THE DEVELOPMENT OF ENGLISH VOCABULARY READING SKILL USING BRAIN-BASED LEARNING FOR GRADE 6 STUDENTS AT THAIRATHWITTAYA 79 (BAN NONG AB CHANG)

1. Arunya Prayunwiang*, 2. Narongsak Lunsamrong, 3. Surakiart Boonmatun

Affiliate: 1., 2., 3. Faculty of Education, Mahamakut Buddhist University, Lanna Campus
* Corresponding Arthor E-Mail: kanarunya29@gmail.com

ABSTRACT

This research article aims to: 1) test the effectiveness of an English vocabulary reading skill training program using brain-based learning (BBL) according to the 70/70 standard; 2) compare the English vocabulary reading achievement of Grade 6 students at Thairathwittaya 79 School (Ban Nong Ab Chang) before and after learning through the Brain-Based Learning (BBL) approach; and 3) examine the satisfaction of Grade 6 students toward learning through the Brain-Based Learning (BBL) approach. The sample group consisted of Grade 6 students selected through simple random sampling. The study employed a quasi-experimental design with a single experimental group, using a pre-test and post-test to measure outcomes. Research instruments included lesson plans, skill training materials, pre-test and post-test assessments, and a student satisfaction questionnaire. Data were analyzed using basic statistical methods, including mean, standard deviation, percentage, and a t-test for dependent samples.

The research found that:

1) The effectiveness of the English vocabulary reading skill training for Grade 6 students was 78.83/79.33, which exceeded the established standard,

2) The post-test achievement in English vocabulary reading of Grade 6 students using BBL was significantly higher than the pre-test at the .05 level of significance

3) The satisfaction of Grade 6 students toward the BBL approach was at a high level ($\bar{X}$ = 4.68, S.D. = 0.51).

Keywords: 1. Reading skills; 2. English vocabulary; 3. Brain-based learning (BBL)

Introduction

The 21st-century learning skills, also known as 3R8C, emphasize both cognitive and emotional abilities, particularly communication skills and media literacy. Learners need to develop skills in listening, speaking, reading, writing, and body language communication

aligned with their objectives. This includes receiving information, interpreting it, and presenting it clearly. These objectives align with the National Education Act of 1999, which defines education as a learning process aimed at fostering individual and societal development through knowledge transfer, training, and cultural preservation. Additionally, Section 22 of the Act states that education must adhere to the principle that all learners are capable of learning and self-development, with learners being the central focus. Educational processes must encourage learners to develop naturally and to their fullest potential in all dimensions. This is consistent with the Ministry of Education (2008), which specifies that by the end of Grade 6, students should be able to engage in interpersonal communication, respond to commands, requests, and permissions, give advice, and express needs, ask for assistance, accept or decline help in simple situations. They should also be able to speak and write to request and provide information about themselves, friends, family, and familiar topics, express feelings about activities or events, and provide brief reasons for their opinions.

English vocabulary reading refers to the skill of accurately producing sounds based on phonetic principles. This includes blending sounds into words and sentences, stress patterns, rhythm, and intonation, as well as incorporating gestures and eye contact to enhance communication. Continuous practice is necessary to achieve proficiency and effective communication. From teaching practices in schools, observations, and discussions with mentor teachers reveal that most students face difficulties with English reading skills, spelling vocabulary, reading basic words, and lack the confidence to express themselves. This stems from inadequate foundational knowledge of English for communication, a limited vocabulary, and insufficient practical language skills for real-life situations. These findings align with the results of the National Institute of Educational Testing Service (O-NET) for English proficiency among Grade 6 students in the 2022 academic year, where the average score was 37.62% (National Institute of Educational Testing Service (2022). Similarly, Lalida Thongrat (2020: 1) conducted a study on the development of English reading aloud skill through the use of phonics based on the Davies instructional model of grade 11 students. The findings indicated that Grade 11 students struggled with English vocabulary pronunciation, a fundamental skill for accurate reading and pronunciation necessary for communication. This was due to a lack of foundational knowledge about the phonetic system of both vowels and consonants, leading to incorrect spelling and pronunciation, reduced confidence, slower vocabulary retention, unsuccessful communication, and decreased interest in learning English. Consistent with the study conducted by Atchima Chaichit (2020), who researched on developing the skill of reading and pronouncing English words (phonics) using practice exercises for second-grade students at Srinakharinwirot

university, it was found that students exhibited low learning achievement in English. This was attributed to their lack of pronunciation and spelling skills. Students tended to memorize individual vocabulary words and write Thai phonetic equivalents alongside them, making it difficult for them to pronounce unfamiliar words beyond their lessons. This issue posed challenges in English language instruction and resulted in low achievement in the subject. If left unaddressed, it could adversely affect their ability to study English at higher levels. Similarly, Patcharamon Polpraphrut (2022) conducted a study on management of brain-based learning affecting learning achievement and creativity for primary 4 students studying the concept of goods and services in the economic learning area. The study revealed that a significant issue among students was their inability to pronounce vocabulary words, even though they could verbally recognize and understand the meanings of the words when spoken. However, when encountering written words, most students were unable to pronounce or comprehend them. This was evident during classroom activities involving reading aloud, where students often experienced anxiety due to their inability to perform the tasks effectively. Consequently, their reading skills scored lower compared to other skills. Consistent with the findings of Pimphorn Puangchuen and Wiwat Meesuwan (2020), who researched on development of English word reading and spelling skills through phonics-based teaching activities for grade 1 students, it was found that many primary school students under the Office of the Basic Education Commission could not read. The proportion of struggling readers amounted to one-third of all primary school students.

Brain-Based Learning refers to the design of learning processes based on the principles of brain functioning to maximize learners' potential through suitable activities, a conducive learning environment, and hands-on practice. This approach emphasizes learners' ability to comprehend and summarize knowledge independently. This aligns with Rutwisan Ngarmsom (2017), who conducted research on a study of learning management using brain-based learning to develop English speaking skill for Prathomsuksa three students. The study stated that brain-based learning integrates knowledge of the brain and its natural functions into learning management to enhance learners' ability to reach their full potential. The foundation is based on three key aspects: emotion, practical experience, and creativity. Similarly, Pornpilai Lertwicha & Akaraphum Jarupakorn (2007) described brain-based learning as understanding or viewing the learning process through knowledge and comprehension of brain functioning. This perspective situates teaching and learning on a foundation of curiosity and reflection, considering changes occurring in the brain during learning and how learners' knowledge, understanding, and expertise are reflected. Moreover, Parita Karaphap (2021) conducted a study on development of learning activities based on Brain-Based Learning (BBL)

in combination with motion graphics media to enhance spelling and word reading skills for grade 2 students. The study described brain-based learning as a learner-centered approach that recognizes the structure and processes of brain function, which vary among individuals. Teachers should promote and guide appropriate learning for each developmental stage by applying diverse methods, including preparing students before lessons to ensure readiness for learning activities.

Therefore, the researcher was interested in studying the development of English vocabulary reading skill using brain-based learning for grade 6 students at Thairathwittaya 79 (Ban Nong Ab Chang). The study incorporated innovative learning management approaches to enhance the classroom learning environment and improve its effectiveness. The Brain-Based Learning process consists of five steps: 1.) Brain Preparation Stage: This stage involves preparing the brain for connecting and integrating new learning experiences. 2) New Knowledge Acquisition Stage: At this stage, the brain is prepared to receive new information, linking prior knowledge with newly acquired information. 3) In-Depth Understanding Stage: Learners engage in studying by utilizing their knowledge and opinions to support the process of knowledge integration.

4) Knowledge Retention Stage: The brain processes information in response to situational demands by adapting and applying prior knowledge to new contexts. 5) Integration of Prior and New Knowledge Stage: Students refine and modify their existing knowledge to effectively apply it to new situations.

Research Objectives

1) To test the effectiveness of an English vocabulary reading skill training program using brain-based learning (BBL) according to the 70/70 standard.

2) To compare the English vocabulary reading achievement of Grade 6 students at Thairathwittaya 79 School (Ban Nong Ab Chang) before and after learning through the Brain-Based Learning (BBL) approach.

3) To examine the satisfaction of Grade 6 students toward learning through the Brain-Based Learning (BBL) approach.

Research Methodology

This study employed a quasi-experimental research design using a one-group pretest-posttest design, wherein a single experimental group was tested before and after the intervention.

1. Scope of the Research

1.1 Population and experimental group the population consisted of 145 students from Grades 1 to 6 at Thairathwittaya 79 School (Ban Nong Ab Chang), Sob Tia Sub-district,

Chom Thong District, Chiang Mai Province, under the Chiang Mai Primary Educational Service Area Office 6, during the first semester of the 2024 academic year. The experimental group included 10 Grade 6 students from the same school, comprising 4 male and 6 female students, selected through purposive sampling. The school was chosen as part of the research network and with approval for conducting the study in the selected class.

1.2 Content scope: The content focused on foreign language learning based on the Basic Education Core Curriculum B.E. 2551 (A.D. 2008). The study emphasized Strand 1: Language for Communication under the Foreign Language Learning Area, specifically reading aloud passages, stories, and short articles correctly according to reading principles. The relevant indicator was T.1.1 G6/2, with the topic "English Vocabulary Reading."

1.3 Timeframe the research was conducted during the first semester of the 2024 academic year, from June to September 2024, over a period of six weeks. Lessons were conducted once a week for one hour per session, including both pre-test and post-test sessions, totaling six class hours.

1.4 Variables under study: The independent variable is the Brain-Based Learning (BBL) lesson plan. The dependent variables are: 1) achievement in English vocabulary pronunciation, and 2) the opinions of Grade 6 students toward the Brain-Based Learning (BBL) approach.

2. Development and Quality Verification of the Instruments:

The research instruments consist of three sets: 1) The lesson plan, with an effectiveness value of 3.59. 2) The pre-test and post-test, with an overall reliability of 0.56. 3) The student satisfaction questionnaire regarding the learning management, using a 5-point Likert scale for evaluation, with an average score of 4.46.

3. Research Implementation Process

3.1 Orientation for Students: Provide students with knowledge and understanding of the learning activities, so that they are aware of the objectives, preparation, and proper participation in the activities according to the correct procedures.

3.2 Implementation of Learning Activities: Conduct learning activities according to the steps of the innovation, summarizing the key activities of each lesson plan.

3.3 Data Collection: The researcher collects data from the worksheet scores, specifically from the English vocabulary pronunciation assessment, to be used for further data analysis.

4. Data Collection and Data Analysis

4.1 The students' basic word writing performance scores from the sample group were collected and analyzed using basic statistics, including mean, standard deviation, and t-test.

4.2 The level of students' opinions from the student opinion questionnaire regarding the learning process was collected and analyzed to obtain basic statistical values.

5. Statistics Used in the Research

The statistics used in this research include mean, standard deviation, and t-test.

Research Findings

Objective 1. To test the effectiveness of an English vocabulary reading skill training program using brain-based learning (BBL) according to the 70/70 standard showed that the average score obtained from the skill training exercises during the course was 47.30 out of a possible 60 points, with a standard deviation of 2.22. The process effectiveness (E1) was 78.83, which exceeded the established standard. The total score from the post-test was 238, with an overall average score of 23.80 and a standard deviation of 2.57. These results indicate that Grade 6 students at Thai Rat Witthaya School 79 (Ban Nong Aab Chang) who participated in the English vocabulary pronunciation skill training achieved a higher average score after the lesson compared to before, and the effectiveness of the English vocabulary pronunciation skill training (E2) was 79.33, which was higher than the set standard.

Objective 2 To compare the English vocabulary reading achievement of Grade 6 students at Thairathwittaya 79 School (Ban Nong Ab Chang) before and after learning through the Brain-Based Learning (BBL) approach. It revealed that the post-test achievement in English vocabulary pronunciation had a mean and standard deviation of ($\bar{x}$ = 23.80, S.D. = 2.57), which was higher than the pre-test with a mean and standard deviation of ($\bar{x}$ = 15.20, S.D. = 4.47). This difference was statistically significant at the .05 level.

objective 3 To examine the satisfaction of Grade 6 students toward learning through the Brain-Based Learning (BBL) approach revealed that the students expressed the highest level of satisfaction with BBL, with an overall average of ($\bar{x}$ = 4.34, S.D. = 0.86). When examining individual aspects, it was found that the students were most satisfied with the teaching methods, with an average score of ($\bar{x}$ = 4.43, S.D. = 0.90). The students also expressed the highest level of satisfaction with content preparation, with an average score of ($\bar{x}$ = 4.20, S.D. = 0.96). Furthermore, they were highly satisfied with the integration of learning and the emphasis on the learner, with an average score of ($\bar{x}$ = 4.17, S.D. = 0.91). Lastly, the students showed the highest satisfaction with learning support materials, with an average score of ($\bar{x}$ = 4.07, S.D. = 0.83).

Discussion of Research Results

1. The effectiveness of the English vocabulary reading skill training for Grade 6 students showed results exceeding the set standard of 78.83/79.33, where the set standard was 70/70. This was because the Brain-Based Learning approach used in the English vocabulary pronunciation practice set was appropriately aligned with the content, falling within a moderately high level. This allowed students to face challenges when completing the exercises and to enjoy engaging in the learning activities. This finding is in line with the research of Ratchadakarn Yaidee (2022) on The reading aloud skill development by using phonics exercises of grade 4 students at Bannontarod school, Kamphaengphet province, which showed an effectiveness score of 80.30/82.00. It also supports the research of Atchima Chaichit (2020: 20) on developing the skill of reading and pronouncing English words (phonics) using practice exercises for second-grade students at Srinakharinwirot university, which resulted in an effectiveness score according to the E1/E2 criteria of 80.00/81.00. Additionally, it is consistent with the research of Saipraew Chaimatchim (2020) on The development of scientific learning activities based on brain-based learning concept integrated with inquiry teaching method (5es) on the topic of water for life and air surrounded us of science learning area for Pratomsuksa 3 students, which showed an effectiveness score of 90.16/82.11, exceeding the set standard.

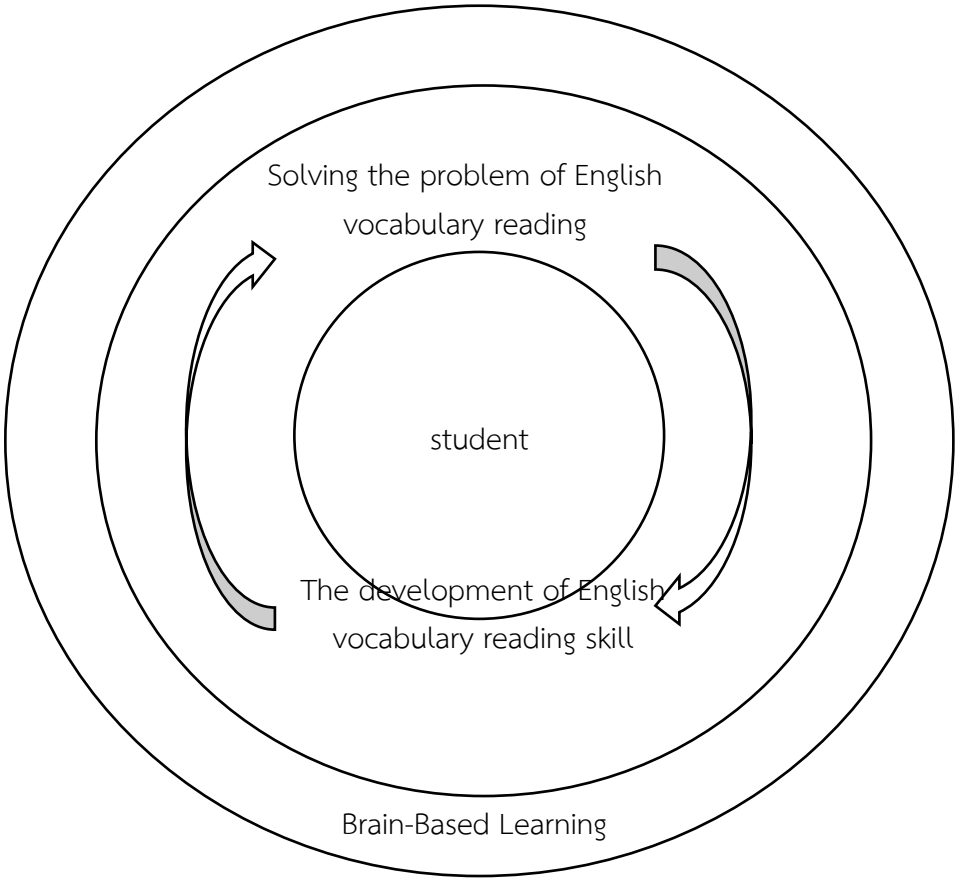
2. The post-test achievement in English vocabulary reading of Grade 6 students using BBL for Grade 6 students at Thairathwittaya School 79 (Ban Nong Ab Chang) revealed that their post-learning scores were significantly higher than pre-learning scores at the .05 level. This finding is consistent with the research by Ratchadakarn Yaidee (2022) on The reading aloud skill development by using phonics exercises of grade 4 students at Bannontarod school, Kamphaengphet province, which found that the post-learning achievement in English pronunciation was significantly higher than pre-learning at the .05 level. It also aligns with the study by Pimphorn Puangchuen and Wiwat Meesuwan (2020) on development of English word reading and spelling skills through phonics-based teaching activities for grade 1 students, where the post-learning test scores were significantly higher than the 75% threshold at the .05 level. Furthermore, it corresponds with the research by Patcharamon Polpraphrut (2022) on management of brain-based learning affecting learning achievement and creativity for primary 4 students studying the concept of goods and services in the economic learning area, which found that the post-learning academic achievement scores were significantly higher than those obtained through traditional learning at the .05 level.

3. The satisfaction of Grade 6 students toward the BBL approach revealed that the students had an average score and standard deviation at the highest level ($\bar{x}$ = 4.34, S.D. = 0.86), as they were ready to learn new things and enthusiastic about

participating in various activities. They cooperated well in the teaching and learning process, which contributed to their highest level of satisfaction with the learning management. This finding is consistent with the study by Parita Karaphap (2021), who researched on development of learning activities based on brain-based learning (BBL) in combination with motion graphics media to enhance spelling and word reading skills for grade 2 students. The study found that the students' satisfaction with Brain-Based Learning to enhance their ability to pronounce words was at a very high level ($\bar{x}$ = 4.94, S.D. = 0.23). This is in line with the research by Jariya Sukkaew (2022), who investigated a development of reading ability on learning activities with based brain learning according to skills practice forms of grade 1 students. The study showed that the students' satisfaction with the learning activities was at a high level ($\bar{x}$ = 4.48, S.D. = 0.15). Furthermore, it aligns with the research by Saipraew Chaimatchim (2020), who explored The development of scientific learning activities based on brain-based learning concept integrated with inquiry teaching method (5es) on the topic of water for life and air surrounded us of science learning area for Pratomsuksa 3 students. The study found that the students' satisfaction with the developed activities was at the highest level ($\bar{x}$ = 4.68, S.D. = 0.51).

The new knowledge gained from the research

The research on the development of English vocabulary reading skill using brain-based learning for grade 6 students at Thairathwittaya 79 (Ban Nong Ab Chang) focused on addressing the issue of English vocabulary reading difficulties among Grade 6 students. It aimed to enhance their ability to read English vocabularies by utilizing Brain-Based Learning (BBL) to improve their English learning outcomes, thereby maximizing students' potential. The following learning process model was used to achieve this objective.



Summary

1. The results of the effectiveness of the English vocabulary reading skill training using Brain-Based Learning (BBL) in Grade 6 students at Thairathwittaya School 79 (Ban Nong Ab Chang) showed an effectiveness score of 78.83/79.33, which is higher than the established standard criterion of 70/70.

2. The results of comparing the achievement in English vocabulary reading skills using Brain-Based Learning (BBL) in Grade 6 students at Thairathwittaya School 79 (Ban Nong Ab Chang) revealed that the post-test average score was significantly higher than the pre-learning score at the .05 statistical level.

3. The results of satisfaction of Grade 6 students toward with Brain-Based Learning (BBL) indicated that the average score and standard deviation were at the highest level ($\bar{x}$ = 4.34, S.D. = 0.86).

Recommendations

Based on the research findings, the researcher offers the following recommendations:

Policy Recommendations

1. Teachers can apply the innovative learning management methods to further enhance teaching and learning practices.

2. Schools can use the processes and innovative learning management models to continue development.

3. Students show increased interest in teaching and learning when innovative learning management methods are employed.

Recommendations for Utilizing Research Findings

1. Student teachers can adopt the learning management techniques to improve their reading skills.

2. Schools and teachers have access to innovative learning management methods that can be used to further develop students.

3. Teachers can adapt the research model for future applications.

References

Atchima Chaichit. (2020). *Developing the skill of reading and pronouncing English words (Phonics) using practice exercises for second-grade students at Srinakharinwirot University*. Samut Prakan: Primary Educational Service Area (PESA). (In Thai).

Jariya Sukkaew. (2022). *A development of reading ability on learning activities with based brain learning according to skills practice forms of grade 1 students.* (Master's Thesis). Phitsanulo: Naresuan University.

Lalida Thongrat. (2020). *The Development of English Reading Aloud Skill through the Use of Phonics based on the Davies Instructional Model of Grade 11 Students.* (Master's Thesis), Maha Sarakham: Rajabhat Maha Sarakham University.

Ministry of Education. (1999). National Education Act B.E. 2542. [Retrieved on June 30, 2021]. Available at https://shorturl.asia/3sE5P

Ministry of Education. (2008). The Basic Education Core Curriculum B.E. 2551. Bangkok: Teacher Council Printing House, Lat Phrao.

Parita Karaphap. (2021). *Development of Learning Activities Based on Brain-Based Learning (BBL) in Combination with Motion Graphics Media to Enhance Spelling and Word Reading Skills for Grade 2 Students*. (Master's Thesis). Bangkok: Silpakorn University.

Patcharamon Polpraphrut. (2022). *Management of Brain-based Learning Affecting Learning Achievement and Creativity for Primary 4 Students Studying the Concept of Goods and Services in the Economic Learning Area*. (Master's Thesis). Chanthaburi: Rambhai Barni Rajabhat University.

Pimphorn Puangchuen and Wiwat Meesuwan. (2020). *Development of English Word Reading and Spelling Skills through Phonics-Based Teaching Activities for Grade 1 Students*. (Master's Thesis) Phitsanulo: Naresuan University.

Pornpilai Lertwicha & Akaraphum Jarupakorn. (2007). *Designing Learning Processes with an Understanding of the Brain*. Bangkok: Dansutthakarn Printing Co., Ltd. (In Thai)

Ratchadakarn Yaidee. (2022). *The reading aloud skill development by using phonics exercises of grade 4 students at Bannontarod school, Kamphaengphet province*. (Master's Thesis). Phitsanulo: Naresuan University.

Rutwisan Ngarmsom. (2017). *A study of learning management using brain-based learning to develop English speaking skill for Prathomsuksa three students*. (Master's Thesis). Bangkok: Silpakorn University.

Saipraew Chaimatchim. (2020). *The development of scientific learning activities based on brain-based learning concept integrated with inquiry teaching method (5es) on the topic of water for life and air surrounded us of science learning area for pratomsuksa 3 students*. (Master's Thesis), Sakon Nakhon: Sakon Nakhon Rajabhat University.

The National Institute of Educational Testing Service (2022). *Summary of the National Educational Test (O-NET) results for Grade 6 in the academic year 2022*. Retrieved from https://www.niets.or.th/th/content/view/25618 on 1 May