EFFECTS OF COGNITIVE READING STRATEGY TRAINING ON READING PERFORMANCE OF EFL STUDENTS: A CASE OF A HIGH SCHOOL IN VIETNAM

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Abstract

Reading can be seen as an essential skill that language learners need to be good at, for it is one of the means of transferring many pieces of valuable knowledge in many fields of the world to many people and nations. One of the common barriers for many Vietnamese students studying English as a Foreign Language to acquiring reading skills is reading anxiety. For years, various researches have been conducted to test the effectiveness of students' using cognitive reading strategies and of teachers' reading strategy instruction to improve students' performance in class. The present study aims to find out the effects of cognitive reading strategy training on Vietnamese EFL students' reading performance in an upper secondary school in Vinh Long province, Vietnam. Furthermore, this study aims to find out students' perceptions on the effectiveness of the training session in their use of cognitive reading strategies. The two groups, including 32 students in the experimental group and 37 students in the control group, participated in the study. The study utilized a mixed-method approach in which both qualitative and quantitative data from the questionnaire and interview were collected. The results from the data indicated that via cognitive reading strategy instruction, EFL students in the educational setting achieved a significant improvement in reading comprehension and they also had positive perceptions on the necessity of cognitive reading strategy training.

Keywords: Cognitive reading strategies; Cognitive reading strategy instruction/training; EFL students; Perceptions.
HUỘNG DẪN CÁC CHIẾN LƯỢC ĐỌC CÓ ÂNH HƯỞNG DỄN VIỆC CẢI THIỂN KẾT QUẢ LÀM BÀI ĐỌC CỦA HỌC SINH TRÊN LỚP: NGHIỆN CÚU TẠI MỘT TRƯỜNG PHÔ THÔNG TRUNG HỌC Ở VIỆT NAM

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Tóm tắt
Đọc là một kỹ năng quan trọng mà người học cần phải đạt được. Vi néu đọc giỏi, người học có thể lĩnh hội được nhiều tri thức về nhiều lĩnh vực khác nhau của các dân tộc và quốc gia trên thế giới. Lo lắng khi đọc là một trong những vấn đề thường gặp trong quá trình học tiếng Anh của nhiều học sinh ngôn ngữ, điều đó đã gắn can việc tiếp thu ngôn ngữ nước ngoài của họ. Nhiều năm qua, một số bài nghiên cứu được tiến hành đã chỉ ra hiệu quả của việc sử dụng các chiến lược đọc nhận thức và hướng dẫn các chiến lược đọc cho sự cải thiện về kết quả làm bài đọc của học sinh trên lớp. Nghiên cứu này nhằm làm rõ về ảnh hưởng của việc rèn luyện sử dụng các chiến lược đọc nhận thức lên khả năng làm bài của học sinh ngôn ngữ ở một trường Cập ba của tỉnh Vĩnh Long, Việt Nam. Thêm vào đó, mục đích của bài nghiên cứu còn nhằm xem nhận thức của học sinh về sự hiểu quả từ việc rèn luyện sử dụng các chiến lược đọc nhận thức. Hai nhóm, gồm 32 học sinh ở nhóm thực nghiệm và 37 học sinh ở nhóm đối chứng, đã tham gia vào cuộc khảo sát. Bài nghiên cứu sử dụng cả hai phương pháp định tính và định lượng để thu thập số liệu. Kết quả từ số liệu cho thấy có sự cải thiện tổng quát trong việc đọc hiểu của học sinh và có được nhận thức tích cực về việc rèn luyện cách sử dụng các chiến lược đọc nhận thức.

Từ khóa: Chiến thuật đọc nhận thức; Học sinh ngôn ngữ; Hướng dẫn chiến lược đọc nhận thức; Nhận thức.
1. INTRODUCTION

It is obvious that EFL (English as a Foreign Language) students need to equip themselves with appropriate reading skills in English to succeed in their four-year university education (Zare-ee, 2007). According to the National Foreign Language 2020 Project of Vietnam, EFL students’ proficiency from primary education (grade 3) to upper secondary education (grade 12) should be at A1 to B1 level CEFR (MOET, 2014). A1 is the beginning level and B1 displays the characteristics of intermediate one. It means that it is necessary for not only undergraduates but lower and upper secondary school students to reach a required level of reading skills. To respond to this necessity, several practical learning strategies have been provided by EFL teachers and one of them is about cognitive reading strategies. In other words, the responsibility of EFL teachers is to make their students aware of deploying an appropriate strategy to achieve the best result. Although language learning strategies have often been developed, there is a limited amount of research on training strategies. Cognitive reading strategies emphasize the importance of readers’ background knowledge of the topic in the reading process so that they can make use of both the relevant information in the text and their background knowledge (Carrell & Eisterhold, 1983). In addition, theoretical and empirical studies tend to show conflicting perspectives and findings about the effectiveness of reading strategies. Due to a lack of studies on the effects of using reading strategies in the context of EFL students in upper secondary school in Vietnam, this study, therefore, aims at discovering students’ perceptions on the necessity of cognitive reading strategy training and the effects on their reading performances. Two major research questions were carefully investigated: i) What are the effects of cognitive reading strategy training on EFL students’ performance in reading class? and ii) What are EFL students’ perceptions on the necessity of cognitive reading strategy training?

2. LITERATURE REVIEW

2.1. Definitions of reading

In 1942, the structural linguist Bloomfield defined the term “reading” as an action process in which readers identify the language signs in written texts. However, since the 1960s, the attention of researchers has been shifted away from basic skills of recognizing words toward more advanced comprehension skills. In other words, reading is far more than an automatic process of identifying language symbols. Artley (1961, p. 1) described reading as “the act of reconstructing from the printed page the writer’s ideas, feelings, mood, and sensory expression”. Likewise, the reading process, which is called “reading for meaning” or “reading comprehension” by Nuttall (1996), is the transferring of message from the writer to the readers. As stated by Kustaryo (1988, p. 21),

Reading comprehension means understanding what has been read. It is an active thinking process that depends not only on comprehension skill but also the students’ experience and prior knowledge comprehension involving understanding the vocabulary, seeing the relationship among words and
concepts, organizing and recognizing author’s ideas, making judgment, and evaluating.

It can be understood that if students do not comprehend what was presented in the material, they cannot catch the idea of the writer through reading. According to Block, Gambrell, and Pressley (2002), reading comprehension is the special thinking process which is used to make sense of what readers read. Comprehending texts is the ultimate goal of reading. As the National Institute of Child Health and Human Development (2000) directly points out, “Reading comprehension has come to be the essence of reading” and if the part “comprehension” does not occur, reading is reduced to a mechanistic and meaningless skill (Oberholzer, 2005, p. 22). For that reason, to engage in reading comprehension effectively, students need to be equipped with effective strategies to help them develop their reading competency. Rupley, Blair, and Nichols (2009) claimed that comprehension is facilitated when readers use strategies. However, Bazerman (1985); and Pressley and Afflerbach (1995) reported that successful comprehension does not occur automatically but depends on directed cognitive effort consisting of knowledge about and regulation of cognitive processing.

2.2. Definition of “cognition”

According to the Houghton (2019), cognition is, firstly, defined as the mental process of knowing, including aspects such as awareness, perception, reasoning, and judgment. It is, secondly, defined as the process that comes to be known, as through perception, reasoning, or intuition. Cognition is not merely a process, but a “mental” process. Neisser (1967) argued that cognition indeed refers to the mental process by transforming, reducing, elaborating, storing, recovering, and using external or internal input. It involves a variety of functions such as perception, attention, memory coding, retention, recall, decision-making, reasoning, problem solving, imaging, planning, and executing actions. Such mental processes involve the generation and use of internal representations to varying degrees and may operate independently (or not) at different stages of processing.

2.3. Cognitive reading strategies

The term cognitive strategies, according to O'Malley and Chamot (1990), is more directly related to individual learning tasks and entails direct manipulation or transformation of the learning material. Whereas cognitive reading strategies are defined as the localized techniques utilized by readers while working directly with the text, especially when it becomes difficult (Sheorey & Mokhtari, 2001, p. 436). Some typical examples are changing reading speed, inferring from context, re-reading for better comprehension, etc. This definition is very similar to the concept of problem-solving strategies suggested by Mokhtari and Reichard (2000). Some new strategies were identified and some were not exactly the same as those defined by O'Malley and Chamot (1990). Some of these cognitive reading strategies have also been identified by Ghonsooly (1997) as follows Table 1.
| Strategies                                      | Definitions                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| i. Using background knowledge                  | Refers to using knowledge about the world and the contents of the text that contribute to understanding and processing the text. This strategy is quite similar to what O’Malley and Chamot (1990) call “elaboration”.                                                                                                                                  |
| ii. Prediction                                  | Refers to predicting the content of the text based on the information presented in a part of the text.                                                                                                                                                                                                                                           |
| iii. Repetition to get the meaning of the word  | Occurs when the reader repeats a word or a phrase in order to remember or retrieve the meaning from long-term memory.                                                                                                                                                                                                                                  |
| iv. Paraphrase                                  | Refers to the reader’s attempt to either provide synonyms and antonyms for a word or restating the contents of a sentence in his own words.                                                                                                                                                                                                        |
| v. Inference                                    | Refers to using the context or the knowledge of suffixes and prefixes to guess the meaning of an unknown word.                                                                                                                                                                                                                                        |
| vi. Inference (reprocessing to get the meaning of a word) | Refers to the act of rereading a phrase, a clause, or a sentence in order to infer or guess the meaning of an unknown word.                                                                                                                                                                                                                  |
| vii. Translation                                | Refers to using L1 to provide equivalents for a word or stating the contents of a sentence.                                                                                                                                                                                                                                                    |
| viii. Watchers                                  | Refers to reader’s attempt to keep an unfamiliar item or vocabulary word in mind to be tackled later on by getting help from incoming information.                                                                                                                                                                                                  |
| ix. Using a dictionary                          | Refers to the simple act of referring to a dictionary to look up the meaning of an unknown word. This strategy corresponds to what O’Malley and Chamot (1990) call resourcing.                                                                                                                                                                        |
| x. Decoding                                     | Refers to breaking a word into syllables in order to pronounce the word more easily or to process its meaning. This strategy is often followed by a repetition of the word.                                                                                                                                                                       |
| xi. Word identification based on phonological similarity | Refers to the reader’s attempt to get the meaning of an unknown lexical item by comparing it to its closest possible neighbor, which bears some phonological similarity.                                                                                                               |
| xii. Grammatical analysis                       | Refers to using the knowledge of grammar to interpret and understand a word, a phrase or a sentence. This strategy corresponds to what O'Malley and Chamot (1990) call deduction.                                                                                                                                 |
| xiii. Imagery                                   | Refers to using visual images and visualizing the content of a text in order to understand.                                                                                                                                                                                                                                                      |
The training of reading strategies for this study concentrated only on four strategies: Using background knowledge, inferring, predicting, and paraphrasing. Firstly, these strategies are frequently needed to encode the meaning of the writers when students are doing IELTS reading comprehension questions. Secondly, time limitation did not allow the researchers to introduce all the strategies. Thirdly, the researchers were afraid that if many strategies had been introduced simultaneously, these high school students might have been unable to apply all of them during their reading tasks and this might have caused a counter-effect.

2.4. Cognitive reading strategy instruction in English reading class

Teachers play an integral role in EFL contexts and learners accept the teacher as a model (Fillmore, 1991 & Oxford, 1990). Therefore, the teacher is responsible for the training of the learners on how to use their resources in the process of language learning in the best and appropriate way. When the reading strategies are outlined by good readers, teachers can use them to motivate poor readers; Thereby helping them learn more effectively (Hosenfeld, 1979). Block (1986) supports the idea that reading strategies help learners to execute a task in which they have to identify which textual cues they will use to make sense of what they read and help to know what to do when they have problems comprehending the text. The reading strategies involved in this process range from the simplest, such as guessing word meaning, or predicting, to the most complex including paraphrasing or making inferences. Strategy instruction was found to positively affect both reading performance and strategy use of language learners of varying abilities (Anderson, 1991 & Muñiz, 1994). Anderson (1991) claimed that after instructing strategies in various contexts, students were found to use similar strategies in a standardized reading test and an academic test. He reported that after teaching a wide array of strategies, successful readers know which strategies to use in given contexts and how to use them effectively with other strategies.

2.5. Awareness of using strategy

Due to the amount of information in the classroom, EFL learners are required to use various learning strategies in order to complete the tasks or to process the new inputs. According to Fedderholdt (1997), the language learners, who are able to use different language learning strategies appropriately, can perform their language skill in a better way. That is to say, language teachers can rely on learners’ use of language strategies in an unconscious way to check the process of assessing, planning, selecting appropriate skills, understanding or remembering the new input of their students. Consciousness-raising skills in language learning provide specific methods to increase learners’ awareness of their goals, motives, applied strategies, and actions in the pursuit of a systemic change (Huang, 2010). This assumption is especially true for reading comprehension which is the process of generating, negotiating, revising interpretations, and understandings within a community of readers. Explicit instruction focuses on a strategy, practice, or a particular aspect of the reading process. Moreover, Swan (2008) suggested that EFL teachers need to use problem-solving oriented strategies in their classrooms to catch students’ conscious attention.
3. METHODOLOGY

3.1. Participants

This study population consists of 69 upper-secondary students at grade 11 in a public upper-secondary school in Vinh Long province. The students were divided into an experimental group of 32 students and a control group of 37 students. The current English textbook was Tieng Anh 11 (new version). Although this study employed mixed methods to balance the pros and cons of both quantitative and qualitative approaches, there are two main limitations to be considered. Firstly, this research may be subject to the risk of biased results, as the surveyed sample in both groups was different (with 32 students in the experimental group versus 37 students in the control group). Moreover, the distribution of the school's pilot program led to the selection of the current participants of the study. At that time, there was only one tenth grade class of 34 students taught with the pilot textbook “Tieng Anh 10”. If the students were divided into two groups, the result would not be statistically valid. In addition, although grade 12 has two classes taught with the pilot textbook, they were unable to participate in the study due to their hectic schedule preparing for the final semester tests. Therefore, grade 11 was the best choice.

3.2. Cognitive reading strategy training

The experimental group was trained in using four reading strategies: Using background knowledge, inferring, predicting, and paraphrasing before finding answers for the comprehension questions. Some randomly selected readings were adopted from “Basic IELTS Reading” textbook by Yang (2010) to instruct the experimental class and the topics were similar to those in the students’ textbook (Tieng Anh 11). The level of these reading tests is at low intermediate corresponding to that of the current participants. By contrast, the control group did not receive any reading strategy instruction. Below is the sample of the 90-minute lesson plan for both groups, using Tieng Anh 11 (new version textbook), Unit 1 - Reading (pages 10-11). Each unit has two reading passages and each group was taught four units during the intervention.
Table 2. A sample lesson plan for both groups

| Experimental group | Control group |
|--------------------|---------------|
| **Warm up** (5 minutes) | **Warm up** (5 minutes) |
| The teacher checks the previous grammar lesson. | The teacher checks the previous grammar lesson. |
| **Reading 1**: Where do conflicts come from? | **Reading 1**: Where do conflicts come from? |
| **Pre-reading** (10 minutes) | **Pre-reading** (10 minutes) |
| - The teacher stimulates the students’ knowledge based on the reading title (and elicits them to answer some questions related to conflicts in the family). The students give free responses. | - The teacher reads the reading instruction in the textbook without stimulating the students’ prior knowledge. |
| - The teacher goes through a pre-teach vocabulary, which helps the students better comprehend the text. | - The teacher then asks them to do task 1 in the textbook before reading the text. |
| **While-reading** (10 minutes) | - The teacher goes through a pre-teach vocabulary, which helps the students better comprehend the text. |
| Before letting the students read the text, the teachers explain to the students the necessary strategies below: | **While-reading** (10 minutes) |
| - The teacher asks students not to stop while they are encountering new words; instead, use prediction and inference strategy to guess the meaning. | - The teacher asks them to read the text to answer the comprehension questions in activities 3 and 4. |
| - The teacher also asks the students to attend to the meanings of both the given comprehension questions and the text instead of looking for exact words, phrases appeared in the text (Paraphrase). | Post-reading (10 minutes) |
| **Post-reading** (10 minutes) | - The teacher finally has the students work in pairs to talk about their conflicts with their parents or siblings. |
| - The teacher gives feedback to the comprehension questions. | Further practice (25 minutes): The teacher asks the students to translate some points in the reading passage that gives the answers to the questions. The purpose is to see if the students understand the text and the questions. |
| - The teacher finally has the students work in pairs to talk about their conflicts with their parents or siblings. | The teacher helps the students when in need and then asks them to take notes of new words and structures that are useful. |
| Further practice of cognitive reading strategies (25 minutes). | **Reading 2**: Culture - The return of the extended families in the UK and USA |
| One reading passage was extracted from “IELTS Reading” textbook by Yang (2010) to have the experimental group practice the strategies. | The process of teaching happens similar to that of Reading 1. |
| The students are asked to read silently and use the strategies to find relevant answers. | Pre-reading (10 minutes) |
| Then the teacher gives feedback and sees how each strategy works for each relevant answer. | While - reading (10 minutes) |
| **Reading 2**: Culture - The return of the extended families in the UK and USA | Post-reading (10 minutes) |
3.3. Instruments

3.3.1. Questionnaire

The questionnaires of cognitive reading strategies were delivered to both groups of the students twice, one before the teaching of reading and the other after the teaching of reading for the two groups. The questionnaire has 16 questions adapted from the Survey of reading strategies by Sheorey and Mokhtari (2001). This questionnaire has the reliability index of 0.78, obtained from through Cronbach’s Alpha (of a measure of homogeneity), for the first time (prior to the intervention) and the reliability index of 0.79 for the second time (after the intervention). The purpose of this questionnaire is to demonstrate what cognitive reading strategies the students were taught in class and which strategies they applied most and least frequently. The participants were asked to read each item and rate their frequencies of using the corresponding strategy on a Likert scale ranging from 1 (never) to 5 (always). The participants were told to give free responses to the items. To ensure understanding, all of the items were written in both English and Vietnamese. For analysis, 16 items were classified into four sub-categories in accordance with four cognitive reading strategies: Using background knowledge, predicting, inferring, and paraphrasing (four items for each sub-category). The expectations are that when students are able to activate their “background knowledge”, meaning they can connect what they have already known to the reading text, the process of comprehending the text becomes easier. For the second type of reading strategy – “predicting”, Palinscar and Brown stated that this strategy is to “make educated predictions of subsequent points that will be addressed in the text. Readers get feedback when they discover if their predictions are substantiated” (Magliano, Little, and Graesser, 1993, p.53). The third type is “inferring” which is sometimes referred to as “reading between the lines”. It requires readers to use what they have already known based on their personal experiences and knowledge and the clues provided in the text to help them figure out some of the conveyed meanings by the author. However, based on the definition of cognitive reading strategy by Ghonsooly (1997), the definition of inferring is somewhat similar to the strategy “guessing the meaning of new words”. The fourth strategy is “paraphrasing”. This strategy refers to the readers’ attempt to provide synonyms or antonyms for a word or sometimes to restate the content of the text in their own words. The description for “paraphrasing” by Ghonsooly (1997) is somewhat similar to the “summarizing” strategy.

3.3.2. Reading comprehension tests

The same two reading comprehension tests were administered to the participants of both the experimental group and the control group twice, one for the pre-test and the other for the post-test at the end of the intervention. Some randomly-selected readings were adopted from the “Basic IELTS Reading” textbook by Yang (2010). The level of these reading tests is at the low intermediate level corresponding to that of the current participants. The reading passage for the pre-test and post-test contains about 320 to 350 words. Each test has 16 questions including multiple choice items, short-form answers, gap-filling, and True/False statements. The questions in the reading tests required the
students to apply at least one of the reading strategies to their answers. The students had 45 minutes to answer all the 16 questions. Each correct answer received 0.625 point. The minimum score for the test is zero and the maximum score is 10. The test results from the tests are intended to indicate the students’ performance of reading comprehension performance when using cognitive reading strategies by the students.

3.3.3. Interview

In order to enhance the reliability of the study results, six students from the experimental group were chosen for semi-structured interviews to gather some additional qualitative data. The purpose of this step was to gain more insights from individual evaluations of the training session, and by giving students an opportunity to self-evaluate their process and development. The students were asked whether they were familiar with these cognitive reading strategies before instruction, whether the researcher’s modelling of the strategies helped them follow the strategies more easily, which strategies they found most useful and how they felt about the effects of the strategy instruction session on their reading comprehension performance. The interviewees were asked five open-ended questions adapted from Soonthornmanee (2002): i) What do you think about the training for using cognitive reading strategies? ii) Do you think this training can help you improve reading? Why or why not? iii) Do you think your reading ability has improved after the training session? iv) What do you like most about this training? and v) What do you dislike most about this training? To ensure understanding, the interviews were conducted in Vietnamese.

4. FINDINGS AND DISCUSSION

4.1. Questionnaire analysis

The questionnaire consists of sixteen items with five levels of choice per item, 1 - Never; 2 - Rarely; 3 - Sometimes; 4 - Usually; and 5 - Always. MEAN_T1 stands for the mean frequency of using reading strategies before the intervention and MEAN_T2 stands for the mean frequency of using cognitive reading strategies after the intervention.

As seen in Table 3, before the training session, the mean value of the experimental group is ($M=3.0$) while that of the control group is slightly higher ($M=3.4$). An independent sample t-test was run to check whether students’ level of using all four cognitive reading strategies in the experimental group ($M=3.0$ and $SD=0.5$) is statistically different from the level of using strategies in the control group ($M=3.4$, $SD=0.5$). The results showed a significantly statistic difference between the experimental group and the control group was observed ($t=-3.62$, $df=67$, and $p=0.01$).
Table 3. Students’ mean frequency of using all four cognitive reading strategies before and after the intervention

|                        | Experimental group (32 students) | Control group (37 students) |
|------------------------|----------------------------------|-----------------------------|
|                        | MEAN_T1  | Level of use | MEAN_T1  | Level of use |
| Before                 | 3.0      | Sometimes   | 3.4      | Sometimes    |
| After                  | 3.3      | Sometimes   | 3.3      | Sometimes    |

Table 4 shows that students in the experimental group reported applying less frequency of all four cognitive reading strategies than those in the control group. The results from the independent sample t-test indicated that the frequency of using the four strategies in the experimental group was statistically different from that of the control group before the intervention session (p≤0.05) for the first (knowledge use) strategy. The second strategy, predicting, received a value of 3.3 indicating “sometimes” (Table 2) in the experimental group while received a value of 3.8 indicating for level of frequency in the control group. Moreover, for the third and fourth strategy, inferring and paraphrasing, the mean values in the experimental group were in the range from 2.5 to <3 in line with an “occasionally” level while it was a “sometimes” level of use in the control group. It means that prior to the intervention, the students in the control group reported a statistically higher level of using the four reading strategies in the control group. After four weeks of training with cognitive reading strategies, the questionnaire was delivered again for data collection. Table 3 shows that the same students’ mean frequency of using all four cognitive reading strategies after the intervention for both groups. To check whether there was any statistical difference, an independent sample t-test was run, and the results indicated that no significantly statistic difference was observed (t=-0.18, df=67, and p=0.85).

Table 4. Students’ mean frequency of each cognitive reading strategy used by both groups before the intervention

| Strategy                | MEAN_T1  | t   | df | P   |
|-------------------------|----------|-----|----|-----|
|                         | Experimental group | Control group |       |
| Background knowledge    | 3.0      | 3.4 | -1.90  | 67 | 0.05 |
| Predicting              | 3.3      | 3.8 | -2.30  | 67 | 0.02 |
| Inferring               | 2.8      | 3.2 | -2.50  | 67 | 0.01 |
| Paraphrasing            | 2.7      | 3.2 | -2.60  | 67 | 0.01 |
Table 5. Students’ mean frequency of each cognitive reading strategy used by both groups after the intervention

| Strategy             | Experimental group | Control group | t     | df | P  |
|----------------------|--------------------|---------------|-------|----|----|
| Background knowledge | 3.5                | 3.4           | 0.17  | 67 | 0.8|
| Predicting           | 3.7                | 3.6           | 0.40  | 67 | 0.6|
| Inferring            | 3.0                | 3.0           | -0.30 | 67 | 0.7|
| Paraphrasing         | 3.0                | 3.2           | -0.80 | 67 | 0.4|

The level of using all four cognitive reading strategies in the two groups after the intervention was the same ($p>0.05$). Since there was a statistical difference in the mean frequency in both groups before the intervention but no difference in the mean frequency after the intervention was observed, a paired sample t-test was run in each group to examine if there was any improvement. The results indicated that the mean frequency of using strategies in the experimental group was statistically different before and after the intervention ($p=0.045$, $t=-2.1$, and $df=31$) while the mean frequency in the control group showed no difference ($p=0.26$, $t=1.15$, and $df=36$).

Table 6. Students’ mean frequency of using each strategy in the experimental group before and after the intervention

| Strategy             | Experimental group | t     | df | P  |
|----------------------|--------------------|-------|----|----|
| Background knowledge | 3.0                | -1.8  | 31 | 0.075|
| Predicting           | 3.3                | -1.4  | 31 | 0.16|
| Inferring            | 2.8                | -0.8  | 31 | 0.43|
| Paraphrasing         | 3.0                | -1.5  | 31 | 0.14|

Although the results from the paired sample t-test in the experimental group before and after the intervention showed a statistical difference ($p=0.045$), the $p$-value for each strategy applied by the students indicated a similarity in mean frequency of using strategies before and after the intervention. Overall, after the intervention, the level of using all four cognitive reading strategies in the experimental group specified significant improvement.

4.2. Reading comprehension tests analysis

As can be seen, students’ performance in the experimental group ($Min=1.875$, $Max=7.5$, $SD=1.1$, and $M=4.9$) and the control group ($Min=1.875$, $Max=6.875$, $SD=1.3$, and $M=4.8$) in the pre-test was somewhat the same, below the average ($M\leq5$). In order to ensure that the students’ performance in both groups was the same, an independent
sample t-test was run. The results indicated that no dissimilarity was observed ($t=0.2$, $df=67$, and $p$-value=$0.83$) as shown in Figure 1 below.

![Figure 1. Students’ scores of both groups on the pre-test](image)

Figure 2 illustrated that after the four-week intervention for cognitive reading strategy instruction, the results from the post-test showed a slight increase in students’ scores in the experimental group ($Minpretest = 1.875$, $Maxpretest = 7.5$, $SDpretest = 1.1$, $Mpretest = 4.9$, $Minposttest = 3.125$, $Maxposttest = 8.125$, $SDposttest = 1.3$, and $Mposttest = 5.1$) while students’ scores in the control group were stable or showed slightly lower decrease ($Minpretest = 1.875$, $Maxpretest = 6.875$, $SDpretest = 1.3$, $Mpretest = 4.8$, $Minposttest = 1.25$, $Maxposttest = 7.5$, $SDposttest = 1.68$, and $Mposttest = 3.8$). From the post-test score in the experimental group, the mean value was 5.1, rated an “average” level, whereas the mean value in the control group was 3.8, rated a “below average” level, similar to students’ scores in the pre-test. The findings from the independent sample $t$-test indicated a statistical difference in students’ performance between the experimental group and the control group on the post-test ($t = 3.5$, $df = 67$, and $p$-value = 0.01). Generally, before the intervention, students’ performance in the two groups was the same in the pre-test, but then it showed a significantly statistical difference in the post-test after the intervention. Interestingly, though there were changes in students’ performance in the experimental group on the pre-test and post-test, the results from the paired sample $t$-test specified no differences in students’ performance between the pre-test and post-test in both the experimental group ($t=-0.4$, $df=31$, $SD=1.7$, $p$-value=0.66) and the control group ($t=2.8$, $df=36$, $SD=2.8$, and $p$-value=0.07). In short, students’ level of English proficiency in the experimental group was more consistent than that of students in the control group. Furthermore, after the intervention, the minimum score in the experimental group shifted from 1.875 at “very
poor” level to 3.125 rated at “below average” level while the minimum score in the control group was 1.125, still rated at “very poor” level.

**Figure 2. Students’ scores of both groups on the post-test**

In conclusion, the results of students’ performance in reading prior to the intervention checked by the pre-test of both the experimental group and control group was the same. However, the data analysis of the questionnaire prior to the intervention showed a huge difference in terms of the level of using four cognitive reading strategies by the two groups. Before the intervention, the students from the experimental group tended to use other strategies such as translation and a dictionary. After the training on using four cognitive reading strategies, a statistically significant difference was observed in the performance between the two groups while the level of using strategies in the two groups was observed to be without statistical difference. What is more, the experimental group students’ reading scores and awareness of using those four reading strategies were recognized to have increased. By contrast, students’ scores in the control group showed only an insignificant difference at the end of the study.

**4.3. Interview**

**4.3.1. Students’ perception on the cognitive reading strategy training**

On the whole, all six interviewees reported to have some general, positive feedback about the training session. They claimed that the training was important (students 2 and 4), useful (student 6), necessary (students 3 and 5), and somewhat interesting (student 1). Five out of six students (students 1, 3, 4, 5, and 6) believed that being trained for using reading strategies helped them improve their reading skills, so they read texts more quickly, more clearly and more easily as well as improve their reading scores in class. For example, student 5 reported: “We should take a look at
pictures or the title to relate to our background knowledge or to predict the content of the reading text” when he was asked to explain his statement that training for using reading strategies showed some direct and clear ways for approaching reading texts. Also, two students (students 4 and 6) claimed that those who received training in cognitive reading strategies would be more skilful and perform better than those who did not. Meanwhile, student 2 stated that the training was helpful since “it helps learners get closer to English aspects. It means that learners could read more in English about culture, cuisine, lifestyle and they might better cope with culture shock if they have chances to travel or study abroad”.

4.3.2. Students’ self-evaluation of the training session on using cognitive reading strategies

- Students’ self-evaluation of their reading performance:

  Overall, although six students reported that their reading skills have been improved over a month of training for using reading strategies, only three students (students 1, 2 and 6) claimed to have a considerable improvement in both skills and scores in reading English. Among those three students, some similarities could be recognized. Firstly, they all tended to use the inferring strategy during the reading process to guess the meaning of new words. Secondly, all the three students said that the time for them to finish the reading texts was short. Lastly, their reading scores have been improved over a month of training. Especially, student 2 reported that her score increased from 5 at the pre-test to 7.5 at the post-test. Meanwhile, other students (students 3, 4, 5) claimed that their scores were not improved or did not change much (students 3, 5). When student 4 was asked whether his reading skill had been improved over the training period or not, he responded that it was somewhat improved. Even though his scores in pre-test and post-test were the same, it did not mean that he had not applied the strategies. He said: “I do not depend too much on using dictionary as I used to do, but I could not use those strategies due to lack of knowledge in vocabulary and unfamiliar topics in the last two reading texts”. Students 3 and 5 both claimed that their awareness of using reading strategies had improved throughout the training period. For instance, student 3 responded: “I used those strategies to do reading texts; I did not use dictionary and the results were slightly higher”.

- Students’ self-evaluation of the trained cognitive reading strategies:

  The last two questions of the interview tend to investigate the students’ self-evaluation about the four taught cognitive reading strategies. From the responses of the students, four out of six stated that being able to understand the meaning of new words without using a dictionary was the best part for them. Over a month of training for using the four cognitive reading strategies, four students (1, 2, 5 and 6) claimed to use new instructed strategies in reading class rather than depend on using a dictionary to get the meaning of new words. For example, student 1 expressed: “Those strategies are real and easy to use because I can get the meaning of a new word by dividing it into parts. I used to use a dictionary and realized that looking up new words wasted too much time”.
addition, student 5 believed he would retain new words longer if he used the reading strategies, not rather than a dictionary, while student 6 claimed that using the strategies helped him save more time. Another additional explanation was provided by student 2 who said that she could not keep up with her classmates if she used a dictionary in class. Besides, dictionaries are heavy and inconvenient for her to bring into class, and therefore she used a dictionary on her mobile phone. However, mobile phones are prohibited in class. That is why understanding new words without a dictionary becomes so interesting for them. Unlike the other four students, the thing student 3 liked most was to guess the context of the reading texts. He said: “I used to read the whole text to understand what it is about. But with those strategies, I can guess a big picture of the passage through a given picture or title. When I know what I am going to read, I’d be more confident and my performance is also better”. Furthermore, student 4 then responded that he liked using the background knowledge strategy for reading texts related to world culture and architecture. In other words, these two students use reading strategies to help them activate their schemata, interest, and confidence during the reading process. When it comes to the things that students dislike most, four students (students 1, 4, 5 and 6) stated that they faced difficulties using the paraphrasing strategy due to their lack of vocabulary knowledge, while the other two students had different problems. Specifically, all four students claimed that they could not remember, or did not know, how to use synonyms or antonyms because there are too many words which are sometimes similar to each other. Among these four students, student 4 also stated that he could not use those four cognitive reading strategies in all reading texts, like the last two reading texts before and after the intervention, or those reading texts in the mid-term or final tests because the reading passages in the tests usually did not provide any pictures and their contents were boring and inauthentic. This point of view of student 4 was similar to that of student 2. When asked what he dislikes most, student 2 answered that “some topics of the reading texts are boring and unrealistic. They should be updated with breaking news to motivate readers”. In other words, student 2 could not use the background knowledge strategy during the reading process. Last but not least, student 3 stated that he had difficulty guessing the meaning of new words. Long reading texts full of strange words usually make him feel uncomfortable and stressed sometimes. He admitted that when he had to read such texts, he could easily misunderstand information.

It can be concluded that six students taking part in the interview showed that they were aware of reading strategies. They agreed that the training on using such strategies was important, helpful, and necessary for them. The training process helped students raise their frequencies of using the strategies and improve their reading skills by providing more specific ways, like dividing words into parts to guess the meaning, or using background knowledge to envisage a whole picture from a reading text. Moreover, students gave positive feedback after the training period since they did not depend so much on their former strategies, such as translation and using dictionaries.
5. CONCLUSION AND RECOMMENDATIONS

The major concerns of this study were to explore the effectiveness of training on using cognitive reading strategies to enhance reading comprehension performance of the EFL students in an upper-secondary school and their awareness of cognitive reading strategies. As can be seen, the experimental group outperformed the control group on the reading performance. Thus, the cognitive reading strategy instruction can be of help in improving students’ reading performance. In addition, the finding of this study indicated that providing students with cognitive reading strategies can help raise their awareness of the necessity of using reading strategies in their reading classes. This result also implicates that reading to find answers to comprehension questions is not like reading for pleasure. Reading on exams is usually under time pressure, so students have to rush with time and cannot stop whenever they confront new words. Therefore, teachers should introduce any reading strategies that may work for their students within such constraints and the strategies that were proven to be effective in this study.

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