

**THE DEVELOPMENT OF READING AND WRITING SKILL IN THAI
ORTHOGRAPHIC RULES BY INQUIRY-BASED LEARNING OF
GRADE 2 STUDENTS AT BAN ARUNOTHAI SCHOOL**

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ABSTRACT

This research article aims to: 1) to evaluate the effectiveness of a reading and writing practice module focusing on Thai orthographic rules among Grade 2 students at Ban Arunothai School based on the 70/70 standard criterion; 2) to enhance reading and writing skills in Thai orthography through inquiry-based learning among Grade 2 students at Ban Arunothai School before and after the intervention; and 3) to examine the satisfaction of Grade 2 students towards the inquiry-based learning approach. The sample group consisted of Grade 2 students from Ban Arunothai School, selected using simple random sampling. This study employed a quasi-experimental design with a single-group pretest-posttest approach. Research instruments included lesson plans, pretest and posttest assessments, and a student satisfaction questionnaire. Data were analyzed using basic statistics, including mean, standard deviation, percentage, and a dependent sample t-test.

The findings of the study revealed that: 1) The effectiveness of the reading and writing practice module focusing on Thai orthographic rules for Grade 2 students at Ban Arunothai School was 98.71/75.00, exceeding the set standard criterion, 2) The development of reading and writing skills in Thai orthography using the inquiry-based learning approach among Grade 2 students at Ban Arunothai School showed a statistically significant improvement after the intervention compared to before, at the .05 level, and 3) The satisfaction of Grade 2 students towards the inquiry-based learning approach was at the highest level ($\bar{x} = 4.65$, S.D. = 0.88).

Keywords: 1. Reading; Writing; 2. Thai Orthographic Rules; 3. Inquiry-Based Learning

Introduction

The 21st-century learning skills framework (3R8C) emphasizes essential knowledge-based skills, particularly reading and writing. These skills are fundamental for learners to achieve literacy. This aligns with the National Education Act B.E. 2542 (1999), which defines education as a learning process aimed at the growth and development of individuals and society through the transmission of knowledge, training, cultivation, and cultural preservation. Section 22 of the Act states that education must be based on the principle that every learner is capable of learning and self-development, with the learner considered the most important entity. Educational processes must foster natural growth and the full potential of each learner. Additionally, the Ministry of Education (2008) specifies that by the end of Grade 3, students should be able to spell words correctly and understand their meanings.

Orthographic rules in Thai refer to the use of consonants placed after initial consonants or vowels to function as final consonants, known as “Thai orthographic rules”. Observations from the “Talking Tree” project at Ban Cheong Doi School (Doi Saket Suksa) revealed that some students encountered difficulties in reading and spelling words. They struggled to understand how to combine final consonants with initial consonants, vowels, and tone marks, often confusing Thai orthographic rules. These challenges led to hesitation in answering questions, hindering their participation in the project. Discussions with mentor teachers and peers at the same school and other institutions revealed that these issues in reading and spelling words were rooted in a lack of understanding of orthographic rules. This finding is consistent with a report by the Educational Research Division, Department of Curriculum and Instruction Development, Ministry of Education, which evaluated Thai language instruction in primary schools. The report identified one major factor contributing to students' low average achievement in Thai language as their difficulty with spelling and reading using orthographic rules. These foundational skills are crucial for beginners, as the absence of systematic instruction on spelling and combining sounds can hinder the development of reading skills Basic Education Core Curriculum B.E. 2551 (A.D. 2008). Furthermore, the Office of Educational Testing (2022) highlighted the results of the National Testing (NT) on Thai language proficiency for Grade 3 students. The national assessment revealed an increase in average scores from 40.47% in the academic year 2020 to 56.41% in 2021, an improvement of 15.94%. This data underscores the need for improved teaching strategies to address these foundational gaps in Thai orthography. This aligns with the research by Sangwan Chanthep (2019), which investigated the use of exercise for development of reading obscure Thai spelling rules by using learning STAD technique for Prathomsuksa 2 students of Thasaban 1 Wat Prom Wihan school in Mae Sai district, Chiang Rai province. The study found that a major issue in inaccurate

Thai reading and writing stemmed from students lacking a fundamental understanding of spelling, particularly in recognizing non-standard orthographic rules such as “Maekok”, “Maekot”, “Maekon”, and “Maekop”. Similarly, Pimonporn Phongprasert (2020) conducted research on the development of reading and spelling abilities of Prathomsuksa 1 students taught by hunter’s teaching model and exercises. The study identified that the primary problem in teaching Thai to Grade 1 students was their struggles with reading and spelling due to low linguistic skills. Theerapan Janthong (2020) also researched on creating an e-book “the spelling section to improve reading and spelling skills for the 3rd grade students at Mae Kong Witthaya school, Muang district, Lampang province. The findings revealed that over 50% of learners faced issues with inaccurate reading and spelling. These studies underscore the persistent challenges in reading and spelling Thai orthography. Without adequate practice in these skills, students are prone to confusion in word usage, leading to difficulties in reading and writing. Such issues are prevalent among Thai students today and significantly affect their performance in other subjects and their ability to pursue higher levels of education.

Inquiry-based learning refers to an instructional approach where the teacher encourages learners to engage in self-directed learning. This involves prompting learners to ask questions or develop curiosity about a topic or content introduced by the teacher, followed by the use of scientific processes to explore and answer these questions. The teacher acts as a facilitator in guiding the learning process. According to Watchara Laoleardee, (2006) researched on technical and tactical approaches to enhance critical thinking skills in student-centered learning, findings and construct their knowledge or problem-solving strategies. This approach emphasizes the processes of knowledge discovery and management, fostering critical thinking and problem-solving skills. Inquiry-based learning involves observation, data collection, analysis, synthesis, and conclusion-making, along with the development of questioning skills. Institute for the Promotion of Teaching Science and Technology. (2018) outlines five steps of inquiry-based learning:

1. Engagement: Introducing an engaging topic or issue to capture learners' interest.
2. Exploration: Encouraging learners to seek knowledge through investigation.
3. Explanation: Facilitating learners to summarize, discuss, and present their findings in various formats.
4. Elaboration: Organizing activities that connect new knowledge to prior understanding.
5. Evaluation: Assessing learners' knowledge, understanding, and application of concepts.

This aligns with the study by Wesakiya Wani (2023) on the development of packages learning focusing on hands-on activities by using the 5E of inquiry-based learning to enhance

analytical thinking skills on stoichiometry of grade 10 students found that the average student satisfaction score was at the highest level. Nattawut Srirasa (2024) researched on the learning achievement and satisfaction of upper secondary school students on learning management of inquiry-based learning (5E) with an electronic book. The study revealed that students' satisfaction with this instructional approach was also at the highest level. These findings reinforce the effectiveness of inquiry-based learning in fostering both academic achievement and student satisfaction.

Therefore, the researcher was interested in studying the development of reading and writing skill in Thai orthographic rules by inquiry-based learning of grade 2 students at Ban Arunothai school. This approach integrates innovative learning management strategies as the foundation for organizing instruction to create a more effective classroom learning environment. Inquiry-based learning comprises five key steps: 1) Engagement: Capturing students' interest, 2) Exploration: Encouraging students to investigate and seek knowledge, 3) Explanation: Facilitating students in summarizing and presenting their findings. 4) Elaboration: Expanding students' knowledge by connecting it to prior learning, and 5) Evaluation: Assessing students' understanding and application of knowledge. This learning management method was applied to enhance students' reading and writing abilities related to Thai orthographic rules. It aimed to address students' learning challenges and improve their skills to meet desired learning outcomes. Additionally, this approach seeks to develop learners' abilities to align with the desired competencies and qualities for their academic and personal growth.

Objectives

- 1) to evaluate the effectiveness of a reading and writing practice module focusing on Thai orthographic rules among Grade 2 students at Ban Arunothai School based on the 70/70 standard criterion;
- 2) to enhance reading and writing skills in Thai orthography through inquiry-based learning among Grade 2 students at Ban Arunothai School before and after the intervention
- 3) to examine the satisfaction of Grade 2 students towards the inquiry-based learning approach.

Research methodology

This study employed a quasi-experimental research design using a one-group pretest-posttest design. This approach involved a single experimental group, where data was collected both before and after the intervention to evaluate the outcomes.

1. Scope of the Study

1.1 Population and Sample Group

The population consisted of 2,325 students from Grades 1 to 6 at Ban Arunothai School, Muang Na Subdistrict, Chiang Dao District, Chiang Mai Province, under the Chiang Mai Primary Educational Service Area Office 3, during the first semester of the 2024 academic year.

The sample group included 31 Grade 2 students from Ban Arunothai School, comprising 11 male and 20 female students, selected through simple random sampling. This grade level and school were chosen as part of the research network and were authorized for study.

1.2 Content Scope

The Basic Education Core Curriculum B.E. 2551 (A.D. 2008), Thai Language Learning Strand, Learning Domain 4, Standard TH 4.1, Indicator Prathom 2/2, focusing on Thai orthographic rules (Matra Tua Sakot).

1.3 Time Frame

The study was conducted during the first semester of the 2024 academic year, from May to October 2024. Data collection and instruction followed a schedule of one lesson (one hour) per week, for a total of six weeks (six hours).

1.4 Variables

- Independent Variables: Learning management plans and students' satisfaction questionnaires.

- Dependent Variable: Academic achievement in reading and writing Thai orthographic rules.

2. Research Instruments

The instruments used in this research included: 1) Learning Management Plans: A total of three inquiry-based learning plans were developed, each plan covering two hours, totaling six hours of instruction. The plans were evaluated for effectiveness, achieving an efficiency score of 3.63, 2) Assessment for Developing Reading and Writing Skills in Thai Orthographic Rules: A multiple-choice test with 30 questions and three answer choices was used. The test achieved a reliability score of 0.72 for the entire set, and 3) Student Satisfaction Survey: A five-point Likert scale was employed to assess student satisfaction with the inquiry-based learning management. The scale was defined

as follows: 5 = Very satisfied, 4 = Satisfied, 3 = Neutral, 2 = Dissatisfied, and 1 = Very dissatisfied.

The survey was reviewed and approved by experts, achieving an average score of 4.46.

3. Research Implementation Procedures

3.1 Student Orientation: Students were given an orientation to help them understand the learning activities. This included clarifying the objectives, preparing themselves for participation, and ensuring they followed the steps of the activities appropriately.

3.2 Implementation of Learning Activities: The inquiry-based learning activities were carried out according to the innovative framework. Key activities for each learning management plan were summarized and executed systematically to align with the research objectives.

3.3 Data Collection: The researcher collected data from students' worksheets, focusing on their reading and writing of basic words. The collected data was then used for further analysis.

4. Data Collection and Analysis

4.1 Collection and Analysis of Reading and Writing Performance Scores: Scores from the basic word reading and writing performance of all sampled students were collected. The data were analyzed using basic statistical methods, including: 1) Mean (\bar{x}), 2) Standard Deviation (S.D.), and 3) t-test for comparing pretest and posttest results.

4.2 Collection and Analysis of Student Opinions: Opinions were gathered from the student opinion questionnaire regarding the learning experience. The data were analyzed to determine basic statistical values, such as the mean and standard deviation.

5. Statistics Used in the Research

The statistical methods used in this research included: Mean (\bar{x}), Standard Deviation (S.D.), and t-test for Dependent Samples.

Research Results

1. To evaluate the effectiveness of a reading and writing practice module focusing on Thai orthographic rules among Grade 2 students at Ban Arunothai School based on the 70/70 standard criterion. The findings revealed that: The average score from the exercises completed during the learning process was 59 out of 60, with a standard deviation (S.D.) of 0.71. The process efficiency (E1) was calculated at 98.71, which is significantly higher than the set criterion. The total posttest score was 420, with an average score of 13.13 and a standard deviation of 0.96. These results demonstrate that the second-grade students at Ban Arunothai School who engaged with the

reading and writing exercises showed higher average scores post-intervention. The efficiency of the exercises for learning outcomes (E2) was 75.00, exceeding the set standard criterion. This indicates that the practice exercises for reading and writing Thai word families effectively improved student performance and surpassed the expected standards.

2. To enhance reading and writing skills in Thai orthography through inquiry-based learning among Grade 2 students at Ban Arunothai School before and after the intervention. The results of developing grade 2 students' reading and writing skills at Ban Arunothai School, comparing pre-learning and post-learning outcomes, revealed that: Post-learning scores had an average (\bar{x}) of 13.13 and a standard deviation (S.D.) of 0.96. Pre-learning scores had an average (\bar{x}) of 9.13 and a standard deviation (S.D.) of 3.83. This demonstrates a significant improvement in reading and writing skills for Thai word families after applying the inquiry-based learning approach. The increase in the average score highlights the effectiveness of the teaching method in enhancing student performance.

3. To examine the satisfaction of Grade 2 students towards the inquiry-based learning approach showed that: The overall average satisfaction score (\bar{x}) was 4.65, with a standard deviation (S.D.) of 0.88, indicating a "highest level" of satisfaction. This reflects that the students were highly satisfied with the inquiry-based learning approach, suggesting its positive impact on their learning experience and engagement.

Discussion

1. Regarding Objective 1: to evaluate the effectiveness of the reading and spelling exercises on Thai orthographic patterns for second-grade students at Ban Arunothai School showed scores exceeding the set standard criteria at 98.71/75.00. This can be attributed to the alignment of the inquiry-based learning method and the exercise content with the subject matter. The design of these learning activities made the exercises both challenging and enjoyable for students, fostering active participation and motivation. These findings are consistent with the research of Theerapan Janthong, et al. (2021) on creating an e-book "the spelling section to improve reading and spelling skills for the 3rd grade students at Mae Kong Witthaya school, Muang district, Lampang province scored of 87.50/88.67. Additionally, the study by Wesakiya Wani (2023) on the development of packages learning focusing on hands-on activities by using the 5E of inquiry-based learning to

enhance analytical thinking skills on stoichiometry of grade 10 students scored of 76.70/75.20, further supporting the effectiveness of such methods in enhancing learning outcomes.

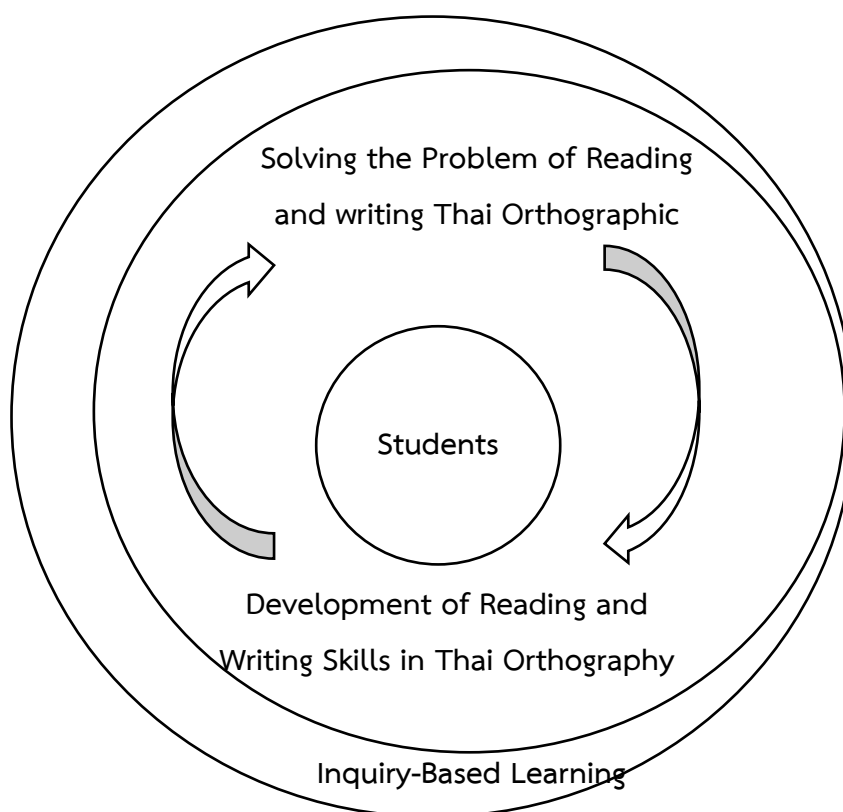
2. Discussion on Objective 2: to enhance reading and writing skills in Thai orthography through inquiry-based learning among Grade 2 students at Ban Arunothai School revealed that post-learning average scores were significantly higher than pre-learning scores at the 0.05 level of statistical significance. This improvement can be attributed to clear teaching guidelines, well-structured instructional materials, and appropriately sequenced lessons aligned with the content. The teacher's step-by-step instruction effectively conveyed knowledge without redundancy, maintaining student engagement in learning. However, the limited use of media and technology during instruction occasionally led to student boredom. This aligns with the findings of Khwannapha Boonnitee (2021), who researched on the development of reading and spelling skills in grade 1 students using the individual diagnostic exercise. Her study demonstrated significantly higher post-test scores at the 0.05 level of statistical significance. Similarly, Pitchasinee Jadeerat (2021) conducted research on the development of analytical thinking skills of Grade 10 students using inquiry-based learning management combined with questioning techniques. The research found that the inquiry-based learning management combined with questioning techniques significantly developed the analytical thinking skills of the target student group, exceeding the set criterion of 80 percent. Specifically, 37 students out of the total student population (representing 82 percent) met the criterion. Furthermore, the analytical thinking skills, as measured by an analytical ability test, of the target group after receiving the inquiry-based learning management combined with questioning techniques were significantly higher than those before the learning management at a statistical significance level of .05. significance level. These findings suggest that while clear instruction and appropriate materials are critical to student success, incorporating engaging media and technology could further enhance learning outcomes and reduce boredom.

3. Discussion on Objective 3: to examine the satisfaction students with the inquiry-based learning approach showed a very high average rating ($\bar{x} = 4.60$, S.D. = 0.89). This outcome is attributed to the teacher's ability to design instructional activities that align with student needs, emphasizing active student participation. The use of diverse instructional methods prevented boredom and sustained student engagement. This finding is consistent with the research of Nattawut Sirasa (2024), who studied the learning achievement and satisfaction of upper secondary school students on learning management of inquiry-based learning (5E) with an electronic book. The study revealed the highest level of satisfaction with chemistry lessons on reaction rates taught

using this approach. Similarly, Chorphaka Sukhumthong (2020) research on development of inquiry-based learning activity packages (5E) in conjunction with science games on earth changes for elementary school level found that students expressed the highest level of satisfaction with the learning management using the science learning management plan on the topic of 'Changes of the Earth' at the elementary level ($\bar{x} = 4.53$, S.D.=0.64). These results underscore the importance of designing student-centered learning experiences and utilizing diverse and interactive teaching methods. Such approaches not only foster active learning but also ensure that students remain motivated and satisfied with their educational experiences.

New knowledge

The research on *"The development of reading and writing skill in Thai orthographic rules by inquiry-based learning of grade 2 students at Ban Arunothai school"* aims to address the challenges faced by Grade 2 students in reading and writing in Thai orthographic rules and to enhance their skills in these areas. By employing an inquiry-based learning approach, this study seeks to improve academic achievement in the Thai language, enabling students to reach their full potential. The development follows the model of the inquiry-based learning process as outlined below.



Conclusion

The researcher summarized the findings as follows:

1. The effectiveness of the reading and writing practice module focusing on Thai orthographic rules for Grade 2 students at Ban Arunothai School was 98.71/75.00, exceeding the set standard criterion.

2. The development of reading and writing skills in Thai orthography using the inquiry-based learning approach among Grade 2 students at Ban Arunothai School showed a statistically significant improvement after the intervention compared to before, at the .05 level.

3. The satisfaction of Grade 2 students towards the inquiry-based learning approach was at the highest level ($\bar{x} = 4.65$, S.D. = 0.88)

Recommendations

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

Policy Recommendations

1. Teachers can apply the innovative learning management approach to their teaching practices.

2. Schools can adopt the prototype process and innovative learning management for further development.

3. Students show increased interest in learning activities when using innovative learning management approaches.

Recommendations for Utilizing Research Findings

1. Pre-service teachers can adapt the learning management approach to enhance students' reading and writing skills.

2. Schools and teachers now have an innovative learning management model to continuously support student development.

3. Teachers can adapt this research methodology for future studies.

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