Using Drawing Games to Enhance Second Language Vocabulary Knowledge in Thai EFL Learners

Sirathee Teemueangsai

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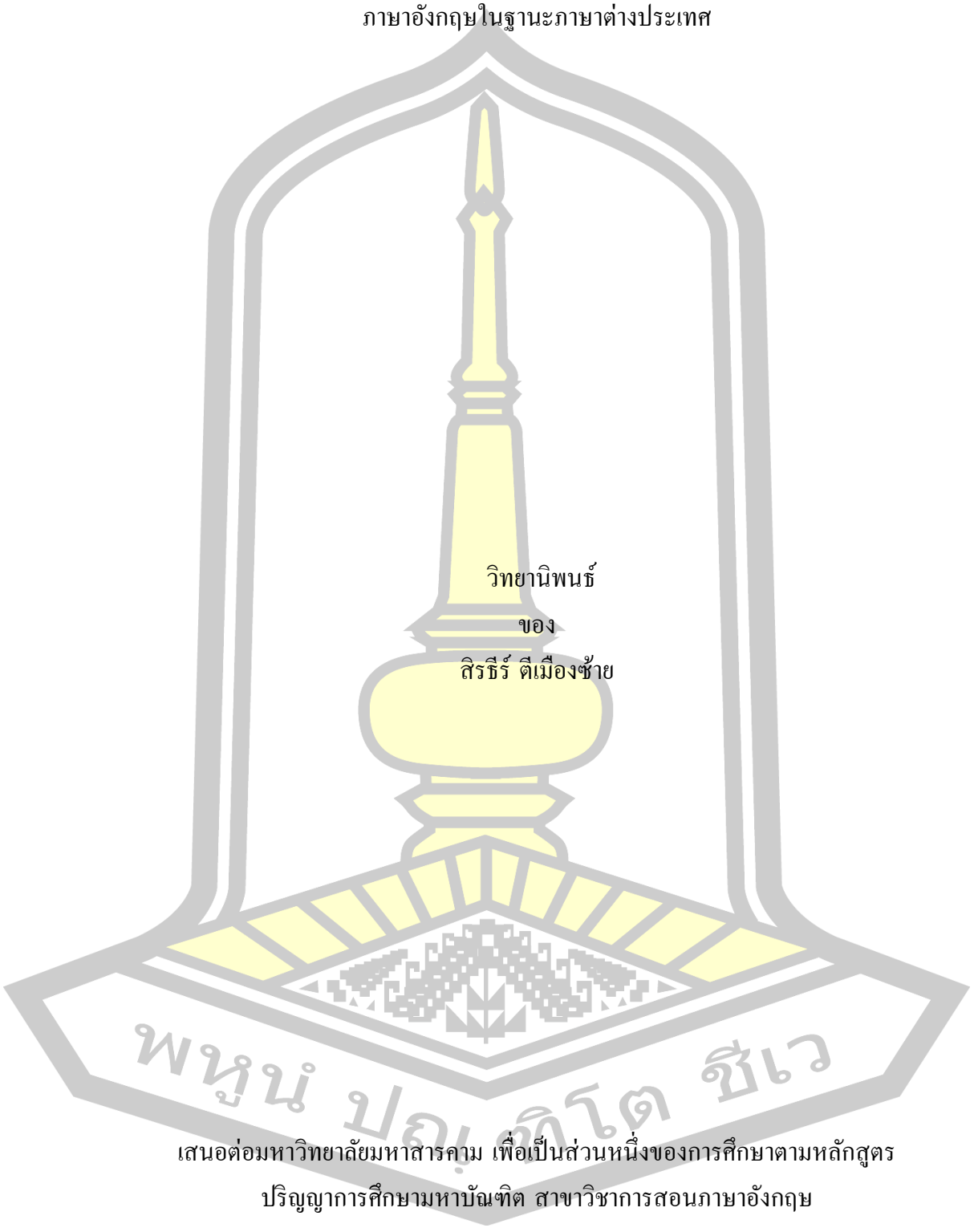

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ABSTRACT

This study explores the impact of drawing games on second language (L2) vocabulary knowledge among Thai EFL learners using a quasi-experimental design with pre-test, post-test, and delayed post-test measures. Forty ninth-grade students from two intact classes were assigned to an experimental group, which engaged in drawing-based vocabulary activities, or a control group, which received traditional vocabulary instruction. Vocabulary knowledge was assessed through four test types: passive recognition, active recognition, passive recall, and active recall. Independent samples t-tests compared pre-test and post-test scores, while repeated measures ANOVA examined performance trends across testing phases. Post-hoc analyses identified significant differences among test types.

The experimental group significantly outperformed the control group across all test types, with post-hoc analyses confirming a continuum of difficulty, where active recall was the most challenging ($\bar{x}$ = 1.84), followed by passive recall ($\bar{x}$ = 3.28), active recognition ($\bar{x}$ = 13.5), and passive recognition ($\bar{x}$ = 14.9). Delayed post-test results indicated that the experimental group ($\bar{x}$ = 39.71) retained significantly more vocabulary than the control group ($\bar{x}$ = 22.16), highlighting the long-term benefits of drawing games for vocabulary retention. Additionally, questionnaire and focus group interviews showed overwhelmingly positive perceptions, with students finding drawing games engaging and enjoyable, though some reported occasional confusion in interpreting drawings. These findings provide strong evidence that drawing games enhance L2 vocabulary acquisition, particularly in strengthening form-meaning connections, retention, and engagement. The study suggests that integrating drawing-based activities into EFL instruction can foster deeper vocabulary learning while creating a more interactive classroom environment.

Keyword : vocabulary knowledge, drawing games, passive vocabulary knowledge, active vocabulary knowledge, retention, perceptions, Thai EFL secondary school students

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CHAPTER I
INTRODUCTION

This chapter provides information on the background and purposes of the study and the scope, including the research design, participants, data collection procedures, and data analysis. Moreover, this chapter highlights the significance of the study along with the definitions of key terms. Finally, it also provides the organization of the study with brief details on each chapter.

1.1 Background of the study

Vocabulary knowledge is a fundamental component of language learning, serving as the cornerstone for effective communication and comprehension in both spoken and written discourse (Afzal, 2019; Alqahtani, 2015; Magnussen & Sukying, 2021; Michael Lessard-Clouston, 2021; Schmitt, 2010). Nation (2022) emphasizes that vocabulary is intricately linked with other linguistic systems, underscoring its critical role in second language acquisition. Vocabulary knowledge encompasses three essential aspects: form, meaning, and use, which are further categorized into receptive (listening and reading) and productive (speaking and writing) vocabulary (Nation, 2022). Among these, the form-meaning connection is particularly significant, as recognizing a word's form and linking it to its meaning is vital for reading comprehension and listening skills (Webb, 2019; Jiang, 2002). Research suggests that repeated exposure and retrieval of words enhance vocabulary acquisition, with form and meaning typically acquired before productive usage (González-Fernández & Schmitt, 2020; Laufer & Goldstein, 2004; Sukying, 2018; Zhong, 2018). This connection is the foundation for developing broader linguistic skills (Laufer & Goldstein, 2004; Nontasee & Sukying, 2021; Webb, 2005, 2009; Zhong, 2018).

Despite the importance of vocabulary acquisition, many English as a Foreign Language (EFL) learners face persistent challenges, including difficulties with spelling, pronunciation, and word recognition (Afzal, 2019). In the Thai educational context, the Basic Education Core Curriculum mandates that ninth-grade students acquire approximately 2,100 to 2,250 words across various topics. However, in the researcher's school, students struggle with reading comprehension due to inadequate

vocabulary knowledge, which hinders their ability to recognize, recall, and apply word meanings and forms. Limited vocabulary proficiency acts as a substantial barrier to language learning and academic achievement (Asgari & Mustapha, 2011; Sumalee & Sukying, 2024), affecting even students with frequent exposure to English (Saengpakdeekit, 2014). Traditional vocabulary instruction in Thailand predominantly relies on rote memorization, translation exercises, and decontextualized word lists, which often lead to disengagement and ineffective retention (Methaneethorn et al., 2020; Ratsamee, 2020; Tanago, 2017). This highlights the urgent need for more dynamic and contextually relevant vocabulary teaching methods in EFL classrooms (Alqahtani, 2015; Matwangsaeng & Sukying, 2023; Sumalee & Sukying, 2024). Furthermore, based on the context of this study in which students suffer from reading comprehension due to the lack of vocabulary knowledge, the approaches should prioritize improving students' knowledge of form-meaning connections since it is fundamental for reading, listening, and other aspects of language learning (Webb, 2019; Jiang, 2002).

One of the emerging approaches to vocabulary instruction is the integration of drawing as a teaching technique. Drawing has been shown to enhance spelling and pronunciation by engaging visual and kinesthetic learning modalities, thereby reinforcing the orthographic and phonological representations of words (Wammes et al., 2015). This technique fosters deeper cognitive processing, enabling learners to establish stronger mental associations between word forms and meanings, ultimately improving recall and long-term retention (Paivio, 1971; Piaget, 1952). By incorporating drawing-based activities, language instruction can facilitate contextualized learning, allowing students to encounter and use words in meaningful scenarios, which strengthens comprehension and memory (Greenfield & Bruner, 1966).

Game-based learning further complements vocabulary acquisition by fostering an interactive and motivating environment where learners actively engage with linguistic content through challenges, task responses, and immediate feedback (Plass et al., 2015). Games seamlessly integrate cognitive, emotional, and social elements, aligning with Vygotsky's (1978) zone of proximal development to enhance learning efficacy.

Research indicates that educational games improve vocabulary memorization, facilitate peer interaction, and develop communicative skills by providing a low-anxiety and immersive learning experience (Derakhshan & Khatir, 2015). Compared to traditional rote-learning methods, game-based learning has been found to be more effective in facilitating vocabulary acquisition among EFL learners (Aghlara & Tamjid, 2011; Vahdat & Behbahani, 2013). Within this framework, drawing games combine the benefits of both game-based learning and visual representation, making vocabulary acquisition more engaging, interactive, and personalized (Altun, 2015; Joklová, 2009).

Despite the documented benefits of drawing games for vocabulary learning, limited research has explored their application in Thai EFL contexts. Many Thai students, particularly ninth graders in Northeastern Thailand, continue to face challenges in vocabulary acquisition due to limited exposure to English outside the classroom and the predominance of traditional teaching methods. Therefore, this study seeks to investigate the effect of drawing games on vocabulary development and retention among Thai EFL secondary school learners. Specifically, the study aims to enhance students' vocabulary knowledge, focusing on the form-meaning connection and examining learners' perceptions of drawing games as an instructional tool for vocabulary learning. By exploring the effectiveness of this approach, the study aspires to contribute to the development of engaging vocabulary instruction strategies in Thai EFL classrooms.

1.2 Problem Statement

Vocabulary acquisition remains a significant challenge for Thai EFL learners, particularly at the secondary level, where students struggle with recognizing, recalling, and using new words effectively. Limited vocabulary knowledge hinders key language skills such as reading comprehension, writing fluency, and overall communicative competence (Schmitt, 2010; Webb, 2007). Traditional vocabulary instruction in Thai EFL classrooms predominantly relies on rote memorization, translation exercises, and isolated word lists, which often fail to foster meaningful engagement, deep processing, or long-term retention (Lu et al., 2023; Riahipour &

Saba, 2012). As a result, learners frequently forget newly learned words and encounter difficulties in applying them in real-world contexts.

A major contributing factor to this issue is the limited exposure to authentic English input, which restricts opportunities for learners to develop strong form-meaning connections and practice active vocabulary retrieval (Matwangsaeng & Sukying, 2023; Nation, 2022). Furthermore, many English words are polysemous, meaning they carry multiple meanings depending on context. However, conventional teaching methods often present vocabulary in isolation, without sufficient contextual variation, leading to misunderstandings and difficulties in accurate word usage.

Vocabulary retention is operationally defined as the ability of learners to remember and accurately recall previously learned vocabulary after a specific period. In language learning, the extent to which learners retain vocabulary depends on various factors, including the effectiveness of instructional methods, learner motivation, and the relevance or meaningfulness of the learning materials (Richards & Schmidt, 2002). Additionally, vocabulary learning presents a dual challenge, not only due to the vast number of words that must be acquired but also because of the cognitive demands associated with retaining them over time (Khabiri & Pakzad, 2012). Effective retention strategies, such as engaging and interactive learning activities, can enhance long-term recall and facilitate the integration of new vocabulary into active language use.

Passive learning approaches that lack engagement and interaction contribute to poor vocabulary retention. The absence of multisensory learning activities, such as drawing and visualization, limits students' ability to establish meaningful associations between words and their meanings. Research suggests that integrating drawing into vocabulary instruction can significantly enhance memory retention by activating visual, kinesthetic, and cognitive processing (Wammes et al., 2015; Paivio, 1971). Similarly, drawing games have been shown to foster motivation, cognitive engagement, and social interaction, making vocabulary learning more effective and enjoyable (Plass et al., 2015).

Learners' perceptions of vocabulary learning play a crucial role in their motivation, engagement, and overall success in acquiring new words. Traditional vocabulary

instruction, which often relies on rote memorization and passive learning, can lead to low engagement and negative attitudes toward vocabulary learning (Schmitt, 2008). Research suggests that active learning strategies, such as game-based activities, can improve students' perceptions by making vocabulary learning more interactive and enjoyable (Taheri, 2014).

Despite these insights, there is a lack of empirical research on the effectiveness of drawing games in improving vocabulary knowledge among Thai secondary EFL learners. Given the persistent challenges in vocabulary learning, there is a pressing need to explore innovative instructional strategies that also promote retention and positive perceptions toward vocabulary learning. This study seeks to address these gaps by investigating the effect of drawing games on vocabulary development and retention as well as examining students' perceptions of this approach. The findings aim to provide valuable findings into alternative vocabulary instruction techniques that can enhance learning outcomes and engagement in Thai EFL classrooms.

1.3 Purposes of the Study

The study explored the effectiveness of drawing games on vocabulary knowledge, specifically focusing on the form-meaning connection in Thai EFL school students. This study also examined the students' retention and perceptions of drawing games in vocabulary learning. The research questions guide this study were:

1. Do drawing games improve Thai EFL secondary school students' vocabulary knowledge of form-meaning connections?
2. Do drawing games enhance Thai EFL secondary school students' vocabulary retention?
3. What are Thai EFL secondary school students' perceptions of drawing games on vocabulary knowledge of form-meaning connections?

1.4 Scope of the Study

This study examines the effects of drawing games on L2 vocabulary knowledge and retention among Thai secondary school learners. The research focuses on 40 ninth-grade students from an educational opportunity expansion school in northeastern Thailand. The participants, approximately 14–15 years old, have been learning English as a foreign language (EFL) for eight to nine years, with an average of three

hours of English instruction per week. Despite their formal education, these learners have limited exposure to English outside the classroom, often due to socioeconomic constraints and restricted access to supplementary learning materials.

The study employs a quasi-experimental design with two groups: an experimental group that receives drawing game-based instruction and a control group that follows traditional vocabulary teaching methods. The study was conducted over 14 weeks in a classroom setting, alternating between traditional instruction and drawing games. Over a 10-week intervention period, both groups engage in standard vocabulary instruction based on the Basic Education Core Curriculum for the first two hours of each week. However, while the control group continues with conventional teaching methods, the experimental group participates in drawing games during the final hour of instruction. This structure allows for a direct comparison of the impact of drawing games on vocabulary acquisition and retention.

The independent variable in this study is the instructional method, wherein the experimental group participates in drawing games as a vocabulary learning intervention, while the control group follows a traditional instructional approach consisting of teacher-led explanations, rote memorization, vocabulary lists, and worksheet-based activities. The dependent variables include vocabulary knowledge, assessed through four test types measuring passive and active recognition and recall, vocabulary retention, evaluated using a delayed post-test to determine long-term recall, and student perceptions, analyzed through a structured questionnaire and focus group interviews to gain insights into their engagement and perceptions regarding the intervention.

1.5 Significance of the study

This study offers valuable insights for both pedagogy and research. From an instructional perspective, the findings highlight the benefits of integrating drawing games into English language teaching to support vocabulary development. Engaging in drawing-based activities enhances vocabulary knowledge and retention by encouraging active participation, creativity, and deeper cognitive processing of word meanings. Moreover, these activities accommodate various learning styles, particularly benefiting visual and kinesthetic learners, while also reducing anxiety and

creating a more relaxed and enjoyable classroom atmosphere. Encouraging students to create their own drawings not only promotes learner autonomy but also aligns with constructivist learning principles, leading to increased motivation and deeper conceptual understanding.

To optimize the effectiveness of drawing games, educators should tailor the complexity of tasks to match students' language proficiency. For instance, allowing learners to review relevant vocabulary beforehand can provide necessary scaffolding and enhance engagement. Additionally, managing the timing of drawing activities is essential for effective cognitive processing and peer comprehension. Sufficient time allocation enables students to think critically, create meaningful drawings, and express their ideas more clearly, whereas insufficient time may result in incomplete or rushed representations, limiting the learning impact.

From a research perspective, this study contributes to the expanding literature on active learning strategies and vocabulary acquisition, particularly in the context of drawing-based instruction. Future research could investigate the long-term effects of drawing games on vocabulary retention, their effectiveness across varying proficiency levels, and their influence on other language skills such as speaking and writing. Furthermore, comparative studies examining drawing games alongside other multimodal learning approaches could offer deeper insights into their relative effectiveness in language learning settings.

1.6 Definitions of key terms

Drawing games refers to games integrated with traditional instruction that require students to draw a picture of a given word and exchange it with other students to interpret the meaning of the drawing.

Passive knowledge refers to the ability to recall or recognize word meanings.

Active knowledge refers to the ability to recall or recognize word forms.

Second language vocabulary knowledge refers to the ability of learners to recognize and recall the forms of words (such as spelling and pronunciation) and their associated meanings in a language other than their native one.

Retention refers to the ability to remember and recall learned information over time.

Perception refers to how learners interpret and respond to their learning experiences, including their learning strategies, attitudes and engagement.

EFL learners refers to ninth-grade students from an educational opportunity expansion school in northeastern Thailand with limited exposure to the language.

1.7 Organization of the Study

Chapter 1 offers readers an overview of the study. This section explains the research's background, purposes, significance, scope, research questions, and definitions of key terms.

Chapter 2 provides an overview of vocabulary knowledge, the importance of vocabulary knowledge in learning English, theoretical frameworks, approaches to vocabulary learning, and studies related to the use of games and drawing in teaching vocabulary.

Chapter 3 highlights the research methodology by describing the research design, instruments used for the assessment of vocabulary knowledge, and participants' attitudes toward the use of drawing games, intervention, data collection procedures, and data analysis.

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

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

CHAPTER II
LITERATURE REVIEW

This chapter provides an overview of vocabulary knowledge, the roles of vocabulary learning, a theoretical framework for vocabulary learning, several approaches to teaching vocabulary, and examinations of relevant literature on vocabulary instruction and acquisition. Additionally, it evaluates the tools utilized to assess vocabulary knowledge and student perceptions of the treatment. The chapter begins by examining vocabulary knowledge, its roles in language learning, and different teaching methods. The chapter ends with a review of related literature and a summary of the chapter's content.

2.1 Vocabulary Knowledge

Vocabulary knowledge is essential for language learning, enabling learners to express their thoughts and understand others. Lessard-Clouston (2021) defines vocabulary as "words of a language, including single items and phrases or chunks of several words that convey a particular meaning, the way individual words do" (p. 2). This definition highlights that vocabulary consists not only of individual words but also of phrases that function as single units of meaning.

Vocabulary forms the foundation of language learning. Without a strong vocabulary, learners cannot effectively communicate or comprehend others. Studies have consistently highlighted the critical role of vocabulary in language acquisition (Alqahtani, 2015; Afzal, 2019; Magnussen & Sukying, 2021; Pearson & Johnson, 1978). Vocabulary knowledge encompasses not only comprehension and word use but also an understanding of both concrete and abstract meanings (Nation, 2022). Furthermore, recent research by Webb and Nation (2017) underscores the importance of vocabulary depth and breadth in achieving language proficiency.

Nation's (2022) vocabulary knowledge can be divided into three main aspects: form, meaning, and use, each of which can be receptive or productive (see Table 1).

Form consists of three dimensions: spoken form, written form, and word parts. Receptive knowledge of spoken form involves recognizing what a word sounds like,

while productive knowledge entails knowing how to pronounce it. Receptive knowledge of written form consists of identifying how a word looks, whereas productive knowledge requires knowing how to write and spell the word. For word parts, receptive knowledge means recognizing components like prefixes and suffixes, while productive knowledge involves using these parts to convey meaning.

Meaning is divided into three dimensions: form and meaning, concepts and referents, and associations. Receptive knowledge of form and meaning means understanding the meaning signaled by a word form, whereas productive knowledge involves using the correct word form to express a specific meaning. Receptive knowledge of concepts and referents includes knowing what is encompassed by an idea. In contrast, productive knowledge is the ability to use the word to refer to specific items or concepts. Receptive knowledge of associations involves recognizing related words, while productive knowledge means using these related words appropriately.

Use involves understanding grammatical functions, collocations, and constraints on use. Receptive knowledge of grammatical functions consists in understanding the patterns in which a word occurs, while productive knowledge is the ability to use the word in correct grammatical patterns. Receptive knowledge of collocations is knowing which words commonly occur with the target word, and productive knowledge involves using the word with appropriate collocates. Receptive knowledge of constraints on use involves recognizing where, when, and how often the word is used. In contrast, productive knowledge is the ability to use the word in the appropriate context, frequency, and register.

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

Aspect	**Dimension**	**Receptive (R)**	**Productive (P)**
Form	Spoken	What does the word sound like?	How is the word pronounced?
	Written	What does the word look like?	How is the word written and spelled?
	Word parts	What parts are recognizable?	What parts express this meaning?
Meaning	Form and meaning	What meaning does this word signal?	What word form expresses this meaning?
	Concepts and referents	What is included in the concept?	What items can the concept refer to?

	Associations	What other words does this word make us think of?	What other words could we use instead of this one?
Use	Grammatical functions	In what patterns does the word occur?	In what patterns must we use this word?
	Collocations	What words or types of words occur with this one?	What words or types of words must we use with this one?
	Constraints on use	Where, when, and how often would we meet this word?	Where, when, and how often can we use this word?

Learning a word involves mastering many linguistic elements, such as pronunciation, spelling, and morphology. It also entails understanding the word's relationships with other words, including collocations, synonyms, antonyms, and hyponyms (Laufer, 1998, 1992). Vocabulary learning is a continuous process that evolves from basic recognition to deeper knowledge (Faerch, Haastrup, & Phillipson, 1984; Henrikson, 1999; Nation, 2022).

Laufer and Goldstein (2004) distinguish between passive and active vocabulary knowledge. Passive knowledge involves recognizing and understanding a word when encountered in listening or reading, whereas active knowledge requires being able to produce the word in speaking or writing. This distinction is critical in test development, where separate assessments measure passive and active vocabulary knowledge. This approach ensures that learners are tested on both their ability to recognize and use vocabulary, providing a comprehensive understanding of their vocabulary knowledge.

Vocabulary knowledge is multifaceted, involving understanding and using words in various contexts. By mastering the different aspects of vocabulary, learners can improve their language skills and become more effective communicators in English. This holistic view of vocabulary learning, encompassing form, meaning, and use, supports learners in developing both receptive and productive language skills, ultimately enhancing their overall language proficiency. Recent studies, such as those by Sukying (2018), Schmitt (2019) and Milton (2020), further emphasize the importance of a well-rounded vocabulary education in second language acquisition

2.2 The Importance of Vocabulary Knowledge in Learning English

Vocabulary knowledge is essential for mastering English as a second or foreign language (L2), and its importance is extensively documented. According to Nation (2022), vocabulary is deeply interconnected with other linguistic systems, making it critical for effective communication and comprehension. Without an adequate vocabulary, students are unable to express their thoughts or understand others, which is vital for successful language learning (Lessard-Clouston, 2021).

Aebersold and Field (1997) identified three main objectives of vocabulary learning: familiarizing students with the vocabulary found in texts, helping them recognize and understand essential vocabulary, and preparing them to anticipate and acquire necessary vocabulary for future use in a second or foreign language. This progression ensures students develop a solid vocabulary foundation, enabling them to engage with and comprehend authentic texts and spoken language.

Recent studies continue to highlight the crucial role of vocabulary in language learning. Schmitt (2019) emphasized that a strong vocabulary base is necessary for reading comprehension and overall language proficiency. Milton and Alexiou (2020) showed that vocabulary size significantly predicts language performance, especially in reading and writing. Webb and Nation (2017) stressed the importance of both breadth and depth of vocabulary knowledge, suggesting that comprehensive and intensive vocabulary learning can lead to better language outcomes.

Effective vocabulary teaching strategies are essential in English as a Foreign Language (EFL) context. Khamkhien (2010) noted challenges Thai students face in vocabulary acquisition, such as limited exposure to English outside the classroom and the influence of their first language on English vocabulary learning. Integrating technology and interactive methods into vocabulary instruction has been recommended to address these challenges and improve learning outcomes.

Sukying's research (2020) has provided valuable insights into the role of explicit vocabulary instruction and morphological awareness in vocabulary development. Sumalee and Sukying (2024) studied the effect of teaching derivational suffixes on vocabulary knowledge among Thai university learners. They divided 58 high school students into control and experimental groups, with the latter receiving explicit

instruction on derivational suffixes. The experimental group significantly outperformed the control group in vocabulary tests, highlighting the effectiveness of this instructional method. The study also found that students had positive perceptions of this teaching method, suggesting its potential for enhancing vocabulary acquisition.

The benefits of derivational suffix instruction for vocabulary acquisition are also significant. Sumalee and Sukying (2024) conducted a study with 58 high school learners to explore this effect. The experimental group, which received focused instruction on derivational suffixes, outperformed the control group in both receptive and productive vocabulary tests. The study concluded that derivational suffix instruction effectively enhances vocabulary knowledge and is positively perceived by students.

Additionally, Sukying (2023) investigated the role of vocabulary size and depth in predicting postgraduate students' second language writing performance. The study involved 53 EFL postgraduate students who took various vocabulary tests and completed an argumentative writing task. The results indicated that vocabulary depth, measured by the Productive Vocabulary Levels Test (PVLT) and the Word Associates Test (WAT), significantly predicted overall L2 argumentative writing performance. These findings underscore the importance of vocabulary depth oversize in L2 writing, suggesting that teaching strategies should enhance both the breadth and depth of vocabulary knowledge to improve writing skills.

In summary, vocabulary knowledge is crucial for learning English, aiding comprehension, communication, and continuous language development. Research in EFL contexts, including studies in Thailand, supports explicit vocabulary instruction and morphological awareness as effective strategies for enhancing vocabulary acquisition. These findings highlight the need for innovative and tailored approaches to vocabulary teaching, ensuring that students can effectively engage with and master the English language.

2.3 Importance of Vocabulary Retention in Language Learning

Vocabulary retention is the ability to recall and retain learned information over time. Richards and Schmidt (2002) posit that the extent to which learners remember linguistic concepts can be influenced by factors such as the types of instruction,

learner motivation, and the significance or relevance of the learning materials (Richards & Schmidt, 2002). Moreover, the levels of processing hypothesis suggests that information is more likely to be retained when it is processed in a deeper and more meaningful way (Nation, 2022). Similarly, research suggests that deep processing, meaningful engagement, and repeated retrieval enhance retention (Baddeley, 1997). Several studies have been conducted to assess the importance of vocabulary retention in language learning.

Taheri (2014) examined the effect of using language games on vocabulary retention of 32 elementary EFL students. The experimental group received language games instruction while the counterpart was taught with the traditional vocabulary method. The intervention stage took 4 weeks, with a post-test administered after the session. Furthermore, 2 weeks after the first post-test, the second post-test was provided in order to measure vocabulary retention. The third post-test was administered 6 weeks after the intervention. The results showed that the experimental group retained vocabulary better than the control on all of the post-tests.

In the study of Na and Trang et al. (2022), the effect of using pictures on EFL learners' vocabulary retention was investigated. 70 participants were divided into two groups and were tested at three different times: pre-test, post-test, delayed post-test. After 10 weeks of the intervention and post-test, the findings demonstrated that the experimental group significantly improved their vocabulary retention with a *p*-value of less than 0.05 between the two groups. This implies that the use of pictures is effective for enhancing vocabulary retention of EFL students.

Ou et al. (2018) examined how using ready-made flashcards versus self-drawn flashcards influenced vocabulary learning among 52 elementary students. To compare the two methods, students were split into control and experimental groups. The control group learned vocabulary with pre-made flashcards, while the experimental group created their own flashcards through drawing. The findings revealed that drawing improved motivation and memory retention, as students were actively involved in constructing their learning materials, creating a more engaging and interactive learning experience.

To conclude, vocabulary retention is essential for long-term language learning, as it allows learners to recall and use words effectively over time. Strong retention reduces the need for constant relearning and enhances overall language acquisition. Research highlights that deep processing, active engagement, and repeated retrieval improve retention, making vocabulary learning more efficient and lasting.

2.4 Theoretical Frameworks for Vocabulary Learning

2.4.1 Conditions for Vocabulary Learning

Nation (2022) provided five crucial conditions that facilitate vocabulary acquisition. First, ***motivation*** is an enabling condition for others since there is a slight chance for other conditions to present unless learners are actively engaged and attentive. Games are certainly one of the tools for vocabulary learning that can be used to maintain learners' interest and motivation (Kickmeier-Rust et al., 2011; Noemí & Máximo, 2014; Ismail et al., 2019; Chuang & Chen, 2009). Second, ***noticing*** occurs when learners give attention to a particular word and view it as an essential item that should be learned (Schmidt, 1990). In addition, noticing involves decontextualization, a process in which learners focus on language items rather than messages. Drawing games direct learners to think of a word that describes the figure drawn instead of giving attention to the figure itself. ***Retrieval*** is also a necessary factor in promoting vocabulary learning because once a word is noticed and, in turn, retrieved during a task, it will contribute to the enhancement of the memory of the word (Nation, 2013). Not only are the form and meaning of a word retrieved while students are engaging in drawing games, but also the imagery or visual form of the word; thus, the memory of that word is strengthened. Moreover, Nation (2022) stressed that retrieval can be more effective in vocabulary acquisition if vocabulary is encountered in a different form, context, or activity, which, in this case, is in the drawing activities. ***Creative use*** occurs when words encountered before are subsequently met or used differently from the previous encounter of the words (Nation, 2022). Therefore, using pictures to facilitate word learning can enhance a form of mental elaboration, which improves the enrichment of word processing and learning (Baddeley, 1990: 160-177). ***Retention*** occurs during learners' visual and linguistic process of words (Nation, 2022). Additionally, Anderson et al. (1978) argued that instantiation can aid retention as it

connects the meaning of vocabulary to a specific instance or example of that word, creating a meaningful context for the word.

2.4.2 Dual Coding Theory (DCT)

dual coding theory (DCT), proposed by Allan Paivio in 1971, posits that information is processed and stored in two distinct systems: verbal and non-verbal. This theory is particularly relevant in vocabulary learning among English as a Foreign Language (EFL) learners because it highlights the importance of engaging both verbal and visual representations to create solid mental models. When EFL learners draw pictures associated with new words, they activate both verbal and visual pathways in the brain. This dual engagement allows learners to encode the vocabulary in both forms, making the learning process more effective. For instance, research by Paivio and Csapo (1973) demonstrated that learners who used imagery in learning tasks performed significantly better in recall tests than those who relied solely on verbal information.

Enhanced memory retention and recall are vital benefits of using DCT in vocabulary learning. By employing both verbal and visual codes, learners have two retrieval paths available. If they forget the verbal representation of a word, they can recall the visual image and vice versa. This dual coding strengthens memory retention and recall, which is crucial for language acquisition. Mayer and Anderson (1991) found that students who received information through both verbal and visual means showed better understanding and retention of complex concepts than those who received information through a single mode. Creating visual representations of vocabulary helps learners build more comprehensive mental models, integrating both the appearance and the meaning of the word, leading to a deeper understanding and more meaningful learning experience.

2.4.3 Cognitive Load Theory (CLT)

Cognitive Load Theory (CLT), developed by John Sweller, emphasizes managing cognitive load during learning to prevent overwhelming working memory. This theory is critical in vocabulary learning because it addresses the challenge of processing and retaining new information without overloading cognitive resources. Drawing pictures simplifies complex vocabulary concepts into manageable visual representations. For EFL learners, this reduction in complexity helps them process new words more

efficiently. Research by Chandler and Sweller (1991) supports this by showing that learners who were provided with simplified visual representations experienced reduced cognitive load and performed better in problem-solving tasks.

By breaking down vocabulary into visual elements, learners can better focus on the essential aspects of the word without being overwhelmed by extraneous information. This visual simplification aligns with CLT's principle of reducing extraneous cognitive load, making learning more focused and effective. Furthermore, integrating drawing activities helps learners concentrate on core vocabulary concepts, facilitating deeper comprehension. A study by Leahy and Sweller (2011) found that learners who used visual aids to understand new vocabulary showed improved retention and comprehension compared to those who did not. When learners create their visual representations, they engage in active processing, which enhances understanding and retention of new vocabulary. This active engagement is vital for moving information from working memory to long-term memory.

2.4.4 Constructivist Theory

The constructivist theory emphasizes that learners construct knowledge through active engagement with their environment and by building on their prior experiences (Piaget, 1970). According to this theory, learning is most effective when learners are involved in activities that require them to actively explore, question, and reflect on their understanding. The theory highlights the importance of providing learners with opportunities to create meaning from their experiences, rather than passively receiving information (Piaget, 1952). Piaget (1985) also posits that learning is a social process, and interactions with peers and teachers play a crucial role in cognitive development. Therefore, collaboration and communication facilitate the construction of new knowledge.

This theoretical framework aligns with the use of drawing games on enhancing vocabulary knowledge. Drawing games require students to actively engage with the vocabulary by creating visual representations. This process involves cognitive functions such as visualization, interpretation, and synthesis of learned words. Furthermore, as students draw pictures of the vocabulary they have learned, they integrate new words into their existing mental schemas. This visual and contextual

representation helps in better understanding and retention of vocabulary (Piaget, 1970). In addition, the collaborative nature of the drawing games, where students exchange pictures and describe them, fosters social interaction. This interaction is crucial for language learning as it allows students to practice vocabulary in communicative contexts (Piaget, 1985).

2.5 Approaches to Learning and Teaching Vocabulary

Nation (2022) pointed out that high-frequency words should be the primary focus of vocabulary instruction since these words do not require considerable effort and time to teach. Another way to alleviate the effort and time limitations involves incidental learning through encountering words in reading and listening and using words in writing and speaking. Furthermore, Qian (1999) argued that the depth of vocabulary knowledge increases alongside the vocabulary size as several exposures to a language can lead to new encounters with new words and enrichment of the knowledge of the partially known words. Deliberate teaching, thus, plays an essential role in promoting rapid gains of vocabulary knowledge accompanied by incidental learning to add up the remaining gaps. Therefore, it is not ideal to spend much time to deepen the knowledge of each word; instead, the priority should be put on teaching only the most important aspects of word knowledge (Nation, 2022). He also added that to design effective vocabulary instruction, it is crucial to be informed of the learning goal of the activity, the psychological conditions that promote the learning goal, the signs that learners achieve their goal, and the certainty in the occurrence of the conditions. Nation (2020) proposed the four strands of language teaching: meaning-focused input (listening and reading), meaning-focused output (speaking and writing), fluency development, and language-focused learning (deliberate teaching). Meaning-focused input and output and fluency development strands relate to incidental learning, while language-focused learning is viewed as deliberate learning. However, these strands should be approximately equal in size. Therefore, it is essential to look at the two ways of learning a language – incidental and deliberate learning.

2.5.1 Incidental learning

Incidental learning occurs when learners learn in a stimulus context while simultaneously focusing on another. Incidental learning involves lectures, storytelling,

or reading aloud to a class (Nation, 2022). Laufer and Hulstijn (2001) highlighted that incidental learning is necessary for vocabulary development every day. This type of learning is the most essential compared to other sources of vocabulary learning for native and non-native speakers; however, non-natives might require some conditions for incidental vocabulary to occur (Nation, 2022). While learners read, they tend to learn new vocabulary, deepen the learned ones, develop grammatical knowledge, become used to text structure, learn new information, and appreciate as well as become familiar with reading activities; all of the mentioned gains are considered the results from incidental learning. Nonetheless, incidental learning requires a considerable amount of time. Therefore, for effective vocabulary acquisition to occur, attention should also be given to deliberate attention to vocabulary, stressing that incidental and deliberate learning complement one another (Elley, 1989; Hulstijn, 1992).

2.5.2 Deliberate Teaching and Techniques for Vocabulary Learning

Deliberate teaching refers to drawing attention to a context to acquire knowledge or skill (Schmitt, 2000). Regarding language learning, deliberate teaching is responsible for directing attention to specific words that need to be learned. Deliberate teaching should not be considered a type or mode of teaching but rather a condition given to learners for learning (Roediger, 2008). Deliberate teaching contains the highest number of teaching techniques, relies on teachers' linguistic proficiency, and allows teachers to set learning goals (Nation, 2022). The relationship between vocabulary learned from deliberate teaching and consequent incidental learning is essential to consider when it comes to successful vocabulary acquisition. Qian (1999) argued that when learners encounter new words, they expand their vocabulary size and enrich their partially known words, stressing the importance of deliberate teaching in exposing a variety of new words for learners. Nation (2022) also opined that although deliberate teaching may account for only a small amount of vocabulary gain for first-language learners since they already know up to 5,000 high-frequency words, second-language learners considerably need deliberate teaching to learn the high-frequency words and to raise awareness of certain words when they encounter in other occasions which helps learners easily notice the words.

Effective vocabulary acquisition is fundamental to language learning, as it enhances comprehension, communication, and overall linguistic competence (Nation, 2022). To facilitate vocabulary learning, it is important to employ various deliberate teaching techniques that are appropriate to different learning styles and preferences. These techniques should be designed to make the learning process more engaging, efficient, and enjoyable for students. In this section, details of Nation's (2022) strategies for deliberate vocabulary teaching will be provided, including dictionary use, the keyword technique, glossing, flashcards, and picture drawing.

Dictionary

Dictionaries positively affect vocabulary learning, understanding, and producing texts (Luppescu & Day, 1993; Knight, 1994). Scholfield (1982) suggested different dictionary strategies, including 1) learners improving comprehension by searching for unknown words, confirming the meanings of words, and confirming guesses 2) learners developing productive skills through looking up unknown words used for speaking, writing, or translating, finding different aspects of words such as spelling, pronunciation, meaning, grammar, and so on, and 3) learners using dictionaries for learning by selecting new words to learn and developing knowledge of the already known words.

However, research has shown that dictionaries can yield challenges in vocabulary learning due to their difficulty in use. For example, Nesi (2000) found that the main obstacle to effectively using a dictionary is that users frequently lack the skills needed to use it or are not sufficiently guided by the preface to fully utilize its potential; in addition to lacking the look-up techniques and dictionary-using skills necessary to fully use an English learner's dictionary on their own, the majority of students in British universities frequently favor bilingual over monolingual dictionaries. Knight (1994) also revealed that students were unlikely to spend extra time searching for words and gathering information ineffectively since the words that students looked up had several meanings.

Glossing

Glossing refers to a technique in which a definition or synonym is given within or alongside the text. Glossing is useful when learners need to read texts with several

difficult words that might not be guessed correctly. This method encourages learners to read effortlessly since it does not interfere with the reading process and directs learners' attention to the target vocabulary (Nation, 2022). Glosses do not support only the comprehension of text reading but also vocabulary learning (Bowles, 2004). Hulstijn et al. (1996) argued that using glosses has a better effect on vocabulary learning than looking up words from the dictionary. Glossing also ensures that newly encountered words are not ignored and enhances learners' attention to the succeeding encounters.

On the other hand, there is also a disadvantage in using glossing, as found in some studies. Glossing is viewed as a method that does not encourage searching, leading to a lower involvement load and search effort, contributing to impaired retention (Laufer & Hulstijn, 2001; Nation, 2022)

Flashcards or word cards

Flashcards or word cards are responsible for creating the connection between the word form of a foreign language and its meaning, which may be represented by first-language translation, second-language definition, pictures, or objects (Nation, 2022). Using flashcards is a technique in which learners can see a second-language word on one side of a card and its translation or pictures describing the word on the other. Learners get to explore each card and attempt to retrieve its meaning. Several studies argued that flashcards are beneficial for learning vocabulary quickly and entail great word retention (Thorndike, 1908; Webb, 1962).

Despite these many benefits of flashcards, Oxford and Crookall (1990) mentioned that the decontextualizing approach is undesirable for vocabulary learning since it removes the communicative context from a word, which is what flashcards do, and that flashcards are ineffective for word memorization and use. In addition, Laufer and Shmueli (1997) added that sentence contexts can help learners create better form-meaning links.

Keyword technique

The keyword technique is used to connect the form and meaning of an unknown word with the help of a mental image (Nation, 2022). With this technique, learners need to think of a first-language word pronounced similarly to the unknown word and create a

reference with a mental image containing the unknown word's meaning and the first-language keyword. Sentences can refer to unknown words instead of mental images (Pressley et al., 1980). The keyword technique can contribute to vocabulary recognition and long-term retention. Beaton et al. (1995) revealed that after ten years of no revision, the learners who received the keyword technique instruction could still retrieve some words.

Nevertheless, some studies are against the use of the keyword technique as this method can contribute to poor long-term retention (Wang and Thomas, 1992; Wang et al., 1993). Moreover, Barcroft et al. (2011) found that the keyword technique required additional links to the form-meaning association compared to the traditional form-meaning link methods. There was no difference between using the keyword technique and traditional rote learning to learn vocabulary.

2.6 Picture drawings

Nation (2022, p. 137) describes drawing as an activity that enables learners to "read or listen to descriptions containing words they have recently met and draw or label pictures." Picture drawing is one of the information transfer techniques where learners transfer information from one form to another (Nation, 1988). This process indicates a deep understanding of the material, as it requires learners to adapt and reinterpret received information into a new format. The effectiveness of this technique lies in the dual engagement of learners' cognitive resources, which deepens their knowledge of specific details (Craik & Lockhart, 1972; Paivio, 1971). Studies such as those by Thomson and Paivio (1994) have demonstrated that dual coding through verbal and visual means can enhance memory and comprehension in language learning.

2.7 Roles of Picture Drawing in Vocabulary Learning

Fiorella and Mayer (2015) describe drawing in learning as a method where learners draw pictures of what they have learned from the lesson. This method facilitates learning through generative processing, which involves selecting, organizing, and integrating information. Organizing is activated when learners arrange elements within a spatial layout. Selecting occurs when learners choose components to include in their drawings. Integrating is involved when learners transition from verbal to

visual representation by drawing on their existing knowledge. This multi-step process ensures that learners engage with the material at a deeper level.

However, learners who struggle with drawing might experience extraneous processing due to the mechanics of drawing, which can detract from the cognitive resources needed for learning. Teachers should, therefore, provide proper guidance and training to minimize extraneous cognitive load and ensure that drawing facilitates rather than hinders learning.

Drawing shapes, actions, or contexts associated with target words encourages learners to make sense of vocabulary meaningfully. Research by Wammes et al. (2015) found that drawing can significantly enhance vocabulary development by integrating multiple memory codes, such as elaboration, visual imagery, motor action, and picture memory, into a single memory trace. This integration enhances vocabulary retrieval and solidifies learners' understanding and retention of new words.

Several studies have highlighted the benefits of picture drawing in vocabulary learning. For example, a study by Feryok and Pryde (2021) demonstrated that learners who engaged in drawing activities significantly improved their ability to recall and use new vocabulary. The study involved EFL students who were asked to create drawings related to the vocabulary they were learning. The results showed that these students retained and understood the vocabulary better than those who used traditional study methods.

Another study by Sadoski and Paivio (2001) explored the impact of dual coding on vocabulary learning. They found that combining verbal and visual representations of words led to improved recall and comprehension. This finding supports the idea that picture drawing, as a form of dual coding, can effectively enhance vocabulary learning.

Furthermore, empirical research by Marzano (2010) demonstrated that using non-linguistic representations, such as drawings, can improve students' ability to remember and understand academic vocabulary. In his study, students who created drawings to represent new vocabulary words performed better on vocabulary tests

than those who did not use drawings. This suggests integrating visual elements into vocabulary instruction can significantly enhance learning outcomes.

2.8 Game-Based Learning

Game-based learning as suggested by Plass et al. (2015) is an instructional method that incorporates games to actively involve students in educational tasks. In this approach, learners address challenges, make choices, and receive feedback based on their actions. Additionally, Plass et al. (2015) highlight that game-based learning theory can further enhance vocabulary acquisition by developing engagement, motivation, and meaningful interaction. As illustrated in Figure 1, their framework emphasizes the role of cognitive, emotional, and social aspects in learning, which aligns with the benefits of picture drawing. When integrated into game-based activities, drawing can create an immersive and enjoyable learning environment that promotes deeper processing and sustained attention.

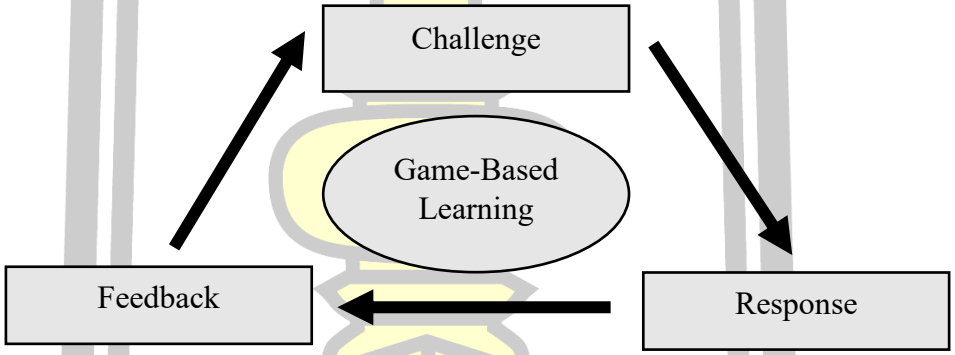


Figure 1: Model of Game-Based Learning (Plass et al., 2015)

To maximize its benefits, educators should provide guidance and training to help learners overcome any difficulties with drawing and minimize extraneous cognitive load. Integrating picture drawing into vocabulary instruction can facilitate deeper learning and more effective language acquisition.

2.9 Drawing games

The majority of the studies that incorporate drawing games as an intervention to develop vocabulary knowledge draw on the instructions from the Pictionary game (Dwi, 2017; El Rusyda et al., 2014; Naderiheshi 2022). The game requires learners to draw a picture that they have learned in a particular class and guess what the picture

is. While the game enhances vocabulary knowledge due to the integration of visual and verbal representations of vocabulary, it seems to neglect the collaboration aspect of learning since only one representative of a group will have a chance to draw a picture in each turn. This study perceives the importance of collaboration and develops new procedures for drawing games by having students work in groups to draw a picture together and exchange the pictures with other groups. Students in each group will consequently describe the exchanged pictures using their existing vocabulary knowledge. This new approach to the games offers learners the opportunity to engage in the activities collaboratively, which is crucial for language learning as it allows students to practice vocabulary in communicative contexts (Piaget, 1985).

Based on the comprehensive literature review, picture drawing is a powerful tool in vocabulary learning for EFL learners. It improves comprehension and memory retention by utilizing the principles of dual coding theory, cognitive load theory, and constructivist theory. By engaging learners in generative processing activities, such as selecting, organizing, and integrating information, drawing helps to create positive mental models of vocabulary. Research supports the effectiveness of this technique, showing that it can significantly improve vocabulary retention and understanding.

2.10 Related Studies

A number of studies have emphasized the significance of drawing in vocabulary acquisition and expansion and have revealed the benefits for motivation, memory retention, and vocabulary learning (Dwi, 2017; Ou et al., 2018; Saragih et al., 2022). Dwi's (2017) action research examined using Pictionary games to enhance elementary students' vocabulary proficiency. Prior to the study, the students mostly scored half or less in vocabulary tests due to their lack of exposure to the language. The study was partitioned into two cycles to assess the students' advancement in vocabulary acquisition. Following the completion of the cycles, the findings indicated that the average score of the students rose from 72.73 in the initial cycle to 79.33 in the subsequent cycle, demonstrating a noteworthy enhancement. Additionally, it was discovered that teachers should be mindful of utilizing suitable instructional materials about Pictionary games, sustaining student engagement, and offering guidance

throughout the activity to ensure the successful execution of the games, starting from the initial cycle. Ou et al. (2018) investigated the effect of ready-made flashcards and drawn flashcards on vocabulary learning of 52 elementary school students. Ou et al. found that the students lost their interest in learning due to the passive approach to learning and repeated information transfer. The participants were divided into control and experimental groups to compare the differences between using typical flashcards and drawing. The control group learns vocabulary through ready-made flashcards, while the experimental group learns through flashcards drawn by students. The result showed that drawing was conducive to raising motivation and memory retention and also encouraged active learning as learners created their learning content with drawings. Saragih et al. (2022) utilized a case study design employing a qualitative research approach to investigate the perception of utilizing drawing media to augment the vocabulary knowledge of 24 seventh-grade students. The data were gathered through observation, experimentation, interviews, and questionnaires. The findings indicated that many students agreed regarding drawing media's captivating and pleasurable nature. Furthermore, the mean scores notably increased from 61.9 in the pre-test to 84.5 in the post-test, emphasizing the significant increase in vocabulary knowledge.

El Rusyda et al. (2014) conducted a study to investigate the impact of using Pictionary on students' vocabulary growth. They also observed the classroom during the activity. The study involved seventh-grade students who underwent a pre-test and post-test and were observed throughout the study. The results indicated a significant improvement in students' vocabulary attainment, with scores increasing from 65.15 in the initial assessment to 89.15 in the final evaluation. In addition, the observation revealed that students were motivated to memorize the target words and demonstrated the development of problem-solving and creative skills and cooperative behavior, resulting in positive interactions among themselves.

The present study also examined certain pedagogical aspects of drawing. Cohn (2012) comprehensively analyzed multiple studies examining the correlation between drawing and language. The study determined that drawing and language are similar in structure and development, as both involve expressing concepts through systematic

patterns and rules stored in a lexicon. These two domains also share similarities in terms of the critical period. These abilities will become fossilized if drawing and linguistic skills are not adequately acquired during this period. Hence, it is noteworthy that drawing is closely linked to language development. Hamer and Lely (2019) investigated the pedagogical approach of utilizing drawing games in language learning and explored their advantages in enhancing vocabulary acquisition. They concluded that drawing games can cultivate a range of English skills, such as listening, speaking, reading, and speaking, based on the teacher's preference.

Drawing games foster collaboration among learners and enhances their vocabulary mastery in a pleasant learning setting, enabling them to acquire new words without feeling pressured. Emirmustafaoğlu and Gökmen (2015) conducted a study to examine the comparative effectiveness of pictures and direct word definitions as instructional methods or cues for vocabulary recall, in addition to existing research on the impact of pictures and drawings on vocabulary knowledge. The study included 75 elementary learners of English as a foreign language (EFL). The participants were divided into two groups: the experimental group, which received vocabulary instruction using pictures, and the control group, taught by providing English equivalents without pictures. The study involved the administration of two post-tests to assess the efficacy of pictures as an instructional method and as cues for recall. The first post-test required learners to provide answers based on their assigned instruction method, while the second post-test included questions relevant to both groups' instructional methods. The findings demonstrated that both the control and experimental groups achieved similar scores when asked to generate L2 vocabulary words for pictures. This suggests that employing pictures as an instructional method is not more advantageous than using L1 word instruction. Nevertheless, both cohorts exhibited superior performance on the test involving pictures compared to the test solely utilizing L1 words, suggesting that pictures serve as more effective prompts for vocabulary recall.

Fiorella and Zhang (2018) reviewed 17 empirical studies that examined the impact of drawing while learning a text on meaningful learning outcomes. The studies compared this approach to reading-only, text-focused, model-focused, and instructor-

provided illustration approaches. The results indicated that drawing as a learning method had a more significant impact on understanding and applying knowledge than solely reading or focusing on text-based instructions. However, the effectiveness of drawing may vary depending on the level of drawing guidance, such as minimal guidance, drawing training, partially provided drawings, or instructor-provided drawings, compared to the other two conditions. Bush's (2007) literature review explores the effects of incorporating pictures into language courses to integrate culture with vocabulary acquisition. The study proposes that pictures in language courses stimulate learner motivation, enhance vocabulary retention and comprehension, and foster a contextualized learning environment.

Additionally, the use of pictures facilitates the development of cultural awareness by illustrating cultural contexts. Wammes et al. (2015) conducted an experiment involving undergraduate students to investigate the advantages of using drawing as a mnemonic strategy for enhancing information retention. A study revealed that utilizing drawing as a memorization strategy is more productive than relying solely on written words. Drawing enables learners to improve their vocabulary by effectively combining various memory codes, such as elaboration, visual imagery, motor action, and picture memory, into a single memory trace, thereby facilitating vocabulary recall.

The practical implications and advantages of games-based instruction were the subject of a review of numerous studies. Ekin et al. (2023) systematically reviewed numerous studies over the past 55 years. The results indicated a rise in game-based studies, particularly since the 2000s, with game-based learning, serious games, and student science games being the most prevalent topics. This investigation underscored that game-based learning has emerged as one of the most pervasive research areas and advocated developing well-designed games that employ an interdisciplinary approach. A meta-analysis of the efficacy of game-based learning in formalized school contexts was conducted by Backlund and Hendrix (2013), who selected empirical studies from the 2000s. Positive effects on learning were observed in 29 of the 40 studies. Also, it was discovered that games in education could enhance language skills, collaboration, argumentation, and problem-solving abilities.

The impact of language games on the retention of 32 elementary students' vocabulary was examined by Taheri (2014). students were assigned to either a control group, instructed through conventional methods such as drilling and direct definitions, or an experimental group that received language game instruction. Compared to the control group, the experimental group demonstrated improved vocabulary knowledge, as evidenced by higher post-test scores and the ability to recall vocabulary over an extended period. It was discovered in the study conducted by Huyen and Nga (2003) at the Distance Education Centre that learners are generally weary of the conventional method of learning vocabulary, which involves memorizing and copying lists of words. Nevertheless, implementing various language games as time-filling activities resulted in a greater sense of relaxation among learners, which improved their ability to retain words. Friendly competition and active participation in the activities also served to motivate learners. Finally, language games facilitate learners' communicative and flexible language use by incorporating real-world context into the classroom setting. The selection of games should be based on the number of learners, proficiency level, cultural context, timing, topic, and classroom settings. Practitioners should carefully consider these factors. A study by Ahmed et al. (2022) examined the influence of game-based learning on Iranian EFL learners' language anxiety and motivation. In total, 58 Iranian EFL intermediates were divided into experimental and control groups. Before the treatment, the motivation and anxiety questionnaires were administered to participants in both groups. After the tests, the experimental group was instructed on ninety English vocabulary items through game-based learning. In contrast, the control group was instructed on the same vocabulary items through traditional vocabulary instruction, which involved the direct provision of word definitions. After the vocabulary instruction, the questionnaires were re-administered during the posttest. The results suggested that game-based learning could alleviate EFL students' anxiety and enhance their English learning. Also, it was discovered that game-based learning can improve the language motivation of EFL students. A study by Bavi (2018) investigated the impact of engaging in enjoyable activities on the vocabulary knowledge of 40 elementary EFL students. In the post-test, the experimental group, provided with enjoyable activities, demonstrated a substantial improvement over the control group, which was instructed in traditional vocabulary

through memorization. Additionally, the investigation indicated that students experienced increased levels of relaxation and were more cooperative during vocabulary instruction.

In Iran, Naderiheshi (2022) reviewed the literature on teaching vocabulary through games, such as Pictionary or drawing games, to young learners. The review revealed that games may present various challenges, including time management, a chaotic classroom environment, and the selection of appropriate games. However, the advantages significantly outweighed these drawbacks. This is because games in English vocabulary instruction substantially enhance motivation and engagement among learners. Additionally, games facilitate the integration of new students and promote the development of a more intimate relationship with their peers. They also foster a stress-free and relaxed environment, improving the quality of their education. In addition, it was suggested that the target vocabulary is emphasized in the context of playing games, which enables learners to acquire it more rapidly and subconsciously. Derakhshan (2015) conducts a literature review on vocabulary learning through games. It was summarized that using games can assist students in developing contexts for vocabulary acquisition and language utilization. Additionally, the effective utilization of games necessitates teachers to supervise students' utilization of target words and contemplate the activity's proceedings, as games are employed solely to inspire students without any contemplation of the content. In 2011, Dolati and Mikaili conducted a study on the impact of instructional games on the vocabulary achievement of 70 sixth and seventh-grade students. After examining the pre-test and post-test results determined that students enhanced their vocabulary knowledge and were motivated to engage in the learning process, particularly passive students who rarely participated in activities.

In Thai contexts, several studies also related to the use of games and vocabulary improvement (Methaneethorn et al., 2021; Ratsamee, 2020; Tanago, 2017). In the study of Methaneethorn et al. (2021), second-year tertiary students were taught through a game-based learning approach. The study revealed that the students improved their vocabulary knowledge with an average score of 8.82 out of 10 in the post-test when an average pre-test score was 7.43. This showed that the game-based

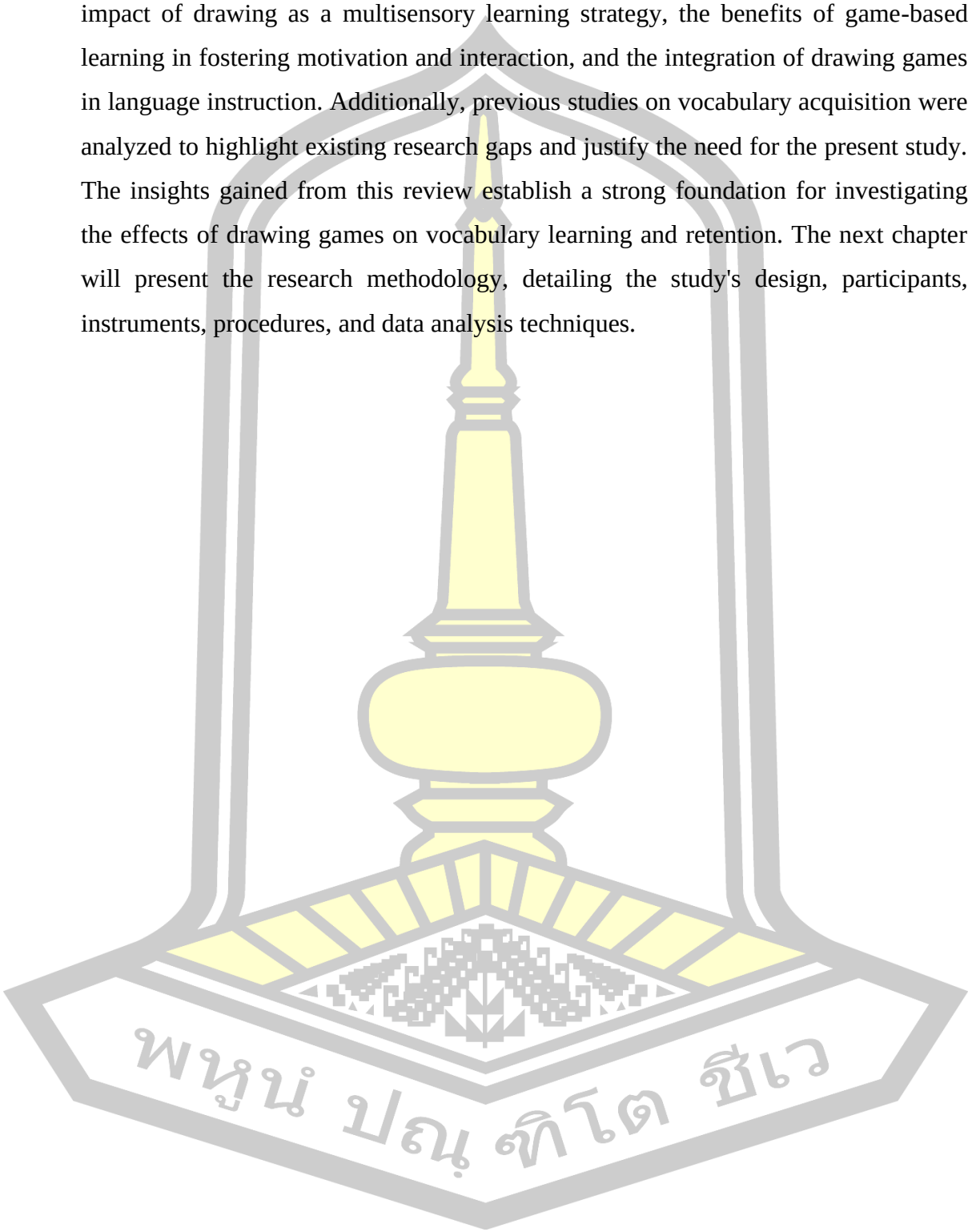
learning approach significantly developed vocabulary knowledge. Moreover, Ratsamee (2020) examined Thai Grade 11 students' attitudes and satisfaction toward using vocabulary games. It was found that the students' attitudes and satisfaction were positive since most of them stated that they could communicate more effectively during the games and that their vocabulary learning was less stressful, which made it easier to memorize the meaning of words. Tanago (2017) showed that the students received higher scores on the post-test, with an average score of 11.13 but 6.58 on the pre-test in the game-based class. On the other hand, there was no significant difference between the pre-test and post-test scores in the traditional vocabulary teaching class, with the average post-test score of 2.83 and the average pre-test score of 3.15, which was not significantly different. In addition to the test scores, the student's attitudes toward the game-based learning method were also positive, as most of the students agreed that games helped create a conducive classroom environment and helped them memorize vocabulary more easily than the traditional approach.

In conclusion, drawing, games, and game-based learning approaches significantly enhance vocabulary acquisition, motivation, engagement, and retention among learners in different contexts. Integrating these approaches into vocabulary instruction holds benefits for creating effective learning environments that serve the needs and preferences of learners. Nevertheless, although the literature review on using drawing games for vocabulary development consists of a wide range of age groups and contexts, little attention is paid to the Thai context, especially for secondary-level students. Also, the procedures for drawing games in the reviewed studies rely on the instructions for the Pictionary game, which lacks the collaboration and involvement of various learning styles. This study, therefore, aims to fill this gap by investigating the effect of drawing games on the development of second language vocabulary of Thai EFL secondary learners by incorporating a unique approach to the games which also necessitates collaboration and learner differences.

2.11 Chapter Summary

This chapter provided a comprehensive review of the theoretical and empirical foundations relevant to the study. It outlined key theories supporting vocabulary acquisition, including the form-meaning connection, dual coding theory, and the role

of cognitive engagement in learning. The review of related literature examined the impact of drawing as a multisensory learning strategy, the benefits of game-based learning in fostering motivation and interaction, and the integration of drawing games in language instruction. Additionally, previous studies on vocabulary acquisition were analyzed to highlight existing research gaps and justify the need for the present study. The insights gained from this review establish a strong foundation for investigating the effects of drawing games on vocabulary learning and retention. The next chapter will present the research methodology, detailing the study's design, participants, instruments, procedures, and data analysis techniques.



CHAPTER III
RESEARCH METHODS

This study aims to explore the effectiveness of drawing games in second-language vocabulary acquisition, mainly focusing on the form-meaning link aspect of vocabulary knowledge, and to examine the perceptions of the use of drawing games by Thai EFL secondary students. This chapter provides details on the research design, settings, participants, instruments, methods, procedures, and data analysis.

3.1 Research Design and Approach

This study adopted a pragmatic research philosophy, emphasizing the practical impact of educational interventions on student learning outcomes and engagement. This pragmatism was reflected in the choice to employ a quasi-experimental design, facilitating a direct comparison between traditional teaching methods and innovative pedagogical strategies, such as drawing games within the context of vocabulary instruction.

The quasi-experimental design, chosen for its suitability in learning settings where random assignment to conditions may be impractical, aligned with a pragmatic approach by focusing on the real-world applicability and consequences of the research findings (Creswell & Creswell, 2018). This design allowed for examining cause-and-effect relationships within naturally occurring classroom settings, providing immediately relevant insights to educators and policy-makers.

Furthermore, the study's data collection and analysis approach, incorporating both quantitative and qualitative methods, reflected a mixed-methods research philosophy. This philosophy acknowledges the complexity of educational phenomena and the value of capturing both the measurable outcomes of educational interventions (through pre-tests and post-tests) and the subjective experiences of participants (through questionnaires) (Creswell & Clark, 2011; Johnson et al., 2007). This study employed a mixed-methods approach to triangulate quantitative results with qualitative data, ensuring a comprehensive understanding of the impact of drawing games on vocabulary learning. The quantitative component assessed the effectiveness of the intervention in enhancing vocabulary knowledge through pre-tests, post-tests,

and delayed post-tests, while the qualitative aspect explored students' motivation, engagement, and perceptions of learning through focus group interviews and questionnaires. This approach provided a more holistic analysis, assessing not only the measurable improvements in vocabulary knowledge but also the students' experiences, attitudes, and engagement levels with the learning process.

In summary, the research philosophy underpinning this study was characterized by a pragmatic, and mixed-methods approach, emphasizing the practical application of research findings, the active role of learners in constructing knowledge, and the importance of employing both quantitative and qualitative methods to capture the multifaceted impact of educational interventions. This philosophy supported the investigation's aim to enhance vocabulary instruction through innovative teaching strategies, contributing valuable insights to the field of language education (Creswell & Creswell, 2018; Johnson, Onwuegbuzie, & Turner, 2007; Piaget, 1954).

3.2 Methodology

3.2.1 Participants and Setting

This study involved 40 ninth-grade students from an educational opportunity expansion school in northeastern Thailand. To ensure consistency and validity, only students who regularly attended class sessions were included, guaranteeing adequate exposure to the instructional methods. Additionally, students with emotional or behavioral challenges were excluded to maintain a consistent level of classroom interaction and participation, as such factors could interfere with students' ability to fully engage in the drawing games and potentially affect the study's outcomes. All participants had been learning English as a foreign language for at least eight to nine years, with an average of three hours of English instruction per week. However, they had limited exposure to English outside the classroom, underscoring their challenges in acquiring and retaining vocabulary.

The study employed convenience sampling, selecting two intact ninth-grade EFL classes. One class (n = 20) was assigned as the experimental group, which participated in drawing games as a supplementary instructional method, while the other class (*n* = 20) served as the control group, receiving traditional vocabulary instruction without drawing games. The study was conducted over a 14-week period.

In the experimental group, students received two hours of traditional vocabulary instruction focusing on memorization, repetition, and lessons aligned with the Basic Education Core Curriculum. This was followed by one hour of drawing games per week, which integrated vocabulary learning with interactive and creative tasks. In contrast, the control group followed a strictly traditional approach, receiving three hours of vocabulary instruction per week without the inclusion of drawing games. This intervention stage took 8 weeks (24 hours in total) of instruction and drawing games sessions.

Before the study, the informed consent process was conducted to ensure that participants and their guardians fully understood its purpose, procedures, and potential risks or benefits. The researcher administered an initial information session with both students and their guardians. During this session, the researcher explained the study's goals, the activities involved, and what participation involved. The researcher was responsible for obtaining voluntary informed consent from each participant and their guardian. Detailed information about the study, including potential risks, benefits, and rights to withdraw at any point, is provided. The researcher also thoroughly answered all questions from participants and guardians. Moreover, participants and their guardians were given one week to consider all aspects of participation. The study began after all information had been reviewed, and both students and guardians had provided written consent.

To ensure sufficient exposure to the intervention while allowing for minimal absences, participants were required to attend at least 80% of the sessions to be included in the final analysis. Attendance records were carefully monitored, and students who met the inclusion criteria were identified through official school records.

To maintain equitable access and transparency, eligible students and their guardians were formally invited to participate via an official letter distributed in class. This approach minimized the risk of selection bias and ensured that all potential participants had an equal opportunity to take part in the study.

Students who did not meet the 80% attendance requirement were excluded from the final research analysis to maintain the study's internal validity. However, to ensure that these students did not miss essential vocabulary instruction, they were provided

with a catch-up session outside regular class hours, offering a brief overview of the lessons covered during their absence. This measure upheld ethical considerations by ensuring that all students, regardless of participation in the study, had access to vocabulary learning.

During the informed consent process, the researcher explicitly communicated the minimal risks associated with participation. These included possible discomfort from unfamiliar tasks, minor stress from vocabulary assessments, and some time-consuming sessions. They were assured of the right to withdraw at any time if they felt uncomfortable, with no negative consequences for choosing to stop.

3.2.2 Instruments

Three study tools were used to examine the effects of drawing games. Vocabulary knowledge tests, including receptive or passive recognition and productive or active recognition tests, were used as the first tools to evaluate students' vocabulary knowledge both before and after the intervention. A questionnaire and focus group interview were also used to investigate the intervention's perceptions. The following sections contain detailed information on the instruments.

Word Selection Procedures

Laufer and Nation (2012) proposed three criteria for selecting vocabulary: *usefulness*, *learnability/difficulty*, and *frequency*. *Frequency* was the criterion used in this study to choose the target words since high-frequency words provide better outcomes in learning vocabulary (Laufer, 2014; Nation, 2022; Nation & Webb, 2011; Sukying, 2018). Students might have found it hard to understand a word and learn a language if vocabulary exposure was insufficient (Afzal, 2019; Alqahtani, 2015; Magnussen & Sukying, 2021; Michael Lessard-Clouston, 2021). According to Basic Education Core Curriculum B.E. 2551 (A.D. 2008), grade 9 students were required to study vocabulary about families, schools, the environment, foods, beverages, free time and recreation, health and welfare, buying and selling, climate, education and occupations, travel for tourism, provision of services, places, language, and science and technology with a vocabulary size of 2,100-2,250 words. This present study adopted the Nation's (2017) British National Corpus (BNC) and Corpus of Contemporary American English (COCA) word family lists as the source of vocabulary used in the

intervention and tests. The lists involve the 1,000 most frequent words up to the 25,000 most frequent words. The first 1,000 and 2,000 frequent word lists were used in the selection process since these words are the minimum requirements for Thai EFL students conforming to the Basic Education Core Curriculum. After gathering words from the lists, a pilot study was conducted to gain appropriate target words for the study. The pilot participants were drawn from another school with a similar level of English proficiency and were tested on whether they knew or did not know the words (see Table 2). Afterwards, words that were partially known or unknown but not consistently so were selected as target words used in the study. Another criterion used was the concept of "*drawability*". This criterion emphasized the selection of words that could be easily and accurately represented through drawings, ensuring that the visual aspect of the intervention was effective in enhancing vocabulary learning. Words that were concrete and tangible, such as nouns (e.g., "apple," "dog'), verbs (e.g., "run," "jump"), and certain adjectives (e.g., "happy," "big"), were prioritized because they tended to be easily depicted. Students could easily recognize and interpret these types of words when presented in drawing, facilitating a clear connection between the image and the word's meaning.

Table 2: Example of the vocabulary pilot test

Vocabulary	**Known**	**Unknown**	**Meaning**
School	✓		โรงเรียน
Hospital		✓	
Park	✓		สวนสาธารณะ
Restaurant		✓	

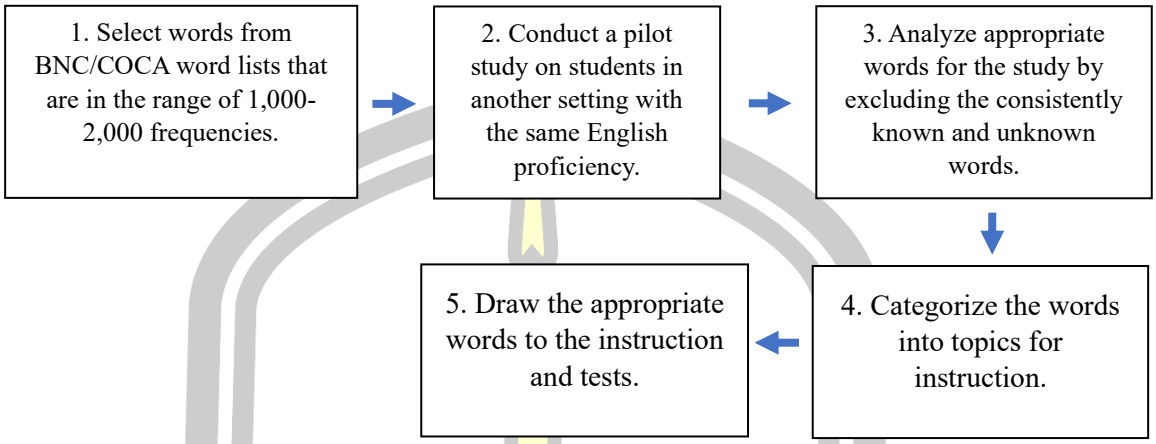


Figure 2: A summary of the word selection procedures

Passive Recognition Test

The passive recognition test was adopted by Laufer and Goldstein (2004) which was used to assess whether students could recognize the L1 meaning of an L2 word. In this test, students must select one correct meaning corresponding to the given target word from four topic-related options with three L1 distractors. This test comprised 25 items and was timed for 20 minutes. Students gained 1 score for each correct answer and 0 for selecting an incorrect option. For example:

1. จงบอกความหมายของของคำว่า “school” (Select the best meaning of the word “school”)

1. บ้าน 2. โรงเรียน

3. โรงพยาบาล 4. ร้านอาหาร

From the example above, for students to gain a score, students must choose the word “โรงเรียน” which is equivalent to the given target word “school”; however, should the students select one of the other choices, the students did not receive a score since the meanings of these L1 choices are not equivalent to “school” despite their relevance to the topic of places.

Active Recognition Test

The active recognition test was also adopted from Laufer and Goldstein. The test assesses whether students can recognize the L2 form of an L1 word. Students had to

select the form of the target word that corresponds with the given L1 meaning from four topic-related options with three L2 distractors. The test contained 25 items and was conducted within the time limit of 20 minutes. Each correct answer earned students a score; however, selecting any of the other choices did not give the students any score. For example:

1. จงบอกคำแปลของของคำว่า "โรงพยาบาล" (Select the English word for "โรงพยาบาล")

A. coffee shop B. house

C. hospital D. store

Similar to the passive recognition test, students must select the word "hospital" as it corresponds with the given L1 word "โรงพยาบาล", but the students did not gain a score if they choose any of the other options because the options, while relevant to the topic of places, do not have the same meaning as "โรงพยาบาล".

Passive Recall Test

Laufer and Goldstein's passive recall test evaluates students' ability to recall the L1 meaning of an L2 word by supplying or writing the meaning of the given L2 form. The test also took 20 minutes but contained 20 items since the time taken for each item was longer than that of the recognition tests. Students earned 1 score if they could provide the correct L1 word even with minor spelling or synonym mistakes; however, students did not gain a score if the meaning of the answer was not equivalent or close to the given L2 form.

1. _____ **(mall)**

As shown in the example, students received a score if they could supply any L1 translations of the given L2 word. For instance, if the answer was either "ห้าง" or "ห้างสรรพสินค้า", the students would receive 1 score. Spelling mistakes were acceptable as long as the given answer was understandable.

Active Recall Test

The active recall test adapted from Laufer and Goldstein involves students recalling the L2 form of an L1 word by completing the full form of the target word given aside to ensure that students would provide the target words, not other words that had the same meaning. The test consisted of 20 items with a 20-minute time limit. Students received a score of 1 for providing the correct L2 word, even with minor spelling or synonym errors. However, they did not earn a score if the L2 form of their answer differed significantly from the provided L1 word.

For example:

1. s_____ **(ร้านค้า)**

In this test, students earned a score should they provide any L2 equivalent of the given L1 word, which, in the example, could be both *shop* and *store* since they could be translated into the word "ร้านค้า". Errors in spelling were also compromised if the given answer was comprehensible. Nevertheless, the students did not receive a score if the L2 form of their response differed from the provided L1 word.

Questionnaire

EFL primary school participants' perceptions of form-meaning link knowledge instructions through drawing games were investigated using a five-point Likert scale questionnaire adapted from Sukying's (2020) perception questionnaire of word knowledge. The questions centered on comprehending form-meaning link knowledge acquired through the intervention, both in production and reception. Likert scale with five points: strongly disagree (1) to strongly agree (5). The questionnaire was written in Thai to ensure that the participants understood the questions and that the answers were accurate (see Table 3).

Table 3: Example of the questionnaire

Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I feel fun learning vocabulary through drawing games.					
2. I think drawing games helps me remember vocabulary.					

3. I feel motivated to learn more when learning with drawing games.					
4. I understand the instructions for the games well.					
5. I think drawing games is a good to learn vocabulary.					
6. I want to recommend the games to those who want to learn vocabulary.					

Focus Group Interviews

To gain deeper insights into participants' perceptions of the intervention, focus group interviews were conducted. Rabiee (2004) defines focus group interviews as a qualitative research tool used to explore participants' perceptions, experiences, and ideas about an intervention. This method provided rich, detailed data to complement the quantitative findings, offering a comprehensive understanding of students' experiences with drawing games in vocabulary learning.

The focus group sessions involved 20 participants from the experimental group, divided into five groups. Each group consisted of two high-performing and two low-performing students, ensuring a balanced representation of perspectives. Each session lasted approximately 10 minutes; however, the researcher remained flexible, allowing discussions to extend naturally to avoid restricting participants' responses due to time constraints.

To facilitate mutual understanding, all questions were asked in Thai, ensuring that participants could express their thoughts clearly and confidently. The interviews were conducted in a voluntary and interactive manner, allowing turn-taking to occur naturally. The researcher provided occasional follow-up prompts to encourage participation from quieter students and to mitigate potential power dynamics within the groups.

The following open-ended questions were used to guide the discussion:

1. How did you feel when you first played these games?
2. Do you think the games are beneficial for vocabulary learning compared to traditional methods? If so, why?
3. What aspects of the games did you enjoy the most? How did they enhance your learning experience?

4. Were there any aspects of the games that you did not like? If so, why?
5. Is there anything that should be improved about the games? If so, how?

These questions were designed to elicit meaningful responses, identify strengths and limitations, and gather suggestions for potential improvements to the intervention.

3.3 Test Development

The target words were selected from the BNC/COCA word list and checked if they followed the CEFR standard of the A1 level. However, only words that were easy to draw were selected as target words. The passive recognition, active recognition, passive recall, and active recall tests contained 25, 25, 15, and 15 items, respectively. In terms of the time required during the tests, a pilot study was conducted to determine the number of items that required the equivalent amount of time. All items were used in both the pre-test and post-test to compare the improvement of the participants' receptive and productive vocabulary knowledge; however, the items and options in the pre-test and post-test were arranged differently. After the development of the tests, the experts were requested to evaluate the validity of the instruments with the Index of Item-Objective Congruence (IOC). A three-point scale was used to review each item, with +1 for congruent items, 0 for unsure items, and -1 for incongruent items. The experts' total scores were divided by three. If the outcome equals 0.5-1, the instruments are considered valid. On the other hand, if the result is not more than 0.5, the item needs to be revised. The reliability of the questionnaire was measured with Cronbach's Alpha to assess the extent to which all the items measure the same construct. The value of Cronbach's Alpha must be 0.70 or more to be accepted as internally consistent.

3.4 Drawing Games as an Intervention

This study adapted Pictionary games as an addition to the traditional vocabulary instruction. Pictionary games are characterized as games that require learners to draw pictures of the words that the teacher gives and attempt to guess what the drawn pictures are. During the games, the students are divided into 2 teams, and each team must select 1 representative to draw pictures on the board while the rest of the group are the guessers. However, the drawing activities in this study involved collaboration so as to ensure that students who may not typically engage in drawing could

participate in the activities. Students had to work in groups, drawing about what they had learned, and the drawings were then exchanged among groups for interpretation. Subsequently, participants had to describe the images using their existing vocabulary. This emphasis on collaboration aligns well with the constructivist theory as students are grouped together to create drawings based on the vocabulary they have learned. This group activity fosters a collaborative learning environment where students negotiate meanings, share ideas, and learn from each other. The exchange of drawings among groups further reinforces this social aspect, as students are required to interpret and describe the drawings created by their peers, thereby deepening their understanding of the vocabulary through collaboration (Slavin, 1996). This integration of drawing helps students develop their vocabulary by combining various memory codes—elaboration, visual imagery, motor action, and picture memory, for example—into a single memory trace that improves vocabulary retrieval (Wammes et al., 2015). Also, learning vocabulary can be facilitated by drawing because students are encouraged to draw objects, activities, or situations connected to the target words to help them understand the vocabulary (Fiorella & Mayer, 2015). In the drawing games lesson, students were taught the target words by topic through traditional vocabulary instruction or memorization and repetition. After teaching each topic, drawing games were implemented as an additional instruction approach. During drawing games, students were asked to get into groups and draw a picture of a word that was presented in the class prior to the drawing games session

The integration of drawing games as a teaching method is rooted in constructivist learning theory, which posits that learners actively construct knowledge through interactions with their environment (Piaget, 1954). This theoretical foundation emphasizes that engaging, interactive learning experiences facilitate deeper cognitive processing, leading to a more meaningful understanding and retention of vocabulary. Drawing games align with constructivist principles by fostering creativity, collaboration, and critical thinking, enabling students to actively engage with vocabulary rather than passively memorizing word lists. Unlike traditional rote-learning methods, which often rely on repetition and memorization, drawing games provide a dynamic and student-centered approach to language acquisition, allowing learners to form personal connections with new vocabulary through visual

representation and social interaction. By encouraging students to actively create, interpret, and discuss their drawings, this method not only reinforces word meaning and form but also enhances motivation and engagement, making vocabulary learning more effective and enjoyable.

3.5 Data Collection Procedures

This study arranged the data collection session into four stages.

Stage 1: In the first week, students took a pre-test to determine vocabulary proficiency before the intervention. The test contained Laufer and Goldstein's (2004) four types of vocabulary tests to determine passive and active knowledge of vocabulary.

Stage 2: From week two to week nine, students engaged in one hour of drawing games after two hours of instruction on a particular topic.

Stage 3: In week ten, the three vocabulary tests were used in a post-test, followed by a questionnaire and focus group interviews to gain perceptions of the intervention.

Stage 4: In the fourteenth week, a delayed post-test was conducted to assess vocabulary retention over a certain period.

All tests took 60 minutes, and each type of test was equally allocated since the number of items in each test varied according to the demanding knowledge.

Table 4: Data collection procedures

Stage	Drawing games lesson
Pre-Intervention	Students took a pre-test to determine vocabulary proficiency before the intervention.
Intervention	Students learned vocabulary by topic and engaged in drawing games after each topic was taught.
Post-Intervention	Students took a post-test to measure the results of the intervention, answered a questionnaire, and attended focus group interviews to gain perceptions of the intervention.
Delayed Post-Intervention	Students were administered a delayed post-test to examine vocabulary retention 4 weeks after the post-intervention stage.

3.6 Data Analysis

Quantitative and qualitative data analysis methods were employed to ensure a comprehensive and valid analysis of the study's findings. The data analysis was structured according to the study's three research questions, focusing on the effects of the intervention, vocabulary retention, and participants' perceptions of using drawing games for vocabulary acquisition.

To examine the effects of the drawing game intervention on participants' vocabulary knowledge (RQ1), both descriptive and inferential statistical analyses were conducted on vocabulary test scores. All test scores were converted into percentages to ensure comparability, as the total possible scores varied across different vocabulary tests. The dependent-samples *t*-test was used to compare pre-test and post-test scores within each group (experimental and control) to determine whether significant improvements occurred over time. The independent-samples *t*-test was used to compare the post-test scores of the experimental and control groups, assessing the intervention's overall effectiveness. Additionally, repeated measures ANOVA was applied to analyze differences across passive and active vocabulary tests, which assessed recognition and recall. This helped capture the continuum of vocabulary learning, identifying patterns of progression from receptive to productive vocabulary knowledge. Post-hoc analyses were conducted where necessary to determine specific differences between test conditions.

To evaluate the extent of vocabulary retention over time (RQ2), repeated measures ANOVA was performed on pre-test, post-test, and delayed post-test scores. This statistical approach allows for identifying trends in vocabulary retention and decay across time points. Post-hoc analyses were conducted to assess significant differences between test pairs, clarifying whether the intervention had a sustained impact on long-term vocabulary retention. All statistical analyses were performed using SPSS (Statistical Package for the Social Sciences) to ensure the accuracy, reliability, and replicability of results.

Both quantitative and qualitative analyses were conducted to assess students' perceptions of the drawing game intervention (RQ3). Data from the five-point Likert scale questionnaire were analyzed using descriptive statistics (means, standard

deviations, and percentages) to gauge overall student attitudes toward drawing games for vocabulary learning. In addition, qualitative data from focus group interviews provided deeper insights into students' experiences. A thematic analysis was conducted to identify key themes related to engagement and learning. Participants were grouped into High-Performing (HP) and Low-Performing (LP) categories based on their overall test scores, with a median score of 41.5 as the cutoff. Each focus group included two HP and two LP students, allowing for a balanced representation of perspectives.

Multiple strategies were employed to ensure the trustworthiness and validity of the qualitative findings. In this study, coding scheme was established by having two independent coders analyze a subset of the focus group interview data using a predefined coding scheme. Any discrepancies in coding were resolved through discussion, leading to refined categories based on common patterns. Additionally, member checking was employed, wherein participants reviewed preliminary findings to confirm their accuracy. Their feedback verified that the themes reflected their actual experiences with the drawing game intervention. The final qualitative analysis identified three key themes of engagement**:** cognitive engagement, which reflects how students actively processed and retained vocabulary through drawing games; behavioral engagement**,** which highlights students' participation, effort, and willingness to engage in learning activities; and affective engagement**,** which captures students' emotional responses, motivation, and enjoyment of the learning process.

To ensure the trustworthiness and validity of the qualitative findings, multiple strategies were employed. A systematic coding process was established by involving two independent coders who analyzed a subset of the focus group interview data using a predefined coding scheme of student engagement. Any discrepancies in coding were resolved through discussion and consensus, leading to the refinement of categories based on common patterns. Additionally, member checking was conducted, where participants were given the opportunity to review preliminary findings to verify their accuracy. Their feedback confirmed that the identified themes accurately reflected their experiences and perceptions of the drawing game intervention.

The final qualitative analysis identified three key themes of engagement: (1) cognitive engagement, which captures how students actively processed and retained vocabulary through drawing games; (2) behavioral engagement, which highlights students' participation, effort, and willingness to engage in learning activities; and (3) affective engagement, which reflects students' emotional responses, motivation, and enjoyment of the learning process. These findings provide a comprehensive understanding of how drawing games influence learners' vocabulary acquisition and overall engagement in an EFL classroom setting.

3.7 Chapter Summary

This chapter provided a comprehensive overview of the research methodology, detailing the research design, participants, setting, research instruments, treatment, data collection procedures, and data analysis. It outlined the experimental setup, described the comparative analysis between the experimental and control groups, and highlighted the demographic and linguistic background of the participants. The research instruments, including vocabulary tests, questionnaires, and focus group interviews, were explained, along with their adaptation and validation procedures, to ensure reliability. The treatment and data collection process were described, emphasizing the integration of drawing games into vocabulary instruction and the structured timeline of the intervention. The data analysis section detailed both quantitative and qualitative approaches, employing *t*-tests, repeated measures ANOVA, and thematic analysis to evaluate vocabulary acquisition, retention, and learner engagement. The next chapter will present the results of the data analysis, offering empirical insights into the impact of drawing games on vocabulary learning and student perceptions.

CHAPTER IV
RESEARCH RESULTS

This chapter presents the findings of the research based on the data collected from pre-tests, post-tests, perception questionnaires, and focus group interviews. The analysis focuses on the effects of drawing games on vocabulary knowledge, student perceptions of these games, and their impact on vocabulary retention.

4.1 The Effects of Drawing Games on Vocabulary Knowledge of Form-Meaning Connections of Thai EFL Learners

This section outlines the impact of the intervention on students' vocabulary knowledge of form-meaning connections. To measure the effectiveness of drawing games in vocabulary acquisition, four types of vocabulary tests were administered: passive recognition, active recognition, passive recall, and active recall. These assessments were conducted at three stages: pre-test, post-test, and delayed post-test, with all 40 participants completing each stage.

To analyze the effects of the intervention, repeated measures ANOVA was employed using SPSS. This statistical method was chosen as it allows for comparisons of mean scores across multiple time points within the same group of participants, thereby assessing vocabulary gains and retention over time. Prior to conducting the analysis, the normality of score distribution was examined to confirm the appropriateness of statistical tests. A normality test was performed to assess whether the data conformed to a normal distribution, ensuring reliability in interpreting the results. The distribution analysis showed no significant skewness or irregularities, confirming that the data followed a normal pattern across all test types. These statistical measures provide a robust and reliable basis for evaluating the effectiveness of drawing games in enhancing students' vocabulary knowledge.

4.1.1 Passive Recognition Test Results

The results from the passive recognition test are shown in Table 5. The mean score for the experimental group increased from 10.45 (SD = 3.50) on the pre-test to 19.35 (SD = 2.81) on the post-test, compared to a smaller change in the control group, which had mean scores of 10.05 (SD = 6.01) and 13.75 (SD = 6.24) on the pre-test

and post-test respectively. The *t*-value of 10.45 and *p*-value less than 0.05 significance level suggest that the intervention had a statistically significant effect on the experimental group's ability to recognize target vocabulary passively. This finding indicates that drawing games may facilitate better recognition of vocabulary.

Table 5: Participants' scores on the Passive Recognition Test within groups

Groups	Test	Mean (%)	SD	*t-value*	*p*
Experimental Group (n = 20)	Pre-test	10.45 (41.8)	3.50	10.45	0.05*
	Post-test	19.35 (77.4)	2.81		
Control Group (n = 20)	Pre-test	10.05 (40.2)	6.01	5.73	0.05*
	Post-test	13.75 (55)	6.24		

***Note:** the total score = 25

Table 6 shows the comparison of the scores between the two groups. For the pre-test of the recognition test, the experimental group had a mean score of 10.45, while the other group scored 10.05. The *t*-value was 0.28, with a *p*-value of 0.78. These results indicate no statistically significant difference between the two groups at the pre-test stage ($p > 0.05$). The similarity in scores suggests that both groups had comparable levels of vocabulary recognition knowledge before the intervention began.

For the post-test of the recognition test, the experimental group had a mean score of 19.35, while the other group scored 13.5 with a *t*-value of 3.3 and a *p*-value of less than 0.05. These results indicate a statistically significant difference between the two groups ($p < 0.05$) after the intervention. The experimental group outperformed the other group, suggesting that the drawing games intervention positively improved vocabulary recognition.

Table 6: Participants' scores on the Passive Recognition Test between groups

Tests	Groups	Mean	SD	Percentage	*t-value*	*p*
Pre-test	Experimental	10.45	3.50	41.8%	0.28	0.78
	Control	10.05	6.01	40.2%		
Post-test	Experimental	19.35	2.81	77.4%	3.31	0.05*
	Control	13.5	6.24	55%		

***Note:** the total score = 25

4.1.2 Active Recognition Test Results

In the active recognition test, which measures the ability to actively identify the correct form of a word, the experimental group again showed a significant

improvement, with mean scores rising from 9.85 (SD = 4.04) to 17.15 (SD = 3.38). The control group, however, demonstrated minimal change, with mean scores of 8.25 (SD = 5.26) and 10.9 (SD = 4.92). The calculated *t*-value of 7.93 and *p*-value smaller than 0.05 significance level indicate a statistically significant difference between the pre-test and post-test. These results imply that drawing games can effectively promote the recognition of word forms.

Table 7: Participants' scores on the Active Recognition Test within groups

Groups	**Test**	**Mean (%)**	**SD**	***t-value***	***p***
Experimental Group (n = 20)	Pre-test	9.85 (39.4)	4.04	7.93	0.05*
	Post-test	17.15 (68.6)	3.38		
Control Group (n = 20)	Pre-test	8.25 (33)	5.26	5.98	0.05*
	Post-test	10.9 (43.6)	4.92		

***Note:** the total score = 25

Table 8 presents the comparison of the scores of the active recognition test of the experimental and control groups. The experimental group had a mean score of 9.85, while the control group scored 8.25. The *t*-value was 1.05, and the *p*-value was 0.30. These results show no statistically significant difference ($p > 0.05$) between the two groups before the intervention, indicating that both groups started with similar levels of vocabulary knowledge.

The experimental group scored 17.15, while the control group scored 10.9. The *t*-value was 4.77, and the *p*-value was less than 0.05. This result demonstrates a statistically significant difference ($p < 0.05$) between the two groups after the intervention. The experimental group performed significantly better, suggesting that the drawing games intervention had a strong positive impact on improving students' ability to actively recall and produce vocabulary.

Table 8: Participants' scores on the Active Recognition Test between groups

Tests	**Groups**	**Mean (%)**	**SD**	***t-value***	***p***
Pre-test	Experimental	9.85 (39.4)	4.04	1.05	0.30
	Control	8.25 (33)	5.26		
Post-test	Experimental	17.15 (68.6)	3.38	4.77	0.05*
	Control	10.9 (43.6)	4.92		

***Note:** the total score = 25

4.1.3 Passive Recall Test Results

The passive recall test, which assesses the ability to recall the meaning of a given word, showed significant gains for the experimental group (See Table 9), whose mean scores increased from 2.19 (SD = 3.11) to 4.38 (SD = 2.58). On the other hand, its counterpart's performance showed no change, with mean scores of 3.56 in both tests. The significance level of the *t*-value of 2.97 and the significance level of the *p*-value of smaller than 0.05 confirm the statistical significance of these findings. This suggests that drawing games may help improve students' ability to recall the meanings of vocabulary more efficiently than traditional vocabulary instruction.

Table 9: Participants' scores on the Passive Recall Test within groups

Groups	Test	Mean (%)	SD	*t-value*	*p*
Experimental Group (n = 20)	Pre-test	2.19 (8.76)	3.11	2.97	0.05*
	Post-test	4.38 (17.52)	2.58		
Control Group (n = 20)	Pre-test	3.56 (14.24)	3.77	0	1
	Post-test	3.56 (14.24)	4.00		

***Note:** the total score = 25

When examining the difference between the two groups (See Table 10), the experimental group had a mean score of 2.19, while the control group scored 3.56 in the pre-test. The *t*-value was -1.17, and the p-value was 0.26. These results indicate no statistically significant difference ($p > 0.05$) between the two groups before the intervention, suggesting that both groups started with comparable levels of passive recall ability prior to the intervention.

In the post-test, the experimental group scored 4.38, while the control group scored 3.56. The *t*-value was 0.80, and the *p*-value was 0.43. Similarly, there was no statistically significant difference ($p > 0.05$) between the two groups after the intervention. While the experimental group showed a slight improvement, the results suggest that the drawing games intervention did not have a significant impact on improving passive recall ability compared to the control group.

Despite no significant differences between the groups, a within-group comparison (See Table 9) revealed that the experimental group experienced a significant improvement in their passive recall scores from 2.19 in the pre-test to 4.38 in the post-test. This increase suggests that the drawing games intervention had a positive impact

on the experimental group's performance, even though it did not outperform the control group in the post-test.

Table 10: Participants' scores on the Passive Recall Test between groups

Tests	Groups	Mean (%)	SD	Percentage	*t-value*	*p*
Pre-test	Experimental	2.19 (8.76)	3.11	8.76%	-1.17	0.26
	Control	3.56 (14.24)	3.77	14.24%		
Post-test	Experimental	4.38 (17.52)	2.58	17.52%	0.80	0.43
	Control	3.56 (14.24)	4.00	14.24%		

***Note:** the total score = 25

4.1.4 Active Recall Test Results

The results of the active recall test, which is the most challenging as it requires students to produce the target word, also showed a clear benefit from the intervention (See Table 11). The experimental group's mean scores increased from 1.25 (SD = 2.22) to 2.44 (SD = 2.16), while the control group received identical scores in the pre-test and post-test with an average score of 3.56 in both tests. With a *t*-value of 2.17 and a *p*-value at the 0.04 significance level, the results indicate a significant effect of the drawing games on the student's ability to actively recall the form of the target words.

Table 11: Participants' scores on the Active Recall Test within groups

Groups	Test	Mean (%)	SD	*t-value*	*p*
Experimental Group (n = 20)	Pre-test	1.25 (5)	2.22	2.17	0.05*
	Post-test	2.44 (9.76)	2.16		
Control Group (n = 20)	Pre-test	1.69 (6.76)	2.82	1.56	0.14
	Post-test	2 (8)	3.13		

***Note:** the total score = 25

Table 12 reveals the difference between the two groups. The results indicate no statistically significant difference between the experimental and control groups in the pre-test (p = 0.64) and post-test (p = 0.63) scores for active recall. Although both groups showed no significant improvement when compared to each other, the results of the within-group comparison (See Table 11) showed that the experimental group's gain (from 1.25 to 2.44) was significantly different. In contrast, the control group's scores were not significantly different in the pre-test and post-test (from 1.69 to 2), indicating that while the experimental group benefited from the intervention regarding

active recall performance, the control group did not achieve the same level of improvement.

Table 12: Participants' scores on the Active Recall Test between groups

Tests	Groups	Mean (%)	SD	*t-value*	*p*
Pre-test	Experimental	1.25 (5)	2.22	-0.48	0.64
	Control	1.69 (6.76)	2.82		
Post-test	Experimental	2.44 (9.76)	2.16	0.49	0.63
	Control	2 (8)	3.13		

***Note:** the total score = 25

4.1.5 A Summary of the Participants' Performance

Table 13 presents the summary of the overall scores before and after the intervention within groups. In the experimental group, the mean score increased substantially from the pre-test ($\bar{x}$ = 23.74, SD = 10.97) to the post-test ($\bar{x}$ = 43.31, SD = 9.16) and decreased slightly by the delayed post-test ($\bar{x}$ = 39.71, SD = 8.86). The repeated measures ANOVA showed an *F*-value of 192.93, with a p-value less than 0.05, indicating that scores across the three-time points were statistically significant. Post-hoc analysis revealed that the difference between the pre-test and post-test was statistically significant ($p < 0.05$), as was the difference between the pre-test and delayed post-test ($p < 0.05$). However, the difference between the post-test and delayed post-test also reached a significance level of less than 0.05, indicating a slight decline in scores but still demonstrating retention compared to the pre-test.

For the control group, the mean score improved from the pre-test ($\bar{x}$ = 23.55, SD = 15.81) to the post-test ($\bar{x}$ = 30.21, SD = 16.59), followed by a decrease in the delayed post-test ($\bar{x}$ = 22.16, SD = 15.19). The repeated measures ANOVA for the control group yielded an *F*-value of 37.29, with a *p*-value less than 0.05, suggesting significant differences in scores over time. Post-hoc comparisons indicated a statistically significant improvement from the pre-test to the post-test ($p < 0.05$). However, the difference between the pre-test and delayed post-test was insignificant ($p = 0.22$), suggesting that the initial gains were not retained. Moreover, the difference between the post-test and delayed post-test was significant ($p = 0.05$), indicating a decline in scores over time.

Table 13: A summary of the overall participants' scores within groups

Groups	Test	Mean (%)	SD	*f*	*p*
Experimental Group (n = 20)	Pre-test	23.74 (23.74)	10.97	192.93	0.05*
	Post-test	43.31 (43.31)	9.16		
	Delayed	39.71 (39.71)	8.86		
Control Group (n = 20)	Pre-test	23.55 (23.55)	15.81	37.29	0.05*
	Post-test	30.21 (30.21)	16.59		
	Delayed	22.16 (22.16)	15.19		

***Note:** the total score = 100

However, Table 14 and Figure 3 show the difference between the mean scores between the two groups. The results of the pre-test indicated no significant difference between the experimental group ($\bar{x}$ = 23.74) and the control group ($\bar{x}$ = 23.55), with a *t*-value of 0.04 and a *p*-value of 0.97, suggesting that the two groups started at a similar level of vocabulary knowledge before the intervention. In the post-test, the experimental group demonstrated a notable improvement, achieving a mean score of 43.31 compared to 30.21 in the control group. The difference between the groups was statistically significant, with a *t*-value of 3.03 and a *p*-value less than 0.05. This indicates that the experimental group significantly outperformed the control group after participating in the intervention. The delayed post-test results revealed that the experimental group maintained a higher level of vocabulary knowledge ($\bar{x}$ = 39.71) than the control group ($\bar{x}$ = 22.16). The difference between the groups was statistically significant, with a *t*-value of 4.38 and a *p*-value less than 0.05. This suggests that the experimental group improved their vocabulary knowledge and significantly outperformed the control group in terms of retention.

Table 14: A summary of the overall participants' scores between groups

Tests	Groups	Mean (%)	SD	*t-value*	*p*
Pre-test	Experimental	23.74 (23.74)	10.97	0.04	0.97
	Control	23.55 (23.55)	15.81		
Post-test	Experimental	43.31 (43.31)	9.16	3.03	0.05*
	Control	30.21 (30.21)	16.59		
Delayed post-test	Experimental	39.71 (39.71)	8.86	4.38	0.05*
	Control	22.16 (22.16)	15.19		

***Note:** the total score = 100

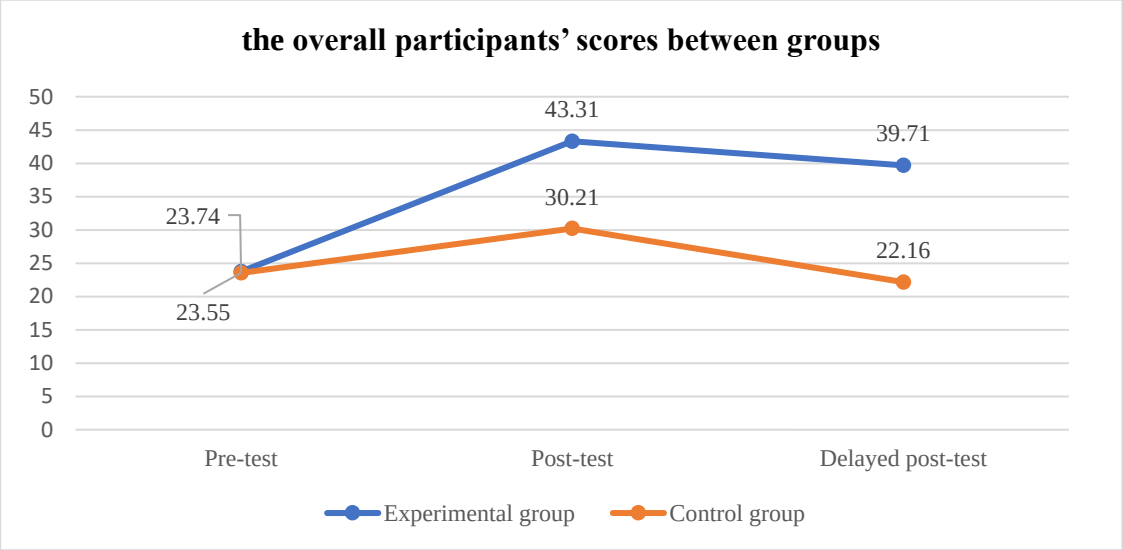


Figure 3: Difference in the performance of the participants

4.1.6 Differences between the Four Types of Tests

Table 15 presents the pre-test and post-test scores across the four types of vocabulary tests for both the experimental and control groups. For the experimental group, the pre-test results showed that passive recognition had the highest mean score ($\bar{x}$ = 10.45), followed by active recognition ($\bar{x}$ = 9.85), passive recall ($\bar{x}$ = 2.19), and active recall ($\bar{x}$ = 1.25). A significant difference was found among these test types (f = 109.31, $p < 0.05$). The post-hoc analysis further indicated that the difference between passive recognition and active recognition was not statistically significant (t = 0.7, p = 0.49), suggesting that students performed similarly on both tasks. However, active recognition was significantly easier than passive recall (t = 13.84, $p < 0.05$), and passive recall was significantly easier than active recall (t = 3.00, $p < 0.05$), confirming that recall-based tasks were more challenging.

After the intervention, the post-test results indicated significant improvement across all test types, with passive recognition still showing the highest mean score ($\bar{x}$ = 19.35), followed by active recognition ($\bar{x}$ = 17.15), passive recall ($\bar{x}$ = 4.38), and active recall ($\bar{x}$ = 2.44). The overall difference between test types remained statistically significant (f = 463.30, $p < 0.05$). The post-hoc analysis revealed that passive recognition scores were significantly higher than active recognition (t = 3.34, $p < 0.05$). Similarly, active recognition scores were significantly higher than passive

recall (t = 23.55, p < 0.05), and passive recall remained easier than active recall (t = 6.60, p < 0.05).

In the control group, a similar pattern was observed. In the pre-test, passive recognition yielded the highest score ($\bar{x}$ = 10.05), followed by active recognition ($\bar{x}$ = 8.25), passive recall ($\bar{x}$ = 3.56), and active recall ($\bar{x}$ = 1.69), with a statistically significant difference (f = 39.10, p < 0.05). Post-hoc analysis showed that passive recognition was significantly easier than active recognition (t = 2.14, p = 0.04). Moreover, active recognition was significantly easier than passive recall (t = 5.04, p < 0.05), and passive recall was significantly easier than active recall (t = 4.80, p < 0.05), confirming a clear hierarchy of difficulty.

The post-test results showed an increase in all test types, but with smaller gains compared to the experimental group. Passive recognition remained the highest ($\bar{x}$ = 13.75), followed by active recognition ($\bar{x}$ = 10.90), passive recall ($\bar{x}$ = 3.56), and active recall ($\bar{x}$ = 2.00), with an overall significant difference (f = 95.92, p < 0.05). Post-hoc analysis indicated that passive recognition scores were significantly higher than active recognition (t = 3.09, p < 0.05). Similarly, active recognition was significantly easier than passive recall (t = 9.88, p < 0.05), and passive recall remained significantly easier than active recall (t = 3.60, p < 0.05).

Table 15: Differences between the four types of tests among pre-tests and post-tests

Groups	Test Types	Pre-test	*f*	*p*	Post-test	*f*	*p*
Experimental	P-Recognition	10.45 (41.80%)	109.31	0.05*	19.35 (77.40%)	463.30	0.05*
	A-Recognition	9.85 (39.40%)			17.15 (68.60%)		
	P-Recall	2.19 (8.76%)			4.38 (17.52%)		
	A-Recall	1.25 (5%)			2.44 (9.76%)		
Control	P-Recognition	10.05 (40.20%)	39.10	0.05*	13.75 (55%)	95.92	0.05*
	A-Recognition	8.25 (33%)			10.90 (43.60%)		
	P-Recall	3.56 (14.24%)			3.56 (14.24%)		
	A-Recall	1.69 (6.76%)			2.00 (8%)		

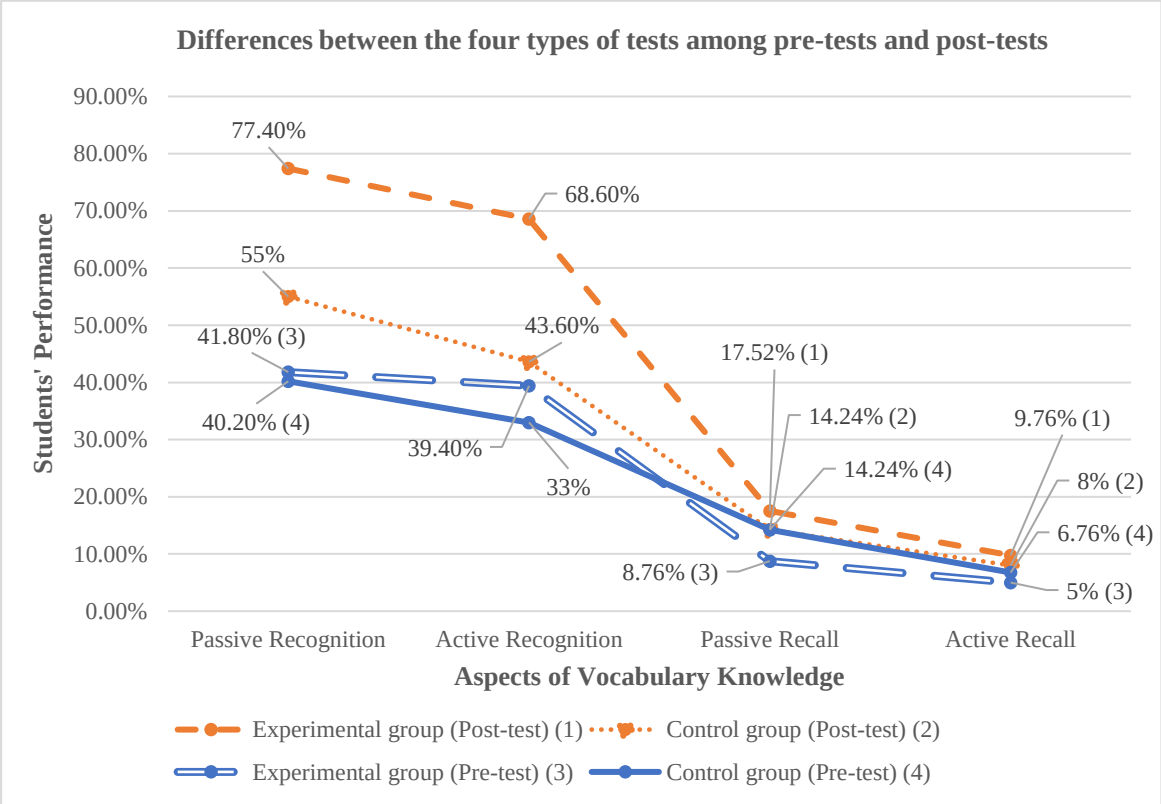


Figure 4: Differences between the four types of tests among pre-tests and post-tests

Table 16 provides the comparison of the four test types based on mean scores revealed significant differences in difficulty levels. In the experimental group, passive recognition ($\bar{x}$ = 14.9) had the highest mean score, followed by active recognition ($\bar{x}$ = 13.5), passive recall ($\bar{x}$ = 3.28), and active recall ($\bar{x}$ = 1.84), with an overall significant difference (f = 248.59, $p < 0.05$). Post-hoc analysis confirmed that passive recognition and active recognition were significantly different (t = 2.55, $p < 0.05$). Additionally, a substantial gap was observed between active recognition and passive recall (t = 18.24, $p < 0.05$), as well as between passive recall and active recall (t = 6.35, $p < 0.05$).

Similarly, in the control group, passive recognition ($\bar{x}$ = 11.9) had the highest mean score, followed by active recognition ($\bar{x}$ = 9.58), passive recall ($\bar{x}$ = 3.56), and active recall ($\bar{x}$ = 1.84), with a statistically significant difference across the tests (f = 115.86, $p < 0.05$). Post-hoc comparisons indicated significant differences between passive recognition and active recognition (t = 3.74, $p < 0.05$), active recognition and passive recall (t = 9.63, $p < 0.05$), and passive recall and active recall (t = 5.95, $p < 0.05$).

Table 16: Differences between test types based on mean scores of each test

Groups	Test Types	Mean (%)	*f*	*p*
Experimental	Passive recognition	14.9 (59.6%)	248.59	0.05*
	Active recognition	13.5 (54%)		
	Passive recall	3.28 (13.12%)		
	Active recall	1.84 (7.36%)		
Control	Passive recognition	11.9 (47.6%)	115.86	0.05*
	Active recognition	9.58 (38.32%)		
	Passive recall	3.56 (14.24%)		
	Active recall	1.84 (7.36%)		

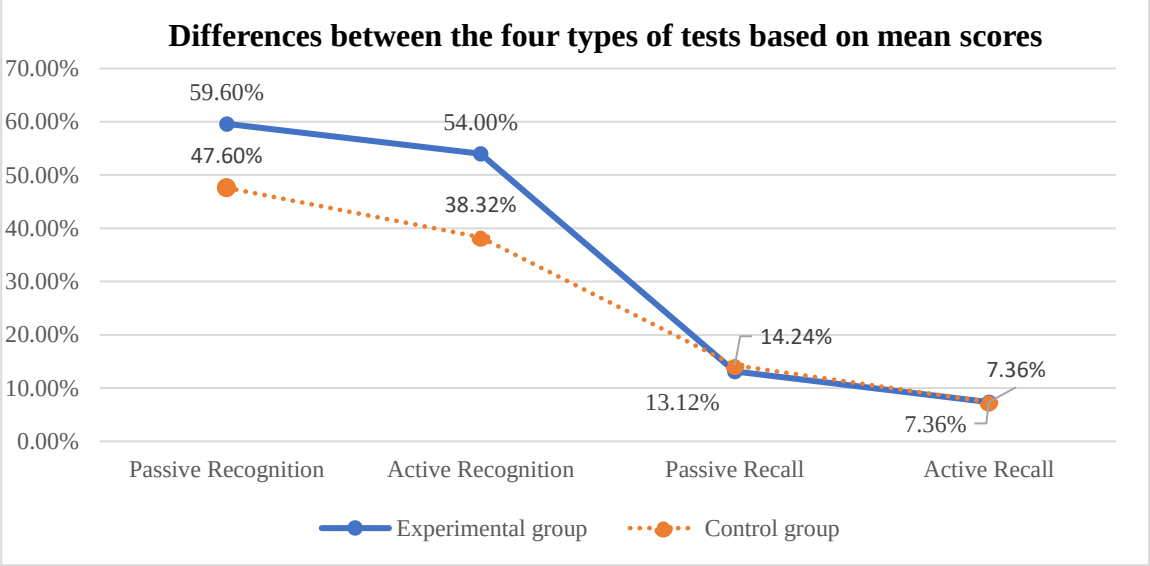


Figure 5: Differences between the four types of tests based on mean scores

4.2 Thai EFL Learners' Perceptions of Drawing Games for Vocabulary Learning

4.2.1 Questionnaire Results

This section presents the findings from a questionnaire designed to examine participants' perceptions of using drawing games for vocabulary learning. The questionnaire, adapted from Sukying's (2020) perception questionnaire of word knowledge, evaluated various aspects of engagement and effectiveness. The results, summarized in Table 15, highlight students' overwhelmingly positive perceptions of this teaching technique.

Table 17: Students' perceptions of drawing games in vocabulary learning

	Items	x̄	SD	%	Meaning
1	I enjoy studying English through the use of drawing games.	4.5	0.61	90%	Very high
2	I think drawing games helps me remember vocabulary.	4.15	0.67	83%	Very high
3	I think I am more encouraged to learn vocabulary using drawing games.	4.15	0.59	83%	Very high
4	I think drawing games helps me learn new vocabulary better.	4.45	0.69	89%	Very high
5	I think drawing games helps me get familiar with vocabulary.	4.30	0.73	86%	Very high
6	I think drawing games helps me learn vocabulary that suits my proficiency level.	4.10	0.85	82%	Very high
7	I can remember the L2 form of vocabulary better.	4.35	0.81	87%	Very high
8	I want to learn more often through drawing games.	4.35	0.81	87%	Very high
9	I think drawing games helps me learn vocabulary better than memorization	4.25	0.79	85%	Very high
10	I think the instructions of drawing games are easy to understand	4.40	0.60	88%	Very high
	Total	**4.30**	**0.71**	**86%**	**Very high**

The overall mean score for all questionnaire items was 4.30 (SD = 0.71), indicating a very high level of positive perception (86%). This suggests that participants widely regarded drawing games as an engaging and effective tool for vocabulary learning. Among all items, the highest-rated statement was, "I enjoy studying English through the use of drawing games," which received a mean score of 4.5 (SD = 0.61, 90%). This finding highlights the motivational benefits of incorporating enjoyable activities into language learning, as engagement and enjoyment are key factors in fostering student motivation and participation.

The findings also demonstrate the effectiveness of drawing games in supporting vocabulary retention and familiarity. Items such as "Drawing games help me learn new vocabulary better" ($\bar{x}$ = 4.45, SD = 0.69, 89%) and "Drawing games help me get familiar with vocabulary" ($\bar{x}$ = 4.30, SD = 0.73, 86%) received high ratings, emphasizing the role of drawing games in both introducing new words and reinforcing existing knowledge. Additionally, the statement "I can remember the L2

form of vocabulary better" scored a mean of 4.35 (SD = 0.81, 87%), further highlighting the potential of drawing games to enhance vocabulary retention.

Participants also praised the usability of drawing games, as reflected in the high rating for "The instructions of drawing games are easy to understand" ($\bar{x}$ = 4.40, SD = 0.60, 88%). This suggests that the activity was well-designed, making it accessible and easy for students to engage during lessons.

Despite the generally positive responses, the statement "Drawing games help me learn vocabulary that suits my proficiency level" received the lowest mean score ($\bar{x}$ = 4.10, SD = 0.85, 82%). While still rated positively, this result suggests that some participants felt the games could be better tailored to match their individual language proficiency levels. This represents an area for potential improvement, where future studies could explore ways to adapt drawing games to better accommodate diverse learner needs.

In conclusion, the findings demonstrate that students perceive drawing games as a highly engaging, enjoyable, and effective tool for vocabulary learning. High ratings across most items underscore the value of this approach in promoting motivation, improving retention, and fostering familiarity with vocabulary. However, future research should focus on refining these games to align with varying proficiency levels, ensuring maximum benefit for all learners. Overall, the study supports the integration of drawing games as a valuable strategy in EFL vocabulary instruction.

4.2.2 Results of Focus Group Interview

This section presents findings from focus group interviews exploring participants' perceptions of drawing games and their impact on vocabulary knowledge and retention. The qualitative data complement the quantitative findings from the pre-and post-tests, providing a comprehensive understanding of the drawing games' effectiveness. All participants (n = 20) in the experimental group were grouped based on their overall test scores into High-Performing (HP) and Low-Performing (LP) groups, using a median score of 41.5 as the dividing point. Each of the five focus groups included two HP and two LP students. Thematic analysis was conducted to identify engagement-related themes, with inter-coder reliability and member checking ensuring the trustworthiness and validity of the findings.

To ensure the reliability and validity of the coding process, two independent coders reviewed the data and generated initial codes. Discrepancies were resolved through discussion, refining the codes into categories based on similarities and patterns. To further enhance credibility, member checking was employed by presenting the initial findings to participants for verification. Feedback confirmed that the identified themes accurately reflected their experiences.

The final analysis identified three key themes of engagement: cognitive, behavioral, and affective. These themes were derived from codes reflecting specific actions, feelings, or opinions expressed during the interviews.

Cognitive Engagement

Cognitive engagement emerged as a prominent theme, highlighting students' mental strategies, such as simplifying, planning, and guessing. These strategies reflect their active involvement in understanding and applying vocabulary during the games.

Simplifying

Students used simplification as a cognitive strategy to make complex ideas easier to depict and understand. This involved breaking vocabulary items into manageable visual elements, using basic shapes and symbols, and focusing on the most recognizable features. The excerpts derived from the focus groups are illustrated in Excerpt 1.

Excerpt 1: Interviewer and participants' interactions on **simplifying**

Interviewer: Let's talk about how you decided what to draw during the games. Did you try to include every detail, or did you simplify your drawings?

Kla (HP): Instead of drawing a full scene, I just drew something **small** that represented the word. It saved time and made it **easier** for my friends to guess.

Interviewer: What about you, Nut?

Nut (LP): Before drawing, I thought about which part of the word to show first to make it **easier**. If I tried to add too much, my friends might get confused.

Tan (HP): Me too! I tried to draw **simple** shapes so my friends could guess the word easily. Like, instead of drawing a full elephant, I would just draw a trunk and big ears.

Interviewer: Good strategy! Do you think simplifying the drawing helped you learn the word better?

Beam (LP): Yes! If a word was too hard, I made a **simple** picture. It helped me understand it faster.

Nut (LP): Definitely! When I had to decide which part of the word to show, it made me think about the word more carefully. That helped me remember it better later.

Planning

Participants actively planned their approach, organizing their thoughts and deciding on the best representations for vocabulary items. Planning included selecting key elements of a word, structuring their efforts for efficiency, and coordinating with peers. The examples from the participants are presented in Excerpt 2. These findings showed that the emphasis on planning highlights students' proactive engagement, which enhanced both task completion and collaboration.

Excerpt 2: Interviewer and participants' interactions on **planning**

Interviewer: Did you think about how to represent the word before drawing, or did you just start and adjust as you went?

Tonkao (HP): **Before drawing**, I thought about how to make the picture show the word clearly. It made learning easier because I had a clear idea in my head before I started.

Interviewer: So, having a plan helped you feel more confident while drawing?

Eve (HP): Yes! I also **planned** with my teammates. We talked about how we could connect the word to something everyone knows, so they could guess it faster.

Interviewer: Good job on that! So instead of just drawing randomly, you tried to relate the word to something familiar. Can you give me an example?

Eve (HP): Yes, for the word “island,” I didn’t just draw a random piece of land—I added a palm tree and some waves because everyone knows that image.

Interviewer: What about you, Peno?

Peno (LP): I **decided** which part of the word I would focus on before starting to draw.

Guessing

Guessing required study participants to analyze visual clues, interpret drawings, and infer vocabulary items. This essential cognitive activity involved teamwork and analytical skills to identify words effectively. Excerpt 3 presents examples from the participants, indicating the concept of guessing strategies for vocabulary learning.

Excerpt 3: Interviewer and participants’ interactions on **guessing**

Interviewer: Let’s talk about the part of the game. How did you figure out what your friends were drawing?

Kwan (LP): When I look at my friends’ drawings, I try to **guess** the word. It makes me think harder and remember better.

Interviewer: Did you ever make a wrong guess at first? How did you adjust?

Nam-Nao (LP): Yes! At first, I **thought** it was a tree because there were branches, but then I saw the circle in the middle and **realized** it was a lion.

Interviewer: So, noticing small details helped you change your answer?

Nam-Nao (LP): Exactly! If I had just looked at the first part, I would’ve kept thinking it was a tree. But when I looked again, I understood the drawing better.

Interviewer: What about you two? How did you approach guessing?

Mix (HP): I tried to look for key details. Like one time, I noticed the drawing had a face with a smile and glasses, so I **guessed** it was a teacher because we talked about that word in class.

Tan (HP): We also worked together as a team. We all looked at the drawing together and **guessed** it might be "book" because of the rectangles and lines.

Interviewer: Alright. So, discussing and collaborating with your team helped improve your guessing?

Tan (HP): Yes! If one person wasn't sure, another teammate might see something they missed.

Behavioral Engagement

Behavioral engagement in drawing game activities was demonstrated through students' physical actions and social interactions, categorized into three primary behaviors: talking, helping, and playing. These behaviors demonstrated how students actively participated in tasks, collaborated with peers, and immersed themselves in the learning process.

Talking

Talking behaviors involved active communication among students during the games. Participants frequently asked questions, clarified drawings, and collaborated to decide how to represent or guess vocabulary items. Talking behaviors were also implied to enhance task efficiency, as students engaged in frequent verbal exchanges to address uncertainties and refine their approach to the activities. For example, some participants noted that they asked teammates for spelling assistance or ideas on how to simplify their drawings. Others mentioned how discussing and deciding on drawing elements helped ensure clarity and ease of understanding for peers. Additionally, excitement and enthusiasm during the games often led to students shouting out guesses, further demonstrating their active involvement and engagement. This verbal interaction not only facilitated task completion but also strengthened collaboration and mutual understanding. Excerpt 4 provides examples from the participants to support this claim.

Excerpt 4: Interviewer and participants' interactions on **talking**

Interviewer: Let's discuss things you do during the drawing games.

Apple (LP): I like asking my friends about their pictures because sometimes they have a different way of showing the word. It helped me see new ways to think about the words.

Nock (HP): If the picture was hard to guess, I always asked my friends to help me figure it out. Sometimes, one person noticed a detail that I didn't see.

Pepe (LP): We talked about our drawings a lot, and my friends helped me if I didn't understand a word. If I wasn't sure what something meant, they explained it to me.

Nuut (HP): Sometimes, when the other groups struggled with my drawing, I accidentally shouted at them to tell them what the picture was.

Interviewer: It sounds like talking played a big role in the game not just within teams but even across groups. Would you say that discussing the drawings helped reinforce your vocabulary?

Nock (HP): Definitely! Talking about the words and pictures helped us remember them better.

Helping

Helping behaviors were characterized by students' willingness to provide support to their peers during the activities. This included assisting with vocabulary understanding, correcting spelling errors, offering suggestions for drawings, and giving hints during gameplay. The following responses highlight a supportive learning environment where students work together to overcome challenges. Helping behaviors not only facilitated the completion of tasks but also contributed to a sense of community within the group. Participants expressed a willingness to share knowledge, clarify misunderstandings, and provide guidance, reflecting their collaborative spirit and commitment to mutual success. Excerpt 5 presents examples of the participants' helping behaviors.

Excerpt 5: Interviewer and participants' interactions on **helping**

Interviewer: What about other things you do apart from talking?

Big (HP): I also **help** my friends. If someone was confused, we **helped** them by explaining or showing our pictures. It made learning fun because we weren't just playing alone but working together.

Interviewer: So, when someone struggled, you like to step in to support them?

Poom (HP): I **helped** other teams sometimes! When they couldn't think of the answer, I gave them a **hint** so they could figure it out.

Interviewer: What about the difficult words? Did anyone help their teammates with that?

Big (HP): Yes! If someone in my team didn't know how to spell the word, I **told** them the correct spelling. That way, they could remember it for next time.

Nam-Nao (LP): Because I'm not good at English. So, if the picture was hard to guess, I always asked my friends to **help** me figure it out. Sometimes, they saw things that I didn't notice.

Playing

Playing behaviors encompassed students' active engagement with the mechanics of the game, such as drawing, guessing, and writing. These actions demonstrated how participants immersed themselves in the activities, combining physical involvement with cognitive processing. Excerpt 6 presents excerpts from the participants in response to their physical reactions (playing). In short, these findings suggest that playing behaviors foster collaboration and enjoyment as students actively participate in all aspects of the game. Taking turns to draw and guess may encourage teamwork, while the time constraints may add an element of excitement and challenge. The interactions between drawing and guessing also emphasize the reciprocal nature of the tasks, requiring students to engage not only with the vocabulary but also with their peers' contributions.

Excerpt 6: Interviewer and participants' interactions on **playing**

Interviewer: Let's talk about the experience of playing the drawing games. Did it feel more like a game or a learning activity?

Mix (HP): It's like **playing** and learning at the same time. I don't get bored, and I want to learn more words.

Interviewer: So, the game aspect made learning more engaging for you?

Mix (HP): Yes! If it were just memorizing words, I think I would lose interest. But because it was a **game**, I wanted to keep going.

Interviewer: That's great! What about you?

Poom (HP): Yes! It feels like a **game**, not a lesson. I always look forward to it.

Beam (LP): I like the challenge of **guessing** the words. It makes learning exciting.

Kwan (LP): To me, I love that I had to **draw** very fast before the time ran out. It made me focus more and not overthink my drawing.

Affective Engagement

Affective engagement encompasses students' emotional responses to the drawing games, including feelings of enjoyment and occasional confusion. These emotions played a significant role in shaping the overall learning experience, influencing both motivation and engagement. Affective engagement was categorized into two primary codes: enjoyment and confusion, reflecting positive and negative experiences, respectively. The analysis of these emotional responses provides insights into the strengths and areas for improvement in the implementation of drawing games.

Enjoyment

The majority of participants expressed high levels of enjoyment during the drawing games. Students described the activities as fun, engaging, exciting, and refreshing from traditional learning methods. Many students noted that the games were simultaneously challenging and relaxing, offering a balance between mental stimulation and a stress-free environment. The process of revealing pictures and guessing words often elicited laughter and excitement, contributing to a positive classroom atmosphere. These responses suggest that the games foster active participation and provide students an enjoyable and memorable learning experience. The elements of fun and excitement appeared to motivate students to engage more deeply with the tasks, making the learning process more effective. This claim can be supported by the excerpts presented in Excerpt 7.

Excerpt 7: Interviewer and participants' interactions on **enjoyment**

Interviewer: Let's talk about how you felt while playing the drawing games. Did you enjoy the experience?

Nut (LP): Yes! Drawing games make learning **fun**. I can remember words better because I think about how to draw them.

Mix (HP): It's **like playing** and learning at the same time. I don't get bored, and I want to learn more words.

Interviewer: That's great to hear! So, the game aspect made vocabulary learning more engaging?

Pepe (LP): Yes! I feel **happy** when we play drawing games. It's better than just writing words over and over.

Interviewer: So, compared to traditional methods as we regularly did, this was a more enjoyable way to learn?

Pepe (LP): Definitely! It felt less like a school task and more like an activity I actually **wanted to do**.

Poom (HP): Yes! I **love** every part of the games, whether it's the drawing, writing, or revealing the answers.

Interviewer: What about you, Nut?

Nut (LP): Yes, I do **love** the games. I love the idea of having limited time for drawing because it makes the games more **challenging**.

Confusion

Excerpt 8 demonstrates the participants' responses to confusion. Despite the overall positive reception, some students reported moments of confusion during the drawing games. These challenges primarily stemmed from difficulties interpreting their peers' drawings or deciding how to represent certain words. Some participants found the complexity of the tasks overwhelming, leading to occasional cognitive overload. Additionally, a few students expressed uncertainty about the game rules during the initial rounds, suggesting that clearer instructions or demonstrations could enhance the experience.

While the confusion code represents a challenge to affective engagement, it also highlights areas for potential improvement. Students who experienced confusion generally noted that repeated exposure to the games alleviated their uncertainties.

Nevertheless, refining task design, providing clearer instructions, and offering examples could help minimize confusion and enhance students' overall engagement and learning outcomes.

Excerpt 8: Interviewer and participants' interactions on **confusion**

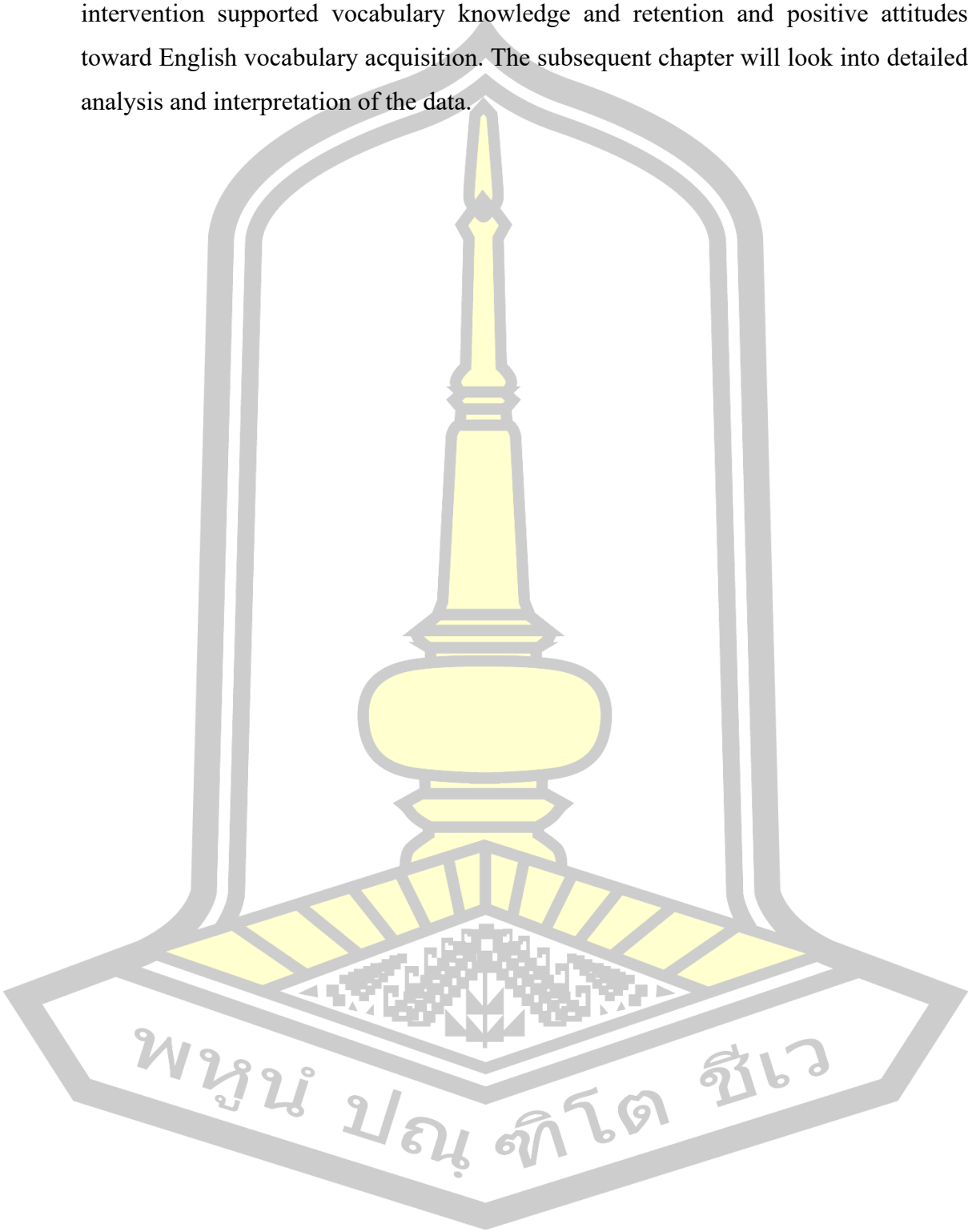
Interviewer:	Let's talk about challenges you faced while playing the drawing games. Were there any moments when you felt confused?
Khing (LP):	Yes! Sometimes, I **didn't understand** what my friend drew. It was **hard** to guess the word.
Nutty (HP):	The rules were a bit **unclear** at first, so I didn't know if I was doing it right.
Interviewer:	What did you do in those situations?
Peno (LP):	Sometimes I **didn't understand** my friend's drawing either, but we just laughed and figured it out together.
Nutty (HP):	Yes! I did the same thing!
Interviewer:	How did you overcome that?
Nutty (HP):	After playing a few rounds, it started making more sense. And if I **wasn't sure** about something, my teammates helped explain it.

The findings on affective engagement demonstrate the dual impact of emotional responses on students' experiences with drawing games. Enjoyment was a dominant theme, with students emphasizing the fun, challenging, and stress-free nature of the activities. This positive emotional connection likely contributed to increased motivation and active participation. On the other hand, moments of confusion reveal opportunities for improvement, particularly in task clarity and initial instructions. Overall, the balance of enjoyment and manageable challenges underscores the potential of drawing games to create an engaging and effective vocabulary learning environment in EFL classrooms.

4.3 Chapter Summary

The chapter concluded with a detailed description of these findings, emphasizing the role of drawing games in improving both vocabulary learning, retention, and positive

perceptions toward the intervention. The data provided information on how the intervention supported vocabulary knowledge and retention and positive attitudes toward English vocabulary acquisition. The subsequent chapter will look into detailed analysis and interpretation of the data.



CHAPTER V
DISCUSSION AND CONCLUSION

The preceding chapter presented the statistical results and descriptive findings related to the formulated research questions. This chapter discusses the research findings in relation to the existing literature. Specifically, the findings of the present study provide details on how drawing games impact passive and active knowledge of form-meaning connections, retention, and perceptions among Thai EFL learners. Moreover, this chapter outlines the pedagogical and research implications of the findings, identifies the limitations of the study, and offers suggestions for future research.

5.1 Effects of Drawing Games on Enhancing Students' vocabulary knowledge of form-meaning Connections

This study examined the effects of drawing games on ninth-grade EFL students' vocabulary knowledge, specifically their ability to establish form-meaning connections. Using four different types of vocabulary tests in both pre-test and post-test assessments, the findings revealed that drawing games significantly improved students' vocabulary retention and recall. The results demonstrated that engaging in drawing-based activities enhanced passive and active recall of vocabulary and facilitated deeper cognitive processing, making learning more effective and enjoyable.

The statistical analysis highlighted that drawing games positively influenced students' vocabulary acquisition by strengthening both recognition and productive use of target words. These findings align with Nation's (2022) conditions for vocabulary learning, which emphasize motivation, noticing, retrieval, creative use, and retention. The interactive nature of drawing games heightened students' motivation, while the act of illustrating vocabulary encouraged noticing and deeper cognitive engagement. Retrieval was reinforced as students recalled and explained words during the games, and the creative aspect of the task facilitated meaningful application and retention of new vocabulary.

Researchers generally agree that vocabulary acquisition is incremental, with some components of word knowledge developing before others. For instance, learners typically acquire a word's basic meaning and spelling before understanding its

associations and collocations (Min & Sukying, 2024; Sukying, 2023). However, no research has explicitly established a fixed sequence for acquiring these components. Min and Sukying (2024) observed that learners first acquired words' spelling and meanings, followed by their associations and collocations.

The present study reinforces the incremental nature of acquiring form-meaning links, highlighting that the most advanced aspect of this knowledge is active recall, or the ability to retrieve a word's form from memory. Notably, failure to recall a word's form does not necessarily indicate an inability to recall its meaning, as meaning recall is a less demanding component of vocabulary knowledge and is typically acquired earlier. Before reaching the stage of passive recall, learners may first develop the ability to recognize the word's form, which, in turn, is preceded by the recognition of its meaning.

The findings align with Laufer and Goldstein (2004), who demonstrated that active recall was the most challenging component of word knowledge, followed by passive recall, active recognition, and finally, passive recognition, which was the easiest. A similar pattern emerged in the present study: active recall consistently yielded the lowest scores and the smallest improvement, while passive recall showed slightly better performance. Among the recognition-based tasks, active recognition was more demanding than passive recognition, which recorded the highest scores and the most substantial improvement.

A possible explanation for these differences lies in the nature of retrieval processes. Passive recognition, where learners select the correct translation of a word, was significantly easier than active recognition, which required them to recall and produce the L2 target word corresponding to an L1 word. Similarly, passive recall, which involved supplying or writing the meaning of a given L2 form, was significantly easier than active recall, where learners had to produce the full form of the target word.

The results also support the notion that passive knowledge of form-meaning links surpasses active knowledge, which is consistent with previous findings (Laufer & Goldstein, 2004; Min & Sukying, 2024; Nation, 2022). This suggests that learners typically acquire many words passively before transitioning to active usage. The more

advanced nature of active knowledge stems from its higher cognitive demands; retrieving a word's form for a given meaning requires deeper processing than simply recognizing it. Additionally, recall-based tasks generally indicate a stronger memory trace than recognition tasks, as recalling a word's meaning or form reflects a more advanced level of mastery than merely recognizing it from a set of options. These findings are further supported by the increased vocabulary test scores observed in both the control and experimental groups, demonstrating that drawing games can facilitate vocabulary acquisition by reinforcing the progressive development of form-meaning connections.

Moreover, these results support cognitive load theory (Chandler & Sweller, 1991). Drawing games help reduce extraneous cognitive load, allowing students to allocate more cognitive resources to processing new vocabulary effectively. The act of creating illustrations minimized intrinsic cognitive load by transforming complex information into simplified visual representations, making vocabulary easier to understand and remember. This aligns with Paivio's (2013) Dual Coding Theory, which posits that combining visual and verbal elements enhances memory and retrieval processes, ultimately strengthening vocabulary learning outcomes.

The study also provides strong evidence for Piaget's (1970) constructivist theory, which highlights the role of active engagement and learner-driven knowledge construction. As students personalized their drawings, they linked new vocabulary to prior knowledge, reinforcing deeper learning through meaningful connections. Students internalized vocabulary more effectively by actively constructing their understanding rather than passively memorizing words, leading to sustained retention and improved recall.

Performance comparisons between the experimental and control groups further emphasized the benefits of drawing games. While both groups significantly improved their pre-test and post-test scores, the experimental group outperformed the control group in active recognition tests. This suggests that drawing fosters deeper engagement with vocabulary, integrating visual and verbal elements to enhance memory retention and word recall. Although no significant difference was observed between the groups in the active recall test, the experimental group showed notable

within-group improvement, further supporting the claim that drawing can be a powerful cognitive tool in vocabulary learning.

The findings of this study align with previous research on vocabulary acquisition through drawing-based activities (Dwi, 2017; El Rusyda et al., 2014; Naderiheshi, 2022; Ou et al., 2018; Saragih et al., 2022). Like Dwi (2017) and El Rusyda et al. (2014), this study highlights how drawing enhances cognitive engagement, deepens processing, and strengthens form-meaning connections. Additionally, Fiorella and Mayer's (2015) concept of generative processing explains that when students select, organize, and integrate information through drawing, they engage in an active learning process that reinforces memory and comprehension. Paivio's (1990) dual coding theory further supports this by suggesting that visual representations and verbal learning complement each other, strengthening encoding and retrieval mechanisms and leading to long-term vocabulary retention.

Furthermore, Saragih et al. (2022) highlighted the motivational benefits of drawing games, which aligns with this study's findings. The interactive and engaging nature of these activities reduced learning anxiety, increased enthusiasm and made vocabulary learning more enjoyable. This motivational boost is essential for sustaining student engagement and creating a positive learning environment, as emphasized by Piaget's (1970) active learning theory, which posits that students learn best when they are actively involved in constructing their knowledge.

In conclusion, the findings of this study provide empirical evidence that drawing games are an effective tool for enhancing vocabulary knowledge, particularly in strengthening form-meaning connections. Drawing-based activities support long-term retention and improved recall by fostering active learning, cognitive engagement, and meaningful interaction with vocabulary. Grounded in Nation's vocabulary learning conditions, cognitive load theory, dual coding theory, constructivist theory, and generative processing, this study highlights the advantages of integrating visual learning strategies into language instruction. Given the cognitive and motivational benefits of drawing games, educators should consider incorporating them into EFL classrooms as an engaging and effective vocabulary teaching approach.

5.2 Effects of drawing games on enhancing students' vocabulary retention

This section discusses the findings of the study regarding vocabulary retention resulting from learning vocabulary through drawing games. The findings of this study demonstrated that drawing games significantly improved students' vocabulary retention, as reflected in the delayed post-test results. Students who engaged in drawing-based activities retained a significantly larger portion of the vocabulary than those in the control group, highlighting the long-term effectiveness of visual learning strategies. This aligns with Baddeley's (1997) concept of memory encoding, which suggests that visual representations not only enhance initial understanding but also serve as memorable retrieval cues, making it easier for learners to recall word meanings over time.

The dual coding theory (Paivio, 1990) further explains this retention advantage, emphasizing that transforming abstract vocabulary into concrete images engages visual and verbal memory systems, reinforcing word recall. Learners who create and interpret drawings activate multiple cognitive pathways, making vocabulary storage more robust. Additionally, cognitive load theory (Chandler & Sweller, 1991) posits that drawing reduces extraneous cognitive load, enabling learners to focus on integrating new words into their long-term memory. By breaking down complex linguistic information into manageable visual representations, drawing minimizes cognitive overload and maximizes retention.

The effectiveness of drawing games in promoting vocabulary retention also aligns with Nation's (2022) vocabulary learning principles, particularly the importance of retrieval and repetition in strengthening memory traces. The multiple interactions with target vocabulary during the drawing, writing, and revealing stages of the game provided ample opportunities for retrieval practice, reinforcing retention. Since retrieval plays a critical role in consolidating knowledge, students who actively recalled and illustrated vocabulary words were more likely to retain them over time.

These findings are consistent with previous research on visual learning and memory retention (Feryok & Pryde, 2012; Marzano, 2007; Ou et al., 2018; Taheri, 2014; Teng, 2021; Wammes et al., 2015). Marzano (2007) and Feryok & Pryde (2012) emphasized that visual representations deepen comprehension, making vocabulary learning more

meaningful. Similarly, Ou et al. (2018) and Wammes et al. (2015) found that the combination of visual and motor processes involved in drawing leads to improved vocabulary recall, as it encourages learners to process information at a deeper cognitive level.

In sum, integrating drawing into vocabulary instruction is a highly effective strategy for enhancing long-term retention. By engaging multiple cognitive systems, reducing cognitive load, and strengthening retrieval through repeated exposure, drawing games provide learners with a powerful, interactive, and memorable approach to vocabulary learning. Given these advantages, educators should consider incorporating drawing-based activities into language instruction to support both short-term acquisition and long-term retention of vocabulary knowledge.

5.3 Students' Perceptions of Drawing Games in Vocabulary Learning

The findings from this study highlight the positive perceptions Thai primary school students have toward using drawing games for vocabulary learning. The results indicate that drawing games significantly enhance students' understanding of form-meaning connections in vocabulary acquisition, aligning with previous research and theoretical frameworks.

The high level of student agreement regarding the usefulness of drawing games in vocabulary learning can be linked to Nation's (2022) motivational conditions for vocabulary acquisition. The interactive and creative nature of the activities provided students with an enjoyable and engaging learning experience, increasing their motivation and willingness to participate. One student, Nut, stated, "*Drawing games make learning fun. I can remember words better because I think about how to draw them.*" Another student, Mix, emphasized, "*It's like playing and learning at the same time. I don't get bored, and I want to learn more words.*" Additional statements from the questionnaire revealed that students feel more encouraged to learn new words through drawing games, as one student, Gun, mentioned, "*It helps me see the word in my head, and I can remember it better later*." These findings align with constructivist theory (Piaget, 1954), which emphasizes active involvement and hands-on experiences as essential for meaningful learning. Additionally, the results are supported by a body of literature affirming that visually engaging, interactive learning

methods enhance vocabulary acquisition (Ahmed et al., 2022; Bavi, 2018; Bush, 2007; Dolati & Mikaili, 2011; El Rusyda et al., 2014; Huyen & Nga, 2003; Ou et al., 2018; Ratsamee, 2022; Saragih et al., 2022; Tanago, 2017). Specifically, Ou et al. (2018) found that drawing fosters motivation and memory retention, while Saragih et al. (2022) reported that students find drawing-based activities engaging and enjoyable.

The study categorizes student engagement into cognitive, behavioral, and affective domains. This multidimensional perspective reinforces the robustness of the findings, demonstrating that drawing games influences students holistically.

Students displayed significant cognitive engagement through simplification, planning, and guessing strategies. These behaviors reflect their active involvement in constructing meaning from vocabulary items and align with cognitive learning theories that emphasize active processing and scaffolding in learning (Sweller et al., 2011).

Students demonstrated simplification by using basic symbols and key visual elements to make vocabulary words easier to recognize, showcasing strategic thinking in breaking down complex words. Beam shared, "*If a word is too hard, I make a simple picture. It helps me understand it faster.*" Another student, Kla, added, "*Instead of drawing a full scene, I just draw something small that represents the word.*"

Planning was evident as students thought about their representations before drawing, highlighting a proactive approach to learning and enhancing both comprehension and task efficiency. Tonkao remarked, "*Before drawing, I think about how to make the picture show the word clearly. It makes learning easier.*" Another student, Pepe, noted, "*When I couldn't think of a detailed picture, I used symbols or basic shapes instead.*"

Guessing, another cognitive engagement strategy, involved analyzing visual cues and collaborating to infer vocabulary meanings, suggesting the activation of higher-order thinking skills. Kwan explained, "*When I look at my friends' drawings, I try to guess the word. It makes me think harder and remember better.*" Tonkao shared, "*Sometimes the pictures are tricky, but that makes me think more about the meaning of the word.*"

Behavioral engagement was demonstrated through talking, helping, and playing, illustrating students' active participation in classroom tasks. These social interactions are essential for cooperative learning, aligning with Vygotsky's (1978) sociocultural theory, which posits that interaction plays a fundamental role in cognitive development.

Students engaged in meaningful discussions to clarify meanings, reinforcing vocabulary retention through peer collaboration. Pepe noted, "*We talk about our drawings, and my friends help me if I don't understand a word.*" Apple also stated, "*I like asking my friends about their pictures because sometimes they have a different way of showing the word*."

Helping behavior was also prominent, as students supported one another in understanding vocabulary, fostering a positive learning environment. Ai-Aun said, "*If someone is confused, we help them by explaining or showing our pictures. It makes learning fun*." Another student, Big, added, "*It feels good to help my friends, and I learn more when I explain the words to them.*"

Additionally, playing elements, such as drawing, guessing, and working within time constraints, contributed to excitement and deep engagement, increasing motivation and investment in learning outcomes. Poom stated, "*It feels like a game, not a lesson. I always look forward to it.*" Beam also explained, "*I like the challenge of guessing the words. It makes learning exciting.*"

Affective engagement captured students' enjoyment and occasional confusion, offering insights into their emotional responses to the activities. The overwhelmingly positive reactions indicate that drawing games reduce learning anxiety and make vocabulary acquisition more accessible and enjoyable.

Students expressed enthusiasm and excitement, viewing drawing games as a welcome alternative to traditional memorization techniques. Eve remarked, "*I feel happy when we play drawing games. It's better than just writing words.*" Khing noted, "*I feel excited because I want to see what my friends draw.*"

While most students found drawing games enjoyable, some reported occasional confusion in interpreting their peers' drawings. However, these challenges can be

mitigated through structured guidance and repeated exposure, enhancing the learning experience over time. Peno commented, "*Sometimes I don't understand my friend's drawing, but we laugh and figure it out together.*" Kwan added, "*Even when I don't get the answer right, I still learn something from my mistakes.*"

The findings of this study offer convincing evidence that drawing games are highly effective in fostering vocabulary acquisition through engaging, interactive, and student-centered learning experiences. The combination of cognitive, behavioral, and affective engagement highlights the multidimensional benefits of this approach, making vocabulary learning more meaningful, enjoyable, and effective.

The focus group interviews also reveal differences in how the high-performing and low-performing groups engaged with the drawing games. Both groups benefited from the social aspect of the games but in different ways. The high-performing students actively guided their peers, correcting spelling errors, as stated by Tan, *"If someone in my team didn't know how to spell the word, I told them the correct spelling."* They also provided hints when others struggled. Poom mentioned, *"When other teams couldn't think of the answer, I gave them a hint so they could answer."*. The low-performing group, while also engaging in teamwork, focused more on clarifying each other's drawings, as reflected in statements like, *"I like asking my friends about their pictures because sometimes they have a different way of showing the word,"* and *"We talk about our drawings, and my friends help me if I don't understand a word."*

Additionally, the high-performing group perceived the games as more structured and well-designed, appreciating the time constraints as a fun challenge. Nutty commented, *"I love the idea of having limited time for drawing because it makes the games more challenging."*. Meanwhile, the low-performing group found some drawings difficult to interpret, which occasionally led to confusion, as seen in Khing's statement, *"I didn't understand what my friend drew. It was hard to guess the word."*. Despite these challenges, both groups expressed enjoyment, with many low-performing students stating that drawing games made learning more engaging and less stressful than memorization, as mentioned by Nam-Nao, *"The games make learning more relaxing and less stressful than memorizing words."*.

In conclusion, drawing games is a powerful pedagogical tool in vocabulary learning, offering a balance between cognitive challenge and enjoyment. The study's findings contribute valuable insights into EFL teaching methodologies, affirming the importance of integrating interactive, student-centered approaches in language acquisition. As Big summarized, "*I never thought learning words could be this fun. Drawing makes everything easier to remember.*"

5.4 Conclusion of the Study

The current study provided compelling evidence that drawing games are an effective instructional method for enhancing vocabulary acquisition among secondary-level EFL students. As confirmed by inferential analyses, the findings demonstrate that engaging in drawing activities significantly improves students' ability to establish and retain form-meaning connections. Additionally, students expressed overwhelmingly positive perceptions of drawing games, highlighting their motivational and interactive value in the classroom. These results highlight the pedagogical potential of drawing games for vocabulary development and fostering active participation, creativity, and sustained interest in language learning, particularly vocabulary acquisition. Given these benefits, integrating drawing-based activities into vocabulary instruction can enhance learning outcomes and student engagement, offering a dynamic and student-centered approach to EFL education.

5.5 Implications of the Study

This study has significant pedagogical and research implications. From a pedagogical perspective, the findings underscore the value of incorporating drawing games into English language instruction to enhance vocabulary learning. Drawing-based activities provide an effective means of reinforcing vocabulary retention by fostering active engagement, creativity, and deeper cognitive processing of form-meaning connections. Additionally, drawing games cater to diverse learning styles, benefiting visual and kinesthetic learners while reducing learning anxiety and fostering a more supportive and enjoyable classroom environment. The use of student-generated drawings not only encourages learners to take ownership of their learning but also aligns with constructivist principles, promoting sustained motivation and deeper conceptual understanding.

To maximize the effectiveness of drawing games, teachers should carefully adapt the complexity of the activities based on students' language proficiency. For example, allowing students to review relevant vocabulary before their turn can help scaffold learning and ensure more meaningful participation. Moreover, allocating time for each drawing activity is a crucial factor in facilitating cognitive processing and peer comprehension. Providing adequate time enables students to think, draw, and articulate their ideas more effectively, whereas insufficient time may lead to rushed or incomplete representations, limiting the learning benefits.

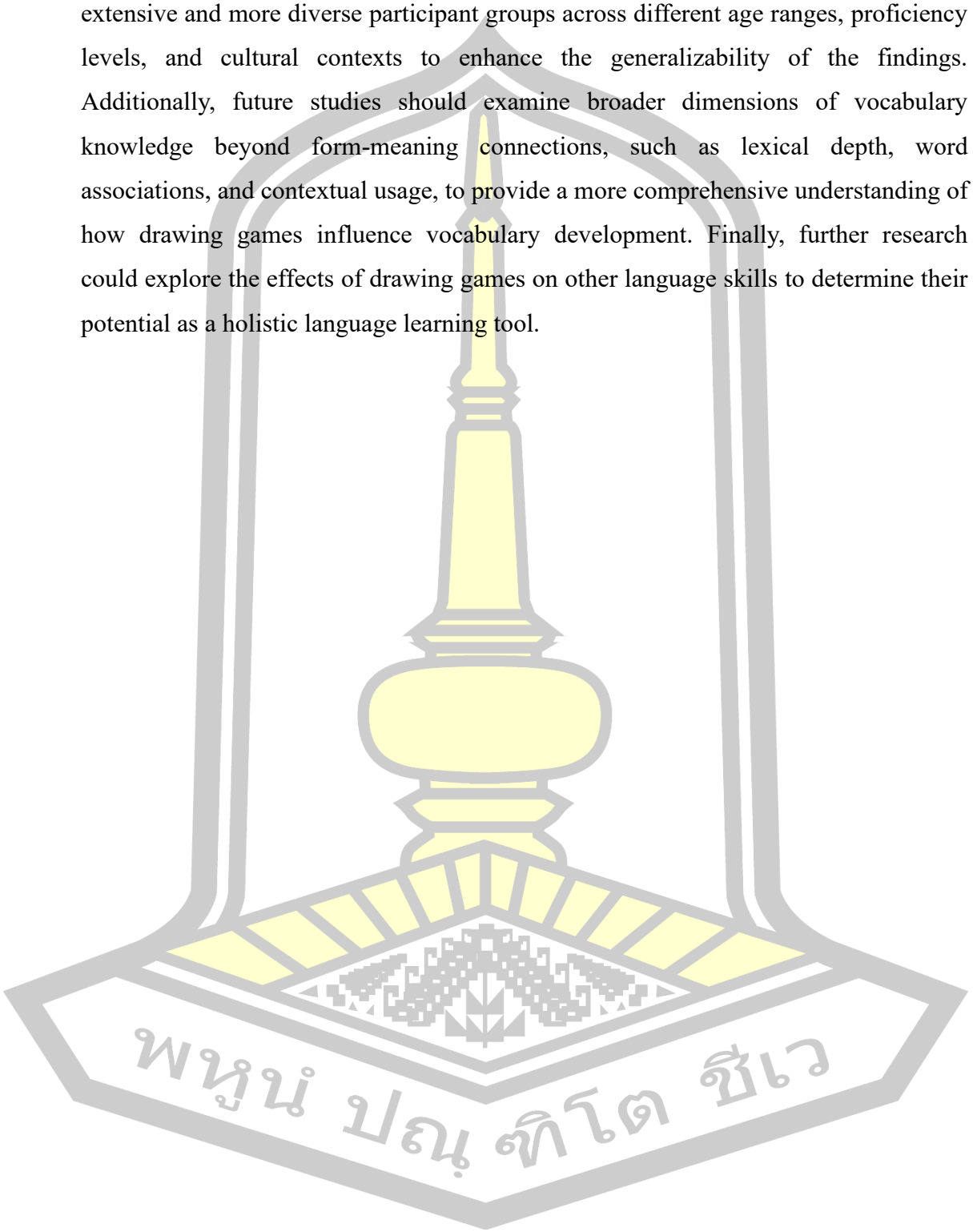
In terms of research implications, this study contributes to the growing body of literature on active learning strategies and vocabulary acquisition, particularly within the context of drawing-based learning. Future research could further explore the long-term effects of drawing games on vocabulary retention, their applicability across different proficiency levels, and their impact on other language skills, such as speaking and writing. Additionally, experimental studies comparing drawing games with other multimodal learning approaches could provide deeper insights into their relative effectiveness in language learning contexts.

5.6 Limitations of the Study and Suggestions for Future Research

Despite its contributions, this study has several limitations that should be acknowledged. First, the sample size was limited to a single group of secondary school students within a specific educational context, which may restrict the generalizability of the findings to broader populations. Additionally, the use of convenience sampling further limits the study's applicability to different learning environments, as participants were drawn from a specific school setting rather than a more diverse or randomized population.

Another limitation lies in the reliance on form-meaning connection tests as the primary measure of vocabulary knowledge. While these tests effectively assess students' ability to link word forms with meanings, they do not account for other critical aspects of vocabulary knowledge, such as collocations, connotations, and word usage in varied contexts. Moreover, the study focuses solely on vocabulary acquisition without examining the impact of drawing games on other essential language skills, such as speaking, writing, listening, or grammar.

Given these limitations, future research should aim to replicate this study with more extensive and more diverse participant groups across different age ranges, proficiency levels, and cultural contexts to enhance the generalizability of the findings. Additionally, future studies should examine broader dimensions of vocabulary knowledge beyond form-meaning connections, such as lexical depth, word associations, and contextual usage, to provide a more comprehensive understanding of how drawing games influence vocabulary development. Finally, further research could explore the effects of drawing games on other language skills to determine their potential as a holistic language learning tool.



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APPENDICES

Appendix A: Passive Recognition Test (25 Items)

Instructions: Choose the correct meaning of the given word.

1. park

1. สวนสัตว์ 2. ร้านอาหาร 3. สวนสาธารณะ 4. ธนาคาร

2. grocery

1. โรงภาพยนต์ 2. ร้านขายของชำ 3. สวนสัตว์ 4. ห้องสมุด

3. hospital

1. ธนาคาร 2. โรงแรม 3. พิพิธภัณฑ์ 4. โรงพยาบาล

4. art

1. ศิลปะ 2. ภาษาอังกฤษ 3. คณิตศาสตร์ 4. คอมพิวเตอร์

5. geography

1. ดนตรี 2. วิทยาศาสตร์ 3. ภูมิศาสตร์ 4. ประวัติศาสตร์

6. math

1. วิทยาศาสตร์ 2. ศิลปะ 3. คณิตศาสตร์ 4. สุขศึกษา

7. science

1. พละศึกษา 2. คณิตศาสตร์ 3. ศิลปะ 4. ดนตรี

8. shoes

1. เสื้อเชิ้ต 2. กางเกงขาสั้น 3. ถุงเท้า 4. รองเท้า

9. skirt

1. เสื้อกันหนาว 2. กระโปรง 3. กางเกงขายาว 4. เข็มขัด

10. socks

1. ถุงเท้า 2. รองเท้า 3. เสื้อกันหนาว 4. กระเป๋า

11. shorts

1. กระโปรง 2. กางเกงขาสั้น 3. รองเท้า 4. เสื้อกันหนาว

12. bacon

1. ไข่ 2. ข้าว 3. เบคอน 4. เนื้อวัว

13. bread

1. เนื้อหมู 2. ขนมปัง 3. ข้าว 4. เนื้อวัว

14. tomato

1. เนื้อไก่ 2. มะเขือเทศ 3. ขนมปัง 4. มะนาว

15. bean

1. ขนมปัง 2. ถั่ว 3. เค้ก 4. มะเขือเทศ

16. beef

1. เนื้อไก่ 2. เนื้อวัว 3. พริก 4. มะนาว

17. banana

1. กล้วย 2. มะนาว 3. เนื้อหมู 4. ถั่ว

18. foggy

1. หมอกเยอะ 2. ฝนตก 3. แดดจ้า 4. ลมแรง

19. windy

1. ฝนตก 2. พายุเข้า 3. ลมแรง 4. หิมะตก

20. desk

1. โต๊ะเรียน 2. ปากกา 3. กระเป๋า 4. กระดาน

21. board

1. กระดาน 2. ดินสอ 3. ไม้บรรทัด 4. ยางลบ

22. window

1. เก้าอี้ 2. กระดาน 3. ยางลบ 4. หน้าต่าง

23. bike

1. เรือ 2. จักรยาน 3. รถยนต์ 4. รถบัส

24. plane

1. เครื่องบิน 2. รถบรรทุก 3. รถยนต์ 4. รถจักรยาน

25. truck

1. เรือ 2. รถไฟ 3. รถบัส 4. รถบรรทุก

Appendix B: Active Recognition Test (35 Items)

Instructions: Choose the correct word of the given meaning.

1. เข็มขัด

a. belt b. shorts c. tie d. coat

2. ชุดเดรส

a. socks b. sneakers c. jacket d. dress

3. เนกไท

a. tie b. suit c. shirt d. shoes

4. เสื้อคลุม

a. shirt b. coat c. shorts d. belt

5. กางเกงยีนส์

a. jeans b. sneakers c. dress d. jacket

6. ร่าเริง

a. shy b. serious c. cheerful d. friendly

7. อัธยาศัยดี

a. friendly b. calm c. polite d. shy

8. สุภาพ

a. shy b. cheerful c. funny d. polite

9. หยาบคาย

a. polite b. funny c. rude d. nice

10. สงบ

a. shy b. calm c. friendly d. serious

11. สถานีตำรวจ

a. police station b. restaurant c. café d. airport

12. สวนสัตว์

a. park b. zoo c. school d. bank

13. โรงภาพยนต์

a. library b. cinema c. mall d. museum

14. ห้องสมุด

a. bakery b. library c. hotel d. airport

15. ตลาด

a. market b. park c. police station d. hotel

16. น้ำซุป

a. soup b. lemon c. carrot d. potato

17. เนื้อวัว

a. bread b. beef c. pork d. chicken

18. ขนมกรุบกรอบ

a. tomato b. lime c. chip d. carrot

19. เนื้อหมู

a. egg b. potato c. pork d. papaya

20. มันฝรั่ง

a. potato b. garlic c. bread d. tomato

21. วิชาประวัติศาสตร์

a. history b. geography c. art d. math

22. วิชาดนตรี

a. music b. math c. health d. science

23. วิชาสุขศึกษา

a. science b. health c. math d. geography

24. เมฆเยอะ

a. sunny b. cloudy c. rainy d. foggy

25. แดดจ้า

a. rainy b. stormy c. sunny d. windy

Appendix C: Passive Recall Test (20 Items)

Instructions: Complete the Thai word that relates to the given English word

1. _____ **(phone)** **2.** _____ **(fan)**

3. _____ **(lamb)** **4.** _____ **(television)**

5. _____ **(dancing)** **6.** _____ **(swimming)**

7. _____ **(boxing)** **8.** _____ **(football)**

9. _____ **(tree)** **10.** _____ **(beach)**

11. _____ **(house)** **12.** _____ **(temple)**

13. _____ **(mall)** **14.** _____ **(class)**

15. _____ **(cinema)** **16.** _____ **(old)**

17. _____ **(rich)** **18.** _____ **(scared)**

19. _____ **(funny)** **20.** _____ **(happy)**

Appendix D: Active Recall Test (20 Items)

Instructions: Complete the Thai word that relates to the given English word

1. t_____ (โต๊ะ)

2. n_____ (หนังสือพิมพ์)

3. c_____ (นาฬิกา)

4. b_____ (หนังสือ)

5. c_____ (เก้าอี้)

6. h_____ (บ้าน)

7. d_____ (เป็ด)

8. h_____ (โรงแรม)

9. b_____ (ผึ้ง)

10. b_____ (ร้านขายขนมปัง)

11. s_____ (อาบน้ำ)

12. r_____ (รีโมต)

13. i_____ (เตารีด)

14. b_____ (มวย)

15. t_____ (เทนนิส)

16. s_____ (เล็ก)

17. c_____ (ราคาถูก)

18. n_____ (เสียงดัง)

19. b_____ (ใหญ่)

20. h_____ (ยาก)

แบบสอบถามทัศนคติต่อการเรียนด้วยเกมวาดรูป

ตอนที่ 1: ข้อมูลทั่วไป

เพศ ☐ ชาย ☐ หญิง

ตอนที่ 2: ทัศนคติต่อการเรียนด้วยเกมวาดรูป

คำชี้แจง: โปรดใส่เครื่องหมาย ✓ ลงในช่องระดับความพึงพอใจตามความคิดเห็นของนักเรียนเพียงระดับเดียว

รายการ	ไม่เห็นด้วยอย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วยอย่างยิ่ง
1.ฉันสนุกกับการเรียนคำศัพท์ภาษาอังกฤษด้วยเกมวาดรูป					
2.ฉันคิดว่าเกมวาดรูปช่วยให้ฉันจำความหมายของคำศัพท์ได้					
3.ฉันคิดว่าฉันมีแรงกระตุ้นในการเรียนคำศัพท์มากขึ้นเมื่อเรียนด้วยเกมวาดรูป					
4.ฉันคิดว่าเกมวาดรูปช่วยให้ฉันเรียนรู้คำศัพท์ใหม่ๆ					
5.ฉันคิดว่าเกมวาดรูปช่วยให้ฉันคุ้นเคยกับคำศัพท์ต่างๆ					
6.ฉันคิดว่าเกมวาดรูปเหมาะสำหรับการเรียนรู้คำศัพท์ในระดับของฉัน					
7.ฉันสามารถจดจำรูปคำศัพท์ได้ดีขึ้น					
8.ฉันต้องการเรียนด้วยเกมวาดรูปบ่อยขึ้น					
9.ฉันคิดว่าการเรียนด้วยเกมวาดรูปช่วยให้ฉันเรียนคำศัพท์ได้ดีกว่าการเรียนคำศัพท์แบบท่องจำ					
10.ฉันคิดว่าวิธีการเกมวาดรูปง่ายต่อการเข้าใจ					

ข้อเสนอแนะ

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Perception questionnaire on the use of drawing games

Section 1: General information

Gender ☐ Male ☐ Female

Section 2: Perceptions on the use of drawing games

Direction: Please mark ✓ the box that corresponds to your level of agreement or disagreement on the use of drawing games.

Statement	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
1. I enjoy studying English through the use of drawing games.					
2. I think drawing games helps me remember vocabulary.					
3. I think I am more encouraged to learn vocabulary using drawing games.					
4. I think drawing games helps me learn new vocabulary better.					
5. I think drawing games helps me get familiar with vocabulary.					
6. I think drawing games helps me learn vocabulary that suits my proficiency level.					
7. I can remember the L2 form of vocabulary better.					
8. I want to learn more often through drawing games.					
9. I think drawing games helps me learn vocabulary better than memorization					
10. I think the instructions of drawing games are easy to understand					

Suggestions

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พหูน ปณฺ ฑิโต ชีเว

BIOGRAPHY

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