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INVESTIGATING THE USE OF METACOGNITIVE STRATEGIES TO TEACH READING COMPREHENSION TO LOWER SECONDARY SCHOOL STUDENTS

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Abstract

This article presents the research findings on using metacognitive strategies in teaching English reading comprehension to lower secondary school students in Vietnam. The study used a quasi-experimental design, involving 76 students from a lower and upper secondary school in An Giang province. It investigated students' awareness of metacognitive strategies, examine the frequency of their strategy use, and evaluate the effectiveness of applying these strategies in reading comprehension instruction. Both quantitative and qualitative data revealed that students used metacognitive reading strategies at a high level, with problem-solving strategies being the most frequently employed. The findings also indicated that instruction incorporating metacognitive strategies significantly improved students' reading comprehension performance and enhanced their positive awareness of strategy use. This study offers preliminary evidence regarding the use of metacognitive strategies in teaching English reading comprehension at the lower secondary school level. It also offers pedagogical implications for English language teaching and serves as a foundation for future research in this area.

Keywords: *Metacognitive Strategies, metacognitive awareness, lower secondary school students, reading comprehension.*

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NGHIÊN CỨU VIỆC SỬ DỤNG CÁC CHIẾN LƯỢC SIÊU NHẬN THỨC TRONG DẠY ĐỌC HIỂU TIẾNG ANH CHO HỌC SINH TRUNG HỌC CƠ SỞ

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Tóm tắt

Bài báo này trình bày kết quả nghiên cứu về việc sử dụng các chiến lược siêu nhận thức trong giảng dạy đọc hiểu tiếng Anh cho học sinh trung học cơ sở tại Việt Nam. Nghiên cứu được thiết kế theo phương pháp bán thực nghiệm với sự tham gia của 76 học sinh tại một trường trung học cơ sở và trung học phổ thông ở tỉnh An Giang. Mục tiêu của nghiên cứu là khảo sát nhận thức, đo lường mức độ sử dụng các chiến lược siêu nhận thức, đồng thời đánh giá hiệu quả của việc áp dụng các chiến lược này trong hoạt động đọc hiểu. Kết quả phân tích dữ liệu định lượng và định tính cho thấy học sinh sử dụng các chiến lược đọc siêu nhận thức ở mức cao, trong đó các chiến lược giải quyết vấn đề được vận dụng thường xuyên nhất. Việc giảng dạy đọc hiểu thông qua các chiến lược siêu nhận thức đã góp phần cải thiện đáng kể năng lực đọc hiểu của học sinh, đồng thời nâng cao nhận thức tích cực của các em đối với việc sử dụng các chiến lược này. Nghiên cứu này cung cấp những hiểu biết ban đầu về việc sử dụng các chiến lược siêu nhận thức trong dạy học đọc hiểu tiếng Anh ở bậc trung học cơ sở, làm cơ sở cho các nghiên cứu và ứng dụng tiếp theo trong thực tiễn giảng dạy.

Từ khóa: Chiến lược đọc hiểu siêu nhận thức, đọc hiểu, học sinh trung học cơ sở, nhận thức siêu nhận thức.

1. Introduction

Reading comprehension is considered to be an essential receptive skill, enabling learners' acquisition of English language knowledge and critical thinking development. Reading comprehension allows students to widen their language knowledge and to shape their mindset (Yapp et al., 2023). In teaching English as a Foreign Language (EFL), it is one of the main sources for language input acquisition and language proficiency development (Ediger, 2001). It sometimes requires learners to employ higher-order thinking skills, such as making inferences and evaluating information, in order to interpret complex texts (Grabe, 2009).

Teaching reading comprehension effectively entails a systematic and strategic approach. Pre-reading, while-reading, and post-reading activities help students activate their background knowledge, engage deeply with the texts, and consolidate their understanding (Nation & Macalister, 2010). Students can be taught to employ metacognitive strategies to enhance their reading skills and promote lifelong learning (Barbe-Clevett et al., 2002). When learners apply the strategies, they can purposefully plan how to carry out a learning task, monitor their own performance, seek solutions to problems, and evaluate their learning outcomes (Zhang & Goh, 2006).

The General Education English Curriculum (GEEC) in Vietnam is competency-based and requires EFL teachers to support learners not only in acquiring English language knowledge but also in developing essential competencies (MOET, 2018). However, the pressure of an examination-oriented educational system has led to a more product-based approach rather than process-oriented instruction that focuses on skills development (Nguyen & Gu, 2013). Consequently, students tend to rely more on test-taking strategies aimed at improving examination performance than on actively engaging in the development of long-term language skills (Nguyen & Gu, 2013).

A growing body of research on the use of metacognitive strategies in reading comprehension instruction has reported positive outcomes. However, there remains a lack of studies investigating the effectiveness of metacognitive reading strategy instruction in enhancing the reading abilities of lower secondary school students in the Vietnamese context. This study aims to address this research gap by examining the implementation of metacognitive strategies in English reading comprehension instruction for lower secondary school students in An Giang Province.

2. Literature Review

2.1. Reading Comprehension in Teaching English as a Foreign Language

Reading comprehension is commonly defined as an interactive and dynamic process in which readers actively construct meaning from written texts through the integration of decoding skills, background knowledge, and critical thinking. According to Heilman et al. (1981), reading comprehension involves decoding written texts while engaging meaningfully and interactively with language. Snow (2002) argues that reading cannot be considered complete unless comprehension is achieved, as readers must not only decode words but also actively construct meaning from the text. Similarly, Zimmermann and Hutchins (2003) emphasize that effective reading involves critical thinking, drawing on prior experiences, and connecting new information to existing knowledge. As such, comprehension is widely regarded as both the central component and ultimate goal of reading (Clarke et al., 2013). It encompasses not only the recognition of words and sentences but also the construction of meaning through active engagement with the text (Nurie, 2017).

2.2. Metacognition in Reading

Metacognition enables learners to become aware of their thinking processes and to regulate their learning strategies proactively and flexibly to achieve reading goals. According to Flavell (1979), metacognition, often defined as “thinking about thinking,” consists of two key components: metacognitive knowledge (awareness of one’s cognitive abilities) and metacognitive regulation (the management of cognitive processes through strategies). These components allow learners to adjust their learning strategies actively to achieve desired learning outcomes. In addition, metacognitive strategies such as planning, monitoring, and evaluating help students identify and address difficulties encountered during the reading process (Baker & Brown, 1984). Skilled readers are able not only to employ a range of reading strategies but also to adapt them flexibly to different reading situations (Schraw et al., 2006). Furthermore, the frequent use of metacognitive strategies has been associated with improved overall academic performance (Zhang & Seepho, 2013).

2.3. Metacognitive Reading Strategies

Metacognitive reading strategies have been widely recognized as effective tools for enhancing students’ reading comprehension. Research has shown that the use of metacognitive strategies can improve the reading performance of ESL learners (Ahmadi et al., 2013). At both lower and upper secondary levels, these strategies have been found to contribute positively to reading comprehension development (Muhid et al., 2020). Palincsar and Brown (1984) reported that seventh-grade students who independently employed metacognitive strategies demonstrated greater progress in comprehending, retaining, and recalling textual information. Therefore, metacognitive strategy instruction plays an important role in enabling learners to monitor and regulate their own learning processes and to develop a deeper understanding of texts.

2.4. Metacognitive Strategy Instruction

Strategy instruction supports students in taking control of their own learning, thereby fostering greater learner autonomy. Palincsar and Brown (1984) introduced the Reciprocal Teaching program, in which teachers and students take turns leading discussions about a text. This instructional approach actively engages learners and promotes the development of higher-order thinking skills. In addition, several researchers have recommended systematic strategy training to strengthen students’ reading comprehension abilities (Cohen, 1998; Palincsar & Brown, 1984). Such approaches include explicit strategy instruction (Duffy et al., 1986), extensive reading programs (Day & Bamford, 1998), and scaffolding techniques grounded in sociocultural theory (Vygotsky, 1978). Among these approaches, the Cognitive Academic Language Learning Approach (CALLA) integrates content-area learning, academic language development, and learning strategies through five instructional stages: preparation, presentation, practice, evaluation, and expansion (Chamot & O’Malley, 1987; Chamot et al., 1999).

2.5. Related Studies

Empirical evidence from international researchers supports a positive relationship between metacognitive strategies and reading comprehension. More frequent application of the strategies helps gain higher levels of reading comprehension and promotes better comprehension outcomes (Phakiti, 2003). The use of metacognitive strategies could enhance EFL students’ reading proficiency (Zhang & Wu, 2009; Anggia & Habók, 2024) and improve students’ reading comprehension and attitudes (Al-Kiyumi et al., 2021; Al-Khresheh & Al Basheer, 2023). As such, the use of metacognitive strategies can lead to better reading performance across various academic contexts.

In the Vietnamese educational context, the use of metacognitive strategies in language teaching and learning has attracted considerable attention, particularly in the area of reading comprehension. Huynh (2024) reported that Vietnamese university students demonstrated generally positive attitudes toward metacognitive strategy instruction through the implementation of the CALLA model, although their attitudes remained at a moderate level. Furthermore, Duong and Nguyen (2022) found that the use of metacognitive strategies could improve students' reading comprehension ability, particularly their higher-order thinking skills.

Previous studies have reported similar patterns in students' use of metacognitive reading strategies. Zhang and Wu (2009) found that secondary school students frequently used all three strategy groups, with PROB strategies being the most common and SUP strategies the least common. Likewise, Hong-Nam (2014) reported that PROB strategies were used most frequently, followed by GLOB and SUP strategies. A more recent study by Bantasan (2026) also showed that PROB strategies were the most preferred, while GLOB and SUP strategies were used less often.

2.6. Conceptual Framework

The conceptual framework of this study is grounded in Flavell's (1979) theory of metacognition and the metacognitive reading strategy framework proposed by Mokhtari and Reichard (2002). The framework assumes that metacognitive strategy instruction, implemented through explicit teaching and guided practice of planning, monitoring, and evaluating strategies, can enhance students' awareness and regulation of their reading processes. These strategies are operationalized through three categories of metacognitive reading strategies: Global Reading Strategies (GLOB), Problem-Solving Strategies (PROB), and Support Reading Strategies (SUP). The study suggests that the application of metacognitive strategy instruction influences students' use of these strategies, which in turn improves their English reading comprehension achievement. In addition, students' perceptions of strategy use are considered an important factor reflecting their engagement with the instructional approach. Therefore, the framework examines the relationship between metacognitive strategy instruction, students' metacognitive reading strategy use and perceptions, and their reading comprehension outcomes among Vietnamese LSS students.

2.7. Research Gap and Study Purpose

Although metacognitive reading strategies have been widely recognized as effective tools for improving reading comprehension, relatively little research has examined their implementation in the Vietnamese educational context. Existing studies have primarily focused on upper secondary school and university students, whereas research involving lower secondary school students remains limited. Consequently, little is known about how lower secondary students perceive and use metacognitive strategies during reading activities, leaving a gap in understanding the potential benefits of metacognitive strategy instruction for this learner group. Therefore, the present study seeks to address this gap by investigating the use of metacognitive reading strategies in teaching English reading comprehension to lower secondary school students. Specifically, the study examines (1) the effects of metacognitive strategy instruction on students' English reading comprehension and (2) students' perceptions and practices regarding the use of these strategies.

3. Research Methodology

3.1. Research Design

This research used a quasi-experimental design (Creswell & Creswell, 2018) to

investigate the effects of metacognitive strategy instruction on lower secondary students' reading comprehension. This research design is considered to be appropriate for educational contexts in which random assignment of participants is not always feasible, but comparison between two groups is still possible (ibid). Additionally, this study adopts an explanatory sequential mixed-methods design (Creswell & Clark, 2018), in which quantitative data are collected and analyzed first, followed by qualitative data to explain the quantitative findings. Students' reading comprehension ability is measured through pre-tests and post-tests to examine the effects of metacognitive strategy instruction. After the post-test, a questionnaire is administered to investigate students' perceptions and practices of strategy use, while semi-structured interviews provide deeper insights into their learning experiences and strategy application. This design is optimal thanks to the extension and in-depth analysis of the quantitative statistics through the qualitative dataset (ibid).

3.2 Participants

The convenience sampling (Creswell & Creswell, 2018) was used to select participants for the quasi-experimental research. In the two seventh-grade classes with 76 students at Upper and LSS in An Giang province, they were most readily available for an experimental group (23 males, 15 females) receiving strategy intervention and a control group (18 males, 20 females) following conventional reading instruction. Also, the stratified purposive sampling (Creswell & Clark, 2018) was used to select six participants from the experimental group for semi-structured interviews after the intervention and post-test. Two students who achieved the highest scores (8.0 to 10 points) from the post-test as high-performing readers, two students who got average grades (5.0 to 7.9) as average-performing readers, and two students who got low grades (below 5.0) as low-performing readers took part in the semi-structured interviews face to face.

3.3. Research Instruments

3.3.1. Reading Comprehension Tests

In the present study, reading comprehension tests (RCTs), developed based on the framework proposed by Paris and Jacobs (1984), were used as the primary instrument for measuring lower secondary school students' reading comprehension performance. The RCTs were designed to assess three levels of comprehension: literal, inferential, and evaluative. These levels are closely associated with the cognitive and metacognitive processes targeted by the instructional intervention. To ensure that the tests were appropriate for the students' proficiency level, the reading passages were carefully selected from *Workbook for Developing English Competence Grade 7* (Phan & Nguyen, 2022). The assessment consisted of a pre-test and a post-test, each containing two parallel reading passages ranging from 150 to 200 words in length and a total of 20 comprehension questions, including 18 multiple-choice questions and 2 short-answer questions. Both the pre-test and post-test were designed as classroom-based achievement tests commonly used in Vietnamese lower secondary schools. Each test was scored on a 10-point scale, with each question worth 0.5 points. Students were given 45 minutes to complete the test.

3.3.2. Metacognitive Strategy Questionnaire (MSQ)

This study adopted the Metacognitive Awareness of Reading Strategies Inventory (MARS), developed by Mokhtari and Reichard (2002), as the primary questionnaire instrument to assess students' awareness and frequency of metacognitive strategy use. To ensure its suitability for lower secondary school students, particularly seventh-grade students in the experimental group, the questionnaire was adapted by simplifying the language and administering it in Vietnamese to minimize potential misunderstandings. Previous research

has demonstrated that MARSİ possesses high internal consistency reliability and strong construct validity across different educational contexts, with a reported Cronbach's alpha coefficient of .89 (Mokhtari & Reichard, 2002). Following the original scoring guidelines, mean scores of 3.5 or above indicate a high level of strategy use, scores ranging from 2.5 to 3.4 indicate a moderate level, and scores of 2.4 or below indicate a low level of strategy use.

3.3.3. Interview Protocols

An interview protocol was developed for this study and consisted of three main sections: (1) ice-breaking questions, (2) main interview questions, and (3) closing questions. The main interview section included seven guiding questions accompanied by several open-ended follow-up questions. These questions explored students' experiences with metacognitive strategy use, including planning through global strategies before reading, monitoring through problem-solving strategies during reading, maintaining comprehension while reading, and evaluating through support strategies after reading. In addition, participants were asked about the perceived usefulness and frequency of strategy use, as well as the challenges they encountered when applying metacognitive strategies. The closing section invited students to share suggestions for making English reading lessons more engaging and easier to understand. All interviews were conducted in Vietnamese to ensure that participants could fully comprehend the questions and provide detailed responses (Braun & Clarke, 2013; Dörnyei, 2007). To establish content validity, the interview protocol was reviewed by an expert to assess the relevance and clarity of the questions. Furthermore, the use of consistent interview procedures and coding schemes helped enhance the reliability of the qualitative findings (Patton, 2015).

3.4. Procedures of Data Collection and Analysis

In the present research, data collection was conducted in various phases. Initially, a reading comprehension pre-test was administered to both groups in the first week to measure the baseline equivalence of their initial reading competence. After the six-week intervention, a reading comprehension post-test was carried out to assess the reading outcomes of the experimental group.

The intervention was conducted over a period of six weeks, comprising six instructional sessions of thirty minutes each. During the intervention, the experimental group received explicit metacognitive reading strategy instruction integrated into regular reading lessons, whereas the control group was taught using conventional reading instruction following the prescribed curriculum without explicit strategy training. The intervention focused on three categories of metacognitive reading strategies: Global Reading Strategies (GLOB), Problem-Solving Strategies (PROB), and Support Reading Strategies (SUP). The instructional procedure followed three stages: pre-reading, while-reading, and post-reading. In the pre-reading stage, students activated prior knowledge, set reading goals, and planned their reading approach. During the while-reading stage, they monitored comprehension, identified difficulties, adjusted reading pace, inferred meanings, and applied problem-solving strategies when encountering unfamiliar information. In the post-reading stage, students employed support strategies such as summarizing, discussing, note-taking, and self-questioning to evaluate their comprehension and transfer reading skills to new texts. Throughout the intervention, the teacher explicitly modeled strategy use, provided guided practice and feedback, and gradually encouraged students to apply the strategies independently. This structured instructional process aimed to develop students' metacognitive awareness, self-regulation, and reading comprehension performance.

Following the intervention, a questionnaire was administered to the experimental group

to examine students' awareness and frequency of metacognitive strategy use. The quantitative data collected from the questionnaire were analyzed using SPSS Version 27. Subsequently, semi-structured interviews were conducted with six students selected through stratified purposive sampling (Creswell & Clark, 2018). All interview data were transcribed into English and reviewed several times to ensure accuracy. The transcripts were then coded to identify themes emerging from participants' responses (Creswell & Poth, 2018). These themes were further reviewed and refined through thematic analysis. Data obtained from multiple sources were triangulated to provide rich and nuanced qualitative insights (Tisdell et al., 2025). To ensure ethical compliance, participants' identities were protected through the use of pseudonyms. Throughout the study, all data collection and analysis procedures adhered to ethical research principles, including informed consent, voluntary participation, institutional permission, data integrity, and confidentiality before, during, and after the research process.

4. Findings

4.1. The Results of the Pre-test and the Post-test

Before the intervention, a pretest was administered to measure students' initial reading comprehension ability in both experimental and control groups. The scores were analyzed using an independent-samples t-test in SPSS Version 27. Levene's test indicated that the variances were equal ($p = .231$), indicating that the assumption of equal variances was satisfied. Additionally, an independent-samples t-test indicated no statistically significant difference between the two groups with $t(74) = 0.45$, $p = .650$. The 95% confidence interval (-1.0615, 0.6668), which included zero, further confirmed that there was no significant difference between the two groups. These results indicated that the two groups were statistically equivalent at baseline.

After the intervention, a post-test was conducted in both the experimental and control group. The post-test scores of the two groups were analyzed using descriptive statistics in SPSS Version 27. The results showed that the post-test scores of the experimental group ($M_E = 7.500$) higher than those of the control group ($M_C = 6.368$). The data were also analyzed using an independent-samples t-test as shown in Table 1.

Table 1. Comparison of Post-test Scores between the Two Groups

Post-tests	Levene's Test		T-test for Equality of Means				95% CI		
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error	Lower	Upper
Equal variances	3.278	.074	2.823	74	.006	1.1316	.4008	.3330	1.9302

Table 1 revealed that value $t(74) = 2.823$ and $\text{Sig. (2-tailed)} = 0.006 < 0.01$ affirmed that the difference of the average scores of the post-test between the experimental group and control group was statistically significant. Additionally, 95% CI (0.3330, 1.9302) which did not include 0 showed the evidence that the treatment had a moderate effect. Moreover, the size effect, $\text{cohen's } d = 0.648$ analysed through Independence Sample Effect Sizes posited the treatment was statistically effective both in educational reality and in pedagogical innovation.

The post-test scores of both groups were compared with those of the pre-test through Paired Sample Test. For the experimental group (Pair 1), the mean of $-1.4079 < 0$, high $t(37) = -8.807$ and $\text{Sig. (2-tailed)} = .000 < 0.001$ proved that the experimental members had the great

and even enhancements. Also, 95% CI (-1.7318, -1.0840) which did not include 0 posited a great effectiveness of metacognitive reading strategy intervention, which helped increase the participants' outcomes. On the contrary, the control groups' lower mean (-0.0789), 95% CI (-.5070, .3491) including 0 and value Sig. (2-tailed) of $p = 0.711$ evinced that the post-test improvements of the control group was not statistically significant.

4.2. Questionnaire Survey Results

The questionnaire was administered to the seventh-graders and demonstrated good reliability, with a Cronbach's alpha coefficient of 0.809. The descriptive statistics showed that the strategies were rated at a high level ($M > 3.5$), especially (G1) setting goals (4.32), (14) reading slowly and carefully when the text was difficult (4.42), (P16) concentrating more (4.03), and (S26) using reference materials (4.05). The findings indicated that the participants perceived the importance of these strategies ($M > 3.5$, $SD < 1.0$) as useful tools for improving reading comprehension. On the other hand, ten strategies were rated at a moderate level from 2.5 to 3.4, particularly (G6) deciding what to read carefully and what to pay less attention to (3.42), (P15) picturing or visualizing what was being read (3.11), and (S29) reading aloud (2.82), and only (G4) using pictures, tables, or charts received a low mean score of below 2.5. This manifested that the readers did not make full use of these strategies, or their perceptions and application of these strategies were limited. However, the SD of G10, G11, P21, P22, S26, S27 were still higher than 1.0. This reflected differences among students in strategy use.

The average levels of the employment of the total strategies and each strategy group were shown in Table 2.

Table 2. The Frequency of Metacognitive Reading Groups

Strategy	N	Mean	Std. Deviation
Global Reading Strategy	38	3.50	0.95
Problem-solving Reading Strategy	38	3.72	0.94
Support Reading Strategy	38	3.34	0.96
Total	38	3.51	0.95

As shown in Table 2, the participants reported a high level of metacognitive reading strategy use ($M = 3.51$, $SD = 0.95$). The findings indicate that the students developed a high level of awareness of metacognitive reading strategies after the intervention, as many strategies obtained mean scores above 3.5. This result suggests a relatively frequent use of metacognitive reading strategies among the participants. Among the three strategy categories, Problem-Solving Strategies (PROB) were used most frequently ($M = 3.72$, $SD = 0.94$), followed by Global Reading Strategies (GLOB) ($M = 3.50$, $SD = 0.95$). Support Reading Strategies (SUP) were used least frequently ($M = 3.34$, $SD = 0.96$). These findings highlight the important role of problem-solving strategies in helping students overcome reading difficulties and regulate their reading process. Overall, the results suggest that the participants tended to rely more on strategies that directly supported text comprehension, particularly when dealing with challenging passages. They actively adjusted their reading behaviors and cognitive processes to understand difficult texts rather than giving up or skipping unfamiliar information. At the same time, the use of support strategies indicates that students also employed additional resources and techniques to facilitate comprehension.

4.3. The Results of the Semi-structured Interviews

After the semi-structured interviews were completed, the Vietnamese audio recording

data were transcribed, translated into English, and reviewed to ensure accuracy and consistency. The thematic analysis was conducted by combining deductive coding and inductive theme development to explore how students use the strategies in EFL reading comprehension and to identify the students' practical perceptions and experiences in the context of the research.

The deductive codes were formed in line with the theoretical framework of metacognitive reading strategies. The researcher assigned codes to meaningful segments during the transcripts to identify patterns and levels of strategy use of students with different levels of reading achievement, as shown in Table 3.

Table 3. Deductive Coding Framework

Deductive codes	Sub-codes		
General experience and attitudes	- happy - interested - motivated	- bored - tired	- pressured - confused
Planning (Global strategies used before reading)	- Setting reading goals - Looking through the text to find organization - Activating prior knowledge		
Monitoring (Problem-solving strategies during reading)	- Pausing to think - Guessing the meanings of unfamiliar words from contexts	- Re-reading - Adjusting the speed or strategies	
Evaluating (Support strategies after reading)	- Using a dictionary - Discussing with others	- Self-questioning - Summarizing	

After the deductive coding, the inductive theming took place to explore the emerging themes from the interview data without focusing on the original theoretical framework of the research. The researcher read the transcripts again, compared the codes, and grouped them into broader themes. These themes were checked and compared to the entire data to ensure the consistency and typical citations for the demonstration as follows:

Theme 1: Students' Awareness and Attitudes

The semi-structured interviews clarified the participants' increased awareness and positive attitudes towards metacognitive reading strategy intervention. The high-performing readers felt interested, positive, and confident. HS1 replied, "I found it interesting to apply reading skills and metacognitive strategies in reading lessons easily and effectively." And, the low-performing students held initially positive attitudes, which might change when encountering difficult texts. HS4 stated, "At first, I was bored with too many new words, but later, when taught how to apply metacognitive strategies in reading lessons, I felt more engaged in the reading lessons and found it effective to use these strategies." However, the findings revealed that the low-performing students lacked confidence and felt pressured. HS6 highlighted, "At first, I was bored due to too many new words and an uninteresting topic, but later I felt more motivated when I learnt more vocabulary and began to know how to use the reading skills, especially metacognitive strategies." Overall, the participants' confidence in metacognitive strategy use directly depended on their capacity to apply these strategies effectively during reading tasks.

Theme 2: Perceived Usefulness and Strategy Use

The participants started to develop a systematic habit of strategy use through three stages due to the perceived usefulness of these strategies. In the pre-reading stage, they could utilize several strategies such as setting goals, skimming for organization, observing titles or pictures, etc. HS1 said, “Before reading, I usually look through the text to realize its organization and get the overall idea of what it is about.” In the while-reading stage, the high-performing students and average-performing students tended to use problem-solving strategies most often to monitor their comprehension and overcome reading difficulties. HS2 replied, “I used the strategies, including guessing the meanings from the context, reading carefully, or changing strategies most often to increase my understanding,” and HS3 admitted, “I utilized the problem-solving strategies such as reading carefully, adjusting my reading speed, and guessing the meanings of the words from contexts most often.” In the post-reading stage, summarizing, self-questioning, or discussing were often used for evaluation. In general, the students employed the strategies proactively and flexibly from the pre-reading stage to the post-reading stage.

Despite the attempts to employ a number of metacognitive strategies, some low-performing students did not get high reading test scores. In the pre-reading stage, they used pictures to identify what the text is about, to skim for main ideas, or to set reading goals to find the answers. HS5 said, “Before reading the text, I often look at the pictures, skim the text to predict what it was about and set the reading goals to find out the main ideas, specific information and to answer the questions”. When having difficulty in understanding the text, students used several metacognitive strategies, including guessing the meanings of the unknown words, pausing, reading aloud as HS6 admitted “I paused and tried to figure out the meanings of difficult words or sentences from 5 to 10 seconds and tried to guess the meanings”. After reading, students often wrote a summary in their own words or discussed the reading topics with other students.

4.4. Data integration

The three sources of data collected from RCT, MARSII, and interviews were integrated for triangulation to provide a comprehensive picture of the strategy used to teach lower secondary students reading comprehension. The results of the post-test showed a significant improvement in scores or reading achievement of the experimental group, which was supported by the qualitative data from the semi-structured interviews. Most of the students confirmed that the utilization of metacognitive strategies helped them do the reading questions more effectively and interpret the text more easily. The gains in reading achievement were clearly explained by positive changes reported in the interviews in terms of learning attitudes towards metacognitive strategies. They shared the effectiveness of reading lessons as a result of strategy use and admitted the gradual positive changes in reading lessons. On the other hand, the data from the questionnaire revealed that the PROB was used most frequently, which was further confirmed by the interviews. All of the students demonstrated their behaviors, such as reading slowly, guessing the meanings from contexts, or pausing to think when they encountered difficulties. Another important finding was that the least frequently used support strategies in the MARSII, especially rewriting in their own words or writing a summary, were consistent with the reason why it was time-consuming and too demanding under test conditions, as shown in the interviews. Nevertheless, according to the interviews, low-performing participants tended to use the SUP, namely, using reference materials and discussing with others, most often. These strategies helped them understand the text and the questions as well as find the answers more efficiently. This result contradicted the questionnaire findings showing low use of SUP strategies, but it was consistent with these

students' lower reading achievement on the post-test. This may be because students were not allowed to use dictionaries and discuss with other test-takers during the test or examination.

5. Discussions

5.1. Enhancements of Students' Reading Comprehension

The present study demonstrated that explicit metacognitive strategy instruction contributed to improvements in students' reading comprehension by providing systematic guidance on how to apply reading strategies effectively. Quantitative findings revealed gains in students' reading comprehension performance following the intervention. These results were further supported by questionnaire and interview data, which indicated that students actively employed metacognitive strategies during the reading process. Together, the findings suggest that integrating metacognitive strategies into explicit reading instruction can enhance lower secondary school students' comprehension and support the development of more effective reading practices. This finding is consistent with the quasi-experimental study conducted by Duong and Nguyen (2022), which involved participants aged 12 to 15 years in a similar lower secondary school context. Their study likewise concluded that metacognitive reading instruction helped students become more active, self-regulated, and strategic readers.

5.2. The Frequency and Awareness of Metacognitive Strategy Use

The findings showed that the LSS students were more aware of metacognitive strategy use in their reading lessons. The quantitative data from the questionnaire showed the high-frequency level of the overall strategies. The results matched the significant improvement of the post-test scores in the experimental group. The students were highly aware of the employment of metacognitive strategies in order to facilitate deeper comprehension. The high-performing students expressed their confidence in interacting with and understanding the text. These results were in line with the study of Mokhtari and Reichard (2002).

The findings also revealed that students used metacognitive strategies at varying levels. Among the three categories of strategies, Problem-Solving Strategies (PROB) were used most frequently, indicating that participants were relatively effective in addressing comprehension difficulties encountered during reading. Global Reading Strategies (GLOB), which help readers plan and manage the reading process, ranked second in frequency of use. In contrast, Support Strategies (SUP) were used least frequently, suggesting that students may require additional explicit instruction and practice in applying these strategies. This finding is consistent with Bantasan (2026), who reported that frequent use of problem-solving strategies reflects a higher level of metacognitive awareness and active regulation of reading comprehension. Furthermore, interview data provided additional insights into students' strategy preferences. Most participants reported regularly employing problem-solving strategies, such as reading more slowly and carefully and inferring word meanings from contextual clues when texts became challenging. Notably, high-performing and average-performing students tended to rely on contextual clues to infer the meanings of unfamiliar words more frequently than low-performing students. The interview findings also indicated that students recognized the value of metacognitive strategies and generally held positive attitudes toward reading tasks and classroom reading activities. These findings support the view that metacognitive strategies can enhance students' engagement in reading activities and contribute to more effective reading experiences (Dinh & Vu, 2022).

There were several reasons why the problem-solving strategies were used the most frequently. Firstly, this could be explained by the fact that these strategies were activated right as the students encountered difficulties such as new vocabulary, complicated structures and information, and focus loss. Therefore, these strategies were used more frequently as they met

students' immediate comprehension needs. For instance, a student did not know the new word, but he or she could guess its meaning from the specific context rather than stopping reading. In addition, reading comprehension is an interactive process in which a reader handles linguistic information in a text through background knowledge and monitors and regulates comprehension (Grabe & Stoller, 2019). When comprehension was interrupted, the PROB played an important role as a repair mechanism in reading comprehension to help students restore their meaning-making processes by reading again, adjusting reading speed, and paying more attention. Furthermore, the students applied the PROB at any time, particularly during the tests when dictionaries and discussions were not allowed.

6. Conclusions

The present research sheds light on the positive effects of metacognitive strategy use to teach EFL lower secondary students reading comprehension. The frequent strategy use contributed to students' improvements in reading comprehension. The findings from the RCT and questionnaire indicated a significant increase in students' reading scores and the high-frequency level of strategy use. The semi-structured interview data clarified the positive changes in students' attitudes from the passive state or exhausting feeling to positiveness, confidence, or motivation towards the reading lessons, activities, and tests when obstacles such as new words occurred. They were conscious of taking advantage of metacognitive reading strategies proactively to plan, monitor, and evaluate their reading process for fostering their reading comprehension.

Additionally, the findings showed the different frequency levels of the strategy use. Among the three groups, the problem-solving strategies were used most frequently to deal with the unfamiliar vocabulary. The SUP was the least preferred, which indicated students' insufficient effort to evaluate their reading process. It was suggested that the integration of more explicit metacognitive reading strategy instruction should be considered.

7. Limitations

Despite achieving its research objectives, this study has several limitations that should be acknowledged. *First*, the sample was limited to a relatively small group of students from a single lower and upper secondary school, which may restrict the generalizability of the findings to other educational contexts. *Second*, the six-week intervention period was relatively short and may not have provided sufficient time for students to fully internalize and autonomously regulate their use of metacognitive strategies. *Finally*, challenges associated with the application of metacognitive reading strategies were not explored in depth as part of the qualitative analysis. These factors may have influenced the findings and should be taken into consideration when interpreting the results.

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