The Effects of Multimodal Teaching on English Vocabulary Knowledge of Thai Primary School Students

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Abstract

It is increasingly prevalent in digital learning and teaching strategies for discerning a global perspective on creating the student learning experience. Multimodality is an emergent phenomenon that may influence how digital learning is designed, especially during the COVID-19 pandemic in which immersive learning environments, such as a virtual learning platform, were employed. This immersive platform may assist learners in engaging in, paying attention to, and reflecting on their learning. This quasi-experimental study examined the effects of multimodal teaching on primary school learners' English vocabulary and their attitude toward the learning environment. The participants were 59 primary school students in the northeastern part of Thailand. They were divided into two groups: experimental and control groups. The former consisted of 33 students, while the latter comprised 26. Following Nation's (2013) word knowledge framework, two tests were developed to measure participants' receptive and productive knowledge of the words. L2 vocabulary scholars validated the tests, and the reliability of the tests was checked using Cronbach's alpha coefficient. The questionnaire was also developed to explore the participants' attitudes toward using multimodal teaching methods to improve their vocabulary knowledge. The results showed that although both groups increased their vocabulary knowledge, the statistical analysis revealed that the multimodal teaching technique significantly enhanced participants' receptive and productive vocabulary knowledge. The results also indicated that primary school participants had a positive attitude toward using multimodal teaching methods to improve their vocabulary knowledge. The current study suggests that the multimodal teaching method effectively improves Thai primary school learners' receptive and productive word knowledge and helps them learn new vocabulary.

Keywords: multimodal teaching, modality, vocabulary knowledge, Thai primary school learners

1. Introduction

Learners constantly strive to improve various language features. In the field of second language acquisition (SLA), previous studies have explored different aspects, including corrective feedback (Li, 2010), second language (L2) strategy instruction (Plonsky, 2011), and L2 grammar acquisition (Shintani, 2015). Notably, researchers in SLA emphasize the significance of vocabulary in L2 learning (Schmitt, 2008; Sukying, 2021, 2023; Yousefi & Baria, 2018), underscoring its crucial role in language comprehension and L2 teaching efficiency.

Multimodal materials and teaching strategies have been shown to facilitate language learning, attract learners' attention, and enhance memory retention (Boshrabadi & Biria, 2014; Emerson et al., 2020; Ganapathy, 2016). Multimodal teaching, which incorporates various modes of perception such as speech, audio, written or printed, and visual cues, aims to create a rich learning experience (Jewitt, 2008). By engaging multiple senses and employing diverse modalities, learners can develop a deeper understanding and better recall of the content taught.

Several studies have demonstrated the positive effects of multimodal instruction on students' vocabulary knowledge (Zarei & Khazaie, 2011). For instance, Zarei and Khazaie (2011) discovered that using laptops to

deliver multimodal content led to improved vocabulary acquisition. Furthermore, researchers such as Boshrabadi and Biria (2014), and Ganapathy and Seetharam (2016) have found that multimodal teaching methods promote cognitive engagement, social interactions, reading comprehension, vocabulary retention, and positive learning outcomes.

Despite the benefits of multimodal instruction, challenges persist in maintaining students' concentration and motivation in primary school contexts, which can hinder language learning progress (Hamada & Koda, 2008). Students often experience decreased concentration, lack of motivation, boredom, and apprehension towards language learning. Limited vocabulary also contributes to difficulties in understanding reading texts and applying appropriate vocabulary in their sentences or paragraphs. To address these challenges, educators are increasingly incorporating multimodal teaching approaches that integrate various resources and technologies to enhance language learning (Cope & Kalantzis, 2009).

By leveraging multimodal teaching strategies, this study aims to build upon previous research that highlights the benefits of using visual and auditory stimuli to enhance vocabulary learning (Boshrabadi & Biria, 2014; Emerson et al., 2020; Ganapathy, 2016). The study seeks to address the following research questions:

1) What are the effects of multimodal teaching on vocabulary enhancement among Thai primary school learners?

2) What are the students' attitudes toward using multimodal teaching to learn English vocabulary in the classroom?

Incorporating multimodal resources aligns with the notion that diverse modalities stimulate learners' senses, capture their attention, and improve memory retention (Jewitt, 2008). This study aims to contribute to the existing body of knowledge by investigating the impact of multimodal teaching on vocabulary learning outcomes and students' attitudes in primary school settings.

2. Method

This study was designed as a quasi-experimental research aimed at implementing multimodal teaching methods to enhance vocabulary acquisition among Thai primary school students. English, being a foreign language, was introduced at a private primary school located in northeastern Thailand. The study participants comprised 59 Thai students, with grade 5 (n = 33) serving as the experimental group and grade 6 (n = 26) as the control group. These students, aged between 10 and 12 years, were selected based on their classroom context. It is worth noting that they resided in an industrial province where the majority of parents worked far from home. For this study, all students possessed a comparable level of language proficiency, as they were learning English as a foreign language and had two one-hour sessions with the teacher each week. The entire study spanned a duration of nine weeks.

2.1 Instruments

Two research instruments were utilized to examine the impact of the multimodal approach. The first instrument employed was a Vocabulary Knowledge Test, which consisted of two types. The receptive test was adapted from Promluan and Sukying (2021) and aimed to assess the students' vocabulary knowledge. It comprised 20 multiple-choice items that measured spelling and comprehension of target words derived from the L1 text. The test exclusively covered vocabulary from the supplementary book for primary school level 5. Each question required the selection of the most accurately spelled English word corresponding to its Thai meaning, offering four choices. The following are samples of the receptive vocabulary knowledge test:

1) จงหาคำแปลที่ถูกต้องของคำว่า "หิมะ"/ Find the correct translation of the word (the correct is "snow")

   A. Snew

   B. Snow

   C. Snuw

   D. Snaw

(2จงหาคำแปลที่ถูกต้องของคำว่า "เผาไหม้"/ Find the correct translation of the word (the correct is "burn")

   A. Born

   B. Brunt

   C. Burn

   D. Bern

The second instrument used was the productive vocabulary knowledge test, adapted from the Expressive

One-Word Picture Vocabulary Test and modified by Magnussen and Sukying (2021). The test procedure involved presenting a picture representing the target word to each student. The teacher displayed images and provided the meaning of the words in the students' native language (L1) on the projector screen. This process was repeated for a total of 20 pictures, with each picture allotted approximately three minutes. The students were instructed to write down their answers on their answer sheets, expressing the word they believed corresponded to the presented picture. Pretest and posttest results were collected and analyzed to compare and discuss the effects of the multimodal approach on vocabulary knowledge development among Thai primary school English as a Foreign Language (EFL) learners. The samples of productive vocabulary knowledge tests are as follows:

Figure 1. Example of The One-Word Picture Vocabulary Test slide.

Example: จงเขียนความหมายของภาพที่กำหนดให้เป็นคำภาษาอังกฤษ/Write the meaning of the picture given in English words.

ภาพ/image = หลุม/A hole

คำตอบ = Hole, a hole/คำแปล หลุม, รู

The final instrument utilized in this study was a questionnaire, adapted from Yamashita (2013) and modified for a multimodal teaching context by Promluan and Sukying (2021). The questionnaire aimed to assess the attitudes of the students towards multimodal teaching. The questionnaire followed the Index of Item-Objective Congruence (IOC) and each question was rated on a 3-point scale. A rating of +1 indicated congruence, 0 denoted uncertainty, and -1 represented incongruence. In total, the questionnaire consisted of 15 questions. To gauge the students' attitudes, a 5-point Likert scale was employed, ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire contained the same questions and format and was administered twice: once in the first week as a pretest to assess their initial attitudes and again in the last week as a posttest to evaluate any changes in their attitudes towards the multimodal approach.

Table 1. Example of the attitude questionnaires

(Instructions: ให้นักเรียนทำเครื่องหมาย (/) ลงในช่องที่ตรงกับความรู้สึกหรือความคิดเห็นของนักเรียน แต่ละคำถามสามารถเลือกตอบได้เพียงคำตอบเดียวเท่านั้น

Put a mark (/) in the box that corresponds to opinions. Each question can only choose one answer.)

ข้อความ(Text)	ไม่เห็นด้วยอย่างยิ่ง (Strongly disagree)	ไม่เห็นด้วย (Disagree)	ไม่แน่ใจ (Unsure)	เห็นด้วย (Agree)	เห็นด้วยอย่างยิ่ง (Strongly agree)
1.ฉันเข้าใจคำศัพท์ในหนังสือเพิ่มขึ้นหลังจากเรียนด้วยการสอนหลายรูปแบบ (I enjoy using multimodal teaching to learn vocabulary.)			/		
2.สื่อการสอนเหมาะสมกับเนื้อหาและตัวชี้วัด (Teaching materials are suitable for content and indicators.)			/		

The assessment was conducted both before and after the implementation of the teaching approach. Each test comprised 20 questions, and all the vocabulary items were selected from the grade 5 students' textbooks. The process of test development commenced by defining the purpose of the tests, followed by the creation of the tests and the corresponding scoring rubrics by the researcher. Subsequently, the tests underwent review and pilot testing. Finally, the quality of all the instruments was evaluated by experts.

2.2 Data Collection Procedure

The data collection process spanned approximately two months and was conducted during regular class sessions. The two vocabulary knowledge tests were administered on separate days. Considering that vocabulary knowledge can be transferred to various aspects (Laufer & Goldstein, 2004; Magnussen & Sukying, 2021) and that 'meaning' knowledge plays a role (Webb, 2005), the Vocabulary Knowledge Test was administered first, followed by the One-Word Picture Test. Following the pre-testing phase, the students received multimodal instruction for a duration of 16 hours, equivalent to eight weeks. All participants received an average of four hours of English instruction per week, including two hours of multimodal instruction. The day after the final lesson, all students were once again given the two tests. Subsequently, all participating students were requested to complete an attitude questionnaire. During the assessments, participants were permitted to use dictionaries.

2.3 Data Analysis

The quantitative data for this study was collected through a vocabulary knowledge test, based on the Vocabulary Knowledge Test (VKT) adapted from Promluan and Sukying (2021). The posttest followed the same procedure as the pretest conducted at the beginning of the study. The results of the vocabulary tests were then analyzed to facilitate discussions on the effectiveness and appropriateness of multimodal teaching for primary students, addressing Question 1.

On the other hand, the qualitative data was obtained through 15 questionnaires administered in the participants' native language (L1), utilizing a Likert scale. These questionnaires aimed to assess the students' satisfaction and attitudes towards multimodality. The qualitative analysis focused on measuring attitudes, satisfaction levels, and identifying overall significance, gaps, and limitations, which can help address Question 2.

This section of the study describes the methodology, including the research design, the instruments used (VKT and questionnaires), the data collection procedure, and the data analysis. In this study, all participants completed two vocabulary tests before receiving 16 hours of multimodal instruction. Following the instruction, the participants completed the same tests along with an attitude questionnaire regarding the multimodal teaching approach in the classroom.

3. Results

This section begins with a general description of the Receptive test results (3.1), Productive test results (3.2) for the first research question, and a summary of the overall quantitative data (3.3) for the second research question.

3.1 Receptive Results

The analysis found that the experimental group had the largest effect size (0.56), indicating that the multimodal teaching approach was more effective than the control group. However, no teaching approach showed a significant advantage in improving participants' receptive vocabulary knowledge. The receptive vocabulary knowledge test (RVKT) assessed participants' ability to recognize L2 meanings in multiple-choice questions. The results of the RVKT showed that the experimental group performed at 43.33% (S.D. = 4.73) in the pretest and 55.61% (S.D. = 4.81) in the posttest. The control group achieved 46.41% (S.D. = 3.85) in the pretest and 47.43% (S.D. = 3.60) in the posttest. A dependent-sample t-test revealed a significant increase in posttest scores for the experimental group (t-test = 4.73, $p < 0.00$), while the control group showed no significant change (t-test = -0.08, $p < 0.93$). An independent t-test comparing the groups on the same test showed no significant difference in receptive pretest and posttest scores (t-test = 1.32 for the pretest, 1.06 for the posttest, $p = 0.19$ for the pretest, and 0.29 for the posttest).

Table 2. Receptive vocabulary knowledge results

Group	Pretest		Posttest		*t-test*	*p*	*d*
	$\dot{x}$	S.D.	$\dot{x}$	S.D.			
Experimental (n=33)	8.67	3.83	11.12	4.81	4.73	0.00	0.56
Control (n=26)	10	3.85	9.96	3.60	-0.08	0.93	-0.02
t-**test**	-1.32		1.06				
p-value	0.19		0.29				

Figure 2 revealed that the control group differed in their pre-test performance ($\bar{x} = 2$). In contrast, there was a significant difference in the posttest performance of the control group ($\bar{x} = 9.96$) and the experimental group ($\bar{x} = 11.12$). The experimental group improved their receptive form-meaning skill significantly; the multimodal

teaching approach completed their total outstripped the control group significantly. It can be determined that the current study offers evidence that the multimodal teaching approach amended vocabulary learning and development among Thai primary school students in receptive vocabulary knowledge.
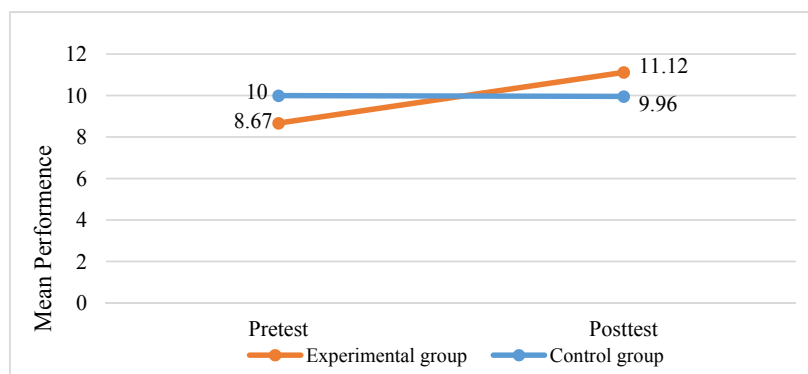

Figure 2. Students' overall performance on receptive vocabulary knowledge

3.2 Productive Test Results

The productive vocabulary knowledge test assessed primary school students' ability to write L2 vocabulary and corresponding L1 meaning based on visual slides. Table 3 summarizes the performance of Thai primary school students on this test. The experimental group achieved an average performance of 22.12% (S.D. = 2.10) in the pretest and 37.12% (S.D. = 3.47) in the posttest, while the control group obtained scores of 24.83% (S.D. = 1.30) in the pretest and 30.67% (S.D. = 1.9) in the posttest. A dependent-sample t-test revealed that both the experimental group (t-value = 8.29, p < 0.00) and the control group (t-value = 2.77, p < 0.01) showed significantly higher scores in the posttest compared to the pretest. However, the independent t-test comparing the groups on the same test indicated no significant difference in the pretest (t-test = -1.72, p = 0.09) but a significant difference in the posttest (t-test = 2.11, p = 0.04). These results significantly improve students' productive vocabulary knowledge over time.

Table 3. Productive vocabulary knowledge results

Group	Pretest		Posttest		t-test	p	d
	$\dot{x}$	S.D.	$\dot{x}$	S.D.			
Experimental (n = 33)	4.42	2.1	7.42	3.47	8.29	0.00	1.10
Control (n = 26)	5.19	1.3	5.92	1.9	2.77	0.01	0.45
t-test	-1.72		2.11				
p-value	0.09		0.04				

Figure 3 shows the control group performance ($\bar{x}$ = 5.19) and the posttest performance ($\bar{x}$ = 5.92), while the experimental group pretest performance ($\bar{x}$ = 4.42) was lower than the control group but higher in posttest ($\bar{x}$ = 7.42). The whole classroom significantly improved their productive vocabulary knowledge, focus on form, and meaning proficiency; the P5 outperformed the control group. It can be decided that the present study positively affected Thai primary school students' productive vocabulary knowledge.
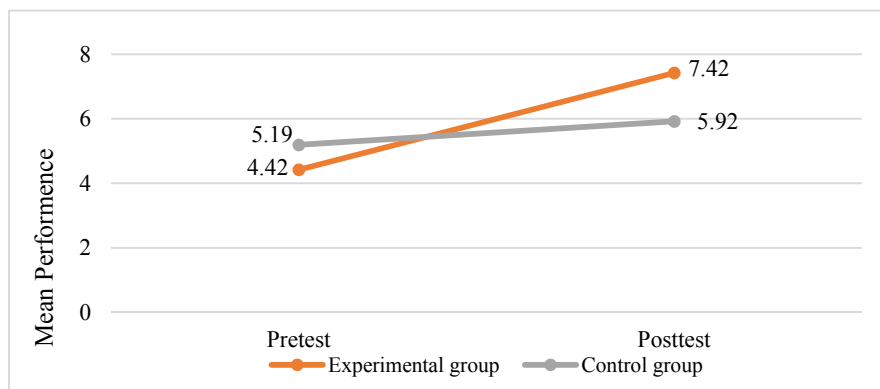
Figure 3. Students' overall performance on productive vocabulary knowledge

3.3 Students' Attitudes Toward Multimodal Teaching Approach

To answer Research question two, this section investigated Thai primary school learners' attitudes toward multimodal teaching by analyzing the data from the attitude questionnaires administered at the end of this study for the Experimental group. Students were asked to rate a 15-item questionnaire to measure their five attitudinal variables from 'strongly disagree' (1 point), 'disagree' (2 points), 'neutral' (3 points), 'agree' (4 points), and 'strongly agree' (5 points). Table 4 describes the results of the closed-ended statement items in the questionnaires related to the students' attitudes toward the multimodal teaching approach.

Table 4. Student's attitudes questionnaire analysis

No	Items	Mean	%	S.D.	Meaning
13	I feel comfortable when I learn vocabulary through the multimodal approach.	4.27	85.45	0.71	High
15	The multimodal teaching allows me to learn new vocabulary	4.27	85.45	0.83	High
2	I think multimodal teaching assists me in recognizing the meanings of words.	3.91	78.18	0.29	High
6	I feel motivated to study with multimodal teaching to learn spelling and meaning.	3.91	78.18	0.93	High
Total		**3.76**	**75.20**	**0.94**	**High**

As shown in Table 4, The average scores on the attitude questionnaire ranged from 3.55 to 4.27, indicating a moderate to high level of agreement among the participants that multimodal teaching facilitated their vocabulary learning and development. The highest scores were achieved for items 13 (I feel comfortable when I learn vocabulary by the multimodal approach) and 15 (Multimodal teaching allows me to learn new vocabulary), while the lowest score was obtained for item 3.

The overall mean of the attitude questionnaire was 3.76, with a standard deviation of 0.94. The highest mean score of 4.27 was observed for items 13 and 15, indicating that the majority of the class enjoyed learning vocabulary using the multimodal approach in the English classroom. This high score was followed by a mean score of 3.91 for statement 2 (I think the multimodal teaching assists me in recognizing the meanings of the words) and statement 6 (I feel motivated when I study with multimodal teaching to learn spelling and meaning).

These results demonstrate that students agreed that multimodal teaching improved their memorization of words, particularly in terms of sound and meaning, by utilizing pictures or short videos to enhance memorability. Statement 6 also indicates that the approach stimulated the students by addressing their spelling issues, as these problems became evident during exercise sessions and classroom activities.

In summary, the findings indicate that eight weeks of multimodal teaching significantly improved the students' vocabulary knowledge. The majority of participants expressed satisfaction with the approach's content and activities, which facilitated their learning of new vocabulary and enhanced their overall vocabulary knowledge.

4. Discussion

The previous section suggested the study outcomes and answered the research questions. This section further clarified and discoursed the current results in the context of prior studies. Overall, the present study's outcomes revealed a bottomless understanding of the effectiveness and effects of using multimodal teaching in English vocabulary to L2 learners, especially in a Thai EFL context. This section discussed the contributions of these findings and proposed the implications for multimodal and recommendations for future studies.

4.1 The Effects of Multimodal Teaching on English Vocabulary Knowledge Among Thai EFL Primary School Students

The present study aimed to examine the impact of multimodal teaching on the English vocabulary knowledge of Thai primary school learners. Two measures were developed and validated to assess participants' receptive and productive knowledge of English vocabulary. The results of the analysis demonstrated significant effects of multimodal teaching on Thai primary school learners, with both the experimental and control groups showing significant increases in vocabulary knowledge as measured by the two tests. Notably, the experimental group achieved higher average scores than the control group and their control peers.

These findings suggest that multimodal teaching has beneficial effects on enhancing vocabulary learning among Thai primary school students, which aligns with previous studies that have highlighted the advantages of utilizing auditory, visual, and kinesthetic learning styles (Kahn & Kellner, 2008; Kress, 2000; Jewitt, 2008; Yimwilai & Phusri, 2018).

The significant increase in vocabulary knowledge observed in students who received multimodal teaching can be attributed to deliberate vocabulary learning, which accelerates vocabulary development by employing visual aids to facilitate the transfer of information from short-term to long-term memory. These strategies can be implemented individually within a short period. Furthermore, multimodal teaching through interactive multimedia presentations, songs, and online resources has been found to improve students' motivation, engagement, and retention of new vocabulary words. These findings align with previous studies that highlight the positive effects of different learning modes on vocabulary acquisition (Magnussen & Sukying, 2021; Sukying & Yowaboot, 2022), supporting the notion that intentional efforts to learn vocabulary yield effective and worthwhile results (Nation & Meara, 2010).

The increase in vocabulary knowledge can be attributed to cognitive processes such as noticing and retrieval. The presentation of lexical items through multiple teaching platforms increases their visibility and likelihood of being learned. The more frequently a lexical item is retrieved during the learning process, the more deeply it becomes embedded in the learner's memory. These encounters also prompt students to reconsider their understanding of the encountered words. Consequently, when students receive multimodal teaching in the classroom, it aids in establishing a strong memory for the words. In vocabulary tests, the multimodal classroom outperformed the incidental group significantly in areas such as digital flashcards, songs, and previous multimodal studies (Harchegani & Sherwan, 2021; Magnussen & Sukying, 2021; Yowaboot & Sukying, 2022; Yimwilai & Phusri, 2018). Thus, deliberate vocabulary learning efforts are effective and worthwhile (Nation & Meara, 2010). These findings are consistent with previous research indicating that encountering and reclaiming L2 words enhances their meanings and that repeated exposure and use contribute to a better understanding of various senses of the encountered words by students (Elgort, 2011; Magnussen & Sukying, 2021; Nation, 2013; Nation & Meara, 2010; Yowaboot & Sukying, 2022). In summary, the current study supports the effectiveness of multimodal teaching for vocabulary learning and teaching.

Furthermore, multimodal teaching, which incorporates hands-on and interactive experiences, provides learners with opportunities to actively engage with and construct their knowledge. This approach aligns with the principles of constructivism (Mogashoa, 2014). Multimodal teaching and constructivism theory are compatible and complementary approaches to education, as they both support the active construction of knowledge by the learner. By employing multiple modes of representation and interaction, multimodal

In conclusion, the use of multimodal teaching has been found to have a beneficial effect on vocabulary improvement among Thai primary school learners. Several studies have investigated the use of multimodal teaching in the Thai context and found that it can significantly improve students' vocabulary acquisition.

4.2 Thai EFL Primary School Students' Attitude Towards Using Multimodal Teaching

Regarding Research Question 2, quantitative data were collected through a questionnaire administered to the participants in the experimental group to investigate their attitudes toward the use of multimodal teaching for improving vocabulary knowledge. The questionnaire utilized a five-point Likert scale to gauge the participants' responses, and the results indicated that primary school students generally hold positive attitudes toward multimodal teaching. The findings revealed that deliberate vocabulary learning through multimodal teaching is well-received due to its communicative features, diverse range of techniques, and adaptability to various contexts. Multimodal teaching offers a semi-contextualized approach that enhances effectiveness within a short timeframe, allowing learners to retrieve vocabulary knowledge through reviewing lessons, engaging in activities, and completing assignments. However, teachers need to ensure that students remain engaged and focused on word acquisition, as some students may perceive less emphasis on spelling practice compared to the core

curriculum. These findings are consistent with previous studies highlighting the benefits of multimodal teaching in simultaneously emphasizing form and meaning, leading to the continuous retrieval of vocabulary items (Dizon & Tang, 2017; Magnussen & Sukying, 2021; Wilkinson, 2017; Yowaboot & Sukying, 2021).

The advantages of multimodal teaching in facilitating deliberate vocabulary learning among Thai primary school students can be attributed to its usefulness, broad scope and context, and entertainment value. The inclusion of visual images and sounds motivates students to learn the meaning and spelling of individual words, aiding in more effective memorization and recall of vocabulary items. In conclusion, the current findings contribute to the existing literature by providing evidence that multimodal teaching is an effective tool for promoting intentional vocabulary learning (Kahn & Kellner, 2008; Kayumova & Sadykova, 2019; Jewitt, 2008; Pintado & Fajardo, 2021; Sakulprasertsri, 2020; Yimwilai & Phusri, 2018).

4.3 Conclusion of the Study

The current study has provided valuable insights into L2 vocabulary acquisition and development. It has demonstrated the effectiveness of multimodal teaching techniques in enhancing vocabulary learning among Thai EFL primary school learners. The findings highlight the positive impact of employing multiple modes of teaching strategies on vocabulary acquisition and development for these learners. Furthermore, the study has revealed that Thai primary school students possess a strong inclination towards using multimodal teaching methods, perceiving them as engaging and beneficial for their vocabulary learning. In summary, the multimodal teaching approach proves to be effective for L2 vocabulary acquisition, enabling teachers to actively involve students in the process of learning new vocabulary.

4.4 Implications of the Study

The study's positive results serve to strengthen the theoretical foundation of multimodal approaches and their potential to facilitate language acquisition. Furthermore, the research sheds light on the role of attention and memory functions in vocabulary acquisition. By employing memory aids such as video clips, PowerPoints, and visual imagery, the study demonstrates how multimodal teaching can enhance learners' vocabulary retention and their ability to recall concepts.

The study's findings have practical implications for educators and language teachers. They can incorporate multimodal teaching techniques, including the integration of videos, visual materials, and technology, to create engaging and interactive vocabulary lessons. These approaches can help students develop a deeper understanding of vocabulary and improve their overall language proficiency. The study emphasizes the importance of multimodal teaching in capturing students' attention and increasing their engagement in the language classroom. By utilizing various sensory modalities, teachers can establish a more stimulating learning environment, leading to higher levels of student satisfaction and motivation.

Moreover, the study provides insights into the design and development of language learning materials. It suggests the inclusion of multimodal resources and activities in textbooks, online platforms, and teaching materials to support vocabulary acquisition. This approach can enhance the learning experience and cater to the diverse learning styles and preferences of students. Finally, the study's outcomes can guide educational policymakers and administrators in considering the integration of multimodal teaching approaches into language curricula. It highlights the potential benefits of incorporating technology and multimodal resources in classrooms, resulting in more effective language instruction and improved learning outcomes.

4.5 Limitations of the Study

Due to the wide range of techniques, certain limitations are imposed on the current research. First, the preparation session for the multimodal lessons is pointless to initiate because the ready-made classroom materials can be adapted to provide content in language learning anytime. Therefore, the preparation stage could be created by considering the school's and students' context. The impact of the first limitation causes less time to develop and refine strategies effectively. Second, the duration in the classroom is shorter than the core-curriculum teaching due to the explanation of each slide, classroom activities, and setting classroom before initiating, which can take more than twenty minutes per class.

4.6 Suggestions for Further Studies

Multimodal teaching and constructivism theory are both concerned with the active construction of knowledge by the learner. Both approaches emphasize the importance of incorporating multiple modes of representation and interaction in the learning process. Besides, multimodal teaching is an instructional approach that recognizes the importance of using various presentation methods to support learning, including visual, auditory, and kinesthetic. This approach acknowledges that different learners may have different strengths and preferences for learning and

that by incorporating multiple modes of representation, teachers can facilitate learning for a broader range of learners. Future studies may benefit multimodal pedagogical practices by examining the different aspects of vocabulary knowledge and other language skills. Further studies may call for reorienting L2 vocabulary and EFL teaching and learning, focusing on multimodal pedagogical practices. Thus, this study argues against previous studies that support the use of constructivism theory and multimodal teaching for EFL learners.

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