การจัดการเรียนรู้แบบใช้สมองเป็นฐานเพื่อพัฒนาความสามารถด้านการอ่านภาษาอังกฤษเพื่อความเข้าใจของนักเรียนชั้นประถมศึกษาปีที่ 5

USING BRAIN-BASED LEARNING TO IMPROVE ENGLISH READING COMPREHENSION ABILITY OF PRATHOMSUKSA 5 STUDENTS

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บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาและเปรียบเทียบความสามารถด้านการอ่านภาษาอังกฤษเพื่อความเข้าใจก่อนเรียนและหลังเรียนของนักเรียนชั้นประถมศึกษาปีที่ 5 ที่เรียนการอ่านภาษาอังกฤษเพื่อความเข้าใจโดยใช้การจัดการเรียนรู้แบบใช้สมองเป็นฐาน และศึกษาเจตคติต่อการสอนอ่านภาษาอังกฤษเพื่อความเข้าใจโดยใช้การจัดการเรียนรู้แบบใช้สมองเป็นฐานของนักเรียนชั้นประถมศึกษาปีที่ 5 กลุ่มตัวอย่างที่ใช้ในการวิจัยคือนักเรียนชั้นประถมศึกษาปีที่ 5 โรงเรียนโพนสว่างป่าตองวิทยา จังหวัดหนองคาย สำนักงานเขตพื้นที่การศึกษาประถมศึกษาหนองคาย เขต 1 ในภาคเรียนที่ 1 ปีการศึกษา 2567 จำนวน 15 คน ซึ่งได้มาโดยการสุ่มกลุ่มตัวอย่างแบบกลุ่ม แบบแผนของการวิจัย ประกอบด้วย แผนการจัดการเรียนรู้ จำนวน 12 แผน แบบทดสอบวัดความสามารถด้านการอ่านภาษาอังกฤษเพื่อความเข้าใจ และแบบวัดเจตคติต่อการสอนอ่านภาษาอังกฤษเพื่อความเข้าใจโดยใช้ การจัดการเรียนรู้แบบใช้สมองเป็นฐาน ดำเนินการทดลองใช้ระยะเวลา 12 สัปดาห์ สัปดาห์ละ 2 ชั่วโมง รวมทั้งสิ้น 24 ชั่วโมง สถิติที่ใช้ในการวิเคราะห์ข้อมูล ได้แก่ ค่าเฉลี่ย ร้อยละ ส่วนเบี่ยงเบน มาตรฐาน การทดสอบทีแบบไม่อิสระ และการทดสอบทีแบบกลุ่มเดียว ผลการวิจัยสรุปได้ดังนี้ 1) นักเรียนมีคะแนนความสามารถด้านการอ่านภาษาอังกฤษเพื่อความเข้าใจเฉลี่ยก่อนเรียน เท่ากับ 13.60 คิดเป็นร้อยละ 34.00 และคะแนนเฉลี่ยหลังเรียนเท่ากับ 31.06 คิดเป็นร้อยละ 77.66 ซึ่งสูงกว่าเกณฑ์ร้อยละ 70 และเมื่อทดสอบความแตกต่างของค่าเฉลี่ยพบว่าความสามารถด้านการอ่านภาษาอังกฤษเพื่อความเข้าใจของนักเรียน หลังเรียนสูงกว่าก่อนเรียน 2) นักเรียนมีเจตคติต่อการสอนอ่านภาษาอังกฤษเพื่อความเข้าใจโดยใช้การจัดการเรียนรู้แบบใช้สมองเป็นฐานอยู่ในระดับดี

คำสำคัญ: การจัดการเรียนรู้แบบใช้สมองเป็นฐาน, การอ่านภาษาอังกฤษ, การอ่านภาษาอังกฤษเพื่อความเข้าใจ

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Abstract

The purposes of this research were to study and compare the English reading comprehension ability of Prathomsuksa 5 students before and after studying English reading comprehension using brain-based learning, and to investigate the students' attitude toward teaching English reading comprehension using brain-based learning. The sample consisted of 15 Prathomsuksa 5 students at Phonsawangpatongwittaya School, Nongkhai, under Nongkhai Primary Education Service Area Office 1 in the first semester of the academic year 2024, selected by using cluster random sampling. This research was designed using a one-group pretest-posttest design. Research instruments included 12 lesson plans, an English reading comprehension ability test, and an attitude questionnaire. The experiment lasted for 12 weeks, with two hours per week, totaling 24 hours. The mean, percentage, standard deviation, t-test for dependent samples, and one-sample t-test were used for data analysis. The findings of this research were as follows: 1) The students' mean scores for the pretest and posttest on English reading comprehension ability were 13.60 (34.00 percent) and 31.06 (77.66 percent) respectively. The students' posttest mean score on English reading comprehension ability was higher than the set criterion of 70 percent and was higher than their pretest scores. 2) The students' attitude toward teaching English reading comprehension using brain-based learning was at a good level.

Keywords: Brain-based learning, English reading comprehension, English reading comprehension ability

Introduction

English is the international language used for communication in education, business, careers, technologies, industry, science, engineering, and other related fields. Many countries include English as a subject in their school syllabus. According to the Ministry of Education (2008, p. 252), Thai people also learn English as a foreign language, and many children start learning it at a young age. Learners who have a positive attitude toward learning English continue to use English for both knowledge and communication after they have received their certification. In addition, Harmer (2001, p. 1) states that English is significant because it is widely used for communication between speakers whose mother tongues are different from one another. Moreover, Fulcher (2007, p. 1) claims that English is one of the most important languages used in international standard educational institutions and for working

with foreign organizations. This is the reason that most learners need communication skills in English, which serve as a passport to economic prosperity, social mobility, and educational advancement.

Among the four language skills, Ruddell (1997, p. 69) mentions that the importance of reading is to develop the language learners' reading comprehension ability and reinforce the experiences of learners to get a higher level of reading proficiency. Furthermore, Harris & Hodges (1995: 207) define that reading comprehension as intentional thinking during meaning constructed through interactions between text and readers. People who have better background knowledge and the ability to connect what they know with what they read have greater comprehension of reading texts. Additionally, Ananiadou, et al. (2012, pp. 13-14) state that English reading comprehension ability has played an essential role in students obtaining information. People who know how to read can educate themselves in any fields of study to effectively gain the new information and updated knowledge. At present, English has become dominant on the internet. By accessing the information, students need to master English reading. Therefore, English reading comprehension ability is the major part to take advantage.

However, the English reading of students seems to be at an unsatisfactory level. According to the Ordinary National Educational Test (ONET) reported in the academic year 2024, the average score of Prathomsuksa 6 students attending Phonsawangpatongwittaya School was 28.85 percent of the total. The statistical data has shown that more than half of students have failed to achieve 50 percent of the full score. One reason for this low learning achievement in English reading of students is that the students in Phonsawangpatongwittaya School lacked reading comprehension abilities. Consequently, Thai EFL teachers have always concentrated and focused on the factors of learning reading that should be improved to control and handle the reading problems.

There are various effective teaching approaches to develop students' reading comprehension. Brain-based learning might be one of the effective strategies that helps students enhance their reading comprehension ability. Caine & Caine (1991: 80-87) define brain-based learning as a strategy related to accepting the rules of how the brain functions to design instruction that fosters meaningful learning. It encourages students to connect meaning based on prior knowledge, experiences, and context to help students comprehend texts more efficiently. In addition, Jensen (2000: 6) defines brain-based learning as an

educational approach that considers the way the brain naturally learns. It involves the integration of diverse skills and knowledge to enhance brain development and create instructional methods that enhance the brain's efficiency in the learning process. It can help teachers understand how the brain learns best and the cognitive process in the aspect of reading comprehension to design activities and learning materials appropriately for learners' differences.

Some researchers conducted research to improve English reading comprehension ability by using brain-based learning including Khanthap and Bhiasiri (2012) who investigated the English reading achievement of Prathomsuksa 4 students Baan Thatphanom and students' satisfaction with teaching and learning English by using Brain-Based Learning concepts. The target group consisted of twenty Prathomsuksa 4 students of Baan Thatphanom school, the first semester in the academic year 2012. The methodology was pre-experimental research involving a one-group pretest-posttest design. The results showed that seventy-five percent of students passed the test with an average score of 76 percent (22.80 out of 30) after learning to read English using brain-based learning, with 3 steps: pre-reading, while-reading, and post-reading. In addition, students had a very high satisfaction toward teaching and learning English by using brain-based learning. Moreover, El Sakka, et al. (2023) examined the effect of the brain-based learning on primary students' reading comprehension skills. The participants of the research included 73 students who were randomly chosen from 5th year primary students at Mohamed Hafez Primary School during the first term of the academic year 2021–2022. The research methodology used in this research was a quasi-experimental design involving the experimental group and the control group. The results showed that students in the experimental group have developed their reading comprehension skills because of using brain-based learning instruction. In addition, Kohar (2020) examined the effectiveness of brain-based learning on the level of reading comprehension in Indonesian junior high school. Sixty-four excellent students of grade 7 SMPN Unggulan Sindang Indramayu grouped into the experimental group and the control group participated in this study voluntarily. The results showed that brain-based learning is effective, brain-based learning model could improve students' inferential comprehension, and there were different influences of text structure toward reading comprehension of exposition text.

Based on the cited studies, the researcher has considered that brain-based learning may help students with difficulties on reading comprehension. Therefore, the researcher

would like to employ brain-based learning with Prathomsuksa 5 students in Phonsawangpatongwittaya School whether it could improve their English reading comprehension ability and what level the students have attitude toward it. In addition, the research findings may be guidelines for teaching English reading comprehension in Thailand in the future.

Objectives of the Study

1. To study and compare the English reading comprehension ability of Prathomsuksa 5 students before and after studying English reading comprehension using brain-based learning

2. To investigate the attitude of Prathomsuksa 5 students toward teaching English reading comprehension using brain-based learning

Research Methodology

Population

The population in this study consisted of 196 Prathomsuksa 5 students in the Network group of Mueng 4 schools under Nong Khai Primary Education Service Area Office 1, in the first semester of the academic year 2024.

Sample

The sample in this study comprised 15 Prathomsuksa 5 students enrolled in a Basic English subject (E15101) in the first semester of the academic year 2024 at Phonsawangpatongwittaya School, Nongkhai, under Nongkhai Primary Education Service Area Office 1. These students were selected by cluster random sampling. The researcher divided the entire population into separate groups. Then, a random sample of these clusters was selected.

Research Design

This study was experimental research with one group pretest-posttest design. It is a quantitative research method (Campbell & Stanley,1969)

Research Instruments

Three research instruments were utilized to carry out this study as follows:

1. Lesson plans of teaching English reading comprehension using brain-based learning

The lesson plans consisted of 12 units, with 2 hours per unit. Twelve lesson plans for teaching English reading comprehension using brain-based learning were developed in English version including three stages of teaching English reading comprehension using brain-based learning. The contents of the lesson plans were the English reading texts based on the English curriculum of Thailand according to the Basic Education Curriculum of 2008 and the School Curriculum. There were twelve reading passages including: at school, amazing animals, our happy family, a special menu, help our planet, summer holidays, let's go shopping, let's take a trip, inventions, Halloween, festivals, and science museum. The value of the Index of Item Objective Congruence (IOC) was 1.00 for each lesson plan.

2. An English reading comprehension ability test

The English reading comprehension ability test was developed by the researcher. It was based on Miller (1990, pp. 4-7) in aspects of three levels including; textually explicit, textually implicit, and critical implicit comprehension. It was the multiple-choice test with 40 items. The value of the Index item Objective Congruence (IOC) was 1.00 for every item. The difficulty value of the items was between 0.37 - 0.77 and the discrimination value was between 0.25 – 0.75. The reliability of the test was 0.89 for the whole test.

3. An attitude questionnaire toward teaching English reading comprehension using brain-based learning.

An attitude questionnaire toward teaching English reading comprehension using brain- based learning was developed in Thai version which consisted of 20 items related to the contents using a five-point Likert's rating scale. The value of the Index item Objective Congruence (IOC) was 1.00 for every item.

Data Collection

To perform data collection, the researcher collected data in the first semester of the academic year 2024. The details were as follows:

1. Students took the pretest, an English reading comprehension ability test with 40 items, before studying English reading comprehension using brain-based learning in 90 minutes.

2. The teaching process was carried out according to the 12 lesson plans for 12 weeks, totaling 24 hours.

3. Students took the posttest using the English reading comprehension ability test with 40 items for 90 minutes, which is the same as the pretest, after the completion of the teaching process completed.

4. The attitude questionnaire was used to examine the students' attitude toward teaching English reading comprehension using brain-based learning.

5. The collected scores from the pretest and posttest and students' attitude data were statistically analyzed and interpreted.

Data Analysis

The data from the English reading comprehension ability test and the attitude questionnaire was statistically analyzed as follows:

1. The researcher analyzed data to study the English reading comprehension ability of Prathomsuksa 5 students using mean (*M*), percentage, and standard deviation (*SD*).

2. The researcher analyzed data to compare the pretest and posttest of the English reading comprehension ability using a t-test for Dependent Samples.

3. The researcher analyzed data to compare the English reading comprehension ability of Prathomsuksa 5 students before and after studying English reading comprehension using brain-based learning and the set criterion of 70 percent using a one-sample t-test.

4. The researcher analyzed data to investigate students' attitude toward teaching English reading comprehension using brain-based learning, using mean (*M*) and standard deviation (*SD*).

Results

The results of the study and comparison of the students' English reading comprehension ability before and after studying English reading comprehension using brain-based learning was as follows:

Table 1: Posttest scores on English reading comprehension ability after studying English reading comprehension using brain-based learning

Test	n	*M*	*SD*	Percentage	t
Posttest	15	31.06	2.76	77.66	4.29*

*p ≤ .05

From Table 1, the students' posttest mean score on English reading comprehension ability was 31.06 or 77.66 percent. The result showed that the posttest mean score was significantly higher than the set criterion of 70 percent at the 0.05 level.

Table 2: A comparison of scores on English reading comprehension ability before and after studying English reading comprehension using brain- based learning of Prathomsuksa 5 students

Test	n	*M*	*SD*	Percentage	t
Pretest	15	13.60	2.74	34.00	
					81.13*
Posttest	15	31.06	2.76	77.66	

*p ≤ .05

From Table 2, the students' pretest mean score on English reading comprehension ability was 13.60 or 34.00 percent and the posttest mean score was 31.06 or 77.66 percent. The result showed that the posttest mean score was higher than that of the pretest significantly different at the 0.05 level.

Table 3: An investigation of the students' attitude toward teaching English reading comprehension using brain-based learning

Items	Attitude Questionnaire	*M*	*SD*
1	Using brain-based learning in English reading comprehension enhances your understanding of the text.	4.40	0.49
2	English reading comprehension using brain-based learning generates interest and stimulates to want to learn more.	4.53	0.50
3	English reading comprehension using brain-based learning assists you in systematically connecting with the text.	4.20	0.40
4	English reading comprehension with brain-based learning boosts your confidence in expressing opinions within a group.	4.20	0.40
5	Responding to questions about images and video clips assists you in linking your prior knowledge to the upcoming reading material.	4.67	0.47

Items	Attitude Questionnaire	M	SD
6	Finding keywords and previewing the reading text through skimming assists in understanding the text's content.	4.27	0.44
7	Teaching vocabulary during pre-reading activities aids in better understanding of the reading text.	4.53	0.50
8	Demonstrating structures and expressions in pre-reading activities by the teacher are beneficial for English reading comprehension.	4.20	0.40
9	Answering WH-questions on Worksheet 1 helps in predicting the reading text's content.	4.33	0.47
10	Group activities facilitate the exchange of information and ideas among friends about answering questions on Worksheet 1, enhancing English reading comprehension.	4.27	0.44
11	Discussing the answers on Worksheet 1 with groups and a teacher enhances English reading comprehension.	4.47	0.50
12	Answering questions in detail about Worksheet 1 enhances understanding the reading text.	4.47	0.50
13	Creating a mind map on Worksheet 2 to identify keywords from the reading text, is interesting and enhances understanding the reading text.	4.53	0.50
14	Presenting the mind map on Worksheet 2 in front of the class fosters enthusiasm and self-confidence.	4.33	0.47
15	Discussing keywords that should be in the mind map together enhances understanding the reading text.	4.33	0.47
16	Writing the summary from the mind map in a paragraph enhances understanding the reading text.	4.47	0.50
17	Answering reading comprehension quiz enhances understanding the reading text.	4.27	0.44
18	English reading comprehension using brain-based learning helps in acquiring additional vocabulary and idioms for use in other reading materials.	4.47	0.50
19	I prefer this learning approach for English reading comprehension over traditional reading teaching methods.	4.40	0.49
20	Teaching English reading comprehension using brain-based learning assists students in translating, interpreting, and summarizing the reading text.	4.27	0.44
	Overview	4.38	0.47
	Interpretation	Good	

From Table 3, the result displayed that the mean of students' attitude toward teaching English reading comprehension ability using brain-based learning questionnaire was at 4.38. It showed that student's attitude toward teaching English reading comprehension ability using brain-based learning questionnaire was at a good level.

Discussion

This study was experimental research with a one group pretest – posttest deign. It aimed to study and compare students' English reading comprehension ability before and after using brain-based learning and investigate student's attitude toward teaching English reading comprehension using brain-based learning. The research findings can be discussed as follows:

1. The result of the comparison of students' scores of English reading comprehension ability before and after studying English reading comprehension using brain-based learning was higher than the set criterion of 70 percent.

The students' posttest mean score on English reading comprehension ability was 31.06 or 77.66 percent. The result showed that the posttest mean score was significantly higher than the set criterion of 70 percent. This finding supported the first research hypothesis of this study. The reason might be that brain-based learning could enhance students' English reading comprehension ability when the students studied English reading comprehension through many activities based on brain-based learning. In this study, the researcher applied the lesson plans based on the stages of brain-based learning by Jensen (2000, pp. 31-50) and the stages of teaching reading by Williams (1994, pp. 37-44). The researcher considered the way the brain naturally learns to design the learning activities that stimulated students to be able to find meaningful learning. During the instructional process, the learning activities provided opportunities for students to develop their English reading comprehension skills in the classroom. In the pre-reading stage, the teacher displayed a song in the video related to the topic to stimulate students' brain (Preparation). The teacher used a song to create the curiosity and the enjoyment of students. Then, students discussed with the students on what was in the video that link the topic of the reading text to their experiences or existing knowledge. Then, the teacher taught new vocabulary and structure appeared in the reading text to help students understand the text (Acquisition). In the while-reading stage, students read the reading text silently in a group, answer the question from the reading text and write their answers on Worksheet 1 (Elaboration). Students had to

comprehend the reading text to answer the questions correctly. Then the students share their experiences related to the reading text and discuss it with the teacher. In the post-reading stage, the students did Worksheet 2 to write keywords from the reading text in the mind map (Memory Formation). This step could help students understand keywords in the reading text and comprehend the reading text better. Then, the teacher gives students Worksheet 3 to summarize the reading text in a paragraph (Functional Integration). The teacher could check students' comprehension of the text from an overview of the summary. Therefore, the activities based on brain-based learning in the learning process influenced students to develop their English reading comprehension ability. These findings supported the idea of Smilkstien (2003:70-71), who indicates the principles of brain-based learning. Brain-based learning encourages students to improve in the skill or subject they are learning through consistent practice. They can acquire knowledge by linking new information to what they already understand. Thus, engaging experiences activate the brain's natural abilities, and combining the elements of learning with real-life situations promotes brain learning and develops student's reading comprehension.

Moreover, these findings were consistent with the study of Khanthap and Bhiasiri (2012) who investigated the English reading achievement of Prathomsuksa 4 students Baan Thatphanom and students' satisfaction with teaching and learning English by using Brain-Based Learning concepts. The target group consisted of twenty Prathomsuksa 4 students of Baan Thatphanom school, the first semester in the academic year 2012. The methodology was pre-experimental research involving a one-group pretest-posttest design. The results showed that seventy-five percent of students passed the test with an average score of 76 percent (22.80 out of 30) after learning to read English using brain-based learning. This finding was supported by the study of Chukaeo, et al (2017) who examined a study of brain-based learning activities to promote the knowledge of English reading ability of Prathomsuksa 3 students. The samples were 34 Prathomsuksa 3 students at the demonstration school of Silpakorn University in Nakhon Pathom. The research was classified as pre-experimental research applying a one-group pretest-posttest design. The results showed that the average of the English reading ability score of students in the last unit was 84.3 percent which was higher than the set criterion of 70 percent. It can be stated that brain-based learning improved students' English reading comprehension ability. Therefore, the activities based on brain-based learning in the learning process influenced students to develop their English reading comprehension ability.

2. The results of the study of English reading comprehension ability of Prathomsuksa 5 students before and after studying by using brain-based learning.

The students' pretest mean score on English reading comprehension ability was 13.60 or 34.00 percent and the posttest mean score was 31.06 or 77.66 percent. The results showed that the posttest mean score was significantly higher than the pretest. This finding was in accordance with the second hypothesis. This might be because of the following results:

Before the experiment, the students' pretest mean score on English reading comprehension ability was at a low level. The reasons might be English reading problems that the students might not have reading comprehension ability: textually explicit comprehension, textually implicit comprehension, and critical implicit comprehension. They could not understand the reading text efficiently. This finding supported the idea of Alderson (2000, p. 1), who mentions that students have acquired the fundamental reading skills but have never had trained or practiced in the efficient use of them. Therefore, the students were unable to answer the questions after reading the text. However, after the students learned English reading comprehension using brain- based learning, they improved their English reading comprehension ability. Thus, teaching English using brain-based learning supported students to succeed in English reading comprehension. The results of this study supported the study of Kohar (2020) examined the effectiveness of brain-based learning on the level of reading comprehension in Indonesian junior high school. Sixty-four excellent students of grade 7 SMPN Unggulan Sindang Indramayu grouped into the experimental group and the control group participated in this study voluntarily. The results showed that brain-based learning is effective, brain-based learning model could improve students' inferential comprehension, and there were different influences of text structure toward reading comprehension of exposition text. Additionally, Akman, et al (2020) who investigated the effect of English teaching on academic achievement based on brain-based learning. The research sample consisted of forty-five students of Bohşin Secondary School in Hatay province. The research methodology used in this research was a quasi-experimental design involving the experimental group and the control group. The result showed that after studying English lessons teaching based on brain-based learning, the posttest mean score was significantly higher than the pretest. In addition, El Sakka, et al. (2023) who examined the effect of the brain-based learning on primary students' reading comprehension skills. The participants of the research included 73 students who were randomly chosen from 5th year

primary students at Mohamed Hafez Primary School during the first term of the academic year 2021–2022. The research methodology used in this research was a quasi-experimental design involving the experimental group and the control group. The results showed that students in the experimental group have developed their reading comprehension skills because of using brain-based learning instruction.

In summary, this could be interpreted as brain-based learning, which was one of the effective strategies that helped students improve their English reading comprehension ability. That is, the students were trained by brain-based learning to have English reading comprehension ability. The researcher stimulated students' brain with several activities to integrate information from meaningful learning. In the process of learning, brain-based learning provided the students better understanding in the reading text by creating a relaxed atmosphere in the classroom using a song and asking students to act along with the song, guiding the students to connect their background knowledge to the topic, stimulating motivation and support for students to have the opportunity to express their opinions and ideas in groups, linking the students' knowledge to answer the questions in worksheet, asking them to look at the keywords to create the mind map and summarizing the text in a paragraph to comprehend the reading text efficiently. Thus, brain-based learning could help students develop their English reading comprehension ability productively.

3. The results of an investigation of students' attitude toward teaching English reading comprehension using brain-based learning

The finding indicated that the students' attitude toward teaching English reading comprehension using brain-based learning mean score was at 4.38. It interpreted that students' attitude toward teaching English reading comprehension using brain-based learning was at a good level. From the questionnaire, it was found that teaching English reading using brain-based learning could activate the students' interest in learning English. Especially, Images and video clips could stimulate students' enjoyment and motivation in learning. Students could have fun and be relaxed with a song in the video. Besides, they could connect their background knowledge from the content in the video to the upcoming reading text and make a reason for reading before reading the text. In addition, the findings showed that English reading comprehension using brain-based learning generated interest and stimulated them to want to learn English reading comprehension more. Therefore, it could be interpreted that brain-based learning influenced and promoted students' positive attitude toward teaching English reading comprehension using brain-based learning. It was

supported by Khanthap and Bhiasiri (2012) who investigated the English reading achievement of Prathomsuksa 4 students Baan Thatphanom and students' satisfaction with teaching and learning English by using Brain-Based Learning concepts. The target group consisted of twenty Prathomsuksa 4 students of Baan Thatphanom school, the first semester in the academic year 2012. The methodology was pre-experimental research involving a one-group pretest-posttest design. The findings showed that students had a very high satisfaction toward teaching and learning English by using brain-based learning. Moreover, Puengprom and Cojorn (2018) who examined the students' achievement after learning through the learning activity package based on brain-based learning approach and students' satisfaction toward learning activity package in English reading comprehension skills based on brain-based learning approach. The sample consisted of 42 Mattayomsueksa 1/2 students by cluster sampling. The methodology was pre-experimental research involving a one-group pretest-posttest design. The statistics comprised percentage, mean, standard deviation, and t-test. The results showed that the students' achievement after learning with the learning activity package was significantly higher than the criteria 80 percent at .05, and the post-test mean scores of English reading comprehension ability of the students were higher than those of pre-test at the .05 level of significance. The students' satisfaction toward the learning activity package in English reading comprehension skills based on brain-based learning approach were at a high level of satisfaction. The results showed that brain-based learning influenced students' English reading comprehension. If students had a positive attitude toward reading, they would pay attention to comprehend the text and engage in learning English. These findings were consistent with the idea of Sroinam (2012) who indicates that attitude is an individual's feeling toward something or someone, which has an impact on the individual's decision-making to do something. As a result, those with a positive attitude are more likely to succeed. Therefore, it could be stated that brain-based learning could increase students' positive attitude on English reading comprehension and influenced students on their success in English reading comprehension.

Recommendations

Recommendations from the Study

1. The teacher should clearly explain the learning process to students.

2. The activities in this study should be more varied to stimulate students' interest. For example, playing games or other activities to encourage the student's enjoyment of the learning process.

Recommendations for further study

1. A further study should be conducted to show the effect of using a brain-based learning strategy on developing reading comprehension skills among other graders.

2. A further study should be conducted to reveal the effect of using a brain-based learning strategy on developing other student' thinking skills in English and in other subjects.

Note: Prathomsuksa 5 is the Thai term for grade 5 in the education system of Thailand.

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