

The Development of Online Reading Lesson by Using Metacognitive Strategies of Thai Undergraduate Students

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Abstract

This study examined the development and determination of the efficiency of the online reading lesson by using metacognitive strategies and evaluated the achievements of the online reading lesson by using metacognitive strategies of Thai undergraduate students. Forty Thai undergraduate students who enrolled in English for Communication subject participated in the study for eight weeks. The research instruments employed six online reading lessons and exercises, an online reading lesson using metacognitive strategies tests, and a questionnaire on student's satisfaction towards the online lesson. Quantitative data were analyzed by mean, standard deviation (S.D.), and dependent t-test. The results revealed that the efficiency of the online reading lesson met the assigned criteria 75/75 and the achievements of learning indicated that the student's online reading abilities score obtained in the post-test after learning by online reading lesson were significantly higher than the pre-test at a .05 level of statistical significance. The students had high satisfaction towards online reading lessons because of their usefulness for their online reading.

Keywords: Online Reading, Metacognitive Reading Strategies, Online Reading Satisfaction

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1. Introduction

On a global scale, Thailand, like many other countries, has encountered the adverse impacts of the COVID-19 pandemic on various aspects of life such as the economy, society, and education. Consequently, it is crucial to address the issues of learning behavior and unequal access to knowledge. In this regard, leveraging technology can play a pivotal role in providing equitable opportunities for learners of all levels to acquire knowledge. Moreover, technology can be utilized to improve reading skills and promote healthy reading habits [1, 2, 3, 4, 5, 6]. The Thai education system needs to enhance the reading skills of Thai citizens to a level that

enables them to acquire knowledge to effectively receive and comprehend the language. Reading is an important language ability in many aspects of life, including education and employment [7]. Employing reading strategies plays a crucial role in promoting reading comprehension and aids learners in accurately comprehending textual content [8].

Online learning materials are an essential tool for facilitating education and learning in contemporary times. Engaging in online reading and utilizing reading strategies, particularly metacognitive strategies, can enhance learning skills and foster autonomy in

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language acquisition. With the widespread use of technology in online learning across higher education institutions worldwide, research has shown that incorporating metacognitive strategies in online learning is crucial for achieving learner achievement [9, 10, 11].

Metacognitive strategies are cognitive processes that involve learners in their learning and self-learning processes. Several research studies have indicated that metacognitive strategies are significantly and positively associated with online learning performance, and are essential for achieving academic success [12, 13, 14, 15]. Students can enhance self-control through using metacognitive strategies in online learning [16, 17, 18]. As a result, online learning has the potential to improve the English language proficiency of all Nakhon Pathom Rajabhat University students.

The current research was conducted with the following intended objectives:

- 1) to develop and determine the efficiency of the online reading lesson by using metacognitive strategies of Nakhon Pathom Rajabhat University undergraduate students created by the researcher to meet the criteria of 75/75.

- 2) to compare learning achievements in online reading before and after learning online reading lessons by using metacognitive strategies of Nakhon Pathom Rajabhat University undergraduate students.

- 3) to study Nakhon Pathom Rajabhat University undergraduate students' satisfaction towards online reading lessons learning by using metacognitive strategies.

2. Literature Review

2.1 Concepts of Reading Theories

Reading involves connecting sounds with letters, and committing to memory various lexical items, phrasal combinations, and syntactical patterns, which employ the application of prior knowledge and understanding of the meaning [19, 20]. According to Breznitz [21], reading is an essential communication tool in society. It is an ability that allows the reader to interact with different forms of media. Reading therefore is essential in education. The viral in reading is reading comprehension level. Burmeister [22] classified the level of reading comprehension according to Bloom's Taxonomy as follows: memory, translation, interpretation, application, analysis, synthesis, and evaluation. Nunan and Dole [23] explained that reading comprehension relies on schema theory, emphasizing that understanding a text necessitates activating prior knowledge stored in memory. According to this theory, comprehension involves connecting new information with previously acquired knowledge. The reading process involves two main models: the bottom-up model, which involves processing the smallest components (e.g. letters) to larger units, and the top-down model, which involves drawing on prior experience and knowledge to understand meaning within a given context [24]. When the bottom-up and top-down approaches are integrated and used together, reading instruction can be more effective [25]. As a

result, the notion of an interactive reading process emerged, which involves generating and validating a hypothesis based on prior experiential knowledge. This process occurs through both top-down processing, which involves comprehending the larger context first and then breaking it down into smaller parts, and bottom-up processing, which involves analyzing individual components and then constructing a larger understanding [26]. In terms of metacognitive processes associated with intention, planning, and control strategies. Readers are capable of using reasoning and critical thinking to summarize the context [27].

2.2 Online Reading

Online reading differs from linear reading as it requires the reader to navigate through interconnected readings using hyperlinks. Rather than following a strictly linear progression, the reader must move between various passages related to the same subject [28]. The exploration of pedagogical approaches to facilitate the development of online reading skills. With effective search processes and metacognitive strategies, learners can enhance their experience and thinking abilities. Teachers should prioritize guiding students through the process of online information search. This will enable students to acquire and apply effective strategies for online reading comprehension [29, 30]. Following online instruction, educators must assess students' online reading skills. Ciampa [31] developed a method for measuring and evaluating online reading and reading strategy

use. This includes the use of a reading motivation questionnaire and a list of reading activities. Furthermore, teachers can use a behavior observation form to monitor and record students' behavior while they engage in online reading activities.

2.3 Metacognitive Reading

Metacognition refers to the ability to have a practical understanding of one's thoughts. It involves knowledge of information processing skills, monitoring, and executing one's work. By examining their own thought and action strategies, individuals can use metacognitive strategies to control their thought processes and behavior. They can set goals and objectives for learning and assess their progress by being able to monitor and evaluate themselves. Hence, metacognition is the ability to regulate one's thoughts and actions. The approach to teaching English reading with an emphasis on metacognitive strategies involves the practice of different techniques in tasks that allow learners to understand the use of metacognitive strategies in planning, monitoring, problem-solving, and evaluating their learning process. This teaching method is supported by Cubukcu and Connel [32, 33] suggested that the use of metacognitive strategies in English teaching is crucial in helping learners become more aware of their metacognitive reading strategies. By applying these strategies, learners can adapt their reading habits and enhance their English reading skills. Phuvipadawat [34] evaluated the use of metacognitive reading strategies, which can be

measured and evaluated in two forms. The first form is testing, where the evaluation is performed through standardized tests. The second form is an authentic assessment, which includes observation, the use of tools, interviews, recordings, and reviewing student portfolios to assess their reading skills and strategies.

2.4 Related Literature

Sitiprakan et al. [35] conducted a study to investigate the effectiveness of online lessons on students' advanced reading achievement. The results indicated that learners who used online lessons showed greater improvement in their English learning achievements. Furthermore, the study found that online lessons were beneficial in enhancing learners' knowledge of English reading. The survey conducted also showed a positive impact of online learning, as students expressed high levels of satisfaction. Cigdem and Tirkes [36] conducted research on various analyses and benefits of LMS and Moodle. They found that Moodle and LMS are remarkable open-source software, which aim to improve the quality of education and include necessary tools for an e-learning system. Moodle and LMS provide multiple features that enhance the pedagogical quality and offer the necessary tools required for an e-learning system. LMS plays a significant role in the virtual learning environment (VLE) or learning platform. According to Hall [37], LMS is software that automates the management of training events. LMS manages the login of registered users,

manages course catalogs, stores data from learners, and generates reports for management purposes. Liu and Feng [38] studied the correlation between metacognitive and online learning strategies and academic achievement. Their findings revealed that using these strategies helped students in the test-scoring group to achieve higher overall outcomes.

3. Methodology

3.1 Participants

The participants were a class that had forty students who enrolled in 1500134 English for Communication in the second-semester academic year 2021 and are taught by the researcher. The students registered for this course for the first time. They are non-English majors who were studying in their second year at Language Institute, Nakhon Pathom Rajabhat University. The class was selected by purposive sampling.

3.2 Research Instruments

The instruments used in the study were a lesson plan for a course English for Communication 1500134. It was included learning objectives and course descriptions for English for Communication. In addition, the researcher designed the online material which is composed of six chapters that focus on online reading content using metacognitive strategies using a Learning Management System (LMS) provided by Nakhon Pathom Rajabhat University. Moreover, a pre-posttest in metacognitive online reading was employed in this study, which consisted of a multiple-choice

test with 40 items. The test aimed to measure reading comprehension using metacognitive strategies, which include: 1) distinguishing between the main idea and supporting details, 2) identifying supporting details, 3) guessing unknown words, 4) summarizing main ideas, 5) interpreting the text, and 6) evaluating the text. Furthermore, the Student Satisfaction Questionnaire was used to affirm the results of satisfaction towards metacognitive online reading.

3.3 Research Procedures

This research aims to investigate the methodology used in the study. This research conducts quantitative methods into the study. The data collection comprises the research design, construction of the research instrument, and satisfaction questionnaire towards metacognitive online reading strategies. The main objective of the study on the development of online reading lessons by using metacognitive strategies of Thai undergraduate students at Nakhon Pathom Rajabhat University. The procedures are as follows.

1) The English for Communication course 1500134 comprises six units, emphasizing online reading and metacognitive strategies. It includes learning objectives and course descriptions. Online lessons, delivered in various formats, were developed following content analysis using selected websites. They were integrated into the university's Learning Management System (LMS) for course management, student data handling, evaluation, and communication. The researcher analyzed

online content, created test specifications, and developed a test to assess online reading and metacognitive skills. Both the online lessons and the test underwent expert review and were trialed with experimental groups.

2) The researcher provided a comprehensive explanation of the research particulars to the students. The students were given consent forms and informed of their right to withdraw from the study at any point, without facing any detrimental consequences. Subsequently, the researcher executed the following stages.

3) In the first phase, the students took an online reading proficiency test employing metacognitive strategies via Google Forms before starting the online lessons. The test consisted of 40 questions and lasted for one hour. This process was during the first week of the study. Throughout this process, students were prompted to utilize metacognitive techniques.

4) In the second phase, the researcher developed the online reading lessons, including PowerPoint creation, videos, teaching materials, and exercises. These materials were downloaded from the YouTube platform and uploaded to the LMS. The course comprised six chapters, and students took three hours per week, totaling 18 hours. The study took six weeks to cover all six chapters. Then, students were required to spend an hour every weekday after class finishing the task on the LMS platform. In addition, students were required to engage in post-learning exercises after finishing each chapter, comprising ten items per chapter,

and taking 30 minutes to complete. The students spent total time for post-learning exercises across all six chapters was 180 minutes. The LMS enhanced delivery through content management, interactive videos with metacognitive prompts, quizzes for self-assessment, discussion forums for reflective activities, progress tracking, announcements, resource links, and assignment submission features.

5) In the third stage, after the online lessons, students undertook an online reading ability test using metacognitive strategies through Google Forms. This test contained 40 questions and lasted for one hour. It took place during the seventh week of the study. Students had to use their after-school time to complete it.

6) In the final stage, following the completion of the online reading lessons using metacognitive strategies, students were asked to complete a Student Satisfaction Questionnaire via Google Form. This questionnaire consisted of ten questions and was administered after the seventh week of the study.

3.4 Data Analysis

The data analysis of the study was based on the SPSS which was used to analyze data obtained from pre-posttest in metacognitive online reading by using t-test for dependent samples to get statistical method. Moreover, data was obtained by using mean (\bar{X}), standard deviation (S.D.) and process (E_1), and product (E_2) for the online reading lessons'

content validity and reliability, and satisfaction questionnaire.

4. Results and Discussion

The online reading lessons met the efficiency criteria of 75/75, indicating their efficiency in enhancing students' reading skills. Furthermore, the comparison of pre-test and post-test scores revealed a significant improvement in students' reading abilities and skills after participating in the online reading lessons. The post-test scores were significantly higher than the pre-test scores, indicating the positive impact of the online reading lessons using metacognitive strategies. Additionally, students reported high satisfaction with the online reading lessons, particularly appreciating their format and content, which were rated as highly useful and easy to use. The findings indicate that metacognitive strategies effectively enhance reading comprehension. Moreover, the improvement in post-test scores aligns with previous research [12-14], demonstrating the positive impact of these strategies on academic achievement. The high satisfaction levels further validate the efficiency of the online lessons, corroborating studies by Sitiprakan et al. [35] and Cigdem and Tirkes [36].

In summary, nationally and internationally research supported the use of online language lessons, online reading, and the use of metacognitive reading strategies. Therefore, the researcher developed online reading lessons using metacognitive reading strategies to help students develop English

language skills and abilities. In addition, online reading lessons using metacognitive reading strategies influence vocabulary learning enrichment, participatory learning encouragement, teacher-student interaction stimulation, support learning, enable assessment and tracking of activities, and provide convenient and timely access to instructional materials. This approach is very satisfying for students.

4.1 Results of developing and determining the efficiency of the online reading lesson by using metacognitive strategies

Brahmawong [39] conducted a three-stage tryout, presenting the findings on the efficiency of the draft online reading lessons as follows:

In Individual Testing (1:1), 3 students who had similar characteristics to the samples were employed in this stage. The following is the table of finding on the efficiency of the online reading lessons draft in the individual testing stage.

Table 1: Efficiency of the Online Reading Lessons Draft in Individual Testing (1:1)

| Efficiency | Students (n) | Total scores | \bar{X} | S.D. | Efficiency Value |
|---------------------------|-----------------|-----------------|-----------|------|---------------------|
| Process (E ₁) | 3 | 60 | 45.30 | 6.65 | 75.50 |
| Product (E ₂) | 3 | 40 | 30.30 | 9.29 | 75.75 |

In the first stage of the tryout, the findings on efficiency (E₁ / E₂) of the online reading lesson draft were 75.50/75.75 which meant the draft met the set criteria at 75/75.

In Group Testing (1:10), 10 students who had similar characteristics to the samples were employed in this stage. The following is the table of findings on the efficiency of the online reading lessons draft in the Group Testing stage.

Table 2: Efficiency of the Online Reading Lessons Draft in Group Testing (1:10)

| Efficiency | Students (n) | Total scores | \bar{X} | S.D. | Efficiency Value |
|---------------------------|-----------------|-----------------|-----------|------|---------------------|
| Process (E ₁) | 3 | 60 | 45.10 | 3.14 | 75.16 |
| Product (E ₂) | 3 | 40 | 30.10 | 6.60 | 75.25 |

In the second stage of the tryout, the finding on efficiency (E_1 / E_2) of the online reading lessons draft was 75.16/75.25 which meant that the draft still met the set criteria at 75/75.

In Field Testing (1:100), 40 students who had similar characteristics to the samples were employed in this stage. The following is the table of finding on the efficiency of the draft in the Field Testing stage.

Table 3: Efficiency of the Online Reading Lessons Draft in Field Testing (1:100)

| Efficiency | Students (n) | Total scores | \bar{X} | S.D. | Efficiency Value |
|-------------------|-----------------|-----------------|-----------|------|---------------------|
| Process (E_1) | 3 | 60 | 45.35 | 3.23 | 75.58 |
| Product (E_2) | 3 | 40 | 30.70 | 3.17 | 76.75 |

In the final stage of the tryout, the finding on efficiency (E_1 / E_2) of the online reading lessons draft was 75.58/76.75 which meant the draft met the set of criteria at 75/75. These results suggest that the online reading lessons possessed the quality necessary for further dissemination.

4.2 Results of comparing learning achievements of online reading before and

after learning online reading lessons by using metacognitive strategies

In this part, the results gained from both pre- and post-test were compared to see the achievement of students' online reading before and after employing online reading lessons by using metacognitive strategies.

| Metacognitive Online Reading Test | Students (N) | \bar{X} | S.D. | t-value | p |
|-----------------------------------|-----------------|-----------|------|---------|------|
| Pre-test | 40 | 22.38 | 4.60 | 18.13 | 0.00 |
| Post-test | | 30.70 | 3.17 | | |

* Significant at the 0.05 level ($p < 0.05$)

The table indicates the mean scores of both pre- and post-tests showing the students' online reading. Before the students studied by using the online reading lessons using metacognitive strategies, they had taken the pre-test and the mean score was 22.38 (\bar{X}), 4.60 (SD). However, they had to take the post-test after the online reading lessons by using metacognitive

strategies were employed. The result of the post-test that the mean score was 30.70 (\bar{X}), 3.17 (SD), was higher than the pre-test. However, the scores between the pre and post-test were significantly different at 0.05 level ($t = 18.13$, $P = 0.00$). Therefore, the results of paired t-test indicated that Thai undergraduates' overall online reading after implementing online

reading lessons was higher. It can be concluded that Thai undergraduates' overall achievement towards online reading lessons by using metacognitive strategies was enhanced after the implementation.

4.3 Results of affirming students' satisfaction towards online reading lessons by using metacognitive strategies.

| Satisfaction aspects | \bar{X} | S.D. | Satisfaction | Rank |
|----------------------|-----------|------|--------------|------|
| Student | 4.14 | 0.06 | High | 3 |
| Content | 4.15 | 0.01 | High | 2 |
| Format | 4.17 | 0.02 | High | 1 |
| Total | 4.15 | 0.04 | High | |

The table presents the mean scores and standard deviations for students' satisfaction with online reading lessons utilizing metacognitive strategies, evaluated on a 5-point Likert scale. From this questionnaire, the derived mean score and standard deviation were 4.15 (\bar{X}) and 0.04 (SD), respectively. Notably, the ranking based on mean scores highlights that the format of the online reading lessons was the highest at 4.17 (\bar{X}), followed by content satisfaction at 4.15 (\bar{X}), and student satisfaction at 4.14 (\bar{X}). This indicates that students were most satisfied with the format, followed closely by content and student satisfaction. The positive feedback reflects the students' appreciation and endorsement of the efficiency of the online reading lessons integrated with metacognitive strategies.

5. Conclusion

This study has several key points that relate to its objectives. The purpose of the research was to determine the effectiveness of online reading lessons by using metacognitive strategies among undergraduate students at Nakhon Pathom Rajabhat University. The researcher created online reading lessons for the English for Communication course 1500134, which consisted of six chapters. The efficiency of the material (E_1/E_2) was evaluated based on the practice and post-test scores of all the participants, which were 75.58% and 76.75%, respectively ($E_1/E_2 = 75.58 / 76.75$). The researcher systematically designed and

Apart from the overall satisfaction towards online reading lessons, three aspects of students' satisfaction were also administered and analyzed quantitatively by using mean and standard deviation.

developed online lessons that met quality standards and were evaluated by experts. The lessons were evaluated based on their content and met the criteria set forth at 75/75.

The study analyzed the learning achievement of undergraduate students at Nakhon Pathom Rajabhat University who used online reading lessons by using metacognitive strategies. The results showed that the student's learning achievement was higher after using the online reading lesson designed by the researcher. The online reading lessons were designed to be easily understood and included video lessons, additional sources of knowledge, and interesting modern titles, sizes, colors, and fonts. The learners could interact with the lessons, and students could review the lessons anytime, anywhere. The study also found that the students had a high level of satisfaction with the format of the online reading lessons. Future studies should explore the long-term impact of these strategies and investigate their applicability in different educational contexts. Furthermore, the limitation of this study's sample size, confined to one university,

potentially impacts the generalizability of the findings. Thus, future research should encompass larger and more diverse samples. Additionally, recommendations for future

studies should include investigating the influence of metacognitive strategies on other language skills and exploring their integration into various educational technologies.

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