การใช้กลวิธีการอ่านแบบเสริมต่อการเรียนรู้ร่วมกับกิจกรรมการเรียนรู้ที่เน้นสมองเป็นฐานเพื่อพัฒนาความสามารถด้านการอ่านภาษาอังกฤษของนักเรียนชั้นมัธยมศึกษาปีที่ 5

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บทคัดย่อ

บทความวิจัยครั้งนี้มีจุดมุ่งหมายเพื่อ (1) ศึกษาประสิทธิภาพของแผนการจัดการเรียนรู้โดยใช้กลวิธีการอ่านแบบเสริมต่อการเรียนรู้ร่วมกับกิจกรรมการเรียนรู้ที่เน้นสมองเป็นฐาน เพื่อพัฒนาความสามารถด้านการอ่านภาษาอังกฤษของนักเรียนชั้นมัธยมศึกษาปีที่ 5 ที่มีประสิทธิภาพตามเกณฑ์ 75/75 (2) ศึกษาดัชนีประสิทธิผลของแผนการจัดการเรียนรู้โดยใช้กลวิธีการอ่านแบบเสริมต่อการเรียนรู้ร่วมกับกิจกรรมการเรียนรู้ที่เน้นสมองเป็นฐาน เพื่อพัฒนาความสามารถด้านการอ่านภาษาอังกฤษของนักเรียนชั้นมัธยมศึกษาปีที่ 5 และ (3) ศึกษาความสามารถด้านการอ่านภาษาอังกฤษของผู้เรียนหลังการใช้กลวิธีการอ่านแบบเสริมต่อการเรียนรู้ร่วมกับกิจกรรมการเรียนรู้ที่เน้นสมองเป็นฐาน กลุ่มตัวอย่าง ได้แก่ นักเรียนชั้นมัธยมศึกษาปีที่ 5/2 โรงเรียนนครพนมวิทยาคม อำเภอเมือง จังหวัดนครพนม ในภาคเรียนที่ 1 ปีการศึกษา 2562 จำนวน 35 คน ได้มาโดยการสุ่มแบบกลุ่ม (Cluster Random Sampling) เครื่องมือที่ใช้ในการวิจัยครั้งนี้ ได้แก่ แผนการจัดกิจกรรมการเรียนรู้โดยใช้กลวิธีการอ่านแบบเสริมต่อการเรียนรู้ร่วมกับกิจกรรมการเรียนรู้ที่เน้นสมองเป็นฐาน จำนวน 8 แผน แผนละ 3 ชั่วโมง (2) แบบทดสอบความสามารถด้านการอ่านภาษาอังกฤษชนิดปรนัยเลือกตอบ 4 ตัวเลือก จำนวน 40 ข้อ สถิติที่ใช้ในการวิเคราะห์ข้อมูล ได้แก่ ค่าเฉลี่ย ส่วนเบี่ยงเบนมาตรฐาน ร้อยละ และทดสอบสมมติฐานด้วยสถิติ t-test (dependent sample)

ผลการวิจัยปรากฏดังนี้

1.แผนการจัดการเรียนรู้ที่ผู้วิจัยสร้างขึ้นตามแนวคิดกลวิธีการอ่านแบบเสริมต่อการเรียนรู้ร่วมกับกิจกรรมการเรียนรู้ที่เน้นสมองเป็นฐานเพื่อพัฒนาความสามารถด้านการอ่านภาษาอังกฤษของนักเรียนชั้นมัธยมศึกษาปีที่ 5 มีประสิทธิภาพเท่ากับ 77.87/75.79

2. ดัชนีประสิทธิผลของแผนการจัดกิจกรรมการเรียนรู้โดยใช้กลวิธีแบบเสริมต่อการเรียนรู้ร่วมกับกิจกรรมการเรียนรู้ที่เน้นสมองเป็นฐาน เพื่อพัฒนาความสามารถด้านการอ่านภาษาอังกฤษของนักเรียนชั้นมัธยมศึกษาปีที่ 5 มีค่าเท่ากับ 0.64 ซึ่งแสดงว่านักเรียนมีความก้าวหน้าในการเรียนคิดเป็นร้อยละ 64.00

3. หลังจากที่ผู้วิจัยได้นำแผนการจัดการเรียนรู้โดยใช้กลวิธีกลวิธีแบบเสริมต่อการเรียนรู้ร่วมกับกิจกรรมการเรียนรู้ที่เน้นสมองเป็นฐาน เพื่อพัฒนาความสามารถด้านการอ่านภาษาอังกฤษของนักเรียนชั้นมัธยมศึกษาปีที่ 5 มาทดลองกับกลุ่มตัวอย่างในงานวิจัย พบว่า ค่าเฉลี่ยของคะแนนหลังเรียนสูงกว่าก่อนเรียนอย่างมีนัยสำคัญทางสถิติที่ระดับ .05

คำสำคัญ: เสริมต่อการเรียนรู้ สมองเป็นฐาน ความสามารถด้านการอ่าน

The Use of Scaffolding for Reading Activity and Brain-based Learning Activities to Promote Mathayomsuksa 5 Students' English Reading Ability

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Abstract

This study aimed to investigate the efficiency of eight lesson plans, developed from the concept of Scaffolding for Reading Activity and Brain-based Learning Activities to promote Mathayomsuksa 5 students' English reading ability with the required efficiency of 75/75 (E1/E2). It also sought to examine the effectiveness index of such lesson plans and promote students' reading ability by implementing them. This study's samples consisted of 35 Mathayomsuksa 5 students attending the first semester of the academic year 2019 at Nakhonphanomwittayakhom School, Mueang district Nakhomphanom province. The participants were selected by cluster random sampling technique. The instruments used in this study included eight three-hour lesson plans created from the concept of Scaffolding for Reading Activity and Brain-based Learning Activities and a 40-item reading test. The dependent samples t-test was used to analyze the data. The results showed that the lesson plans developed based on Scaffolding for Reading Activity and Brain-based Learning Activities had an efficiency of 77.87/75.79. This efficiency of the lesson plans was higher than the established criterion. The results also indicated that the effectiveness index of lesson plans created from the concept of Scaffolding for Reading Activity and Brain-based Learning Activities made was 0.64. Overall, the participants' average scores on the post-test performance were higher than the pre-test scores at the statistical level of significance of 0.05.

Keywords: Scaffolding, Brain-Based Learning, Reading ability

Introduction

Reading skill is considered as one of the four essential skills in language learning, especially for second language learners. Anukkung (2013) suggested that reading is an indicator of language learning success. Moreover, Anderson (1999) suggested that reading skill is important for second language learners. It requires practicing activities to develop them to be proficient readers. The recent studies on reading development have widely promoted the importance of reading. These studies revealed that successful learners tended to apply strategies in their reading more than the learners who did not use any reading strategies. However, reading teaching in Thai EFL context has not been successful according to the learning objectives stated in the Basic Education Core Curriculum (A.D. 2008). The results from the national testing revealed that most students failed to apply reading strategies in the reading section, so they gained lower scores than the established standard in the curriculum. The problems in reading from the previous studies were related to the results in the context where the current study was conducted. The researcher observed that students could not understand the reading text and found English reading boring. According to the test analysis and interviews with some students to identify the background and rationale for this study, it was found that the major problems in their reading were that they could not understand reading passages, answer questions, and apply reading strategies in their daily-life reading and reading test.

When investigating further the issues that might cause reading problems, it was found that most students could not read and understand the reading questions. Moreover, they did not know the meaning of vocabulary which was the key to comprehend the reading text. Based on the experience of the researcher in the field of language teaching, the researcher found that reading comprehension was the

problem for EFL students at all levels, including Mathhayomsuksa 5 students who were the participants in this study. Their background knowledge in reading skill was quite low. They were graded in the group of low proficiency readers from the results of the national test. Furthermore, many English teachers in the setting where the study was conducted did not introduce reading strategies or motivate students with interesting activities in reading lessons. The lessons were mainly focused on introducing vocabulary and grammar. The students were required to translate English reading text into Thai. So, these lessons did not help students develop their reading skill which result in the students finding the reading lesson less interesting. When they had to read a long text, they could not understand the main points in which the writer wanted to convey to the readers. The factors which caused this problem was the lack of vocabulary and sentence structure knowledge, reading strategies, motivation in reading, and reading practice.

In the current study, the researcher used the scaffolding principle which was the systematic process in assisting and facilitating students' learning process. The scaffolding process consisted of teacher, peers, and learning materials to support learners in the task that they could not achieve it individually. The assistance process was completed when the students could perform the task by themselves. The principle of scaffolding activity was proposed based on the constructivism theory of Vygotsky (1978). It is believed that learning and interaction are intertwined. The peers who are master in particular topics assist and guide the peers who need learning assistance. Wood, Bruner, and Ross (1976) suggested six ways to apply the scaffolding activities in the classroom context. In a new paragraph, summaries of advantages were found with study of Wood, Bruner & Ross (1976). The scaffolding activities help students be more confident in learning and task performing. The interaction in

the scaffolding process reduces learning anxiety and supports learning and students' creativity. The students and teacher can discuss and share opinions during the lessons. Finally, students comprehend the lesson and construct their knowledge and understanding. This is the opportunity to develop themselves to the next level of development with the assistance of teachers and peers.

Furthermore, the researcher studied the related documents and previous studies about activities that could motivate learners and make the reading lesson more interesting. The researcher found that brain-based learning activity (BBL) is an interesting activity that can encourage students' thinking process. The students are required to answer the questions from a reading text; moreover, many more interesting activities promote their motivation in reading development. Ken and Ken (1990) introduced the 12 suggestions for BBL implementation. Jensen (2008) proposed the steps for organizing BBL activities in seven steps. In organizing BBL activities, the teacher needs to understand the cognitive process in the aspect of reading comprehension to design activities and learning materials appropriately for learners' differences.

According to the background and problem stated above, the researcher was interested in investigating the effectiveness of integrated reading strategies between scaffolding activities and brain-based learning (BBL) activities to enhance Matthayomsuksa 5 students' reading comprehension. The study was expected to contribute pedagogical implications to reading teaching in the field of teaching English in the EFL context.

Objectives

The objectives of the study were as follows:

1.1 To find the efficiency of the lesson plans from the concepts

of scaffolding for reading activity and brain-based learning activities in developing Matthayomsuksa 5 students' reading ability with the required efficiency of 75/75

1.2 To investigate the effectiveness of the lesson plans from the concepts of scaffolding for reading activity and brain-based learning activities in developing Matthayomsuksa 5 students' reading ability

1.3 To find whether the students' reading ability after the implementation of the lesson plans from the concepts of scaffolding for reading activity and brain-based learning activities was better or not

Research Questions

1. What is the efficiency of the lesson plans from the concepts of scaffolding for reading activity and brain-based learning activities in promoting Matthayomsuksa 5 students' reading ability?

2. What is the effectiveness index of the lesson plans from the concept of scaffolding for reading activity and brain-based learning activities in developing Matthayomsuksa 5 students' reading?

3. Was the students' reading ability after the implementation of the lesson plans from the concepts of scaffolding for reading activity and brain-based learning activities improved?

Literature Review

Scaffolding

In order for us to understand how to scaffold reading in a classroom context, we first need to determine a definition for the term 'scaffolded reading.' It is believed that Donald Wood and his colleagues (Wood, Bruner & Ross, 1976) were the first to use the term in an educational context in order to characterize a mother's verbal interaction when reading with her child. Their study determined some

of the steps that a mother, father, or other significant adult, may commonly take when initially beginning to read with a child. Firstly, they may skim through the picture book, familiarizing the child with the pictures and the structure of a book. Then they may focus on a single page, asking the child what the picture is, and pointing out the word in the text that describes this object. The adult does not tell the child what the word is, but acknowledges that it describes the object on the page and lets the child provide the answer. This is then often followed up by positive feedback that lets the child know that their answer was correct (Graves & Braaten, 1996). The important part of this described learning experience is that the adult did not promptly expect the child to know what the word was, without any initial understanding of words and their connections to the pictures. Nor did the adult just give the student the word. The adult in the described process actually built up an "instructional structure" (Graves & Braaten, 1996), or scaffold, in order to assist the child to create meaning from the text for themselves. This process is the very definition of what 'scaffolded reading' is. A child's initial experiences with learning to read are important for us, as teachers, to understand in order to be able to provide the next steps and continue to scaffold reading experiences in a more purposeful way. Axford, Harders and Wise (2009) describe a sequence of steps that teachers can use to implement 'scaffolding reading' in a one-to-one teaching situation.

Brain-Based Learning

Brain-based education aims to improve and accelerate the learning process by using the science behind learning to select a curriculum and form of delivery for each group of students. When adopting this method, educators must forget established conventions. They must also leave behind assumptions about learning and previous practices. Instead, they must look to the most recent cognitive science

discoveries as inspiration for their future lesson delivery. It was once thought that intelligence is fixed and remains virtually the same through someone's entire life. More recent discoveries reveal that physical changes take place in the brain during learning. When someone practices certain skills, they find it easier over time to carry on improving those abilities. Learning has been demonstrated to improve resiliency, working intelligence, and brain function. This discovery holds considerable potential for schools and educators everywhere. The implications of brain-based learning are far-reaching. By putting this knowledge into practice, schools can create academic programs that are best suited to each year group. Individual teachers can also structure the most appropriate educational experiences for their own students.

With such a wide range of scientific findings, it is clear that brain-based learning can take several forms. Schools and individual teachers can choose the best approach to facilitate learning for their students. For example, student stress could be reduced by playing calming music or arranging regular physical activities. Beanbag chairs or couches could replace traditional seating in studying and reading areas. A schoolwide promotion could encourage students to eat a healthier diet or to engage in more exercise, two factors that improve brain health. The benefits of brain-based learning are already recognized by those who are responsible for training new educators. More universities and colleges are now offering degrees in this new and exciting field. As a result, those who are now entering the profession have an in-depth knowledge of how to help their students learn more effectively.

Research Methodology

1. Research Instruments

There were two research instruments for data collection in the study. The instruments included (1) eight lesson plans designed

under the concepts of scaffolding for reading activity and brain-based learning activities and (2) reading test implemented as pre-test and post-test.

2. Research instrument for the implementation

The implementation of the study consisted of eight lesson plans based on the concepts of scaffolding for reading activity and brain-based learning activities. Each lesson plan lasted three hours. There were 24 hours for the intervention. The effectiveness of the lesson plans was verified by three experts and implemented as the pilot study with students in another school.

3. Research instrument for data collection

The reading for comprehension test was used to measure the reading ability of participants before and after the intervention as a pre-test and a post-test. The test consisted of 40 items with four multiple choices. The objectivity and validity of the test items were evaluated by three experts. The pilot study was conducted with students in another school to ascertain the effectiveness of the test.

4. Participants

The current study was a quasi-experimental design. There were 35 of Matthayomsuksa 5 students from three classes of Nakhonphanomwittayakhom School, Mueng District, Nakhonphanom Province. They were equally selected by cluster random sampling as participants of the study. They enrolled in English for Reading and Writing course (E30203) in the first semester of the academic year 2019.

Procedure

The study was conducted in the first semester of the academic year 2019 lasting five months. The data collection procedures were as follows.

1. Before the first lesson began, the reading test was applied as a pre-test to assess the students' reading ability before the implementation.

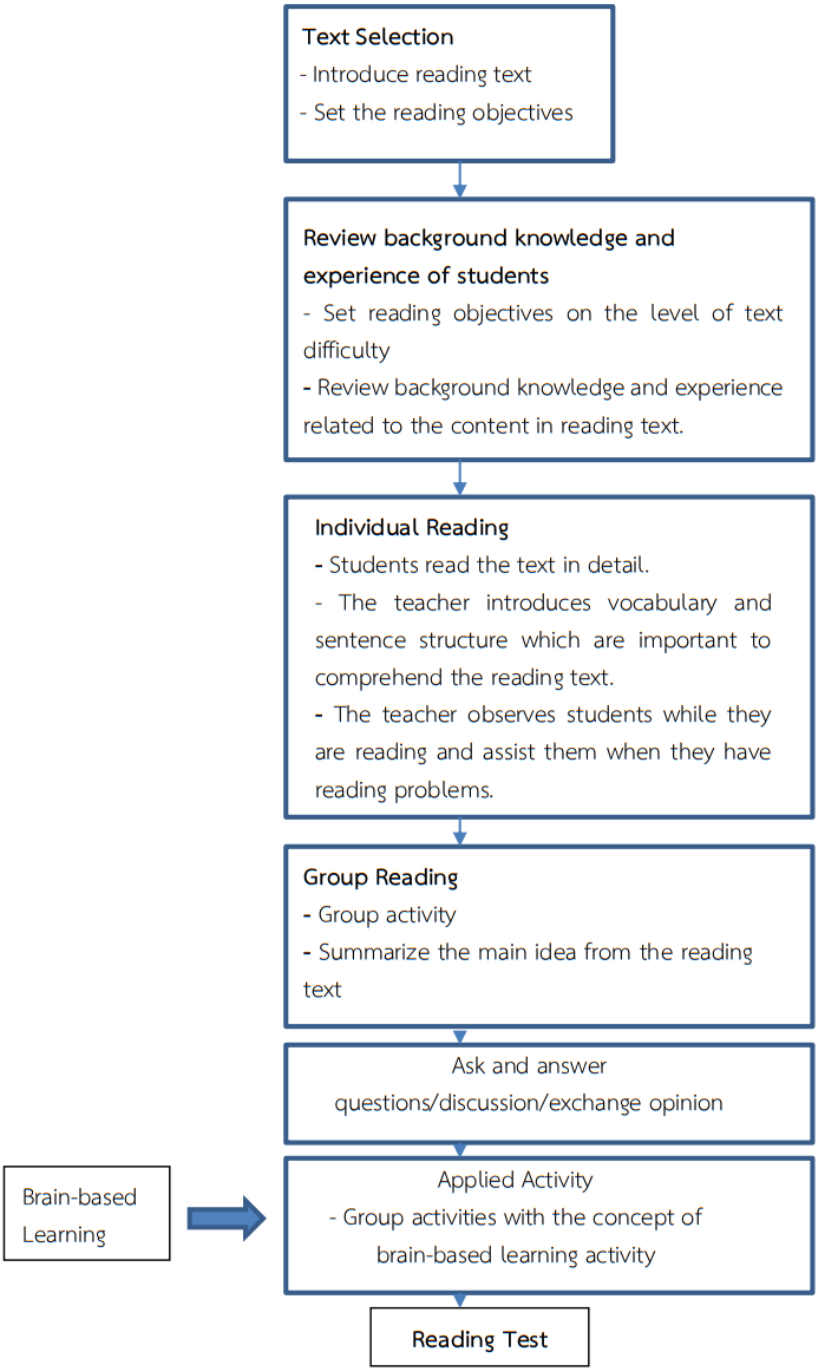
2. Eight lesson plans based on the concept of scaffolding for reading activity and brain-based learning activities were implemented.

3. The reading test was applied as a post-test to investigate the students' reading ability after the implementation.

Theoretical Framework

According to the literature review, the scaffolding for reading activities is effective for reading teaching to enhance students' learning comprehension both in intensive and extensive reading. There are steps for lesson plan design and individual needs analysis which are essential for lesson plans design. Moreover, the teacher needs to bring various reading texts and learning materials based on students' language proficiency. There are a variety of assessments in a positive learning environment to reduce students' anxiety. To implement the concept of scaffolding for reading activity into practice, the researcher presented the teaching procedures as follows:

Teaching Procedures



Data analysis

1. The investigation of the lesson plans' efficiency which was created from the concept of scaffolding for reading activity and brain-based learning activities to promote Mathayomsuksa 5 students' English reading ability with the required efficiency of 75/75 was analyzed by E1/ E2.

2. The investigation of the lesson plans' effectiveness index based on the concept of scaffolding for reading activity and brain-based learning activities to promote Mathayomsuksa 5 students' English reading ability was analyzed by descriptive statistics and the effectiveness index statistics E.I.

3. To investigate the difference in reading ability (if there were any), the scores from reading pre-test and post-test were analyzed by dependent t-test statistics.

Finding

Research question 1: What is the efficiency of the lesson plans from the concepts of scaffolding for reading activity and brain-based learning activities in promoting Matthayomsuksa 5 students' reading ability?

From table 1, it was found that the efficiency of eight lesson plans which were created from the concept of Scaffolding for Reading Activity and Brain-based Learning Activities in order to promote Mathayomsuksa

Table 1 The efficiency of the lesson plans

Efficiency	Score	X	S.D.	Percentage
(E_1)	240	186.89	138.69	77.87
(E_2)	40	30.31	140.75	75.79
The efficiency of the lesson plans (E_1/ E_2)				77.87/75.79

5 students' English reading ability with the required efficiency of 75/75 (E1/E2) was 77.87/75.79. It was higher than the required efficiency.

Research question 2: What is the effectiveness index of the lesson plans from the concept of scaffolding for reading activity and brain-based learning activities in developing Matthayomsuksa 5 students' reading?

Table 2 The effectiveness index of the lesson plans

Students	Total Score	Pre-test		Post-test		E.I.
		Score	Percentage	Score	Percentage	
35	1,400	459	13.11	1,061	30.31	0.64

From table 2, the effectiveness index of the lesson plans from the concept of scaffolding for reading activity and brain-based learning activities in developing Matthayomsuksa 5 students' reading was 0.64. It was found that all students achieved higher scores when they learned at 64 percent.

Research question 3: If the students' reading ability after the implementation of the lesson plans from the concepts of scaffolding for reading activity and brain-based learning activities was improved?

Table 3 The students' reading ability after the implementation of the lesson plans from the concepts of scaffolding for reading activity and brain-based learning activities

Score	N	X	S.D	t	df	Sig.
Pre-test	35	13.11	3.11	10.70	34	.000*
Post-test	35	25.80	6.79			

*sig .05

From table 3, it was found that the average percentage of the post-test score was higher than pre-test score statistically significant at the 0.05 level.

Discussion

According to the results of the study, the efficiency of the lesson plans from the concepts of scaffolding for reading activity and brain-based learning activities to promote Matthayomsuksa 5 students' reading ability was 77.87/75.79 which was higher than with the established efficiency at 75/75. The effective outcome might be because of the planning steps in designing the lesson plans from the principles of scaffolding for reading activity and brain-based learning activities to promote reading ability. The planning steps were as follows: 1) introduce reading text, 2) review background knowledge and experience, 3) individual reading, 4) group reading, 5) ask and answer questions/discussion/exchange opinion, and 6) applied activity. In the class, students discussed and guessed the answers from their background knowledge and experience, video, picture, reading topics, and other learning media that the researcher introduced in the lessons. After that, they shared their answers and discussed to conclude as the group answers. From the class observation, the researcher found that the students who had background knowledge and experience related to the reading topic tended to understand the reading passage easier and answer the questions quicker than the students who did not have background knowledge. However, in the group discussion, the students who did not have background knowledge or experience about the reading topic were assisted by the students who had background knowledge and experience. Finally, the whole class could understand the reading text and answered the questions correctly.

Moreover, with the integration of brain-based learning activities (drawing, quiz, mind mapping, game, group discussion, information interview, model making, and drawing) in step 6 of the lesson, students reduced learning anxiety and they were more engaged with the learning activities.

The researcher interviewed some students after the implementation to explore the most popular brain-based activities in the lesson plans. The three most popular activities were ranged from "model making" in lesson 7, "mind mapping" in lesson 3, and "drawing" in lesson 1 respectively. The "model making" activity was about creating animal models which they found in reading text. The "mind mapping" required students to summarize the main points in the reading passage. The students were interested in this activity as the reading topic was about the ways to keep fit which was an interesting topic among teenagers. In this activity, the researcher found that students discussed and analyzed the main points in the reading text to summarize as the group task. They could guess the meaning of vocabulary from the reading context. The researcher observed that they could perform in their roles to contribute to the success of the group task. The third popular activity among students was "drawing" in lesson 1. The students were asked to design the group product from the information in reading text. Students worked together to design their products. They exchanged their opinion, discussed, and asked each other for information. However, the least popular activity among eight BBL activities was "quiz". From the observation, the researcher found that some students who had better background knowledge could respond to the question quicker as they were better in reading than the others. This caused many students to feel stressed and ignore the activity.

The efficiency of the lesson plans designed based on the concepts of scaffolding for reading activity and brain-based learning activity was higher than the established criterion. This point supported the findings of Sujaree (2011) who conducted a study on the use of scaffolding to enhance reading comprehension of university students. The results revealed that the students who were implemented with the

scaffolding activities significantly outperformed the control group at 0.1 statistical significance. Moreover, the results from the current study also supported the study of Buntununkul (2015) on developing students' reading comprehension by scaffolding activities. The findings indicated that scaffolding activities helped students comprehend reading text and summarize the main points as their understanding. Furthermore, Somsong (2013) investigated the effects of the implementation of a scaffolding learning model to develop reading comprehension of university students. The results showed that the learning model was effective with the efficiency index (E1/E2) 81.15/79.25. The mean of reading comprehension scores from the post-test was higher than the mean of pre-test at 0.5 statistical significance.

Duangkaewklang (2013) conducted a study on the assessment of primary students' cognitive processes in brain-based learning activities. The results revealed that the efficiency (E1/E2) of lesson plans of BBL activities was 80.17/81.18 which was higher than the established criterion 80/80. Boonsong (2016) also studied the effects of BBL activities on secondary students' creative thinking. The results indicated that the mean of students' achievement scores after the implementation of BBL activities was higher than the mean of pre-test scores at 0.1 statistical significance.

According to the results of the effectiveness index of the lesson plans in this study was 0.64. This indicated that students progressed in their reading after the implementation at 64 percent. This showed that the lesson plans based on the concept of scaffolding for reading activity and BBL activities helped students develop their reading comprehension of more than 60 percent. This point supported the finding in the study of Subannard (2012) who investigated analytical reading ability and reading motivation of high school students. BBL activities were implemented

as core activities in the lessons. The findings revealed that students gained 61.68 percent of achievement after the implementation. The findings of the effectiveness index of the lesson plans in this study also supported the study of Suwanmajo (2013) conducting the comparative study on BBL activities and corporative learning activities to enhance cultural knowledge and emotional quotient of high school students. The findings showed that the effectiveness index of the lesson plans with BBL activities was higher than the lesson plans with cooperative learning activities. The results from the study of Boonya (2017) on using BBL activities in the classroom also reveal the effectiveness index of the BBL-based lessons with 80.48 percent of learning progress.

After the implementation of the lessons of scaffolding activities for reading activity and BBL activities, the pre-test scores on reading comprehension were compared with the post-test scores to investigate the development in the reading ability of students. The scores from pre-test and post-test were compared with independent t-test sample. The results showed that the mean of students' post-test scores was higher than pre-test scores at 0.5 statistical significance. The results from the study supported the results in the previous study of Chookaew (1992) who investigated the effectiveness of BBL-based lesson plans. The results presented that the experimental group with BBL-based lesson plans had positive attitudes toward the lessons and could perform better than the control group in reading tasks at 0.5 statistical significance.

This also confirmed with the previous findings of Kuntup (2012) which explored the effectiveness of the lesson with BBL activities to increase students' reading ability. The results presented that 75 percent of students could perform higher than the required criterion. Moreover, students felt more confident in reading after the lessons. This indicated that the lessons with BBL activities were effective for reading ability development.

Implications

1. Classroom management is vital for the lesson implementation. The teacher should encourage students to work together and bring the class friendly learning environment. Moreover, the teacher needs to ensure that all students engage in activities.

2. Before BBL activities implementation, the teacher should provide students with lead-in activity to motivate and prepare students to get ready for the lesson.

3. There should be a variety of activities and learning material to support individual differences.

4. During the lesson, the teacher needs to observe students and provide appropriate assistance in case they encounter difficulties in reading activities.

Recommendations

1. Comparative study on the effects of scaffolding activities for reading activity blended with other teaching approaches should be conducted.

2. The lesson plans of scaffolding activities for reading activity and BBL activities should be implemented with other groups of participants to investigate the effectiveness of the lessons.

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