classes over ten weeks.

The study collected data from receptive and productive word form tests and focus group interviews. These instruments aim to measure the impact of synthetic phonics on word recognition and gather students' perceptions of the instructional method.

The data collection occurred over ten weeks. In the first week, students completed a vocabulary checklist to establish a baseline. The teaching period occurred from weeks two to nine, with both groups receiving their respective instructional methods. In the tenth week, students completed a vocabulary post-test and participated in focus group interviews to provide feedback on their experiences with the instructional methods.

Quantitative data from the tests were analyzed using descriptive and inferential statistics to assess the effectiveness of the intervention. Qualitative data from focus group interviews were thematically analyzed to capture students' perceptions and engagement. This quasi-experimental approach will provide a comprehensive understanding of the impact of synthetic phonics instruction on vocabulary acquisition.

1.5 Significance of the study

Vocabulary is a basis of second language acquisition, particularly for primary school students, as it forms the basis for developing proficiency in listening, speaking, reading, and writing. This study is significant in advancing language education by providing empirical evidence on the effectiveness of synthetic phonics instruction in enhancing vocabulary acquisition. By systematically teaching the relationship between letters and sounds, synthetic phonics strengthens both receptive and productive vocabulary knowledge, enabling learners to decode and encode words more efficiently. This structured approach not only improves word recognition and

pronunciation but also fosters independent reading and writing skills, which are essential for long-term language development.

The findings of this study have practical implications for multiple stakeholders in education. The research offers innovative instructional strategies for teachers that enhance vocabulary teaching, making lessons more interactive and effective for young learners. Students, in turn, benefit from improved vocabulary acquisition, leading to enhanced language proficiency, increased confidence, and greater motivation to engage in language learning. Curriculum designers, materials developers, and assessment creators can also use these insights to design instructional resources and evaluation tools that align with students' cognitive and linguistic development, ensuring more effective and targeted language instruction.

Beyond classroom instruction, this study highlights the cognitive processes essential for vocabulary learning, including noticing, retrieval, and creative application. By integrating multimodal instructional approaches, such as visual, auditory, and kinesthetic learning activities, teachers can help students establish stronger associations between phonemes and graphemes, enhancing memory retention and recall. Furthermore, repeated exposure to vocabulary through interactive and context-rich activities reinforces learning outcomes, supporting long-term retention and application of newly acquired words.

From a policy perspective, this research provides valuable evidence for integrating synthetic phonics into language education curricula. Policymakers can leverage these findings to advocate for more structured and evidence-based teaching methodologies that support language development through phonics instruction. By bridging the gap between traditional rote learning approaches and modern, research-informed pedagogies, this study contributes to transforming vocabulary instruction in primary education. Such reforms can help create a more engaging and effective learning environment that caters to the linguistic needs of young EFL learners.

Ultimately, this study enhances both theoretical understanding and practical applications in vocabulary instruction, offering a framework for designing innovative teaching strategies, lesson plans, and instructional materials tailored to primary school

students in EFL contexts. The insights gained from this research have the potential to reshape language learning experiences, ensuring that students receive comprehensive support in developing their vocabulary and overall language proficiency.

1.6 Definitions of key terms

Synthetic phonics instruction*:* Synthetic phonics instruction refers to a structured, systematic approach to teaching phonics, where students learn to blend individual phonemes (sounds) to form whole words rather than recognizing words by sight or breaking down known words into parts. In this study, synthetic phonics instruction includes explicit teaching of letter-sound correspondences, phoneme blending, and segmenting skills. Additionally, it incorporates engaging, interactive materials such as digital media, phonics-based games, and hands-on activities to involves students in the learning process. The goal is to enhance students' phonological awareness, decoding ability, and overall word recognition skills in an EFL classroom setting.

Word recognition: Word recognition in this study refers to students' ability to identify, decode, and recognize written words by applying letter-sound correspondence rules. Specifically, it includes: (1) phonemic decoding ability, which refers to the ability to blend individual phonemes (sounds) to form complete words; and (2) spelling accuracy, which refers to the ability to correctly spell words based on phoneme-grapheme correspondence.

Primary school students: Primary school students in this study are 40 students from grades one to three who learn English as a foreign language at a small primary school in Sakon Nakhon province.

Attitudes: In this study, attitudes refer to students' perceptions, emotions, and engagement in learning word recognition through synthetic phonics. This includes their interest, motivation, and confidence in acquiring word knowledge. Attitudes are assessed qualitatively through focus group interviews on their experiences, challenges, and perspectives on synthetic phonics instruction.

1.7 Organization of the Thesis

This thesis consists of five chapters. Chapter I provides the readers with an overview of the study. It begins with the study background and the importance of vocabulary

knowledge in language use. This chapter follows issues in vocabulary learning and teaching. The chapter also describes the scope of the study, the significance of the study, and definitions of key terms.

Chapter II reviews the theoretical framework for the study. First, it conceptualizes vocabulary knowledge, and the chapter points out vocabulary learning and teaching, particularly in an EFL context. This chapter then critically reviews previous studies related to the study to identify the gaps.

Chapter III outlines the research methodology. The chapter describes the research paradigm and design, participants and setting, the instrumentation, methods, data collection procedure, and data analysis techniques.

Chapter IV presents research findings both quantitatively and qualitatively. Quantitative results are presented through descriptive and inferential statistics. Conversely, qualitative findings are offered through thematic analysis, employing Fredericks et al.'s (2004) framework and complimented by excerpts from students' focus group interviews.

Chapter V consolidates the main findings of the study. This chapter offers insights into the role of synthetic phonics instruction in vocabulary acquisition and development. It yields fruitful information for pedagogy, theoretical framework, and methodology for further investigations. This chapter also acknowledges the study's limitations and proposes potential avenues for future studies.

CHAPTER II
LITERATURE REVIEW

This chapter presents the literature related to the theoretical framework of word knowledge, followed by a description of the conceptual framework of word knowledge. Vocabulary teaching techniques through synthetic phonics and approaches to measuring word knowledge are also discussed. The study then reviews previous research on word knowledge learning and synthetic phonics instruction in vocabulary teaching.

2.1 Defining Word Knowledge

Recognizing a word is not a binary concept. The concept encompasses various levels of word control, from low control, where students can decode the term, to passive control, where students can provide a synonym or basic definition, to active control, where students can connect the word to other words and use it in oral and written communication (Nagy and Scott, 2000). These categories indicate levels of word knowledge. Active control of words requires knowing words within context and concerning other terms in the discipline, which can be considered conceptual knowledge (Bravo et al., 2008). Understanding the term “force” dynamically involves more than just recognizing the written word or reciting its definition. Understanding force conceptually includes recognizing the relationship between scientific terms like “gravity” or “magnetism” and using these terms correctly in communication. Vygotsky (1987) proposed that conceptual knowledge progresses in parallel with an enhanced comprehension of word meanings. Word learning in science should be viewed and instructed as interconnected concepts to create elaborate conceptual networks. According to Nation (2022) developed the word knowledge theoretical framework through three interconnected aspects: form, meaning, and use, each incorporating both receptive and productive elements (Nation, 2022; Schmitt, 2010; Sukying, 2018a). Nation (2022) defines word form as encompassing knowledge of spoken language, written language, and word components. Word meaning encompasses understanding form-meaning connections, concepts, referents, and linkages. Word use encompasses grammatical functions, collocations, and usage limits.

Among the eight components of word knowledge put forth by Richards (1976) are: (1) the word's spoken form; (2) its written form; (3) the word's grammatical behavior; (4) the word's collocation behavior; (5) the word's frequency; (6) the word's stylistic register constraints; (7) the word's conceptual meaning; and (8) the word's associations with other related words. Furthermore, Nation (1990) delineated a theoretical framework for word knowledge that encompasses various dimensions, such as form, meaning, and usage. To get a comprehensive mastery of the word, learners must possess both receptive and productive knowledge. Nation (2022) has established the most detailed and often cited theoretical framework for word knowledge, categorizing it into word form, word meaning, and word use. Each dimension contains three knowledge components, which are further separated into receptive and productive proficiency within each aspect, as shown in Table 1. Productive knowledge involves using words in speech or writing, while receptive knowledge involves understanding words when reading or listening. The spectrum of knowledge ranges from unfamiliarity with a word to proficiently using it fluently in the language. This continuum is believed to encompass both receptive and productive information. Scholars frequently utilize Nation's dimensional framework to examine L2 word knowledge due to its comprehensive categories of word-knowledge descriptions that encompass almost every aspect of lexical knowledge (Li, Ellis & Zhu, 2019; Luque & Morgan-Short, 2021; Sukying, 2018a, 2018b). Researchers find it difficult to incorporate all components into one study, and language teachers struggle to utilize them for word education. Consequently, the researchers have focused their attention on specific subject areas. When applying the dimensional approach, it is essential to distinguish between word breadth and depth of knowledge (Qian, 2002).

Table 1 Aspects of word knowledge (Nation, 2022, p.54)

form	spoken	R	What does the word sound like?
		P	How is the word pronounced?
	written	R	What does the word look like?
		P	How is the word written and spelled?
	word part	R	What parts are recognizable in this word?
		P	What word parts are needed to express the meaning?
meaning	form and meaning	R	What meaning does this word form signal?
		P	What word form can be used to express this meaning?
	concepts and referents	R	What is included in this concept?
		P	What items can the concept refer to?
	associations	R	What other words does this make people think of?
		P	What other words could people use instead of this one?
use	grammatical functions	R	In what patterns does the word occur?
		P	In what patterns do most people use this word?
	collocations	R	What words or types of words occur with this one?
		P	What words or types of words must people use with this one?
	constraints on use	R	Where, when, and how often would people expect to meet this word?
		P	Where, when, and how often can people use this word?

The primary component of lexical quality is form. For young infants who cannot read yet, form pertains to the phonological representation of a word or the storing of information about the sounds in a specific word (Ainsworth et al., 2015). Similar to other components of lexical quality, the quality of a phonological representation can vary from poor to excellent. Quality is determined by the correctness and stability of the representation. The form also encompasses the grammatical characteristics of a word. Perfetti (2007) states that a thorough understanding of a word's form includes

knowledge of all its grammatical classes and the ability to modify the word to show variations in tense, mood, person, number, and gender. A less refined word depiction could result in the learner's inconsistent and inappropriate use of inflected forms.

The second aspect of lexical quality to be examined is meaning. Perfetti's (2007) research indicates that possessing more refined semantic information on a word enables individuals to differentiate between closely associated words. One must comprehend their respective purposes, sizes, and other perceptual characteristics to distinguish between a shovel and a spade. The semantic information acquired about words differs depending on the word type, with distinct semantic information accessible for highly imageable, tangible words compared to more abstract ones (Hadley et al., 2016). Concrete nouns refer to specific, tangible objects, while verbs, adjectives, and abstract nouns describe more general, interconnected notions like ideas or characteristics (Gentner, 2006). Hence, the type of semantic information that may be acquired about these terms is fundamentally distinct. Concrete nouns offer a broader range of semantic information categories than other word forms due to their perceptual accessibility. Perceptual information can provide a more profound conceptual comprehension of words, resulting in enhanced, accurate knowledge that reflects excellent lexical quality (Booth & Waxman, 2002). Perceiving a helmet as rigid aids children in comprehending its purpose (to safeguard someone's head), whereas observing a creature with four legs assists a child in classifying that entity as an animal. The examples demonstrate two types of conceptual information associated with concrete nouns: functional information, which pertains to the purpose or usage of something (e.g., a helmet protects the head), and category membership (a cat belongs to the category of animals). Identifying a term as belonging to a category does not come from observing an object; instead, the concept must have been formed beforehand. This highlights another aspect of semantic complexity: the degree to which words are part of intricate semantic networks. Research indicates that young children may find it easier to learn new words that are semantically connected to familiar words rather than unrelated ones (Borovsky et al., 2016). Various semantic information kinds pertain to both tangible nouns and abstract terms. For instance, synonyms, which represent the fundamental meaning of a term, can be found for

several words of different categories (Miller & Fellbaum, 1991). Specific semantic characteristics are exclusive to word categories beyond concrete nouns. Three-year-olds studying action verbs prioritize understanding causality and identifying who or what caused the action (Forbes & Farrar, 1993) consistently and suitably.

Use involves applying word knowledge effectively by employing a word in many situations to express meaning and being aware of a term's connotations, usual registers, and idiomatic or rhetorical uses (Silverman & Hartranft, 2015). This facet of word mastery is often regarded as the genuine indicator of superior word knowledge since understanding a word entails the ability to manipulate it effectively (Nagy & Scott, 2000, p. 237). Rapid retrieval and application of a word under the Lexical Quality Hypothesis indicate high-quality semantic and phonological knowledge. Mastery of a word evolves gradually, starting from understanding its meaning, then applying it in a specific situation, and finally employing it in other contexts (Clark, 2010). Children frequently have limited circumstances in which they can effectively employ terms they seem familiar with. A study by Seston et al. (2009) discovered that 50% of the six-year-olds assessed could not comprehend common verbs when used in novel situations despite the additional details provided to aid understanding. These findings indicate that although young infants may possess knowledge of common verbs, they need further exposure and assistance to comprehend and utilize these words effectively and adapt to different situations. Low-quality knowledge of use encompasses scenarios such as when a child can remember a word in a specific context but cannot use it themselves or when a child memorizes a dictionary definition of a word but misuses it. As a child's understanding of a term grows, they may be able to use it accurately in a specific situation. Proficient use involves employing the word in various contexts and applying it to unfamiliar situations.

According to Nation (2022), a distinction was made between receptive and productive word knowledge based on the specific skills engaged. The former pertains to understanding the input text, such as engaging in auditory perception of music or reading a book. In contrast, the latter involves actively constructing words and phrases through verbal or written communication. A study conducted by Nation (2013) determined that receptive word knowledge requires fewer cognitive efforts, is

acquired more efficiently, and develops more rapidly than productive information. The mental effort needed to process input is lower than the verbal output. Furthermore, receptive word knowledge might be referred to as a passive word.

The development of words can be facilitated through repeated exposure to the words. Consequently, frequent exposure to novel vocabulary through hearing and reading activities facilitates the learners' receptive acquisition of those terms. The variation of words is observed across the four language skills, namely listening, writing, reading, and speaking, as stated by Scott Thornbury (2002). Typically, learners find listening and speaking material more effortless and quicker to comprehend than reading and writing materials. According to Thornbury (2002), the concept of receptive words pertains to the vocabulary that learners acquire through listening and reading and the vocabulary they acquire through receiving information from others.

However, acquiring productive word knowledge necessitates the ability to recollect words and possess the skill to employ them accurately to effectively convey significant messages through oral or written communication (Sukying, 2021). To improve their proficiency in speaking and writing, learners should dedicate more time to practicing these skills (Thornbury, 2002). "Productive word" pertains to the vocabulary that learners employ in their verbal or written communication, and it can also be referred to as an active word (Thornbury, 2002). Developing adequate understanding or employing vocabulary is more difficult in oral and written communication. It necessitates the ability to remember phrases and the expertise to use them accurately to communicate significant messages. Consequently, productive knowledge exhibits a higher level of depth due to its reliance on an understanding of the pronunciation, spelling, and pragmatics of a given word.

Nation (2006) states that for reading to be enjoyable, learners must be familiar with 97-98% of the terms in a text, which is referred to as text coverage. As an illustration, let us consider the scenario where independent comprehension necessitates a 98% understanding of the words present in a given text. In the case of L2 learners, comprehension of written texts, such as newspapers and novels, requires a word-family vocabulary ranging from 8000 to 9000. Similarly, for spoken texts, such as

lectures and movies, L2 learners require a word-family vocabulary ranging from 6000 to 7000 (Nation, 2006).

Possessing word knowledge is crucial for language learners to effectively understand and communicate with others (Coxhead & Byrd, 2007). This knowledge can be divided into three key aspects: recognition of the form, understanding of the meaning, and using the words in communication correctly and appropriately (Simpson-Vlach & Ellis, 2010). In this study, we focused on the importance of word form knowledge, which encompasses the ability to recognize and accurately produce the phonological features of a word.

2.2 Approaches to Measuring Word Knowledge

Measuring vocabulary knowledge is of great importance for evaluating and assessing students' language proficiency in terms of word knowledge, as well as for teaching and learning a second language (Anderson & Freebody, 1981; Nation, 2013, 2022; Palmberg, 1987; Staehr, 2008; Vermeer, 2001). Various measures have been designed to capture learners' vocabulary knowledge, and different researchers have advocated for different tests based on their understanding of vocabulary knowledge (Laufer & Goldstein, 2004; Laufer & Paribakht, 1998; Read, 2000; Schmitt, Nation, & Kremmel, 2019). Some measures attempt to evaluate multiple aspects of knowledge simultaneously (Schmitt, 1999), while others are meant to assess learners' progress along a knowledge continuum (Wesche & Paribakht, 1996). Word knowledge can be classified into receptive and productive knowledge (Read, 2000). Receptive knowledge, or recognition, refers to the ability to comprehend and recognize words. In contrast, productive knowledge, or recall, refers to the ability to retrieve and produce words. The reception and production of vocabulary knowledge are typically divided into comprehension and use. Comprehension relates to how well students grasp the target words in the test context, such as reading comprehension, while use refers to students' recall of vocabulary knowledge.

Vocabulary acquisition is gradual, and proficiency in various aspects of a word often varies along a spectrum ranging from "no knowledge" to "complete knowledge" (Wesche & Paribakht, 1996). This spectrum has implications for test design and the development of items. Tests must be tailored to their intended purposes. For instance,

if a test's objective is to provide an overall picture of learners' vocabulary size and recognize partial knowledge, a test of lexical breadth is necessary (Cameron, 2002). Conversely, if the objective is to determine if learners have attained "full knowledge" of a word, a test designed to elicit such knowledge must be developed. Most vocabulary tests deliberately assess one aspect of word knowledge (e.g., comprehending word meanings, forms, or applications). However, earlier studies seem to have captured aspects of either receptive or productive knowledge (e.g., Harrington & Carey, 2009; Hilton, 2008; Laufer & Goldstein, 2004; Laufer & Paribakht, 1998; Nation, 2006; Sukying, 2017; Yu, 2010). Therefore, the present study employed various tests to measure a specific aspect of vocabulary knowledge: the written form of word knowledge. Each test assessed both reception and production.

2.3 Approaches to Vocabulary Learning

The process of acquiring a new word consists of multiple steps. Initially, humans gain knowledge of the morphology or phonology of a word by auditory or visual stimuli. This process is referred to as receptive vocabulary acquisition. Subsequently, individuals have the opportunity to enhance their oral or written aptitude. They acquire practical vocabulary expertise once they can articulate the term or incorporate it into a phrase. Acquiring new vocabulary necessitates substantial exertion from both students and educators. Teachers must determine the suitable methodologies, subject matter, and quantity of vocabulary to be instructed. Prior to instructing any vocabulary, it is vital to ascertain the duration required for its acquisition. If a word is uncommon, specialized, or unfeasible for the learners, it is advisable to instruct it expeditiously. Educators should allocate sufficient time to teach students frequently used and pragmatic vocabulary that can be applied in their future endeavors. According to Thornbury (2002), Yale University has found many productive strategies that educators can employ in the instruction of new vocabulary to pupils. These strategies encompass consistent and frequent word exposure, using word maps, root analysis, and restructuring reading materials.

In conclusion, possessing adequate words is crucial for achieving proficiency in a second language. Researchers have established two practical strategies for enhancing vocabulary acquisition: incidental word learning and deliberate word learning.

2.3.1 Incidental Word Learning

Incidental learning refers to acquiring knowledge in one situation while focusing on another context. Examples of sources of information include observations, interactions with coworkers regarding tasks or projects, encountering errors, or reading materials. In addition, it is typical for learners to develop a repertoire of words (Laufer & Hulstijn, 2001). According to Hulstijn and Laufer (2001), the wordlist encountered during incidental word learning has the potential to be stored in long-term memory and subsequently employed with more confidence across many contexts. However, it is worth noting that incidental learning is particularly effective for learners at an advanced level. While incidental word learning has demonstrated effectiveness for second language (L2) learners, it is essential to acknowledge certain limitations. One such limitation is the time-consuming nature of incidental learning, as it tends to be slow (Schmitt, 2000, p. 120).

Additionally, learners with academic goals may not be well-suited for this particular form of word learning (Coady, 1997, p. 273). Consequently, intentional word learning becomes necessary to address these limitations. According to Nation (2001), incidental learning is a primary approach employed in word acquisition. It happens spontaneously without a deliberate desire to concentrate on words. According to Nation (2001), incidental word learning refers to acquiring knowledge from hearing, speaking, reading, or writing, specifically emphasising the information conveyed in the text rather than the individual words themselves.

In summary, incidental learning refers to a type of learning where learners focus on the context rather than the individual word. Words encountered during hearing, reading, or writing can be stored in long-term memory. Nevertheless, incidental learning is effective only with highly proficient learners, making it impractical for primary kids.

2.3.2 Intentional Word Learning

The deliberate or intentional acquisition of words is a conventional and prevalent method of instruction (Ellis, 2001, p. 1-46). According to Schmitt (2000, p. 120), explicit word learning refers to the process of directly focusing on and engaging with the context in which words are learned. Deliberate learning involves intentionally intending to acquire knowledge about lexical items. To remember these terms in the future, learners need to utilize retention tactics (Schmidt, 1984; Hulstijn, 2003; Nation, 2013). Intentional learning is a rapid process that second language (L2) learners favor. However, a challenge develops when learners encounter low-frequency terms and struggle to understand them accurately. According to Nation (2001, p. 232), acquiring words is not solely incidental but rather necessitates intentional learning. Schmitt (2000, p. 121) concurs with this assertion, asserting that explicit and incidental learning should be incorporated into the teaching process. Intentional learning can be characterized as a method of acquiring vocabulary by utilizing various media or tools that facilitate learners' direct engagement with the structure and significance of the words. These resources may include dictionaries or word lists. Nation (2013) posits that the efficacy of word acquisition is contingent upon the level of learner engagement throughout the processing of individual words. He elaborates on three cognitive processes that contribute to word acquisition. These components include the act of observing through intentional teaching, retrieval, and the use of creative (generative) methods.

Table 2 Types of repetition of word meaning (Nation, 2013)

Types of processing	Types of repetition
Noticing	Seeing the same word form and simultaneously presenting meaning again
Retrieval	Recalling the meaning in different contexts requiring
Creative use	Recalling the meaning in different contexts requires a separate instantiation of the meaning

The process of noticing entails a learner directing their attention towards a certain word and designating it as unfamiliar. This implies that the student must observe the term and understand its significance as a lexical element. Nevertheless, the learner

acknowledges that the word has been encountered previously, albeit in a distinct manner. Moreover, the learner is prone to decontextualize the term at initial observation, establishing a basis for enhanced word comprehension. De-contextualization is a phenomenon that can manifest in several forms, either through conscious or subconscious processes. For instance, it happens during listening or reading exercises, when the teacher emphasizes a specific word during speaking exercises, or when the teacher explains the word, whether it be a translation, a synonym, or a definition in the target language.

After the learner is guided toward learning the word through the noticing process, retrieval cements the word's meaning in their mind. According to Nation (2012), there is a positive correlation between the frequency of retrieval of a specific lexical word during the learning process and the likelihood of the item being retained more deeply in the learner's memory. Hence, the act of repeating and recalling a word enhances its significance, while repeatedly encountering and utilizing it resulted in the learner gaining a deeper comprehension of each meaning associated with the phrase. Nevertheless, the duration between interactions is insufficient. According to Vidal (2011), the most substantial learning improvement occurs when reading is repeated two or three times.

In contrast, the most notable development happens when hearing is repeated five to six times. According to Brown, Waring, and Donkaewbua (2008), the word seen more frequently had a higher probability of being acquired. According to Webb (2007), repeats led to improvements in various facets of word knowledge. However, a minimum of ten repeats would be required to cultivate a comprehensive understanding of multiple facets of a term.

In summary, creative usage happens when words that have already been encountered are reencountered or used in a way that is different from how they were encountered before (Nation, 2013, p. 110). These novel experiences compel learners to reevaluate their understanding of these terms. For instance, when a learner encounters the term "book" as a noun, such as in the sentence "We bought a book yesterday," and subsequently encounters the phrase "We booked tickets for a football match," the learner must reassess the definition and applications of 'book'. This phenomenon will

help the learner integrate the term into their memory. Nevertheless, the utilization of creativity extends beyond the mere metaphorical incorporation of linguistic significance. This phenomenon can be observed across various changes, encompassing inflections, derivations, collocation, grammatical context, reference, and meaning. According to Nation (2022), word tests showed that the deliberate word learning group fared noticeably better than the incidental group (Tabrizi & Feiz, 2016). In his book, Nation (2013) demonstrates the significance of repetition in the process of word acquisition. When acquiring proficiency in a second or additional language, learners are required to engage in regular exposure to the vocabulary or engage in spaced repetition with the terms. Furthermore, Elgort (2011) posited that intentional vocabulary acquisition is more productive than incidental acquisition due to the latter's tendency to necessitate prolonged and extensive exposure to linguistic stimuli. It is uncommon to encounter naturalistic language learning conditions in English as a foreign language (EFL) or other foreign language learning environments.

In contrast, intentional vocabulary acquisition improves learners' process of word formation. This phenomenon can be attributed to the utilization of targeted repetition or memorizing tactics, which can be effectively executed individually within a limited timeframe. It can be argued that intentional efforts to acquire words often result in higher retention rates than accidental learning (Hustijn, 2003), indicating that conscious attempts to learn words are helpful and worthwhile. According to Nation and Meara (2010), the findings of the study suggest that the direct and purposeful learning approach is a more productive means of acquiring and retaining new vocabulary for second language (L2) learners.

In summary, deliberate learning is a pedagogical approach emphasizing learners' active engagement in acquiring vocabulary. The principal method that enhances the effectiveness of this learning is repetition, which involves observing the words, constantly retrieving or recalling them, and consistently employing them in various circumstances.

2.3.3 Criticisms of Deliberate Word Learning

According to Elgort (2010, p.2), deliberate learning is an effective and convenient method for memorizing words. Word lists or cards can be used for learning outside of

the classroom, and target words can be tailored to the specific interests and learning objectives of each second language student. According to Nation (1980), bilingual word pairings have the ability to acquire a range of 30 to 100 new words every hour. Moreover, it has been observed that recall rates in deliberate learning settings tend to be significantly greater compared to accidental contexts, as indicated by Hulstijn (2003). Nevertheless, deliberate learning does have certain limitations. It cannot be definitively asserted that the amount of word acquisition achieved through intentional decontextualized learning meets the standards necessary for practical language usage.

2.4 Activities to Teaching Word Knowledge to Young Learners

Various learning strategies are employed in acquiring a second language, contingent upon factors such as the nature of the work and the surrounding context. According to Nation (2001), direct word teaching methodologies encompass several techniques, such as inferring meaning from context, utilizing word components for word acquisition and retention, employing word cards, and utilizing dictionaries for word research. The direct or natural method might be considered a contrasting approach to the widely used grammar-translation method. The efficacy of direct method teaching in second language communication surpasses the previous grammar-translation technique due to its emphasis on complete immersion inside the classroom setting, as opposed to a concentration on grammar. However, it prioritizes the acquisition of knowledge through auditory and verbal modes. Several tactics are employed in explicit word teaching, including using dictionaries, songs, games, flashcards, and synthetic phonics.

Using of Dictionaries

The dictionary plays a crucial role in word acquisition tactics. Dictionaries facilitate text comprehension and vocabulary acquisition for L2 learners (Nation, 2001). Dictionaries include the definition of a specific word along with its sound, grammatical category, and syntactic structure. In addition, a reliable dictionary may offer alternate spellings (such as behavior and behavior) and sentence examples, which assist learners in comprehending the appropriate usage of a term in various contexts. This has the potential to be beneficial for acquiring new vocabulary. In addition, Landau (1984) demonstrates that dictionaries specifically created for second

language (L2) learners frequently incorporate elements of second language acquisition, including phonetic details, verb structures, and collocations.

Furthermore, it often contains comprehensive grammatical information. Recent research has been undertaken on using dictionaries (Cote González & Tejedor Martínez, 2011). Nation (2001) comprehensively summarises various studies on second language learners' use of dictionaries. Several scholarly investigations have examined the utilization of dictionaries during the act of reading, leading to numerous findings that support the notion that employing a second language dictionary while reading facilitates the acquisition of vocabulary (Gu & Johnson, 1996; Hulstijn, Hollander & Greidanus, 1996; Knight, 1994; Luppescu & Day, 1993) and enhances reading comprehension (Hulstijn, 1993; Hulstijn et al., 1996; Knight, 1994). According to Knight (1994), those who utilize dictionaries when reading two reading materials can retain a greater number of word meanings than those who do not. Nevertheless, previous research has not definitively established the efficacy of dictionaries in enhancing reading comprehension (Bensoussan, Sim, & Weiss, 1983). In contrast, Miller (2006) asserts that her students improve their writing abilities during her academic pursuits. Based on the provided facts, using dictionaries demonstrates the enhancement of English language acquisition in perceiving meaning.

Using the Picture Word Inductive Model (PWIM)

The PWIM, also known as the Picture Word Inductive Model, Primary grade Second Language teachers employ several instructional resources to elucidate the significance of unfamiliar vocabulary. The utilization of visual aids, such as images or tangible objects, proves advantageous as they enhance the accessibility, enjoyment, and, ultimately, the memorability of the learning process. The Picture Word Inductive Model (PWIM) was developed by Calhoun (1999) and is grounded in early literacy principles. According to Calhoun (1999), PWIM is a language arts technique that relies on inquiry. It utilizes pictures featuring familiar items and actions to prompt children to use their hearing and speaking vocabulary. This strategy is specifically created for small groups and individuals ranging from kindergarten to sixth grade. The objective of implementing PWIM is to improve the cognitive abilities of young L2 learners, enabling them to think critically and make generalizations about words. This

approach also intends to boost learners' understanding of word concepts, paragraph construction, and sentence structures in many subjects, such as mathematics, reading, science, and social science. The primary objective of this technique is to empower individuals who are new to a second language to become proficient learners of that language (Calhoun, 1999).

Furthermore, the PWIM approach encompasses the cultivation of visual perception, a crucial aspect in the process of children's learning of literacy skills (Astorga, 1999; Joyce, Calhoun, & Hopkins, 2008). During the instructional session with the PWIM, learners are presented with an image. They are prompted to identify the objects depicted in the image or "shake out" the words within it. The utilization of visual imagery plays a crucial part in the development of children's literacy within the context of PWIM. Children can acquire knowledge through reading and speaking, which involves analyzing and understanding visual representations (Calhoun, 1999; Wong, 2009). Therefore, PWIM is an appropriate approach for a young learner to acquire vocabulary in a second language.

Using Songs

Using songs in second language beginner classrooms is a common practice to foster language familiarity and enhance learner engagement. The act of engaging with music has the potential to improve one's listening abilities and pronunciation, rendering it a powerful teaching instrument for young students. (Murphey, 1992). Furthermore, songs can serve as valuable instruments for acquiring knowledge of vocabulary, language constructions, and sentence patterns. According to Murphey (1992), songs can be an effective educational method for teaching vocabulary to second-language (L2) learners.

Using Games

A game is a structured kind of play that has rules. Therefore, many educators employ games to assist and motivate young learners to exert maximum effort in responding to and engaging in the game. Byrne (1976, p. 100) highlights in his book "Teaching Oral English" that games can enhance learners' proficiency in specific patterns, such as sound, word, spelling, grammatical items, or function. Hence, it can be inferred that

games are recreational activities characterized by regulations that necessitate adherence. Therefore, games, such as puzzles or Hang Man, can be beneficial for children in acquiring English language skills.

Using Flashcards or Word Cards

One effective approach for acquiring vocabulary is the utilization of flashcards. According to the Oxford Advanced Learner's Dictionary (1995, p. 94), a flashcard is a card with one or more words, occasionally accompanied by a picture. The letters on flashcards must be both legible and sufficiently large to accommodate all learners in the classroom. The utilization of both sides of the flashcard is recommended for word instruction. The new term is presented in a second language, potentially accompanied by a visual representation, while the translation is displayed on the other side. Both educators and students can create these flashcards. A diverse range of flashcards exists on the market. Flashcards are an effective tool for facilitating the retention of new letters, syllables, words, and other knowledge. They are commonly employed in an educational setting but can also be utilized less formally. Flashcards are widely employed as a pedagogical tool for memorizing through spaced repetition. In his work "Learning Word in Another Language," Nation (2001) outlines a method where a student affixes a foreign word to one side of a little card and its corresponding translation in the first language on the opposite side. To effectively utilize flashcards, learners should examine the word or picture on one side and assess their ability to recall the answer displayed on the opposite side. According to Tan and Nicholson (1997), flashcards have the potential to enhance complete reading skills, in addition to their role in word instruction.

Using the Word Box

Word Box: Establish a designated container for storing the acquired word cards. Create a container bearing your student's name and invite them to embellish it. Instruct the student to regularly review his cards and update the teacher on the words. As the student's assortment of cards expands, the instructor will support organizing the words in alphabetical order or into subject categories, such as food, toys, and body parts. This may involve illustrating the subject divisions or the cards themselves to assess the student's advancement, as Joseph (2002) stated.

2.5 The Concept of Synthetic Phonics

Phonics refers to a systematic approach employed to decipher written letters and auditory sounds (Kouti, 2021). Children receive instruction on the phonetic representations of letters and how to combine them to form words. Most learners can achieve proficiency in reading essential words and phrases within three to six months by employing the phonics technique. The platform offers learners various tools to improve their vocabulary skills. The primary objective of phonics training is to equip novice readers with fundamental knowledge and skills. Students must acquire all 44 phonemes and graphemes in the English language to interpret language and learn to read. Phonics is the predominant approach to teaching reading globally. The National Institute of Child Health and Human Development (NICHD) (2000) identifies various forms of phonics education, including synthetic and analytic phonics. Synthetic phonics education is a pedagogical approach that aims to facilitate the transformation of graphemes into phonemes and the blending of phonemes to form novel words. Analytic phonics is an instructional approach that instructs children to analyse the associations between letter sounds inside a word they have previously recognized.

Children with compromised speech segmentation and tone duration detection have challenges when associating speech sounds with corresponding letters. The ability to blend sounds, a technique necessary in a synthetic phonics approach, is affected by this phenomenon (Corriveau, Goswami, & Thomson, 2010; Corriveau, Pasquini, & Goswami, 2007; Duff, Hayiou-Thomas, & Hulme, 2012; Kuppen, Huss, Fosker, Fegan, & Goswami, 2011; McArthur & Castles, 2013). Research suggested that dyslexia is commonly linked to inadequate short-term/working memory, leading to difficulties in sequentially blending sounds (McMurray & McVeigh, 2016). Teaching by analogy or onset-rime (analytic phonics) is less demanding on working memory for children with deficient working memory (Baylis & Snowling, 2011; McGeown & Medford, 2014; McMurray & McVeigh, 2016; Wedell, 2014).

Johnston and Watson (2005) conducted a longitudinal study that revealed that synthetic phonics is especially productive for boys. The findings of this study indicate that both male and female participants exhibited significant improvements in word reading, spelling, and comprehension skills when instructed using a synthetic phonics

methodology. These improvements were shown to persist over a period of time. Nevertheless, the increase was more substantial for males (Johnston & Watson, 2005). In addition, the study revealed that synthetic phonics helped children from disadvantaged backgrounds overcome social disadvantages by showing improvements in reading and spelling skills, allowing them to outperform peers of the same age (Johnson & Watson, 2005). More recent studies further corroborate these conclusions. A study by Johnston et al. (2012) examined the academic achievement of 10-year-old male and female participants who received instruction in reading through synthetic or analytic phonics methods. The research revealed that the cohort instructed using synthetic phonics exhibited superior spelling, word reading, and comprehension performance compared to the cohort instructed using analytic phonics. In addition, the findings indicated that the boys who received instruction through synthetic phonics exhibited superior word reading, spelling, and comprehension skills compared to the girls who were taught using the same approach.

In summary, the primary objective of phonics education is to equip learners with adequate alphabetic knowledge, enabling them to advance in their reading abilities and enhance their understanding of meaning (NICHD, 2000). The objective of phonics training is not to enable youngsters to acquire the ability to decode words phonetically. The purpose is for individuals to develop the ability to rapidly and effortlessly identify words, allowing them to redirect their focus towards comprehending the text, as stated by Stahl (1992). Novice readers will likely require instruction in the identification and utilization of phonetic sounds, as well as fundamental spelling conventions. Individuals will primarily employ decoding techniques to identify and decipher words that they are already familiar with. (In addition, they use it to generate phonetic representations for unfamiliar words, although these terms are hardly encountered as novice readers often engage with uncomplicated literary works.) This depiction highlights the distinction between proficient and inexperienced readers. The objective of learners is to “transfer the words from the page.” Their primary duty, and sometimes their most urgent challenge, is identifying the words. Stahl (1992) also supported phonics training that compels children to closely examine the underlying structure of words and the patterns within

words. This is because children acquire the ability to recognize words effectively by acquiring these patterns (p. 624).

Even in work that is quite simple, novice readers can encounter unfamiliar vocabulary. Nevertheless, a significant portion of these unfamiliar terminology are present in their oral language, and if individuals can interpret them, their challenges will be resolved. Proficient readers encounter unfamiliar terminology, but their challenge lies not in decoding them. When individuals lack knowledge of the meaning of a word, it becomes unfamiliar. Proficient readers acquire pronunciation with relative ease and employ other strategies, such as contextual cues or referring to a dictionary, to ascertain the intended significance. Therefore, phonics instruction is crucial for novice readers. Intermediate readers may also derive benefits from this. If individuals' decoding abilities are not entirely innate, engaging in phonics review and repetition might assist them in effectively recognizing words, leading to improved reading speed and fluency.

2.6 Technique of Synthetic Phonics Teaching in Vocabulary Acquisition

Although the most popular, synthetic phonics is also the most structured and disciplined phonics approach. The synthetic phonics method begins with a one-on-one introduction of phoneme-grapheme correspondences (Wattsa & Gardner, 2013, p. 100). Children first learn the individual sounds in words and are then encouraged to blend these sounds to form words (e.g., /s/ /i/ /t/; "sit"). Most synthetic phonics curricula follow nearly identical lesson sequences, beginning with commonly used and easily recognizable sound-letter combinations, such as /s/ in 'sun,' before progressing to less obvious representations, such as /s/ in 'once' (Hill, 2020).

Over the past 20 years, numerous evidence-based investigations and international studies have demonstrated that systematic synthetic phonics instruction yields superior reading outcomes. This has led to its widespread adoption in early childhood education. Notably, studies in the United Kingdom found that systematic synthetic phonics instruction is the most effective way to teach reading, particularly for young children at risk of reading difficulties (Department for Education, 2010). Similarly, research in the United States has shown that systematic phonics instruction contributes more to children's reading development than other reading programs

(National Reading Panel, 2000). In Australia, children received direct, explicit phonics instruction to develop fundamental alphabetic decoding skills necessary for foundational reading proficiency (Rowe & National Inquiry into Teaching Literacy, 2005).

A synthetic phonics program introduces several technical terms essential for understanding its methodology (Learning Link, 2024):

- Phoneme: The smallest unit of speech sound in a word.
- Grapheme: A written letter or group of letters representing a phoneme.
- Phoneme-Grapheme Correspondence: The relationship between letter symbols and their associated sounds.
- Decoding: The process of identifying phonemes corresponding to graphemes and blending them to form words (reading).
- Encoding: The reverse process of spelling, where learners determine which letters correspond to phonemes in spoken words.

Synthetic phonics' structured approach ensures consistency and effectiveness in teaching reading and vocabulary acquisition, particularly among young learners at risk of literacy difficulties.

2.6.1 Comparison of Different Phonics Approaches

Phonics instruction can be categorized into several distinct methods, each with varying degrees of effectiveness (National Reading Panel, 2000):

Table 3 Comparison of different phonics approaches

Phonics Type	Description	Advantages	Disadvantages
Synthetic Phonics	Teaches phoneme-grapheme relationships systematically; students learn to blend phonemes to form words.	Highly structured, evidence-based, improves decoding skills and reading fluency.	Requires rigorous instruction and initial learning curve.
Analytic Phonics	Teaches whole words first, then breaks them down into	Encourages pattern recognition and	Less effective for early readers; does not

	phonemes and patterns.	comprehension.	emphasize blending skills.
Embedded Phonics	Phonics instruction occurs naturally while reading texts.	Integrates phonics with reading for context-based learning.	Less structured; may not develop strong decoding skills in struggling readers.
Analogy Phonics	Teaches new words by comparing them to known word families.	Helps children recognize word patterns.	Limited application to irregular words and requires prior vocabulary knowledge.
Onset-Rime Phonics	Focuses on breaking words into onset (initial sound) and rime (remaining letters).	Helps students recognize rhyming patterns.	Does not fully develop decoding skills needed for unfamiliar words.

Among these methods, synthetic phonics is the most effective because it explicitly teaches the core building blocks of reading and ensures students understand how to decode and blend sounds efficiently. Unlike other approaches, synthetic phonics does not assume prior vocabulary knowledge or reading experience, making it ideal for early literacy learners and struggling readers.

2.6.2 Advantages and Disadvantages of Synthetic Phonics

Synthetic phonics is widely regarded as one of the most effective methods for teaching early reading skills, particularly due to its structured and systematic approach. One of its greatest advantages is its clear and sequential instruction, which ensures consistency in learning. This structured nature allows children to build their reading skills step by step, making the process more predictable and effective (Johnson & Watson, 2005). Additionally, numerous international studies have demonstrated the superior effectiveness of synthetic phonics in improving reading outcomes compared to other phonics methods. The approach significantly enhances decoding skills by equipping students with the ability to break down unfamiliar words into phonetic components, thereby facilitating independent reading. Moreover, synthetic phonics is especially beneficial for early literacy development, particularly

for children at risk of reading difficulties. By providing a solid foundation in letter-sound relationships, it also contributes to improved spelling skills and sight word recognition. As students become proficient in decoding, they gain greater confidence in reading independently, leading to broader vocabulary acquisition and overall literacy development (Johnson & Watson, 2005; Wattsa & Gardner, 2013, p. 100).

Despite these advantages, synthetic phonics has certain limitations that educators and learners must consider. The method requires rigorous and intensive instruction, necessitating systematic teaching and consistent practice, which may be demanding for both teachers and students. Additionally, some learners may experience an initial learning curve, struggling with the blending of sounds before becoming proficient in reading. Another potential drawback is its limited focus on meaning and context, as synthetic phonics primarily emphasizes phoneme recognition and blending rather than reading comprehension. This means that while students may become skilled in decoding words, they may still require additional support to fully grasp the meaning of texts. Furthermore, synthetic phonics may not be suitable for all learners, as some students might benefit from a combination of phonics approaches, especially if they face difficulties with purely phoneme-based decoding (Johnson & Watson, 2005; Wattsa & Gardner, 2013, p. 100).

In conclusion, synthetic phonics remains one of the most effective methods for teaching reading due to its structured, evidence-based approach, which significantly enhances decoding skills and supports early literacy development. However, its rigorous instruction requirements, initial learning curve, and limited emphasis on comprehension highlight the need for supplementary teaching strategies. While synthetic phonics provides a strong foundation for reading proficiency, integrating it with other instructional methods may be beneficial in ensuring a more comprehensive literacy education for all learners.

2.6.3 Roles of Synthetic Phonics in Vocabulary Acquisition

Synthetic phonics plays a critical role in vocabulary acquisition, especially during early literacy development. One key aspect is decoding, the cognitive process of interpreting letters or letter patterns within a word to determine its meaning (Vaughn

& Thompson, 2004). Decoding enables students to decipher unfamiliar words, allowing them to focus on comprehension rather than struggling with pronunciation.

Additionally, sight word recognition improves through synthetic phonics instruction. Sight words include high-frequency words with irregular spelling and words learners can recall from memory (Ehri, 2005). Efficient decoding strategies, including analogizing (Goswami, 1999) and prediction (Goodman, 1970; Ehri, 1975, 2020), allow learners to identify words quickly and expand their vocabulary.

A crucial component of synthetic phonics is self-teaching, which allows readers to internalize letter-sound rules and apply them independently (Clay, 1991). According to Share (2008), exposure to words in different contexts enhances vocabulary memory and fosters reading fluency. Studies as early as 1913 (Valentine) demonstrated that phonics instruction significantly benefits learners in decoding unfamiliar words.

In conclusion, synthetic phonics remains a highly effective approach for vocabulary acquisition and literacy development. While it requires structured instruction and consistency, its benefits in improving decoding skills, sight word recognition, and independent reading far outweigh its drawbacks. Implementing synthetic phonics in early literacy curricula provides students with a strong foundation for future reading success.

2.7 Previous Studies

2.7.1 Thai Contexts

In the Thai context, Sukying (2020) found that implementing purposeful learning strategies, namely morphological learning, enhances students' vocabulary competency. This is attributed to the student's understanding of word forms, which facilitates memorizing the words. Furthermore, acquiring a word family has been found to enhance students' vocabulary skills (Sukying, 2018). Another study found that students developed word recognition by synthetic phonics instruments effortlessly through songs, stories, and engaging exercises. Adults learning English as a second language had clear learning goals, making it easy to understand and building confidence in English pronunciation. However, this learning approach should occur in

a non-threatening and safe environment, allowing adults to learn without fear of speaking English (Futrakul, 2020).

In addition, a study by Thongkumsawat (2022) investigated the effects of synthetic phonics on Thai primary students' English reading skills. The study involved 60 students from a public school in Bangkok, divided into experimental and control groups. The experimental group received synthetic phonics instruction for 12 weeks, while the control group followed the regular curriculum. The results indicated that the experimental group significantly outperformed the control group in word recognition and reading fluency post-tests. This suggests that synthetic phonics can be a beneficial approach to improving English reading skills in young Thai learners.

Moreover, Chuson (2021) explored the impact of synthetic phonics on Thai EFL students' pronunciation and spelling abilities. The study involved 45 Grade 2 students in a rural Thai school. The intervention group received synthetic phonics instruction for ten weeks, while the control group continued with traditional methods. Post-intervention assessments revealed significant improvements in pronunciation accuracy and spelling competence among the students who received synthetic phonics instruction, indicating the potential of this approach for enhancing phonological awareness and literacy skills in Thai EFL contexts.

Another study by Kongsak and Wattanawong (2020) examined the effects of integrating synthetic phonics with digital storytelling on vocabulary acquisition among Thai EFL learners. The participants were 50 Grade 3 students from a public school in Chiang Mai. The experimental group received instruction combining synthetic phonics with digital storytelling for eight weeks, while the control group followed the conventional phonics approach. The findings showed that the experimental group had higher vocabulary retention and engagement levels than the control group, suggesting that integrating synthetic phonics with digital storytelling can effectively support vocabulary learning in young Thai EFL learners.

A quasi-experimental research design was used to investigate the effectiveness of synthetic phonics in the development of early reading skills among struggling young English as a second language (ESL) readers in a rural school. The pretest and posttest,

adapted from the Phonological Awareness Literacy Screening (PALS) for Preschool Students and Grades 1 to 3 tests, assessed children's early reading skills. A semi-structured interview was used to gather information. The findings indicated that the performance of students in the experimental group in decoding was significantly higher in the posttest, where $t(39) = 31.441$, $p < .00005$. Likewise, in comprehension, the experimental group achieved significantly higher scores in the posttest, where $t(39) = 15.322$, $p < .00005$. There was a significant difference in the achievement between the two groups, where $t(78) = 31.010$, $p < .00005$. This indicates that synthetic phonics could be effective in developing early reading skills for struggling readers.

2.7.2 Foreign Contexts

Word recognition research has shown that synthetic phonics are more effective than other word recognition learning techniques, regardless of their delivery form. Chu and Chen (2014) compared the effects of two phonics training programs on L2 word recognition. Empirical evidence showed that explicit phonics teaching was beneficial for English word reading. However, there was controversy about whether phonics teaching should incorporate meaning-involved decodable text instruction to facilitate children's word reading. This study compared the effects of phonics teaching with and without decodable text instruction on immediate and delayed English word reading in 117 Taiwanese children learning English assigned to a Phonics-only group ($n = 58$) and phonics plus decodable text instruction (Phonics+) group ($n = 59$). Results showed that although both groups significantly improved in immediate and delayed post-test word reading, the Phonics+ group performed better in both post-tests. Still, the difference was significant only in the delayed word reading, suggesting a better long-term retention effect produced by Phonics+ teaching. These indicated that incorporated meaning-involved decodable text reading might offer another better facultative linking route for English word reading, even for non-alphabetic child learners of English. The findings were discussed from linguistic, psycholinguistic, and reading perspectives, with implications for second/foreign language teaching and research in reading instruction.

Along the same line of promoting synthetic phonics, Shapiro (2015) examined the differing effects of two synthetic phonics programs on early reading development. The more intensive phonics program (L&S) heightened the association between PA and exception word reading. Although the programs were equally effective for most children, results indicated potential benefits of ERR for children with poor PA. We suggested that phonics programs could be simplified to teach only the most consistent mappings plus frequent words by sight.

Joseph (2019) studied phonics approaches that involved teaching phonemic awareness, making letter-sound associations, and teaching spelling through well-established behavioral principles. The current study examined the effectiveness of word boxes and word sorts using a multiple baseline design across students. Participants had mild mental retardation and ranged in age from nine years, five months to ten years, six months. Findings revealed that word boxes and word sort phonic procedures increased students' word identification and spelling skills. The results were discussed in terms of how the format for these two instructional procedures facilitated opportunities to respond to teaching consonant-vowel-consonant patterned words.

Noltemeyer et al. (2019) examined the effects of a phonics supplemental small group instructional approach for improving kindergartners' word recognition skills. Six kindergarten students from one primary school were randomly assigned to one of two groups. Each group participated in a phonics condition as well as a control condition. Data were examined using visual analyses and comparison of mean outcomes, supplemented by qualitative observations. Results suggested that phonics instruction improved immediate word recognition more effectively than pre-test and control word performance. However, the one-week recall assessment lost many gains, and individual variation in instructional response emerged. The study's limitations, future research directions, and implications for early childhood educators were discussed.

From the review, many scholars agreed that synthetic phonics techniques enhance students' word recognition and seem effective. Attia (2020) studied the effect of a multisensory synthetic phonics program in developing automatic word recognition and spelling among young learners. An interventional study of a 17-week synthetic

phonics teaching program was undertaken with one intact class of 25 young learners at the reception of one of the British International Schools in Cairo, Egypt. After one full term (27/08–20/12) of synthetic phonics instruction, all the participants sat for a Phonics Screening Check, a Tricky-Word-Reading-Test, and a Spelling Test. Results revealed significant differences between the pre and post-scores of the participants in automatic word recognition and spelling attainment. In effect, the multisensory synthetic phonics program had an enhancing impact on helping young learners become fluent readers and better spellers. The study concluded with some recommendations, including the need to start teaching young learners how to crack the code as early as possible. Furthermore, the study concluded that for phonics to have its payoff, it needed to be taught explicitly, systematically, and to a level where decoding became habitual and automatic. Finally, phonics teaching was enhanced by an emphasis on multi-sensory activities.

Additionally, Jones and Smith (2022) conducted a longitudinal study on the impact of synthetic phonics on reading achievement in early childhood education. The study tracked 200 students from kindergarten through third grade, comparing those who received synthetic phonics instruction with those who received traditional reading instruction. The results showed that students who received synthetic phonics instruction outperformed their peers in reading accuracy, fluency, and comprehension. The study highlighted the long-term benefits of synthetic phonics, suggesting its potential for closing reading achievement gaps in early education.

2.8 Chapter Summary

Word knowledge is one of the essential elements in any language, especially English, of all four skills: listening, speaking, reading, and writing. Word knowledge consists of three main areas: form, meaning, and use, and it can be used in two methods: receptive and productive. This work achieves this level of word knowledge via deliberate vocabulary learning because intentional vocabulary learning outperforms the incidental group on vocabulary tests with more regular exposure to the language. Nation (2013) suggests a better approach for second language learners to pick up and remember new vocabulary (Nation & Meara, 2010). The National Institute of Child Health and Human Development (NICHD) (2000) adds that word recognition

learning using synthetic phonics instruments is very effective and much more efficient than teaching and word exercises for young learners. They also stated that teachers should guide their learners in using synthetic phonics in learner-centered ways, using various word recognition learning techniques. While there is considerable research on the effectiveness of synthetic phonics programs in enhancing word recognition skills, particularly in English language learning contexts, a gap exists in understanding how these programs can be effectively implemented and adapted in the Thai educational context. Existing studies such as Futrakul (2020) and Roatchanaphaphong and Chusanachot (2021) have examined aspects of phonics teaching and pedagogical content knowledge among Thai educators. Still, limited research specifically focuses on the implementation and outcomes of synthetic phonics programs in Thai classrooms. Additionally, there is a need to explore how synthetic phonics programs can address Thai learners' unique challenges, particularly in terms of English writing skills. Further research in this area could provide valuable insights into the efficacy of synthetic phonics programs in Thai educational settings and contribute to developing evidence-based teaching practices to support English language learning among Thai students.

CHAPTER III
RESEARCH METHODS

This chapter describes the research methodology used, including the participants and setting, research instruments, data collection, and data analysis. The research design of this study followed previous research using synthetic phonics instruction in word recognition for second language learners. This chapter also includes detailed descriptions of research instruments and related research procedures.

3.1 Research Paradigm and Design

This quasi-experimental research examined how primary school students improved their word knowledge using synthetic phonics instruction as an explicit teaching method. Specifically, the control group was taught using the traditional teaching method, while the experimental group received synthetic phonics instruction. Both groups used the same English textbook, *"Smile Grades One to Three."* The traditional teaching method for the control group involved a conventional approach that used classroom tools such as English textbooks, notebooks, and printed materials. This method relied on direct teaching and was mainly teacher-centered. For example, the teacher wrote on the board, spoke the words, translated them into Thai, and instructed students to write them in their notebooks. Students in the experimental group was taught using synthetic phonics instruction. Synthetic phonics instruction was an effective learning tool that provided word knowledge to learners through decoding the cognitive process of interpreting letters or letter patterns within a word to ascertain its meaning (Vaughn and Thompson, 2004). The teacher prepared letter cards using Microsoft PowerPoint and utilized a computer, monitor, LCD projector, and speakers. The teacher displayed the letter cards in English on the computer screen, taught how to pronounce each letter, blended the grapheme sounds by using digital audio, and provided the word's meaning in both Thai and English. Students in the experimental group were required to read and spell the given words correctly. The teacher reviewed the students by showing words on the digital screen for them to recall and retrieve lessons from previous sessions. Additionally, the teacher conducted class activities such as worksheets, quizzes, games, and oral recitations to better assess the students' understanding. There were eight 50-minute classes in this treatment period. During

the first week, students completed the vocabulary checklist; weeks 2-9 were the teaching period, and in week 10, students completed the vocabulary post-test.

In contrast to the experimental group the control group copied the words, pronounced them after the teacher, and learned the meaning of the words in Thai. The teacher also provided worksheets for the students to write the meanings of the words and occasionally dictated words for spelling practice. Students practiced reviewing the words by looking at their notebooks and textbooks at home. The teacher also conducted class activities such as worksheets, written exercises, paper-based tasks, and oral recitation to assess the students' levels of understanding. Similar to the experimental group, there were eight 50-minute classes in this treatment period. During the first week, students completed the vocabulary checklist; weeks 2-9 were the teaching period, and in week 10, students completed the vocabulary post-test.

3.2 Participants and Setting

3.2.1 Research Context

The focus of educational management in Thailand was on developing human resources with the knowledge, skills, and abilities necessary for living in the 21st century (Napathorn, 2018). This included fostering life skills, vocational skills, moral skills, and foreign language skills and promoting creative thinking, innovation, and the development of new products. The use of technology and information as drivers was considered crucial because Thai people in this era needed to possess international skills, which encompassed both knowledge and the ability to live in a globally interconnected society.

These quantitative studies were conducted with forty primary school students, ranging from Grades One to Three, enrolled in a public school in Sakonnakorn province, Thailand. These young learners, all native Thai speakers, had been exposed to the English language for a duration ranging from one to three years. The participants were under the instruction of the researcher, who was employed as an English teacher for grades one through six at the same institution. One of the main teaching objectives of this course was to help students gain more vocabulary knowledge and prepare them to write basic vocabulary, as had been emphasized in the previous academic year. This was consistent with the research goals of the study.

To conduct a study, the students were evenly divided into two groups: a control group and an experimental group, each of twenty students. The control group continued with the traditional approach to English language learning, which primarily involved grammar instruction and translation methods. This conventional method focused on rote learning and the direct translation of words and sentences from Thai to English, a typical practice in the Thai EFL context.

In contrast, the experimental group was introduced to synthetic phonics, an approach that emphasized the learning of sounds (phonemes) and the blending of these sounds to form words. This method was expected to enhance their reading and writing skills by providing a foundational understanding of English phonetics, which was typically not addressed thoroughly in the conventional teaching approach.

3.2.2 Participant Profiles and Sample Criteria

The current study adopted convenience sampling to select potential participants enrolled in three intact classes. The sampled participants were 40 primary school students from grades one to three. The sample was composed of 13 females and 27 males. They were between 6 and 9 years old, had 2-5 years of English learning experience from primary school, and received English education for approximately four hours each week. The general proficiency of these students remained low according to their English grade records. The limited instructional time is not sufficient for them to achieve a satisfactory level of English, as evidenced by their basic knowledge confined to the English alphabet without the ability to form or interpret words independently. This inadequacy was primarily attributed to a lack of vocabulary knowledge, a critical component in language acquisition that had not been effectively developed through existing teaching methods.

For the given sample, the scores in the English subject were arranged in descending order. Then, individuals classified as good, average, and weak were divided into two groups, each including an equal number of 7 good, 7 average, and 6 weak individuals. I proceed with the following steps: Initially, arrange the given sample scores in decreasing order. Subsequently, the scores were categorized into three distinct classifications: excellent, moderate, and poor and lastly, divided the arranged scores

into two sets, each including 7 scores classified as good, 7 as average, and 6 points classified as weak.

Additionally, most students face unique socio-economic challenges, as their grandparents predominantly raised them. This familial arrangement was due to economic necessities compelling their parents to seek employment in other provinces, leaving the children under grandparental care. This situation potentially affected their educational support and access to additional learning resources at home.

Both groups in the study were exposed to the same A1-level vocabulary lessons, as prescribed by the Common European Framework of Reference for Language (CEFR). The objective was to compare the effectiveness of synthetic phonics against traditional teaching methods in fostering better vocabulary acquisition and overall language competence among these young English learners.

3.3 Materials and Instruments

3.3.1 Instructional Overview: Vocabulary Development Using Traditional and Synthetic Phonics Teaching Methods

The table outlines the differences between traditional and synthetic phonics teaching methods for vocabulary development in a 1 hour session. The objective is to introduce and reinforce ten new English vocabulary words related to an English subject for students in grades 1-3. For the intervention, the experimental group had lessons on Monday and Tuesday during the last hour, while the control group had lessons on Thursday and Friday simultaneously.

Table 4 Instructional Overview: Phonemic Awareness (Learning individual sounds of letters)

Stage	Traditional Teaching Method	Synthetic Phonics Teaching Method
Warm-up (5 minutes)	The teacher presented the content title and encouraged students to think of related vocabulary, stimulating prior knowledge	It was the same approach as traditional teaching, stimulating students' prior knowledge of the topic.

Stage	Traditional Teaching Method	Synthetic Phonics Teaching Method
Presentation (10 minutes)	**Textbook-Based:** The teacher provided a list of words with Thai translations. Students memorized these words and recited their meanings in Thai. The teacher led them in reading the words aloud.	**Phonemic Awareness:** The teacher used letter cards and digital sound tools to introduce new letter sounds. Students practiced pronunciation and blending sounds into words, focusing on the meaning and pronunciation of each vocabulary word.
Practice (25 minutes)	**Blackboard Writing:** Words were written on the board, and students repeated them twice and wrote them in their notebooks. Workbook exercises were given to reinforce word recall and writing.	**Interactive Activities:** "Knock Knock Phonics!" encouraged students to blend sound.
Production (15 minutes)	Students wrote English words to Thai meanings in their notebooks to strengthen their understanding.	Students matched English words to Thai meanings in their notebooks to strengthen their understanding.
Wrap-p (5 minutes)	The teacher reviewed words, focusing on meanings and forms to ensure comprehension.	It was the same activity as traditional teaching to reinforce vocabulary learning.

3.3.2 Tasks and Lesson Plans

The instructional activities were designed to enhance participants' ability to recognize and produce the written forms of words. The researcher developed the materials based on Snow, Burns, and Griffin's (1998) phonemic awareness framework, Nation's (2013, 2022) written form-focused activities, including word dictation, and Nation's

(2022) three cognitive processes of vocabulary learning. These instructional elements were integrated into a structured learning sequence to ensure the systematic development of students' phonemic awareness and spelling proficiency.

The instructional process followed a series of carefully planned stages. First, students were introduced to the phonetic properties of individual letters to build a foundational understanding of letter-sound relationships. Next, they engaged in practicing blending phonemes and constructing complete words. This stage aimed to reinforce their ability to decode unfamiliar words through phonics-based instruction.

Following vocabulary recognition, students applied their learning by completing structured tasks designed to reinforce spelling accuracy and written word recognition. The researcher facilitated these activities through a synthetic phonics approach, encouraging students to actively engage with the instructional content and collaborate with peers. This interactive learning environment enabled students to practice their phonemic decoding skills while enhancing their confidence in spelling and vocabulary usage.

The instructional stages of synthetic phonics instruction were aligned with Snow, Burns, and Griffin's (1998) phonemic awareness principles, Nation's (2013, 2022) form-focused activities (including word dictation), and Nation's (2022) three cognitive processes (see Figure 1). A detailed explanation of each teaching step is provided in the following section, outlining how these strategies were implemented to maximize learning outcomes.

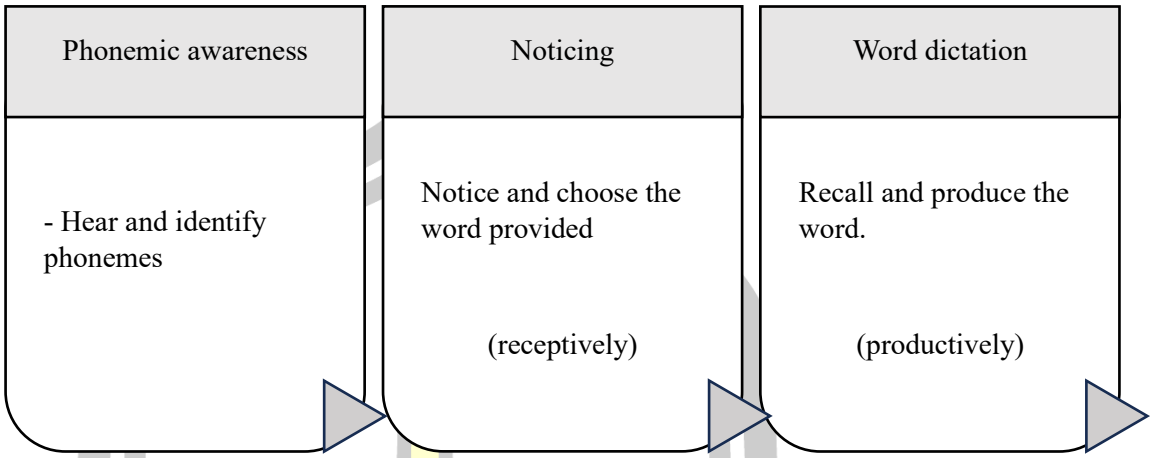


Figure 1 Overall picture of learning procedures

Students were introduced to phonemes, the smallest units of sound in spoken language, to develop their phonemic awareness. To facilitate learning, the researcher used flashcards (see Figure 2) to demonstrate that each letter or combination of letters corresponds to a specific phoneme. This visual and auditory approach helped students establish clear connections between letters and their sounds, reinforcing their ability to decode and recognize words accurately.

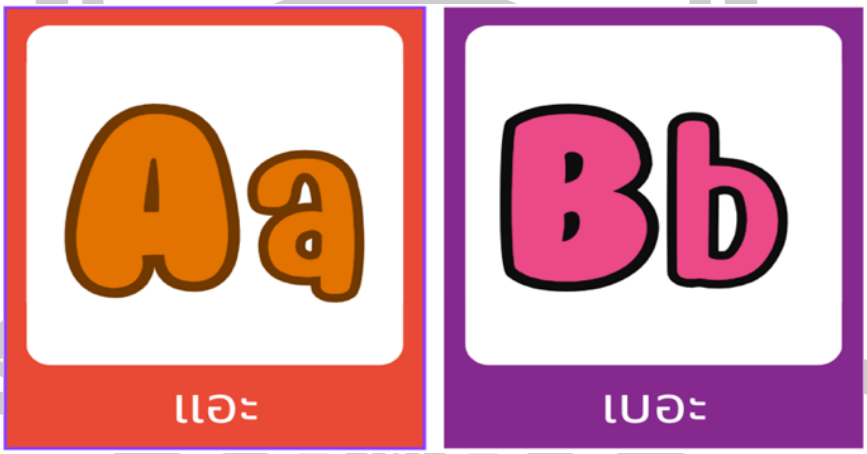


Figure 2 Example of flashcard presenting the sound of each alphabet

Students practiced blending phonemes to form complete words, reinforcing their understanding of letter-sound relationships. After initially learning to segment words into their constituent phonemes, they were guided through the process of blending these sounds to construct words. The activity began with basic consonant-vowel-consonant (CVC) words, such as *cat* and *dog*, to build foundational decoding skills. The target vocabulary was introduced systematically at this stage, starting with basic

word families to help students recognize common phonetic patterns (see Figure 3). This structured approach supported their ability to decode unfamiliar words and enhanced their overall reading fluency.

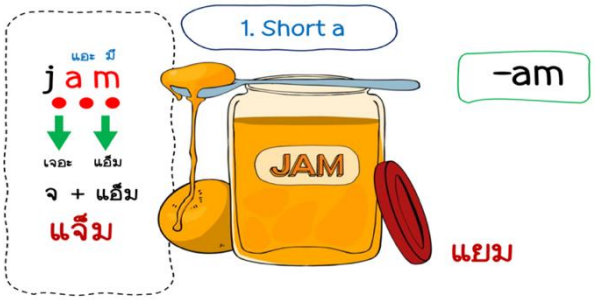


Figure 3 Practice blending words by using a digital flashcard

During the practice stage, learners were introduced to 80 target words over eight one-hour sessions. Each session incorporated synthetic phonics activities, with every two periods dedicated to reinforcing phonics-based word recognition and pronunciation skills.

In the first activity, “Knock Knock Phonics,” students practiced blending sounds using a letter chart. Each student received a chart and used a plastic cup to tap on letters while pronouncing their corresponding sounds in rhythm. For example, as shown in Figure 4, when blending the word *sun*, students tapped the letter S, pronounced the sound /s/, slid the cup to U and produced /u/, followed by N with /n/. Finally, they blended the sounds to form the complete word *sun*.

To reinforce meaning, the teacher provided visual aids by displaying corresponding pictures and reading the words aloud. The chart also allowed students to form related words, such as *gun*, *drum*, and *drug*, by applying the same phonics principles. This interactive, multisensory approach helped develop students’ decoding skills while making the learning process engaging and effective.

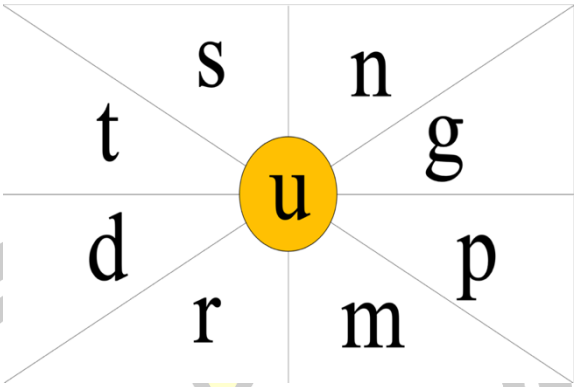
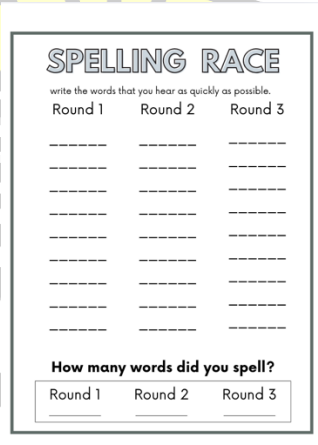


Figure 4 Letter chart in “Knock Knock Phonics” activity

The Spelling Race activity began with a practice phase where students engaged in sound matching and blending exercises, such as identifying words that started with a specific sound and blending phonemes like /s/ /i/ /t/ to form *sit*. This preparatory step reinforced phonemic awareness and built confidence before the competition. The activity consisted of three rounds, each increasing in difficulty. Round 1 focused on CVC words like *hat* and *box*, Round 2 introduced blends and digraphs such as *ship* and *bike*, and Round 3 included more complex words with vowel teams, silent letters, or compound structures like *beautiful* and *chicken*. In each round, the teacher pronounced the words, and students sounded them out, blended the phonemes, and wrote them down. Students worked in groups to promote collaboration, spelling words together on shared boards and earning points for correct answers. This cooperative approach reinforced phonics-based spelling strategies and fostered peer learning and engagement. A sample Spelling Race worksheet is shown in Figure 5


SPELLING RACE

write the words that you hear as quickly as possible.

Round 1	Round 2	Round 3
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

How many words did you spell?

Round 1	Round 2	Round 3

Figure 5 Example of Spelling Race worksheet in Spelling Race activity

Another “Use Recall” activity involved students recalling and matching words with definitions presented on separate slides. The teacher showed the word-definition pairs to the students, one at a time, then presented either the word or the definition first, depending on your preference, read aloud the word and its meaning, and gave students time to process the information. After presenting each word-definition pair, remove the word or definition from view and ask the students to recall the missing letter and match the picture based on their memory of the pair, encouraging them to think critically and use context clues to aid their recall. The word-definition pairs are shown in Figures 6 and 7

Figure 6 Example of word-definition pairs cards presented word and meaning

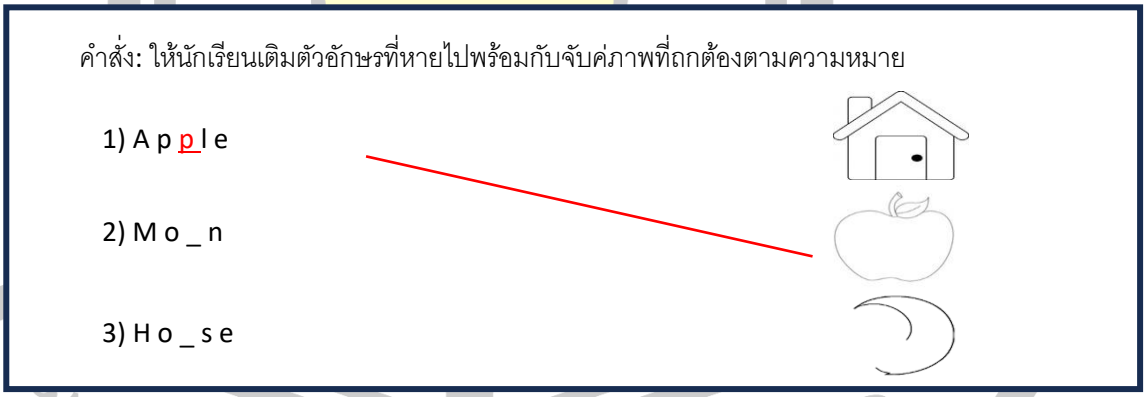


Figure 7 Recall exercise presented a missing letter and pictures

In the production stage, to check understanding. The exercises that the researcher created include vocabulary. It occurred through the use of letters presented along with words, and students were asked to write L1 and L2, which represented the pronunciation of written words. Teachers could see that the participants paid enough attention to the lesson. Figures 8 and 9 show this activity.

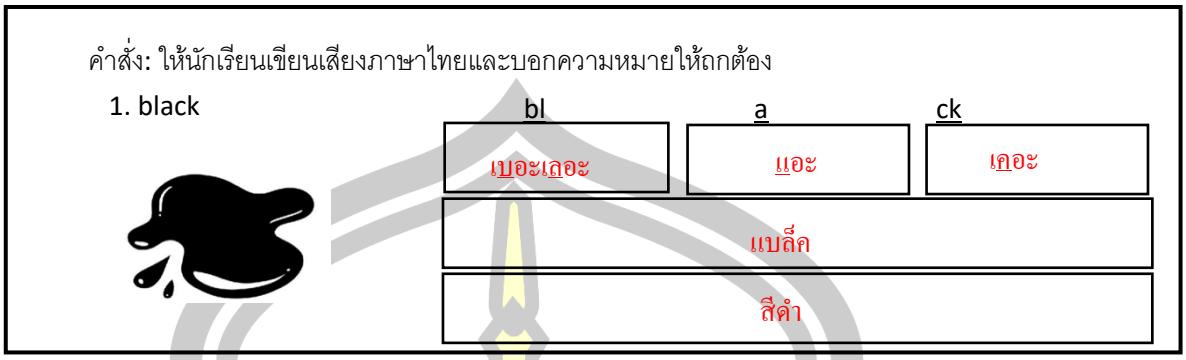


Figure 8 A task presented along with words and write L1, which represents the pronunciation of written words

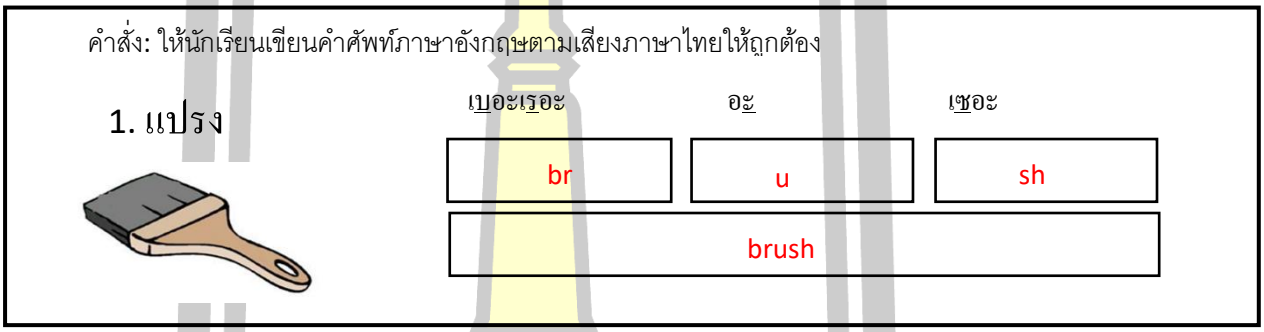


Figure 9 A task presented along with L1 symbols sound and write L2, which represents the pronunciation of written words

Before the learning process ended, the researcher asked about the participants' feelings (e.g., Are you happy with today's learning?) and discussed all learned words for one lesson to review what was learned by letting in their notebooks. The researcher rechecked attendance. The table presents points gained by participation as a leaderboard shown on the board after the class for learning reinforcement.

3.3.3 Selecting the Target Words for the Study

Building the Corpus for Target Words

The selection of target words for this study was a carefully orchestrated process. All target vocabulary was sourced from the textbook "Smile Grades One to Three," which is used in the basic English courses for students in grades 1-3. This textbook, published by The Books Publishing Co., Ltd., is specifically designed to align with the English learning content required by the current core curriculum of Thai primary

education. The researcher selected 150 content words from chapters 1 to 6 of the textbook to create a preliminary pool of potential target words.

According to Nation's (2022) suggestion that L2 learners should prioritize high-frequency vocabulary that is frequently encountered in both spoken and written contexts, the study leveraged the New General Service List (NGSL) created by Browne, Culligan, and Phillips (2013). This list contains 2,818 high-frequency words deemed essential for second language learners. All potential target words were checked against the NGSL 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' vocabulary acquisition and use in reading and L2 writing. Therefore, the words in this corpus were selected according to the following criteria:

a. The 150 words are from the NGSL and in the textbook that participants would learn during the semester.
b. According to the textbook curriculum, the words should be mastered productively within the given semester.
c. The words should have different derived forms, synonyms and collocations.
d. The words should frequently occur in written English and can be readily and commonly used in students' writing.

Following the above criteria, the present study selected the target words for the overall lexical base. The 150 words selected from both the textbook and the NGSL are presented alphabetically as follows:

Table 5 The corpus of 150 words from both the textbook and the NGSL

Nouns	air, animal, arm, art, bag, ball, bank, bear, bed, bell, bike, bin, bird, board, boat, book, box, boy, bus, cake, cap, car, card, cat, chair, chicken, ship, circle, cow, cup, dad, desk, dog, door, ear, egg, eye, face, fan, farm, farmer, father, finger, fish, food, foot, gun, hair, hand, hat, head, horse, ice, job, key, king, leg, log, man, map, mom, moon, name, nose, park, pen, pig, rat, ring, room, sand, ship, son, song, sun, tea, toy, van, wing,
Verbs	buy, can, cook, cry, cut, dance, drink, eat, give, go, hide, hit, hold, kick, like, listen, lock, make, meet, move, open, paint, pick, play, put, read,

	run, say, see, show, sing, sit, sleep, smell, smile, sorry, speak, tell, use, walk, want, wash,
Adjectives	beautiful, big, cool, enjoy, far, fat, fine, fun, happy, hot, kind, left, long, new, old, quiet, ready, relax, right, sad, short, small, stick, sweet, tall, top, ugly, wrong, young

This small corpus mainly comprised nouns, verbs, and adjectives, in which nouns constitute the bulk of the list. Adverbs were excluded because, on the one hand, the NGST is compiled as word families, suggesting that the headwords (mainly stem nouns and verb forms) can represent knowledge of other morphologically distinct forms (Coxhead, 2000). On the other hand, learners who command the knowledge of adjectives are usually assumed to know adverbs, too (Ishii, 2005). In addition, some words can be both a verb and a noun, such as access and schedule, which would be used subject to specific tests. From the 150 words, the final target words are narrowed down for the following English vocabulary checklist tests.

Selecting the Final Target Words

Once verified, the words were piloted through an English vocabulary checklist test administered to participants. The participants had 50 minutes to complete this test, and any words already known were excluded from the final target list. The top 80 unknown words were then chosen as the final set of target vocabulary for the study.

However, before finalization, this list was reviewed by a panel of experts comprising vocabulary teaching specialists and English language teachers (both native speakers and EFL instructors). These experts ensured the target words fit the participants' English proficiency levels. After this review, the finalized list of 80 target words was used for the main study, providing a well-curated vocabulary pool that was both high-frequency and pedagogically appropriate for this particular group of learners.

Table 6 Examples of an English Vocabulary Checklist Test

Word	Know word	Unknown work	Meaning
run	✓		วิ่ง
cow		✓	
play		✓	

3.3.3 Instruments

Two research instruments were formulated: one aspect of a word form (written) to measure receptive and productive dimensions and a focus group interview. The research instruments used in the present study are illustrated in Table 7.

Table 7 Research Instruments

Research questions	Research instruments	Time of distribution
1. To what extent does synthetic phonics instruction affect Thai primary school students' word recognition?	One receptive and one productive word form tests	Before/after using the teaching period.
2. What are Thai primary school students' attitudes towards synthetic phonics in their word recognition?	Focus group interview	After using the synthetic phonics instruction, control group and experimental group.

Two tests measured the participants' word knowledge before and after the treatment for both the control and experimental groups (Sukying, 2017). The test had the same content and was administered by the researcher. The first test was the receptive test of word form, and the second was the productive test. Designed and developed the receptive and productive word knowledge tests. The receptive word knowledge test was presented by choosing the word format to measure participants' word knowledge. In contrast, the productive word knowledge test required students to reproduce or blend the letter, which was the misspelling of the target word, into the correct form following the spaces given within 1 minute per word to measure participants' depth of word knowledge. The productive word knowledge was administered first to avoid the possibility that participants might draw a connection between words on the receptive word knowledge test and spelling on the productive word knowledge test.

Spelling Recognition Test

The Spelling Recognition Test, employed to assess the students' receptive knowledge of written English, was meticulously crafted following the models established by Webb (2005, 2009) and Sukying & Nontasee (2022). The design of this test ensured

that it reliably measured the ability to recognize and recall the correct spelling of vocabulary words after a learning period. Scheduled for administration in the tenth week of the instructional period, the test's format challenged students to select the correctly spelled word that matched an image provided, facilitating a visual association with each word.

Each question on the test presented students with one target word, accompanied by four spelling options: the correct spelling of the target word, another valid English word, and two fabricated words (pseudowords) designed to serve as distractors. This setup was intended to effectively gauge the accuracy of the students' word recognition skills. The test comprised 20 questions, and the participants had 50 minutes to complete. Students earned one point for each correct response within a predetermined time limit. No points were awarded for incorrect answers, ensuring that scoring was straightforward and emphasising accuracy under time constraints.

To illustrate, an example from the test might involve an image of an apple, with the students required to choose the correct spelling of the word "apple" from options such as "aple", "apple", "appel", and "apple". This method tested their vocabulary knowledge and ability to discriminate between similar spellings, enhancing their attention to detail in written English.

Instructions: ให้นักเรียนเลือกคำตอบที่ถูกต้อง (Please select the correct word spelling to match the image given.)					**point**
Example: (correct answer)					
(a) 	(a.) apple	b. appe	c. aple	d. appel	1
(c) 	(a.) rign	b. nirg.	c. ring	d. rgin	0

Spelling Recall Test

The Spelling Recall Test, influenced by Webb (2009), was tailored to assess the student's ability to actively recall and write target words accurately. This assessment was constructed as a fill-in-the-blank format, incorporating visual aids in the form of

relevant images and using distinct fonts to enhance readability and focus. These elements aimed to support learners in connecting visual cues with word spellings, thereby testing their ability to independently produce the correct forms of learned vocabulary.

Structured as an isolated assessment, this test explicitly evaluated the productive knowledge of word forms, challenging students to write the correct spellings for vocabulary items presented in context. Each test item was designed to directly measure the precision of students' spelling abilities. The format consisted of 20 questions, and the participants had 50 minutes to complete this test, with each correct spelling earning the student one point. In line with maintaining rigorous evaluation standards, no points were awarded for incorrect responses, reinforcing the importance of accuracy.

An example of what might appear in this test is a sentence with a missing word accompanied by an image depicting the concept. For instance, the test could present a picture of a sun and a partially completed sentence, "It is very ___ today," where students would need to fill in the blank with the word "sunny". This approach not only assessed their spelling skills but also their ability to contextualize vocabulary appropriately.

Instructions: ให้นักเรียนดูรูปภาพแล้วเติมคำศัพท์ในช่วงว่างให้ถูกต้อง (Look at the picture and correctly spell the word.)

Image	Target word	Answer	point
 (sunny)	1. It is very ____ today.	It is very sunny today	1
 (pencil)	2. a _____ is long.	a pencli is long.	0

Focus Group

Focus group interviews served as a qualitative method to explore the students' perspectives on using synthetic phonics for word recognition, assessing both the benefits and challenges of this approach, as highlighted by Fredericks, Blumenfeld, &

Paris (2004). All interview questions were conducted in Thai to ensure clarity and prevent any potential misunderstandings. Students were invited to participate in a focus group chosen to represent views on both traditional word recognition techniques and synthetic phonics. The researcher aimed to create a comfortable and open environment in the focus group by minimizing their involvement allowing students to express their thoughts freely. The questions, designed to provoke detailed responses, typically started with “what”, “why”, and “how”, as recommended by Lochmiller (2021). These inquiries elicited deep insight into the students’ experiences and preferences regarding the different teaching methods. Sample questions might include inquiries about the effectiveness of traditional word recognition teaching, opinions on synthetic phonics if they had experienced it, preferences between the two methods and reasons for these preferences, and feedback on learning vocabulary through synthetic phonics.

Immediately after the discussion, the researcher transcribed the data for systematic analysis. To ensure rigor in the qualitative analysis, the transcriptions underwent initial coding by two independent coders: the primary researcher and an experienced English teacher. Each coder analyzed the transcripts separately before engaging in a discussion to reconcile interpretations and establish consensus. This dual-coding approach strengthened the credibility of the findings by incorporating diverse analytical perspectives. Thematic analysis was guided by the student engagement framework, identifying key themes related to behavioral and affective engagement**.**

Utilizing focus group interviews with young Thai students provides numerous advantages, particularly in the context of educational research. This method enhances comfort and openness among participants, who may feel more at ease expressing their views in a group setting, a cultural norm in Thailand that values group harmony. Focus groups also yield rich, diverse data, as the dynamic interactions foster detailed discussions and reveal a range of experiences and opinions. This was crucial for understanding how students perceive and experience teaching methods within their specific cultural and educational contexts, such as synthetic phonics, which might be less familiar in Thai education systems. Additionally, focus groups are cost and time-efficient, allowing researchers to collect extensive data from multiple participants

simultaneously, an ideal approach in resource-limited settings. They also help identify both consensus and variance in student opinions, providing a balanced view vital for developing responsive educational strategies. Conducting these sessions in Thai minimizes language barriers, enabling students to express themselves more clearly and confidently.

Finally, focus groups' engaging and interactive nature stimulates active participation, making them particularly effective for gathering qualitative data from young learners. These benefits make focus groups an invaluable tool for exploring the effectiveness and reception of educational methodologies among students.

3.4 Data Collection Procedure

3.4.1 Reliability and Validating Research Instruments

The reliability and validity of these research instruments are assessed via the Index of Item-Objective Congruence (IOC) method. Three Thai experts who have 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.

$$IOC = \sum R\ N$$

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 assessed via a pilot study with 40 grades one to three students from another government primary school. The students in the pilot study had characteristics similar to those of the participants in the main study in terms of educational background. The students in the pilot study completed the two tests (spelling recognition test and spelling recall test). The test results were analyzed using the coefficient Cronbach alpha; Cronbach's alpha measures internal consistency or reliability.

3.4.2 Data Collection Procedure for the Main Study

The data collection procedure was completed over two-month periods. The participants were given a vocabulary checklist test in the first week. This test included 150 words based on the school textbook Smile 1-3. Participants had 50 minutes to mark their unknown words. To answer the checklist test, the students checked (✓) if they knew the word and wrote down its meaning. The participants were asked to mark a cross (×) if the given word was unknown.

Regarding the test administration, the participants had 50 minutes to finish doing each test. A 15-minute break between the productive and receptive tests was provided to reduce participants' fatigue. Before the tests were administered, the instructions and a few examples of the tests were provided to all participants in their native Thai language. The same tests were administered again after the experiment was completed. The focus group was also conducted with the participants at the end of the teaching period to collect their perceptions towards using synthetic phonics input to support their English language learning, especially form-focused vocabulary knowledge.

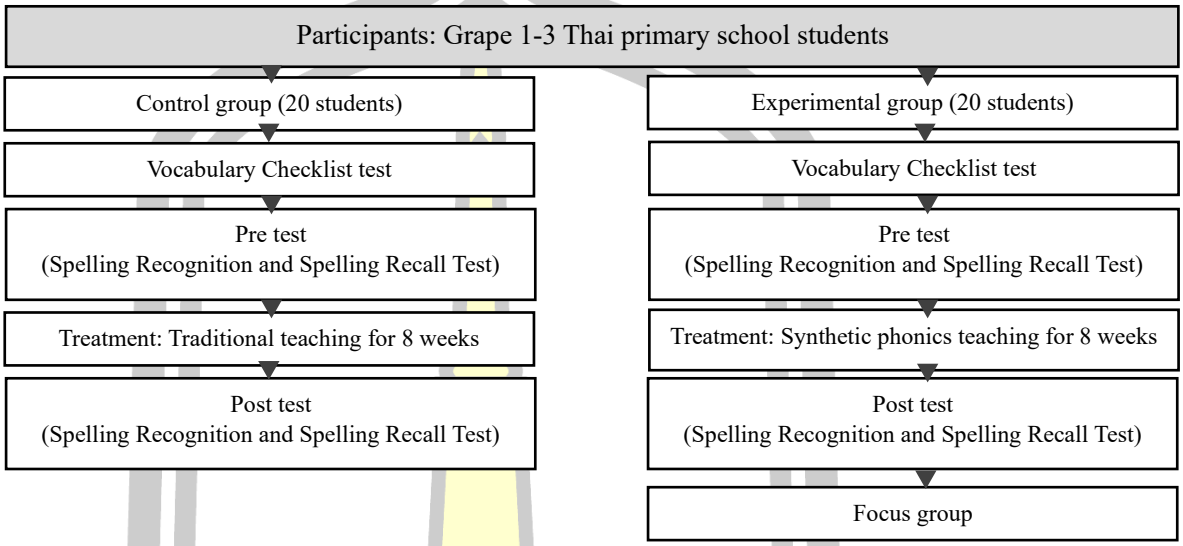


Figure 10 illustrates the research procedures of the present study.

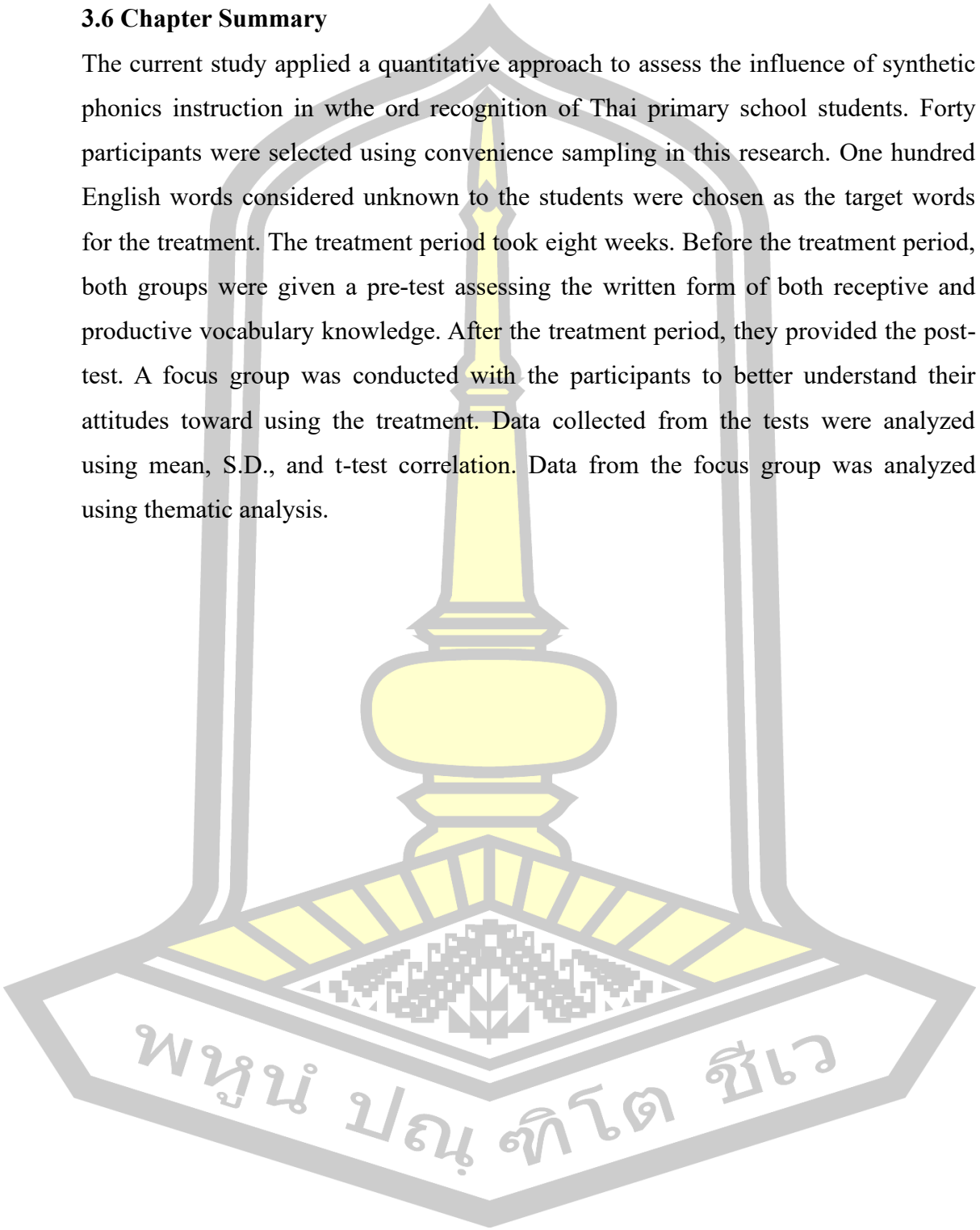
3.5 Data Analysis

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

The focus group interview applied content analysis. The focus group was audio-taped and then transcribed. Before transcribing, the researcher listened to the full recording and determined the time, then wrote a draft first, used shortcuts, proofread the draft, and formatted the transcript. The thematic analysis determined the presence of certain words, themes, or concepts within some given qualitative data (i.e. text). Using thematic analysis, researchers can quantify and analyze the presence, meanings, and relationships of certain words, themes, or concepts. The themes are derived from the content of the data themselves so that what was mapped by the researcher during analysis closely matches the content of the data. Finally, the data was interpreted, and the report was written to provide a compelling story about the data based on the analysis.

3.6 Chapter Summary

The current study applied a quantitative approach to assess the influence of synthetic phonics instruction in wthe ord recognition of Thai primary school students. Forty participants were selected using convenience sampling in this research. One hundred English words considered unknown to the students were chosen as the target words for the treatment. The treatment period took eight weeks. Before the treatment period, both groups were given a pre-test assessing the written form of both receptive and productive vocabulary knowledge. After the treatment period, they provided the post-test. A focus group was conducted with the participants to better understand their attitudes toward using the treatment. Data collected from the tests were analyzed using mean, S.D., and t-test correlation. Data from the focus group was analyzed using thematic analysis.



CHAPTER IV
RESULTS

This chapter presents the research findings and the statistical analyses that address the research questions. The initial section presents an analysis of receptive vocabulary knowledge, summarizing the participants' performance on the Spelling Word Recognition Test. The subsequent section concentrates on the analysis of productive vocabulary knowledge, offering a summary of the participants' outcomes on the Spelling Recall Test. Lastly, the chapter elucidates the findings on students' attitudes regarding the pedagogical implementation of synthetic phonics.

4.1 The effects of synthetic phonics instruction on word recognition

This section examines the effect of synthetic phonics instruction on word recognition among Thai primary school students. To evaluate this, two measures of vocabulary knowledge, receptive and productive, were employed to assess primary school participants' word recognition abilities. Receptive vocabulary knowledge was assessed using the Spelling Recognition Test, while the Spelling Recall Test was used to measure productive knowledge of a word.

The Spelling Recall Test was administered first to both experimental and control groups to minimize potential interference between the two measures. This approach aimed to prevent participants from drawing connections between the written word forms presented in the receptive vocabulary measure. Additionally, the raw total scores for both receptive and productive vocabulary tests were converted into percentages to standardize the data for analysis.

The quantitative data analysis revealed that both experimental and control groups increased their scores. Both groups outperformed the control group on the receptive knowledge test and the productive knowledge measures on all tests. Specifically, the experimental group had an average pretest score of 23.25% on the spelling word recognition test (S.D. = 2.01) and an average posttest score of 44.25% (S.D. = 3.41). In contrast, the control group scored an average of 20% (S.D. = 2.55) on the pretest and 24.75% (S.D. = 2.58) on the posttest.

The results of the productive knowledge tasks showed that the experimental participants obtained a mean performance of 4.15% on the spelling recall test (S.D.=1.32) before the intervention. In contrast, they gained a mean performance of 34.25% (S.D.= 3.54). However, the control participants obtained a mean performance of 4.00% (S.D. =1.14) before the intervention, while they scored a mean performance of 7.65% (S.D. =1.43) on the spelling recall test after the intervention. Together, these findings indicate that synthetic phonics instruction positively affects vocabulary learning in Thai primary school participants.

Table 8 Thai primary school students' vocabulary knowledge test performance.

Groups	Tests	Pretest scores			Posttest scores		
		Mean	(%)	S.D.	Mean	(%)	S.D.
Experimental group (n=20)	Spelling word recognition test	4.65	23.25	2.01	8.85	44.25	3.41
	Spelling word recall test	0.83	4.15	1.07	6.85	34.25	3.54
Control group (n=20)	Spelling word recognition test	4.00	20	2.55	4.95	24.75	2.58
	Spelling word recall test	0.80	4.00	1.14	1.53	7.65	1.43

A dependent samples t-test analysis was also performed to determine whether there was any significant difference between the spelling word recognition test before and after the treatment in the same group of participants. Effect size (d) analysis was also used to calculate the strength of vocabulary learning.

As shown in Table 9, based on the scores of the experiment-group participants, the two times (pretest and post-test) of the reception test of the word recognition test were significantly different, indicating a large effect size ($t = 4.95$, $p < 0.001$, $d = 1.50$), and the two times (pretest and post-test) of the production test were also statistically different, revealing a large effect size ($t = 9.10$, $p < 0.001$, $d = 2.30$). In contrast, the results of the controlled group showed that there was no significant difference between the pretest and post-test in the reception test with a medium effect size ($t = 1.59$, $p = 0.064$, $d = 0.37$). The production tests were also statistically different, revealing a medium effect size ($t = 2.81$, $p = 0.006$, $d = 0.56$). These findings highlight a substantial improvement in form recognition among students in the experimental group over time.

Table 9 Comparisons between pretest and posttest

	Pretest		Posttest	*t*-value	Effect size (*d*)
Experimental group (*n*=20)	Spelling word recognition test	*VS*	Spelling word recognition test	4.95***	1.50
	Spelling word recall test	*VS*	Spelling word recall test	9.10***	2.30
Control group (*n*=20)	Spelling word recognition test	*VS*	Spelling word recognition test	1.59	0.37
	Spelling word recall test	*VS*	Spelling word recall test	2.81**	0.56

Notes: *** $p<0.001$, ** $p<0.01$,

The summary of the paired-sample *t*-test analysis of the experimental group performance. The analyses of the results showed that receptive and productive knowledge tests of word recognition were significantly different with large effect size at the both pretest (recognition test versus recall test; $t = 7.21$, $p < 0.001$, $d = 2.03$) and the posttest (recognition test versus recall test; $t = 3.13$, $p < 0.01$, $d = 0.94$), as shown in Figure 11

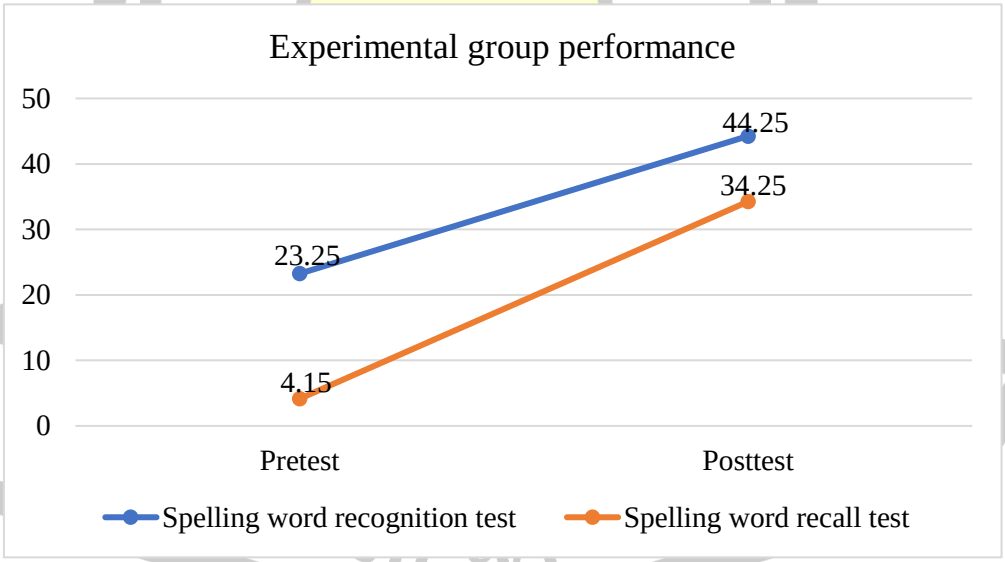


Figure 11 Experimental group performance on vocabulary knowledge

The analysis of the paired-samples *t*-test of the control group's performance. The results indicated that there was a significant difference between large effect sizes at both pretest (recognition test versus recall test; $t = 7.31$, $p < 0.001$, $d = 2.06$) and

posttest (recognition test versus recall test; $t = 4.89$, $p < 0.001$, $d = 1.58$), as shown in Figure 12

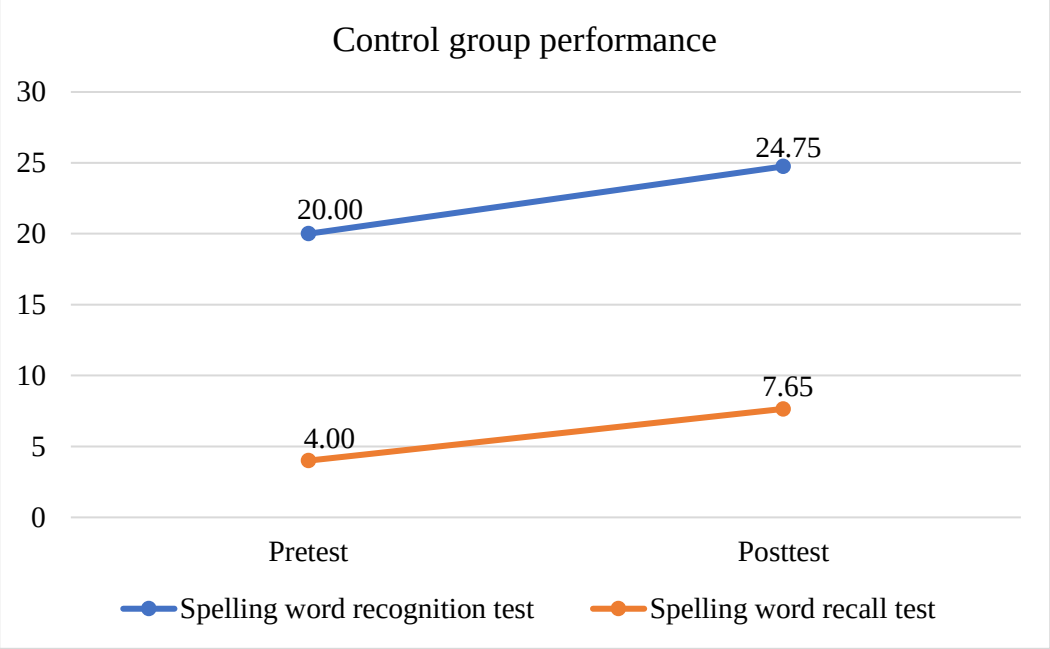


Figure 12 Control group performance on productive knowledge of spelling

An independent-sample *t*-test analysis was further used to examine any significant difference between the two different groups of participants (experiment and control) in the post-test time point (see Table 10). The effect size was also calculated and presented.

Table 10 Comparisons between two experimental groups and control group in the post-test

Groups	Tests	Post-test	
		t	*d*
Experimental group Control group	Spelling recognition test Spelling recognition test	3.84***	1.29
Experimental group Control group	Spelling recall test Spelling recall test	5.38***	1.70

As illustrated in Figure 11, the analysis of the results showed that there were statistically significant differences and large effect sizes on the reception test (Spelling word recognition test) between experimental and controlled groups in the post-test

(t = 3.84, p > 0.001, d = 1.29) and also on the production test (Spelling word recall test) in the post-test (t = 0.60, p > 0.001, d = 1.97).

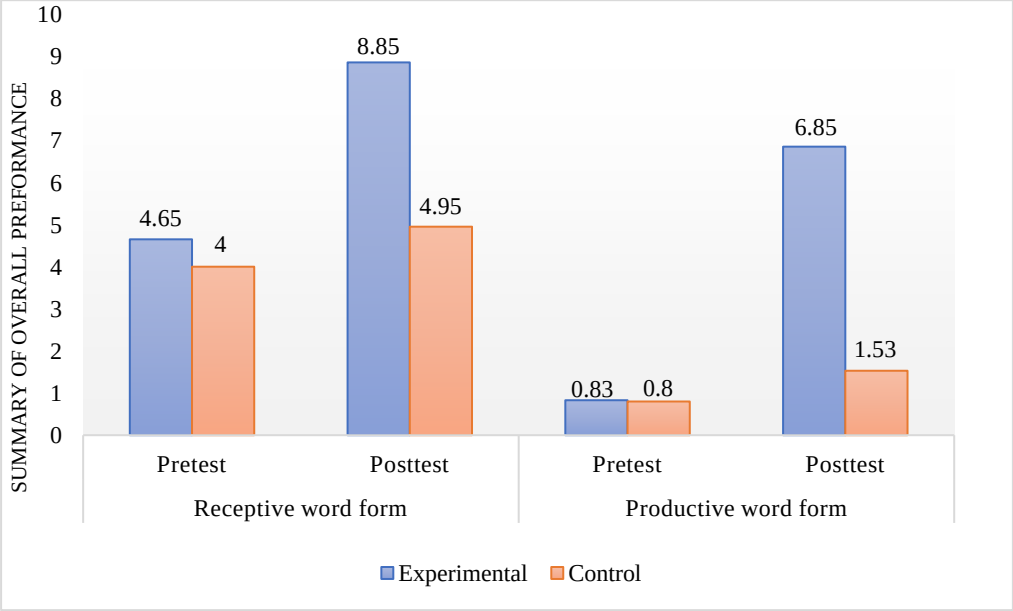


Table 11 Participants' performance on receptive and productive vocabulary knowledge

As shown in Figure 12, the comparison between experimental and control groups from the combined receptive and productive word recognition tests was significantly different, revealing a large effect size (t = 15.51, p < 0.001, d = 4.01). More specifically, the experiment-group participants scored better on vocabulary knowledge at about 39.25% (M = 7.85, SD = 1.41) than the control group participants' scores of approximately 16.20% (M = 3.24, SD = 2.42). It was apparent that after the treatment, the experimental group participants had a higher vocabulary knowledge score than the control group participants, about 23.05%.

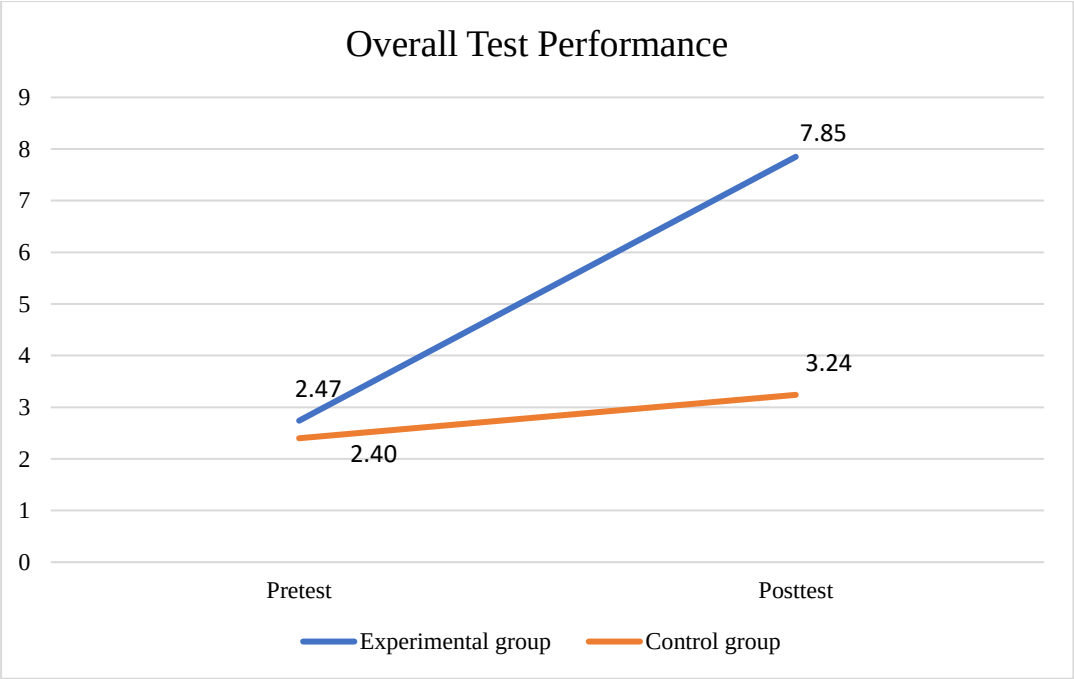


Table 12 Comparison between experimental and control groups with the combined receptive and productive knowledge of word recognition

Overall, this study demonstrates that the use of synthetic phonics enhanced vocabulary knowledge among Thai primary school students. The findings also showed the developmental continuum of vocabulary learning after synthetic phonics intervention. The experimental group showed significant improvements in both skills. In contrast, the control group exhibited only slight modifications. These results suggest that the intervention applied to the experimental group effectively enhanced language skills, particularly in receptive and productive word usage, highlighting the importance of effective teaching strategies.

4.3 Participants' Attitudes towards Synthetic Phonics Instruction

This study explores the attitudes and emotional responses of Thai primary school students toward synthetic phonics instruction, focusing specifically on how differences in vocabulary proficiency levels, high (scores 40-27), medium (26-14), and low (13-0), influence their engagement and overall learning experiences. By categorizing students based on their vocabulary scores, the research aims to provide comprehensive insights into the efficacy of synthetic phonics as an educational approach.

Focus group discussions were conducted with six participants selected to represent a spectrum of vocabulary proficiencies. This approach was chosen to elicit rich, descriptive insights into the students' attitudes and emotional responses. The data from these discussions underwent initial coding by the primary researcher and an experienced English teacher, each independently analyzing the transcripts before engaging in a discussion to reconcile interpretations. This collaborative process ensured a more thematic analysis guided by the theoretical framework of student engagement. Themes were identified in two key dimensions: behavioral and affective engagement, specifically, collaboration and competition in behavioral engagement and positive and negative attitudes in affective engagement.

Behavioral Engagement

Two primary themes emerged in examining the behavioral aspects of student engagement with synthetic phonics instruction: collaboration and competition.

This insight into students' engagement with synthetic phonics highlights the importance of not only the **quantity** of language practice but also the **quality** and **depth** of interaction. The students' engagement reflects a dynamic process where collaboration and competition enhances both learning outcomes and classroom relationships.

Excerpt 1: Behavioral Engagement Interview

Teacher: How did everyone feel about today's spelling activities?

Student 3: I felt confident when we shared our answers and corrected each other during the games. *When the teacher asked us to spell new words aloud, I practiced a lot because I wanted to be the best reader in the class.*

Student 5: I didn't want to go back to my classroom! I loved doing the activity here. I always laughed when we played games.

Teacher: That's great! Helping each other fix mistakes is a great way to improve. Did anyone find that sharing ideas helped them learn better?

Student 1: I liked how we could share ideas about spelling words and help each other during the activities, and I *always wanted to be the first one to*

sound out the words correctly in class. It felt good when I got it right before my friends.

Teacher: That's wonderful! Learning from each other makes the process more engaging. Did anyone find a specific technique helpful?

Student 2: We shared tips together on how to blend sounds, and it helped me understand better, and *I liked practicing spelling new words because it was easy to spell new words with synthetic phonics instruction.*

Teacher: That's a great strategy! Blending sounds is an important skill. Do you think practicing together made spelling easier to remember?

Student 4: Practicing spelling together helped me remember the sounds and feel more comfortable using them.

Teacher: Fantastic! Repetition and teamwork really make a difference. Did working in teams make the lesson more fun?

Student 6: Yes, learning together with my friends made spelling fun and less stressful.

Teacher: I'm so glad to hear that! A fun learning environment helps everyone feel more confident. What do you think about team-based spelling activities?

Student 5: Working together in teams to spell words made the lessons exciting and enjoyable.

Teacher: That's exactly what I hoped for! Learning should be fun, and working together helps everyone improve. Did anyone try to beat their classmates in spelling?

Student 4: I always wanted to get more correct answers than my classmates.

Teacher: A little friendly competition can be fun and motivating! What about during the spelling games?

Student 6: I tried hard to spell the words faster than everyone else when we played spelling games. I liked winning those.

Teacher: I love that enthusiasm! Competing and having fun while learning is a great combination. Keep up the good work, everyone!

Collaboration was notably evident as students actively shared ideas and supported each other in learning activities. This mutual assistance extended beyond mere academic support; it fostered a cooperative learning atmosphere instrumental in

building essential social skills and teamwork. The interaction and communication among students facilitated a more profound understanding of phonics and enhanced their interpersonal relationships, contributing to a more cohesive classroom environment.

Table 13 presents primary school students' responses to collaborative activities in synthetic phonics instruction. The results showed that students highlighted how working together in groups made learning more enjoyable and less stressful. These findings indicated that collaboration was key to improving their phonetic skills and enhancing classroom dynamics.

Table 13 Student feedback on collaborative activities in synthetic phonics instruction

Cases	Statements/excerpts
S1	I liked how we could share ideas about spelling words and help each other during the activities.
S2	We shared tips together on how to blend sounds, and it helped me understand better.
S3	I felt confident when we shared our answers and corrected each other during the games.
S4	Practicing spelling together helped me remember the sounds and feel more comfortable using them.
S5	Working together in teams to spell words made the lessons exciting and enjoyable.
S6	Learning together with my friends made spelling fun and less stressful.

On the other hand, the competition introduced a dynamic element to the learning process. Students demonstrated a competitive spirit by striving to excel in phonics tasks, adding excitement and motivation to their educational experience. This competitive drive encouraged students to engage more deeply with the phonics material, pushing them to improve their skills and achieve their personal best in a challenging yet stimulating setting.

Table 14 illustrates students' reactions to competitive elements in synthetic phonics instruction. The analysis of the participants' responses revealed that students valued the challenge and excitement of competition, which motivated them to perform better and engage more deeply with the learning content.

Table 14 Student reactions to competitive elements in synthetic phonics instruction

Cases	Statements/excerpts
S1	*I always wanted to be the first one to sound out the words correctly in class. It felt good when I got it right before my friends.*
S2	*I liked practicing spelling new words because it was easy to spell new words with synthetic phonics instruction.*
S3	*When the teacher asked us to spell new words aloud, I practiced a lot because I wanted to be the best reader in the class.*
S4	*I always wanted to get more correct answers than my classmates.*
S5	I did not want to go back to my classroom. I loved to do the activity here. I always laughed when we played games.
S6	*I tried hard to spell the words faster than everyone else when we played spelling games. I liked winning those.*

Affective Engagement

The affective dimension of student engagement with synthetic phonics instruction was characterized by a range of emotional responses, both positive and negative, that significantly influenced students' motivation and overall educational experience.

This perspective on affective engagement emphasizes not only the quantity of language practice but also the quality and depth of interaction. Emotional engagement plays a crucial role in learning, as both excitement and challenges contribute to students' growth, resilience, and confidence in the classroom.

Excerpt 2: Affective engagement interview

Teacher: How did everyone feel about today's lesson?

Student 4: I was fully focused on the activities because they were so interesting and fun!

Teacher: That's great! When learning is fun, it's easier to stay engaged. Did anyone find a specific part of the lesson exciting?

Student 3: I was excited every time we started a new phonics game because I wanted to learn more words!

Teacher: I love that enthusiasm! Games can be a great way to learn. How about spelling practice? Did it help anyone feel more confident?

Student 2: Practicing blending sounds helped me build confidence in spelling new words.

Teacher: Confidence is key to learning! Did anyone feel proud after successfully spelling a difficult word?

Student 5: I was so excited when I could spell a difficult word correctly after practicing the sounds!

Teacher: That's amazing! Hard work really pays off. What about overall? How do you feel about learning through phonics?

Student 6: Learning through synthetic phonics made me feel engaged and confident, and I looked forward to the lessons every day!

Teacher: That's wonderful to hear! Now, were there any challenges you faced during the lesson?

Student 1: Sometimes, I felt unconfident when I couldn't remember the sounds during the game.

Teacher: That's completely normal! Forgetting happens, but practicing helps. Did anyone else feel nervous at times?

Student 5: I felt nervous when the teacher asked me to spell the word aloud in front of the class.

Teacher: I understand that can be scary, but the more you do it, the easier it gets! What about during competitions?

Student 4: I was nervous during the competition, but I still tried my best to spell the words correctly.

Teacher: That's a great attitude! Trying your best is what matters most. What about difficult words?

Student 3: When I saw a difficult word, I felt unconfident, but practicing with my friends helped me improve.

Teacher: That's an excellent strategy! Practicing together makes learning easier. Did anyone feel nervous about spelling at first?

Student 2: I was nervous at first because I didn't know if I could spell the words correctly.

Teacher: That's understandable, but look how much progress you've made! Would you say the activities helped?

Student 6: Even though I felt unconfident at times, the activities helped me become better at spelling.

Teacher: That's exactly why we do them! Challenges are part of learning, but you're all improving so much. Keep up the great work!

The positive responses included feelings of enjoyment and confidence, which were frequently expressed by students involved in interactive and supportive phonics activities. These emotions played a critical role in sustaining students' interest and commitment to the tasks. The engaging nature of the phonics exercises and the supportive teaching environment helped bolster students' self-esteem and enthusiasm for learning, making the educational process both enjoyable and rewarding.

Table 15 demonstrates the students' positive experiences with synthetic phonics instruction. The results showed that students reflected the use of synthetic phonics instruction by being engaged, confident, and excited, showcasing the emotional benefits of engaging in phonics activities.

Table 15 Student feedback on positive experiences with synthetic phonics instruction

Cases	Statements/excerpts
S1	I felt very engaged during the lesson because the activities were fun and interactive.
S2	Practicing blending sounds helped me build confidence in spelling new words.
S3	I was excited every time we started a new phonics game because I wanted to learn more words.
S4	I was fully focused on the activities because they were so interesting and fun.
S5	I was so excited when I could spell a difficult word correctly after practicing the sounds.
S6	Learning through synthetic phonics made me feel engaged and confident, and I looked forward to the lessons every day.

Conversely, the negative emotional responses underscored some challenges associated with phonics instruction. Some students reported feelings of anxiety and a lack of confidence, particularly when confronted with complex tasks or competitive scenarios. These feelings highlight the need for additional supportive strategies within the teaching framework to help all students feel more secure and capable. Addressing these emotional hurdles is crucial for ensuring that students participate in the activities and gain confidence and a positive outlook toward their learning journey.

Table 16 shows the students' responses to negative experiences in synthetic phonics instruction. The analysis of the qualitative data of the focus groups indicated that some students reported feelings of nervousness and lack of confidence, highlighting areas where phonics instruction could be improved to support all learners effectively.

Table 16 Student Responses to negative experiences in synthetic phonics instruction

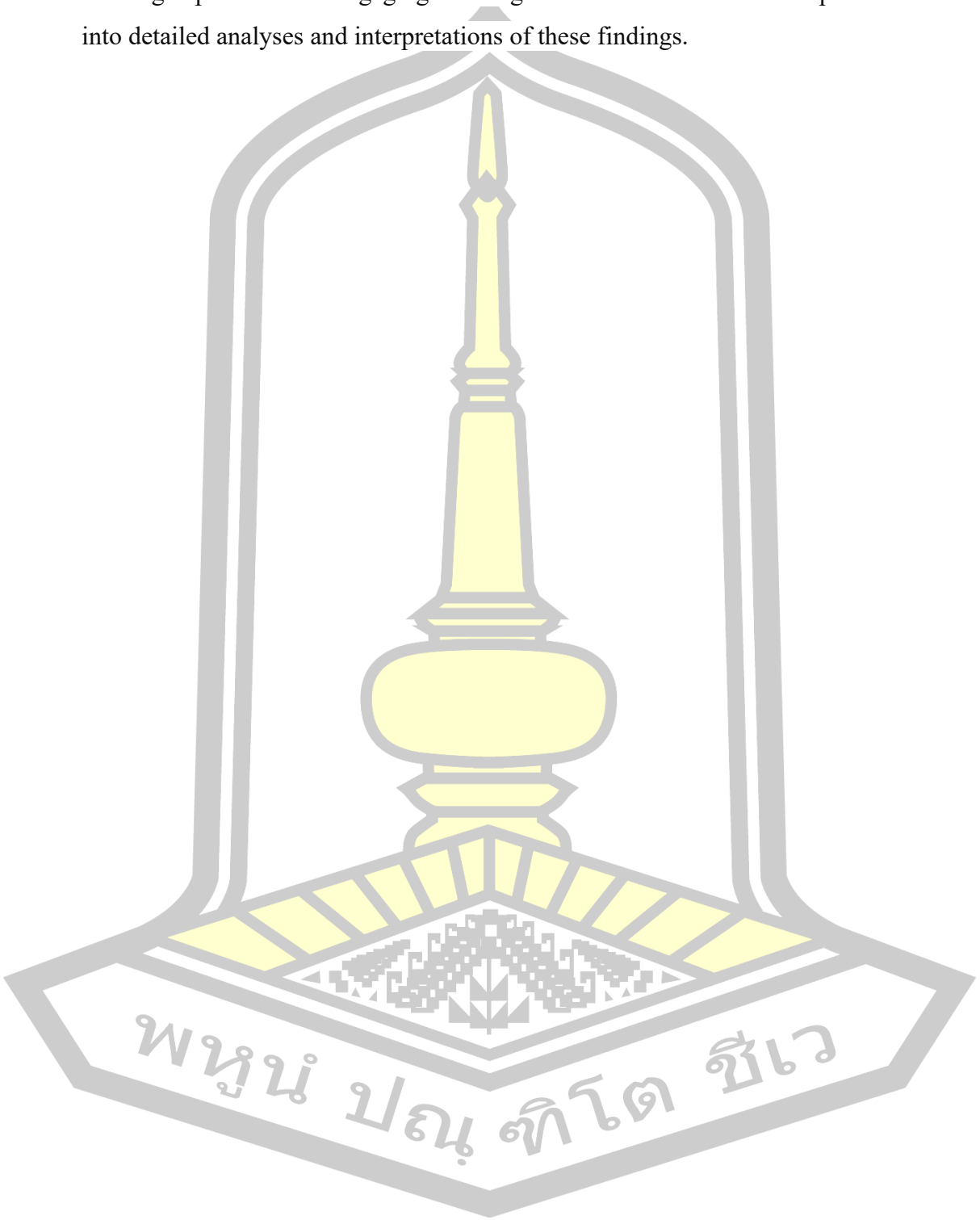
Cases	Statements/excerpts
S1	Sometimes, I felt unconfident when I couldn't remember the sounds during the game.
S2	I was nervous at first because I didn't know if I could spell the words correctly.
S3	When I saw a difficult word, I felt unconfident, but practicing with my friends helped me improve.
S4	I was nervous during the competition, but I still tried my best to spell the words correctly.
S5	I felt nervous when the teacher asked me to spell the word aloud in front of the class.
S6	Even though I felt unconfident at times, the activities helped me become better at spelling.

The findings from this study demonstrate that synthetic phonics instruction significantly enhances both behavioral and affective student engagement in a primary school setting. By promoting an environment that values collaboration and healthy competition, phonics instruction improves phonetic skills and motivates students to participate and enjoy their learning journey actively. However, the presence of negative emotional responses underscores the importance of integrating comprehensive supportive strategies to create a nurturing and inclusive educational experience for all students. This balanced approach is crucial for fostering academic success, emotional resilience, and well-being among students.

4.3 Chapter Summar

This chapter provides an in-depth overview of the participants' behavioral and affective engagement in vocabulary acquisition through synthetic phonics instruction.

The findings emphasize the significant role of well-structured phonics activities in creating a positive and engaging learning environment. The next chapter will delve into detailed analyses and interpretations of these findings.



CHAPTER V
DISCUSSION AND CONCLUSION

This chapter will discuss the research results and the study's theoretical framework. Its results will also be interpreted its findings with previous studies to see if any similarities or differences could be observed. The study findings are likely to provide valuable insights and illuminate the role of synthetic phonics as a medium for language learning, especially vocabulary. This chapter also explores a deeper interpretation of qualitative findings to enhance understanding of learners' attitudes toward synthetic phonics instruction in the context of vocabulary acquisition within the classroom. Additionally, the discussion includes other relevant implications and suggestions for further studies.

5.1 Influences of Synthetic Phonics Instruction on Word Recognition of Thai Primary School Students

This study investigated the influence of synthetic phonics instruction on the word recognition skills of Thai EFL primary school learners. Synthetic phonics, a structured method that explicitly teaches the relationship between letters and sounds, was hypothesized to enhance both receptive and productive vocabulary knowledge. Two key instruments, the Spelling Recognition Test and the Spelling Recall Test, were developed and piloted prior to the main study to assess their effects. The results of the study indicated significant gains in both receptive and productive vocabulary knowledge. Specifically, the primary school students in the experimental group exhibited a 21% gain in receptive knowledge and an approximately one-third improvement in productive vocabulary. In contrast, students in the control group showed more modest gains, with a 4.75% improvement in receptive knowledge and a 3.65% increase in productive knowledge. While both groups benefited from vocabulary instruction, the experimental group outperformed the control group significantly. This finding affirms the effectiveness of synthetic phonics in vocabulary. These findings are consistent with prior studies (Attia, 2020; Chuson, 2021; Kongsak & Wattanawong, 2020; Thongkumsawat, 2022), which further support synthetic phonics as an effective pedagogical method for vocabulary acquisition.

These findings strongly support the effectiveness of synthetic phonics instruction in enhancing vocabulary knowledge among Thai primary school students. The large effect sizes indicate that synthetic phonics approaches facilitate significant learning gains in both word recognition and spelling recall. In contrast, the traditional instructional methods used in the control group led to only moderate or negligible improvements. This underscores the need for evidence-based teaching strategies that actively engage students in phonics learning to promote better vocabulary retention and literacy skills. These findings are consistent with the prior study (Jamaludin et al., 2015). This study demonstrates that synthetic phonics instruction is a highly effective intervention for improving vocabulary knowledge in primary school students. The substantial gains observed in both receptive and productive word recognition suggest that adopting this approach in Thai educational settings could greatly benefit early literacy development.

A key advantage of synthetic phonics lies in its structured instruction, which explicitly teaches students to decode words by associating letters with their corresponding phonemes. Through this method, learners practice blending phonemes to construct words and segmenting words into phonemes to improve spelling and recall. For instance, when learning the word ‘hat’, students learn that ‘h’ corresponds to the /h/ sound, ‘a’ corresponds to /æ/, and ‘t’ corresponds to /t/. They then practice blending /h/, /æ/, and /t/ to form a ‘hat’ and segmenting ‘hat’ back into its phonemic components. This structured approach fosters phonological awareness, the ability to recognize and manipulate the sound structures of language, which enhances both reading fluency and spelling accuracy. As a result, learners become more proficient at decoding unfamiliar words and encoding new vocabulary effectively. These findings align with previous research (Crawford et al., 2024; Hall et al., 2019; Price-Mohr & Price, 2018; Tipprasert et al., 2017), which highlights the role of synthetic phonics in promoting vocabulary development, particularly in EFL contexts where learners often struggle to acquire a robust lexical repertoire despite extended language exposure.

Furthermore, vocabulary acquisition in this study is closely linked to cognitive processes such as noticing, retrieval, and creative use, all of which are reinforced through targeted instructional activities such as spelling rule instruction and word

dictation (Nation, 2013, 2022). The use of multimedia resources, integrating text, images, and sound, facilitated intentional learning by reinforcing phoneme-grapheme correspondences. For example, students watched instructional videos demonstrating how phonemes combine to form words while simultaneously listening to pronunciations, thus engaging both visual and auditory learning channels. Additionally, interactive spelling activities like drag-and-drop letter exercises encouraged active participation and sustained engagement. The noticing process, essential for language acquisition, was facilitated through repeated exposure to target words. At the same time, retrieval was demonstrated in students' ability to spell words correctly in response to auditory prompts. These findings align with previous research (Hulstijn & Laufer, 2001; Magnussen & Sukying, 2021; Ponsamak & Sukying, 2023; Yowaboot & Sukying, 2022), which has highlighted the role of synthetic phonics in reinforcing vocabulary retention and supporting learners in applying their knowledge to practical language use.

The findings of this study align with the continuum of receptive and productive vocabulary knowledge (Ponsamak & Sukying, 2023), supporting the argument that learners develop their vocabulary skills progressively. Initially, students demonstrate the ability to recognize and select the correct spelling of a word, which gradually evolves into the ability to recall and accurately spell the word based on the auditory input.

The results of the Spelling Recognition Test indicate that students performed better in recognizing correct spellings than in recalling and spelling words from memory. This discrepancy can be attributed to differences in cognitive load: selecting the correct spelling from provided options requires a lighter cognitive load, whereas recalling and spelling a word demands a deeper understanding of phoneme-grapheme relationships and a heavier cognitive load. These findings provide empirical support for Nation's (2013, 2022) word knowledge model, which distinguishes between receptive and productive vocabulary knowledge. However, the study does not establish a clear turning point at which students transition from receptive to productive use of vocabulary or determine the extent of word knowledge required for productive use.

The ability to recognize correct spellings is significantly influenced by test design, as recognition-based tasks provide learners with external cues that reduce cognitive load. For example, in a spelling recognition test, students might see an image representing the word “read” along with multiple-choice options such as “raed,” “reed,” “read,” and “rard.” In this situation, students can rely on recognition skills and strategic guessing to identify the correct answer, even if their knowledge of phoneme-grapheme relationships is incomplete.

In contrast, despite offering a fill-in-the-blank format, productive spelling tests require a higher level of cognitive processing. For instance, a test item might include an image of a bear alongside a partially completed sentence: “The _____ is brown.” Here, students must retrieve and spell the word “bear” correctly without visual prompts for spelling. This task demands the integration of phonological and orthographic knowledge, making it cognitively more challenging. Unlike recognition tasks, where students can depend on familiarity and pattern recognition, productive tasks require accurate recall and an internalized understanding of spelling conventions.

These differences underscore the cognitive demands associated with productive vocabulary use. While recognition tasks facilitate initial vocabulary acquisition, productive tasks reflect deeper lexical engagement and active language use. This reinforces the idea that productive vocabulary knowledge develops gradually through repeated exposure, explicit instruction, and meaningful practice. Educators should implement instructional strategies that transition students from passive recognition to active recall, ensuring they can confidently and accurately produce words in both spoken and written forms.

The results indicate that students performed significantly better on the receptive knowledge test than on the productive knowledge test, a difference mainly attributable to the cognitive demands imposed by the test formats. The receptive test (Spelling Recognition Test) required students to identify the correct word form from multiple options corresponding to a given image, allowing them to rely on recognition skills and pattern matching. In contrast, the productive test (Spelling Recall Test) required

students to retrieve the correct spelling from memory and produce it accurately, which demands deeper cognitive engagement and stronger phoneme-grapheme associations.

This variation in task complexity resulted in the Spelling Recognition Test placing a lower cognitive strain on Thai primary school learners than the Spelling Recall Test. While recognition tasks primarily involve visual familiarity and pattern recognition, productive tasks require the integration of multiple cognitive and metacognitive processes, such as memory retrieval, phonological awareness, and strategic self-monitoring. Recalling and reconstructing the word form without external cues makes the productive task substantially more challenging.

These findings align with previous research suggesting that language production imposes a greater cognitive load than language reception (Sukying, 2018, 2022). This highlights the importance of instructional approaches that gradually transition learners from receptive to productive vocabulary use, incorporating explicit spelling practice, repeated exposure, and scaffolding techniques to improve word recall and accurate spelling production. By understanding these cognitive demands, teachers can design more effective learning activities that support students in progressing from recognition to confident, independent word use.

In conclusion, this study provides strong empirical support for the effectiveness of synthetic phonics instruction in facilitating vocabulary acquisition among Thai primary school learners. By enhancing phonological awareness and memory, synthetic phonics improves learners' ability to decode, encode, and recall word forms more efficiently. The findings highlight its potential as a valuable instructional method for addressing vocabulary learning challenges in EFL classrooms. Given these promising outcomes, the following section will explore qualitative insights into students' attitudes towards synthetic phonics instruction, shedding light on its broader pedagogical implications.

5.2 Thai Primary School Students' Attitudes toward Synthetic Phonics Instruction to Enhance Vocabulary Learning

In response to Research Question 2 (RQ2), this study employed qualitative data from a focus group interview to explore Thai primary school learners' attitudes toward

using synthetic phonics instruction to enhance their vocabulary knowledge. The qualitative data were analyzed thematically and categorized into two key dimensions: behavioral and affective.

To ensure the validity and reliability of the qualitative analysis, six participants were purposefully selected based on their post-test scores in the Spelling Word Recognition and Spelling Word Recall assessments. The participants were categorized into three performance levels: low, medium, and high, with two representatives from each group. This stratified selection ensured a diverse range of perspectives, allowing for a more comprehensive understanding of learners' experiences and attitudes.

The qualitative findings provided deeper insights into the behavioral and emotional responses associated with synthetic phonics instruction, complementing the quantitative results. The analysis revealed that synthetic phonics instruction plays a significant role in facilitating vocabulary recognition and retention (Dubiner, 2017; Gardner et al., 2012; Westgate & Hughes, 2017). Specifically, learners exhibited heightened engagement, motivation, and enjoyment, which contributed to their overall learning success. These findings align with previous research that highlights the pedagogical benefits of structured phonics instruction in EFL contexts (Musa et al., 2022; Stahl, 1985; Taylor et al., 2009).

5.2.1 Behavioral Engagement in Synthetic Phonics Instruction

The study found that synthetic phonics instruction was perceived positively due to its structured yet interactive nature. The method, which emphasizes systematic letter-sound relationships, provided learners with an engaging and effective means of vocabulary acquisition. The incorporation of multisensory activities, such as spelling games, phoneme blending exercises, and group challenges, helped sustain students' interest and motivation. These findings are consistent with previous research indicating that interactive learning environments enhance student participation and vocabulary retention (Crawford et al., 2024; Hall et al., 2019; Price-Mohr & Price, 2018).

Participants' feedback from the focus group interview underscored the role of active learning in reinforcing vocabulary knowledge. Many students highlighted how collaborative activities fostered both teamwork and a sense of competitiveness,

making learning more enjoyable and effective. This observation aligns with the developmental characteristics of young learners, who thrive in dynamic and interactive classroom settings. Sample student responses include:

> "I liked how we could share ideas about spelling words and help each other during the activities."(S1)
>
> "Practicing spelling together helped me remember the sounds and feel more comfortable using them." (S4)

Additionally, some students perceived synthetic phonics instruction as a competitive learning environment that motivated them to improve their spelling and pronunciation skills. The excitement of competition encouraged them to actively participate in class and strive for academic achievement. For example, students expressed:

> "I always wanted to be the first one to sound out the words correctly in class. It felt good when I got it right before my friends." (S1)
>
> "When the teacher asked us to spell new words aloud, I practiced a lot because I wanted to be the best reader in the class." (S3)

5.2.2 Affective Responses to Synthetic Phonics Instruction

The qualitative data also provided valuable insights into the emotional responses associated with synthetic phonics instruction. The majority of participants reported positive feelings, such as enjoyment, confidence, and enthusiasm. These emotions were primarily attributed to the engaging nature of the learning activities and the supportive classroom environment. Many students expressed a sense of achievement and motivation to participate in phonics-based tasks. A student shared:

> "Learning through synthetic phonics made me feel engaged and confident, and I looked forward to the lessons every day." (S6)

However, despite the overall positive feedback, some learners experienced moments of anxiety and self-doubt, particularly during challenging tasks or competitive scenarios. These negative emotions were more prevalent among students with lower proficiency levels, who reported feeling nervous when required to perform in front of their peers. While motivating for some, the competitive aspect also induced stress in

others, highlighting the need for differentiated instruction to accommodate diverse learning needs. Students mentioned these concerns:

> "When I saw a difficult word, I felt unconfident, but practicing with my friends helped me improve." (S3)
>
> "I felt nervous when the teacher asked me to spell the word aloud in front of the class." (S5)
>
> Pedagogical Implications

The findings suggest that synthetic phonics instruction is a valuable approach to vocabulary acquisition, promoting both cognitive and affective engagement. However, teachers should be mindful of students' varying confidence levels and implement strategies to foster a supportive learning atmosphere. Differentiated instruction, scaffolding, and formative feedback could help reduce anxiety while maintaining the benefits of interactive and competitive learning experiences. Future research could further explore how individual learner differences influence engagement with phonics-based instruction.

In conclusion, the qualitative findings reinforce the effectiveness of synthetic phonics instruction in vocabulary learning by demonstrating its impact on behavioral engagement and emotional responses. While most students found the instructional method, synthetic phonics instruction, enjoyable and beneficial, the study highlights the importance of balancing structured phonics activities with individualized support to ensure an inclusive and positive learning experience for all students.

5.3 Conclusion of the Study

This study investigated the effect of synthetic phonics instruction on Thai primary school students' word recognition and vocabulary development. The findings show that synthetic phonics significantly enhances both receptive and productive vocabulary knowledge by methodically teaching phoneme-grapheme correspondences. The experimental group showed significant improvements, outperforming the control group. In brief, the quantitative results demonstrate the effectiveness of the synthetic phonics instruction in improving phonological awareness, working memory, and word decoding skills.

Qualitative findings further support the benefits of synthetic phonics, highlighting students' positive attitudes toward its interactive and engaging approach. The method fostered collaboration, motivation, and confidence in vocabulary learning. However, some learners, particularly those with lower vocabulary proficiency, experienced anxiety in competitive tasks, underscoring the need for differentiated instruction to ensure an inclusive learning environment.

Overall, this study provides strong evidence for the effectiveness of synthetic phonics in improving word recognition and vocabulary acquisition in Thai EFL learners.

5.4 Implications

This study provides valuable insights into both research and pedagogical practices, emphasizing the effectiveness of synthetic phonics in enhancing young learners' vocabulary acquisition. The findings highlight how systematic instruction in letter-sound relationships strengthens both receptive and productive word knowledge by improving decoding and encoding skills. Teachers can maximize these benefits by incorporating diverse instructional strategies that cater to different learning styles, promote active engagement, and deepen vocabulary comprehension.

The study also underscores the importance of cognitive processes such as noticing, retrieval, and creative application in vocabulary learning. Multimodal approaches that integrate visual and auditory cues can help learners form stronger associations between phonemes and graphemes, improving memory retention and recall. Repeated exposure to vocabulary through interactive and engaging activities further reinforces learning outcomes.

Beyond classroom instruction, the findings have broader implications for curriculum development, instructional materials, and assessment design. Syllabus designers, material developers, and test creators can apply these insights to enhance learning resources and evaluation methods, ensuring they align with the cognitive and developmental needs of young language learners.

Furthermore, these findings can be applied across various educational settings and age groups, including secondary education, adult learners, and learners in different linguistic and cultural contexts. The effectiveness of synthetic phonics instruction is

not limited to Thai primary school students but may extend to other EFL and ESL environments, particularly where systematic phonics approaches have not been widely adopted. Policymakers and educators worldwide can consider integrating synthetic phonics into language curricula to enhance literacy skills broadly. This research advances academic understanding and offers practical strategies for improving vocabulary instruction in diverse educational contexts.

5.5 Limitations and Recommendations for Future Studies

While this study provides valuable insights into the effectiveness of synthetic phonics instruction in vocabulary acquisition, its limitations must be acknowledged. First, the small sample size, restricted to Thai EFL primary school students, limits the generalizability of the findings to broader populations and different EFL contexts. Additionally, the short intervention period focused primarily on immediate learning outcomes, leaving the long-term effects of synthetic phonics instruction on vocabulary retention and overall language development unexplored.

The study's emphasis on young learners also limits its applicability to older students or adult EFL learners. Furthermore, the reliance on quantitative tests and a small-scale focus group interview may not fully capture the complexities of classroom interactions or individual differences that influence learning outcomes. Some participants also reported experiencing anxiety during competitive activities, highlighting the need for further exploration of the emotional dimensions of learning.

To address these limitations, future studies should include larger and more diverse samples, incorporating learners from various cultural and linguistic backgrounds to enhance the generalizability of the findings. Longitudinal research is recommended to examine the sustained impact of synthetic phonics instruction on vocabulary retention and overall language proficiency. Expanding research to older learners and adults would provide valuable insights into the method's broader applicability.

Future studies should also employ a wider range of data collection methods, such as classroom observations, teacher interviews, and learner journals, to better understand learning processes. Investigating the emotional and psychological effects of synthetic phonics instruction, particularly the role of competition in motivation and anxiety, could help refine teaching strategies for diverse learners.

Finally, exploring how synthetic phonics can be integrated with other teaching approaches, such as communicative or task-based learning, may further enhance language acquisition. Research into the use of digital tools and gamified phonics activities could offer innovative ways to sustain learner engagement and optimize learning outcomes. These recommendations will contribute to a more comprehensive understanding of synthetic phonics instruction, ensuring its effective implementation in various educational settings.

REFERENCES

Reference:

Adams, J. D. (1990). Fundamental stocks of knowledge and productivity growth. *Journal of political economy*, *98*(4), 673-702.

Afzal, N. (2019). A study on vocabulary-learning problems encountered by BA English majors at the university level of education. *Arab World English Journal (AWEJ) Volume*, *10*.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. N. (2015). *Patterns of attachment: A psychological study of the strange situation*. Psychology Press.

Alharbi, B. (2022). SAUDI Teachers'knowledge of Critical Thinking Skills and Their Attitudes towards Improving Saudi Students'critical Thinking Skills. *Problems of Education in the 21st Century*, *80*(3), 395-407.

Anderson, R. C., & Freebody, P. (1981). Vocabulary knowledge. In J. Guthrie (Ed.), *Comprehension and Teaching: Research Reviews* (pp. 77-117). Newark, DE: International Reading Association.

Astorga, M. C. (1999). The text-image interaction and second language learning. *Australian Journal of Language and Literacy, The*, *22*(3), 212-233.

Ball, S. J. (1993). What is policy? Texts, trajectories and toolboxes. *The Australian Journal of Education Studies*, *13*(2), 10-17.

Bancha, W. (2013). What causes spelling errors of Thai EFL students. *ARECLS*, *10*(5), 107-129.

Baylis, P., & Snowling, M. J. (2012). Evaluation of a phonological reading programme for children with Down syndrome. *Child Language teaching and therapy*, *28*(1), 39-56.

Bensoussan, M. (1983). Dictionaries and tests of EFL reading comprehension. *ELT journal*, *37*(4), 341-345.

Binmadnee, P. (2016). The Comparison of Vocabulary Learning Strategies among High School Students in Three Southern Border Provinces of Thailand and Malaysia. *Journal of Business and Social Review in Emerging Economies*, *2*(1), 61-70.

Bintz, W. P. (2011). Teaching vocabulary across the curriculum. *Middle School Journal*, *42*(4), 44-53.

Bisson, M. J., Van Heuven, W. J. B., Conklin, K., & Tunney, R. J. (2015). The role of

verbal and pictorial information in multimodal incidental acquisition of foreign language vocabulary. *Quarterly Journal of Experimental Psychology, 68*(7), 1306–1326. https://doi.org/10.1080/17470218.2014.979211

Borovsky, A., Ellis, E. M., Evans, J. L., & Elman, J. L. (2016). Lexical leverage: Category knowledge boosts real-time novel word recognition in 2-year-olds. *Developmental science*, *19*(6), 918-932.

Brown, R., Waring, R., & Donkaewbua, S. (2008). Incidental vocabulary acquisition from reading, reading-while-listening, and listening to stories.

Browne, C., Culligan, B., & Phillips, J. (2013). The new general service list: A core vocabulary for EFL students and teachers. *JALTs The Language Teacher*, *34*(7), 13-15.

Booth, A. E., & Waxman, S. (2002). Object names and object functions serve as cues to categories for infants. *Developmental psychology*, *38*(6), 948.

Busink, R. (1997). Reading and phonological awareness: What we have learned and how we can use it. *Literacy Research and Instruction*, *36*(3), 199-215.

Byrne, C. C. (1995). *New modeling principles for games and a social dilemma example*. The Pennsylvania State University.

Calhoun, E. (1999). *Teaching beginning reading and writing with the picture word inductive model*. ASCD.

Cameron, L. (2002). Measuring vocabulary size in English as an additional language. *Language Teaching Research, 6*(2), 145–173. https://doi.org/10.1191/1362168802lr103oa

Chall, J. S. (1983). Stages of reading development.

Chu, M. C., & Chen, S. H. (2014). Comparison of the effects of two phonics training programs on L2 word reading. *Psychological Reports, 114*(1), 272-291.

Clark, S. L. (2010). *Mixture* modeling with behavioral data*. University of California, Los Angeles.

Clay, M. M. (1991). Introducing a new storybook to young readers. *The reading teacher*, *45*(4), 264.

Coady, J. (1997). L2 vocabulary acquisition through extensive reading. In J. Coady &

T. Huckin (Eds.), *Second language vocabulary acquisition* (pp. 225-237). Cambridge: Cambridge University Press.

Corriveau, K. H., Goswami, U., & Thomson, J. M. (2010). Auditory processing and early literacy skills in a preschool and kindergarten population. *Journal of learning disabilities*, *43*(4), 369-382.

Corriveau, K., Pasquini, E., & Goswami, U. (2007). Basic auditory processing skills and specific language impairment: A new look at an old hypothesis.

Cote González, M., & Tejedor Martínez, C. (2011). The effect of dictionary training in the teaching of English as a foreign language.

Coxhead, A., & Byrd, P. (2007). Preparing writing teachers to teach the vocabulary and grammar of academic prose. *Journal of second language writing*, *16*(3), 129-147.

Duff, F. J., Hayiou-Thomas, M. E., & Hulme, C. (2012). Evaluating the effectiveness of a phonologically based reading intervention for struggling readers with varying language profiles. *Reading and Writing*, *25*, 621-640.

Ehri, L. C. (1975). Word consciousness in readers and prereaders. *Journal of educational psychology*, *67*(2), 204.

Ehri, L. C. (2005). Learning to read words: Theory, findings, and issues. *Scientific Studies of reading*, *9*(2), 167-188.

Ehri, L. C. (2020). The science of learning to read words: A case for systematic phonics instruction. *Reading Research Quarterly*, *55*, S45-S60.

Elgort, I. (2011). Deliberate learning and vocabulary acquisition in a second language. *Language learning*, *61*(2), 367-413.

Ellis, R. (2001). Introduction: Investigating Form-Focused Instruction. Language Learning, 51, 1–46. https://doi.org/10.1111/j.1467-1770.2001.tb00013.x

Forbes, J. N., & Farrar, M. J. (1993). Children's initial assumptions about the meaning of novel motion verbs: Biased and conservative?. *Cognitive Development*, *8*(3), 273-290.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59-109.

Futrakul, K. (2022). Developing English listening and pronunciation skills through

synthetic phonics teaching principles using jolly phonics teaching approach. *Valaya Alongkorn Review, 12*(3), 229–244. Retrieved from https://so06.tci-thaijo.org/index.php/var/article/view/256855

Gentner, D. (2006). Why verbs are hard to learn. *Action meets word: How children learn verbs*, 544-564.

Gillon, A. C. (2018). *The nature of contemporary organization development*. Routledge.

Goodman, K. S. (1970). Psycholinguistic universals in the reading process. *Visible Language*, *4*(2).

Goswami, U. (1999). The relationship between phonological awareness and orthographic representation in different orthographies. *Learning to read and write: A cross-linguistic perspective*, 134-156.

Goswami, U. (2000). Phonological representations, reading development and dyslexia: Towards a cross-linguistic theoretical framework. *Dyslexia*, *6*(2), 133-151.

Gough, P. B. (1993). The beginning of decoding. *Reading and Writing*, *5*, 181-192.

Gu, Y., & Johnson, R. K. (1996). Vocabulary learning strategies and language learning outcomes. *Language learning*, *46*(4), 643-679.

Hadley, E. B., Dickinson, D. K., Hirsh-Pasek, K., Golinkoff, R. M., & Nesbitt, K. T. (2016). Examining the acquisition of vocabulary knowledge depth among preschool students. *Reading Research Quarterly*, *51*(2), 181-198.

Harrington, M., & Carey, M. (2009). The on-line Yes/No test as a placement tool. *System, 37*(4), 614–626. https://doi.org/10.1016/j.system.2009.09.006

Hilton, H. (2008). The link between vocabulary knowledge and spoken L2 fluency. *Language Learning Journal, 36*(2), 153-166.

Hulstijn, J. H. (1993). When do foreign-language readers look up the meaning of unfamiliar words? The influence of task and learner variables. *The modern language journal*, *77*(2), 139-147.

Hulstijn, J. H. (2003). Incidental and intentional learning. *The handbook of second language acquisition*, 349-381.

Hulstijn, J. H., Hollander, M., & Greidanus, T. (1996). Incidental vocabulary learning by advanced foreign language students: The influence of marginal glosses,

dictionary use, and reoccurrence of unknown words. *The modern language journal*, *80*(3), 327-339.

Johnston, R. S., McGeown, S., & Watson, J. E. (2012). Long-term effects of synthetic versus analytic phonics teaching on the reading and spelling ability of 10 year old boys and girls. *Reading and writing*, *25*, 1365-1384.

Johnston, R. S., & Watson, J. E. (2005). *The effects of synthetic phonics teaching on reading and spelling attainment: a seven year longitudinal study* (Vol. 11). Edinburgh: Scottish Executive.

Joseph, L. M. (2002). Facilitating word recognition and spelling using word boxes and word sort phonic procedures. *School Psychology Review*, *31*(1), 122-129.

Joyce, B., Calhoun, E., & Hopkins, D. (2008). *Models of learning, tools for teaching*. McGraw-Hill Education (UK).

Juel, C., Griffith, P. L., & Gough, P. B. (1986). Acquisition of literacy: A longitudinal study of children in first and second grade. *Journal of educational psychology*, *78*(4), 243.

Knight, S. (1994). Dictionary use while reading: The effects on comprehension and vocabulary acquisition for students of different verbal abilities. *The modern language journal*, *78*(3), 285-299.

Kouti, M. (2021). A Reading Instruction for a First Year Middle School Class. *El-Wahat Journal for Research and Studies*, *14*(03).

Krashen, S. (1982). Principles and practice in second language acquisition.

Kuppen, S., Huss, M., Fosker, T., Fegan, N., & Goswami, U. (2011). Basic auditory processing skills and phonological awareness in low-IQ readers and typically developing controls. *Scientific Studies of Reading*, *15*(3), 211-243.

Laufer, B. (2001). Reading, Word-Focused Activities and Incidental Vocabulary Acquisition in a Second Language. *Prospect*, *16*(3), 44-54.

Laufer, B., & Goldstein, Z. (2004). Testing vocabulary knowledge: Size, strength, and computer adaptiveness. *Language Learning, 54*(3), 399-436.

Laufer, B., & Hulstijn, J. (2001). Incidental vocabulary acquisition in a second language: The construct of task-induced involvement. *Applied linguistics*, *22*(1), 1-26.

Laufer, B., & Paribakht, T. S. (1998). The relationship between passive and active

vocabularies: Effects of language learning context. *Language Learning*, *48*(3), 365-391.

Laufer, B., & Ravenhorst-Kalovski, G. C. (2010). Lexical threshold revisited: Lexical text coverage, learners' vocabulary size and reading comprehension.

Li, S., Ellis, R., & Zhu, Y. (2019). The associations between cognitive ability and L2 development under five different instructional conditions. *Applied Psycholinguistics*, *40*(3), 693-722.

Lochmiller, C. R. (2021). Conducting thematic analysis with qualitative data. *The Qualitative Report*, *26*(6), 2029-2044.

Luppescu, S., & Day, R. R. (1993). Reading, dictionaries, and vocabulary learning. *Language learning*, *43*(2), 263-279.

Luque, A., & Morgan-Short, K. (2021). The relationship between cognitive control and second language proficiency. *Journal of Neurolinguistics*, *57*, 100956.

Manyak, P. C., & Latka, M. K. (2020). Engaging vocabulary units: A flexible instructional model. *The Reading Teacher*, *73*(4), 501-512.

McArthur, G., & Castles, A. (2013). Phonological processing deficits in specific reading disability and specific language impairment: same or different?. *Journal of Research in Reading*, *36*(3), 280-302.

McMurray, S., & McVeigh, C. (2016). The case for frequency sensitivity in orthographic learning. *Journal of Research in Special Educational Needs*, *16*(4), 243-253.

McGeown, S. P., & Medford, E. (2014). Using method of instruction to predict the skills supporting initial reading development: Insight from a synthetic phonics approach. *Reading and Writing*, *27*, 591-608.

Miller, C. A. (2006). Developmental relationships between language and theory of mind.

Miller, G. A., & Fellbaum, C. (1991). Semantic networks of English. *Cognition*, *41*(1-3), 197-229.

Murphey, T. (1992). The discourse of pop songs. *TESOL quarterly*, *26*(4), 770-774.

Nagy, W. E., & Scott, J. A. (2000). Vocabulary processes. *Handbook of reading*

Napathorn, C. (2018, November 29). Contextual influences on HRM practices in

social enterprises: the case of Thailand. *Emerald Publishing Limited, 13*(6), 1969-2000. https://doi.org/10.1108/ijoem-01-2018-0012

Nation, I. S. P. (1990) . *Teaching and learning vocabulary*. Boston, Mass. : Heinle&Heinle.

Nation, I. S. P. (2001). *Learning vocabulary in another language.* Cambridge: Cambridge University Press. http://dx.doi.org/10.1017/CBO9781139524759

Nation, P. (2006). How large a vocabulary is needed for reading and listening? *Canadian Modern Language Review* 63, 59–82.

Nation, I. S. P. (2013). *Learning Vocabulary in Another Language*. Cambridge: Cambridge University Press.

Nation, I. S. P. (2022). *Learning Vocabulary in Another Language (Cambridge Applied Linguistics)* (3rd ed.). Cambridge University Press.
research, *3*(269-284).

National Reading Panel (US), National Institute of Child Health, & Human Development (US). (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups*. National Institute of Child Health and Human Development, National Institutes of Health.

Nicholson, T. (1997). Flashcards revisited: Training poor readers to read words faster improves their comprehension of text. *Journal of Educational Psychology*, *89*(2), 276.

Noltemeyer, A. L., Joseph, L. M., & Kunesh, C. E. (2019). Effects of supplemental small group phonics instruction on kindergartners' word recognition performance. *Reading Improvement*, *56*(3), 149-160.

Olson, M. W., & Griffith, P. (1993). Phonological awareness: The what, why, and how. *Reading & Writing Quarterly: Overcoming Learning Difficulties*, *9*(4), 351-360.

Oxford, R.L. (1990). *Language learning strategies: What every teacher should know*. Heinle & Heinle Pub.

Palmberg, R. (1987). Patterns of Vocabulary Development in Foreign-Language Learners. *Studies in Second Language Acquisition, 9*(2), 201–219. https://doi.org/10.1017/s0272263100000474

Perfetti, C. (2007). Reading ability: Lexical quality to comprehension. *Scientific studies of reading*, *11*(4), 357-383.

Phillips, M. L., Ladouceur, C. D., & Drevets, W. C. (2008). A neural model of voluntary and automatic emotion regulation: implications for understanding the pathophysiology and neurodevelopment of bipolar disorder. *Molecular psychiatry*, *13*(9), 833-857.

Phisutthangkoon, K. (2021). *Thai EFL University Teachers' Beliefs and Practices in Relation to Teaching Speaking Skills* (Doctoral dissertation, University of York).

Pongsukvajchakul, P. (2022). Errors and causes in english spelling writing of Thai university students. *วารสาร วิทยาการ จัดการ มหาวิทยาลัย เกษตรศาสตร์*, *1*(1), 62-79.

Qian, D. D. (2002). Investigating the relationship between vocabulary knowledge and academic reading performance: An assessment perspective. *Language learning*, *52*(3), 513-536.

Read, J. (2000). *Assessing vocabulary*. Cambridge University Press.

Richards, J. C. (1976). The role of vocabulary teaching. *TESOL quarterly*, 77-89

Roatchanaphaphong, W., & Chusanachot, R. (2021). The Pedagogical Content Knowledge in Phonics of Elementary Phonics Teachers in Thailand. *An Online Journal of Education, 16*(2), OJED1602004 (15 pages). Retrieved from https://so01.tci-thaijo.org/index.php/OJED/article/view/248131]

Sattayatham, A., & Honsa, S. (2007). Medical students' most frequent errors at Mahidol University, Thailand. *The Asian EFL Journal*, *9*(2), 170-194.

Sawangsamutchai, Y., & Rattanavich, S. (2016). A Comparison of Seventh Grade Thai Students' Reading Comprehension and Motivation to Read English through Applied Instruction Based on the Genre-Based Approach and the Teacher's Manual. *English Language Teaching*, *9*(4), 54-63.

Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics*, 11, 129-158. https://doi:10.1093/applin/11.2.129

Schmidt, R., (2010) *Introduction to Applied Linguistics*. Translated by Xu Jingning, World Book Publishing Company, Guangzhou, 266.

Schmitt, N. (2000). *Vocabulary in language teaching*. Cambridge University Press.

Schmitt, N., Nation, P., & Kremmel, B. (2019). Moving the field of vocabulary

assessment forward: The need for more rigorous test development and validation. *Language Teaching, 53*(1), 109–120. https://doi.org/10.1017/s0261444819000326

Sedita, J. (2005) Effective Vocabulary Instruction, *Insights on Learning Disabilities, 2* (1), 33-45.

Selinker, L., & Gass, S. M. (2008). Second language acquisition. *Lawrence Erlhaum Ass*.

Shapiro, L. R. (2015). Differing effects of two synthetic phonics programmes on early reading development. *British Journal of Educational Psychology*, *86*(2), 182-203.

Share, D. L. (2004). Knowing letter names and learning letter sounds: A causal connection. *Journal of experimental child psychology*, *88*(3), 213-233.

Share, D. L. (2008). Orthographic learning, phonological recoding, and self-teaching. In *Advances in child development and behavior* (Vol. 36, pp. 31-82). JAI.

Silverman, R. D., & Hartranft, A. M., Doyle, B. (2015). Language skills and reading comprehension in English monolingual and Spanish–English bilingual children in grades 2–5. *Reading and Writing*, *28*, 1381-1405.

Simpson-Vlach, R., & Ellis, N. C. (2010). An academic formulas list: New methods in phraseology research. *Applied linguistics*, *31*(4), 487-512.

Sinatra, R., Zygouris-Coe, V., & Dasinger, S. B. (2012). Preventing a vocabulary lag: What lessons are learned from research. *Reading & writing quarterly*, *28*(4), 333-357.

Snow, C., Burns, S., & Griffin, P. (1998). Reading Difficulties and Family History.

Staehr, L. S. (2008). Vocabulary size and the skills of listening, reading and writing. Language Learning Journal, 36(2), 139–152. https://doi.org/10.1080/09571730802389975

Stahl, S. A. (1998). Understanding shifts in reading and its instruction. *Peabody Journal of Education*, *73*(3-4), 31-67.

Sukying, A. (2017). The relationship between receptive and productive affix knowledge and vocabulary size in an EFL Context. [Doctoral dissertation, University of Sydney]. Retrieved from https://ses.library.usyd.edu.au/handle/2123/17630

Sukying, A. (2018a). Investigating receptive and productive affix knowledge in EFL Learners. In D. Hirsh (Ed.), *Explorations in Second Language Vocabulary Research* (pp. 183-218). Peter Lang.

Sukying, A. (2020). The Acquisition of English Affix Knowledge in L2 Learners. *NIDA Journal of Language and Communication. 23*(34), 89-102.

Sukying, A. (2020a). Word knowledge through morphological awareness in EFL learners. *TESOL International Journal, 15*(1), 74-85.

Sukying, A. (2021). Choices of Language Learning Strategies and English Proficiency of EFL University Learners. LEARN *Journal: Language Education and Acquisition Research Network, 14*(2), pp. 59-87

Sukying, A., & Nontasee, W. (2022). The Acquisition Order of Vocabulary Knowledge Aspects in Thai EFL Learners. World Journal of English Language, 12(5), 306. https://doi.org/10.5430/wjel.v12n5p306

Swanson, H. L., & O'Connor, R. (2009). The role of working memory and fluency practice on the reading comprehension of students who are dysfluent readers. *Journal of learning disabilities*, *42*(6), 548-575.

Tabrizi, A. R. N., & Feiz, F. S. (2016). The effect of deliberate versus incidental vocabulary learning strategy on Iranian high school students' vocabulary learning. *World Wide Journal of Multidisciplinary Research and Development*, *2*(3), 1-8.

Teng, F. (2016). The Effects of Word Exposure Frequency on Incidental Learning of the Depth of Vocabulary Knowledge. *GEMA Online® Journal of Language Studies, 16*(3), 53–70. https://doi.org/10.17576/gema-2016-1603-04

The National Institute of Educational Testing Service (Public Organization). (2024). *Primary Schools Annual Report.* Bangkok: The National Institute of Educational Testing Service (Public Organization).

Thornbury, S. (2002). *How to Teach Vocabulary. New York*: Pearson Education limited.

Valentine, C. W. (1913). The aesthetic appreciation of musical intervals among school children and adults. *British Journal of Psychology*, *6*(2), 190.

Vaughn, S., & Linan-Thompson, S. (2004). *based methods of reading instruction, grades K-3*. ASCD.

Vermeer, H. J. (2001). A Framework for a General Theory of Translation. Shanghai: Shanghai Foreign Language Education Press.

Vidal, K. (2011). A comparison of the effects of reading and listening on incidental vocabulary acquisition. *Language Learning*, *61*(1), 219-258.

Vygotsky, L. S. (1987). *The collected works of LS Vygotsky: Problems of the theory and history of psychology* (Vol. 3). Springer Science & Business Media.

Webb, S. (2005). Receptive and productive vocabulary learning: The effects of reading and writing on word knowledge. *Studies in second language acquisition*, *27*(1), 33-52.

Webb, S. (2007). The effects of repetition on vocabulary knowledge. *Applied linguistics*, *28*(1), 46-65.

Webb, S. (2009). The effects of receptive and productive learning of word pairs on vocabulary knowledge. *RELC journal*, *40*(3), 360-376.

Webb, S., & Nation, P. (2017). *How vocabulary is learned*. Oxford University Press.

Wedell, M. (2014). Putting out the fires: Supervisors' experiences of introducing primary English in Saudi Arabia. *System*, *46*, 120-130.

Wesche, M., & Paribakht, T. S. (1996). Assessing Second Language Vocabulary Knowledge: Depth vs. Breadth. *Canadian Modern Language Review*, 53, 13-39.

Wyse, D., & Goswami, U. (2008). Synthetic phonics and the teaching of reading. *British Educational Research Journal*, *34*(6), 691-710.

Yu, G. (2010). Lexical diversity in writing and speaking task performance. *Applied Linguistic, 31*(2), 236-259.

Zhou, K., Yang, J., Loy, C. C., & Liu, Z. (2022). Learning to prompt for vision-language models. *International Journal of Computer Vision*, *130*(9), 2337-2348.

APPENDIXS

Appendix A: English Vocabulary Checklist Test

Instructions: Please mark (✓) if you know the word and write down its meaning, or mark a cross (×) if you do not know the word.

Word	Known word	Unknown word	Meaning
air			
animal			
arm			
art			
bag			
ball			
bank			
bear			
bell			
bike			
bin			
bird			
board			
boat			
book			
box			
boy			
bus			
cake			
cap			
car			
card			
cat			
chair			
chicken			

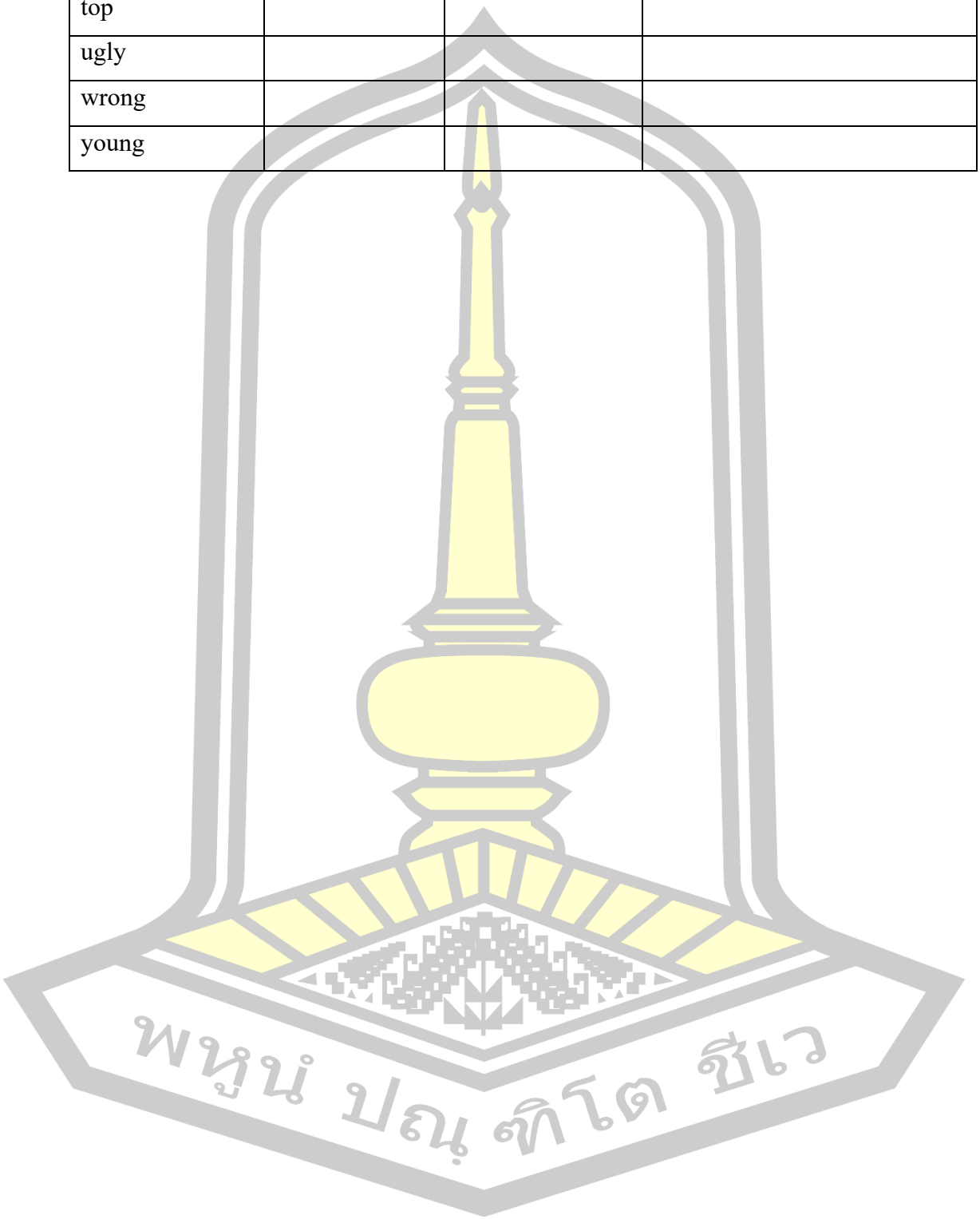
Word	Known word	Unknown word	Meaning
ship			
circle			
coe			
cup			
dad			
deask			
dog			
door			
ear			
egg			
eye			
face			
fan			
farm			
farmer			
father			
finger			
fish			
food			
foot			
gun			
hair			
hand			
hat			
head			
horse			
ice			
job			
key			
king			

Word	Known word	Unknown word	Meaning
leg			
log			
man			
map			
mom			
noon			
name			
nose			
park			
pen			
pig			
rat			
ring			
room			
sand			
ship			
son			
song			
sun			
tea			
toy			
van			
wing			
buy			
can			
cook			
cry			
cut			
dance			
drink			

Word	Known word	Unknown word	Meaning
eat			
give			
go			
hide			
hit			
hold			
kick			
like			
listen			
lock			
make			
meet			
move			
open			
paint			
pick			
play			
put			
read			
run			
say			
see			
show			
sing			
sit			
sleep			
smell			
smile			
sorry			
speak			

Word	Known word	Unknown word	Meaning
tall			
use			
walk			
want			
wash			
beautiful			
big			
cool			
enjoy			
far			
fat			
fine			
fun			
happy			
hot			
kind			
left			
long			
new			
old			
quiet			
ready			
relax			
right			
sad			
short			
small			
stick			
sweet			
tall			

Word	Known word	Unknown word	Meaning
top			
ugly			
wrong			
young			



Appendix B: Spelling Recognition Test

Spelling Recognition Test

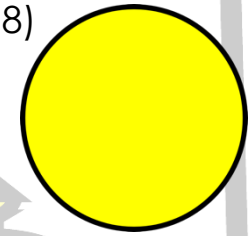
คำสั่ง: ให้นักเรียนดูรูปภาพและเลือกคำตอบที่สะกดคำถูกต้องที่สุด

Instructions: Look at the pictures and choose the correct spellings.

Examble:

a. apple
b. aplpe
c. aeppl
d. appre

1)  a. biek b. bike c. bite d. beik	2)  a. finker b. fingre c. finger d. fingar
3)  a. danse b. dance c. dence d. danze	4)  a. chair b. chiar c. craih d. chrai
5)  a. hpepe b. hpapy c. hpypa d. happy	6)  a. sad b. sed c. sea d. sda
7)  a. seng b. sing c. sink d. sign	8)  a. piant b. pinat c. paint d. paitn
9)  a. beautiful b. baeutiful c. bueatiful d. beaufitul	10)  a. chiken b. chichen c. chicken d. ckichen
11)  a. raed b. reed c. read d. rard	12)  a. sleep b. speel c. slepe d. sleap

13)  a. uylg b. uglk c. unly d. ugly	14)  a. famrer b. farmre c. famer d. farmer
15)  a. kink b. kind c. king d. kint	16)  a. smile b. smlie c. smiel d. smeil
17)  a. walg b. walk c. wakl d. wlak	18)  a. cilcle b. cicle c. cricle d. circle
19)  a. drink b. dlink c. dring d. dling	20)  a. cake b. kake c. caek d. ceak

Appendix C: Spelling Recall Test

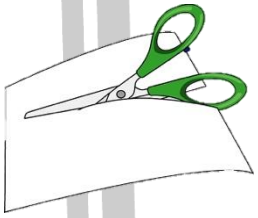
Spelling Recall Test

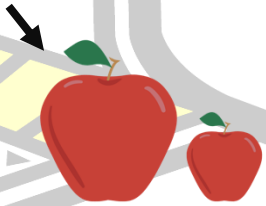
คำสั่ง: ให้นักเรียนดูรูปภาพแล้วเติมคำศัพท์ในช่องว่างให้ถูกต้อง

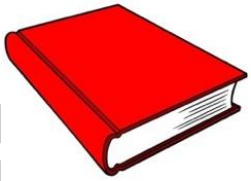
Instructions: Look at the picture and correctly spell the word.

Example

It is _____ today.

1)  The _____ is brown.	2  I _____ paper.
3)  This is an _____.	4)  I _____ a letter.
5)  My mom buys an _____ at the market.	6)  There are _____ in the zoo.

7)  I _____ the ball.	8)  The _____ is cold.
9)  I _____ dinner.	10)  This is a _____.
11)  I _____ the bike everyday.	12)  My bag is very _____.
13)  My favorite color is _____.	14)  This apple is very _____.
15)  This is my _____ on the farm.	16)  I_____ my hands.

17)  Today is very _____.	18)  She likes to read a _____.
19)  The ball is on the _____.	20)  I have a yellow _____.

BIOGRAPHY

NAME	Thanyathon Lakthong
DATE OF BIRTH	18 March 1997
ADDRESS	97, Village No. 4, Khom bo Sub district, Warichaphom district, Sakonnakorn
POSITION	English teacher
PLACE OF WORK	Ban Lao Phonthong Khonkwang school, Sakonnakorn, Thailand
EDUCATION	2020 Bachelor of Education B.Ed. (English), Uttaradit Rachabhat university