

Investigating the Use of Metacognitive Reading Strategies Using Think Aloud Protocol

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Abstract

Reading is one of the most important skills in the process of learning. It takes place at a metacognitive level where planning, evaluating and monitoring are involved. The use of metacognitive strategies has been identified as an important variable in reading comprehension. This qualitative study reports the pilot study done to investigate the behaviors of EFL readers when they use metacognitive strategies to answer reading comprehension exercises. Specifically, this study compares the behaviors of a high achiever and a low achiever reader using metacognitive strategies. The two EFL readers were purposively chosen to fit the description needed based on the scores obtained for EFL learners from a university English Test. The finding shows that the high achiever is more global when it comes to reading comprehension strategies. On the contrary, the low achiever tends to focus on minute details. Pedagogical implications are revealed by the end of the study.

Keywords: Metacognitive Reading Strategies, EFL Reader, Reading Comprehension Test

Introduction

Background of Study

Reading can be either entertaining or boring depending on the materials chosen. It can also depend on the purpose of the reading activity. Readers use different strategies when they read different types of texts. According to Rahmat et al (2018), young adults prefer to read online. Although millennials are not giving up traditional books, their reading habits are trending towards the internet and electronic gadgets. So, youths are reading -only the source they read from may differ from the traditional books. Nevertheless, when it comes to reading academic text, some learners may have low self-esteem (Daud et.al., 2021). These learners were made to believe that other students were better than them. Coincidentally, this snowballs into them being why they (the learners) were nervous when the teacher asks questions- fear of negative evaluations. Finally, learners are worried about the consequences of failing, even when they are prepared for the text.

Statement of Problem

Reading comprehension has long been emphasized as an important skill in learning. For English as a Foreign Language (EFL) Learners, it is a primary means of developing English aptitude, and it's a strong determinant of academic success (Ghaith & El-Sanyoura, 2019). EFL learners who read more seem to acquire English much better than those who do not (Muhid et al., 2020). Reading comprehension is a complex cognitive activity. It involves interaction among a set of reader-related, text-based, and context-specific factors (Ghaith & El-Sanyoura, 2019). It's a challenge for EFL learners to be fluent readers. Readers applied various reading strategies to ensure better comprehension of reading. One of the important strategies they apply is the metacognitive strategy. Metacognitive strategies are perceived as high-order executive skills that make use of knowledge of cognitive processes and constitute an attempt to regulate one's own learning by means of planning, monitoring, and evaluating (Zhang & Seepho, 2013). According to Zhang and Seepho (2013), metacognitive reading strategies are self-monitoring and self-regulating activities which focus on both the process and the product of reading. they affect the success of reading comprehension (Muhid et al., 2020).

Many studies have shown that there is a correlation between the use of metacognitive reading strategies and reading comprehension achievement (Muhid et al., 2020; Sutiyatno, 2019; Zhang & Seepho, 2013). A crucial role of metacognitive strategies in successfully completing an English reading test has been acknowledged (Zhang et al., 2014). However, quite a few studies explored how EFL readers use metacognitive strategies in reading tests. Therefore, qualitative research is designed to investigate EFL learners' use of metacognitive reading strategies, including planning strategies, monitoring strategies, and evaluating strategies.

Research Questions

The present study is done to answer the following questions:

- How does a EFL learner use planning strategies in reading comprehension?
- How does a EFL learner use monitoring strategies in reading comprehension?
- How does a EFL learner use evaluating strategies in reading comprehension?

Literature Review**Assessing Readers' Use of Metacognitive Strategies**

The assessment of readers' use of strategies is often inferred from what they say about their reading process because the use of reading strategies involves internal thinking during reading (Paris & Flukes, 2006). To assess readers' use of reading strategies, both first language and second language reading researchers have developed questionnaires and administered them to readers of different ages, cultures, and language groups (Schmitt, 1990).

Chamot (1987) developed a Learning Strategies Inventory (LSI). This is a 48-item, 1-4-scaled instrument divided into five parts: listening in class, speaking in class, listening, and speaking outside of class, writing, and reading. Four principal reading strategies were identified in LSI: 1) inferencing; 2) deduction; 3) elaboration; 4) transfer.

Schmitt (1990) described a multiple-choice questionnaire: the Meta comprehension Strategy Index (MSI). The MSI focus on the metacognitive strategies readers use for reading comprehension. This strategy was originally designed to measure strategic awareness of students who took part in metacognition training research, but further developed for teachers to evaluate middle and upper elementary students' knowledge of strategic reading processes. The MSI asks participants about the strategies they could use before, during, and after reading a narrative selection with a 25-item, 4-option, multiple-choice questionnaire. It assesses students' awareness of a variety of meta-comprehension behaviours that fit within six broad categories

- 1) *predicting and verifying,*
- 2) *previewing,*
- 3) *purpose setting,*
- 4) *self-questioning,*
- 5) *drawing from background knowledge,*
- 6) *summarizing and applying fix-up strategies.*

Based on the notion of constructively responsive reading (Pressley & Afflerbach, 1995), Mokhtari and Reichard (2002) developed the Metacognitive Awareness of Reading Strategies Index (MARSİ). The MARSİ is a 30 items survey using a 5-point Likert-type scale ranging from 1 (I never do this) to 5 (I always do this). Different from the previous reading strategy inventories that focus on younger readers' use of reading strategies, MARSİ was designed as a tool for helping adolescent and adult readers to increase metacognitive awareness and strategy use while reading. The reading strategies were subdivided into three groups: global strategies, problem-solving strategies and support strategies. Cetinkaya and Erktin (2002) constructed an assessment tool for the metacognition of Turkish preadolescents. The metacognition inventory contains 32 questions which can be categorized into four scales: evaluation, self-checking, awareness, and cognitive strategies.

Mokhtari et al (2008) adapted MARSİ into another survey of reading strategy (known as SORS) to measure the type and frequency of reading strategies used by adolescent and adult ESL readers while reading academic materials in English. This survey is also a 5-point Likert with 1= "I never or almost never do this." And 5= "I always or almost always do this." The same three categories of strategies were identified to investigate the relationships between the use of reading strategies and reading performance. It focuses on readers' metacognitive awareness in reading.

Zhang et al (2017) developed a Reading Test Strategy Use Questionnaire (ReTSUQ) based on Pressley and Afflerbach (1995)'s constructively responsive reading model and the theory of metacognition, and the empirical studies on learning strategies to investigate Chinese college test takers' metacognitive and cognitive strategy use in reading comprehension. ReTSUQ is a 58 items 5-point Likert scale survey that grouped conceptually into 8 subscales: 1) planning strategies; 2) evaluating strategies; 3) monitoring strategies; 4) general progression strategies; 5) strategies for identifying important information; 6) inference-making strategies, 7) integrating strategies; and 8) interpreting strategies. The ReTSUQ provides a tool to measure readers and test-takers' awareness and use of reading strategies, and the relationship between strategy use and reading test performance as well.

To sum up, the above-mentioned reading comprehension strategy inventories are useful means of measuring readers' use of strategies in processing reading materials. Various empirical studies were conducted with a combination or adaptation of these methods. The next section reviews empirical research on the use of reading strategies.

Past Studies

The study by Rahmat et al (2020) investigates students' fear in academic reading as well as the influence of perceived difficulties in their reading comprehension. The paper aims to study the level of anxiety experienced by undergraduate students in academic reading. Data from 25 respondents were analyzed quantitatively using a survey. The objectives of the study are to examine the influence of students' fear and perceived difficulties in academic reading. The findings of this study reveal that factors such as background and culture, general reading ability, vocabulary, grammar as well as teaching methods can make readers fear reading. The results of this study bear interesting implications towards the teaching and learning of academic reading in English as a Second Language.

Next, Becirovic et al (2017) applied the Metacognitive Reading Strategies Questionnaire (MRSQ) developed by Taraban et al (2004) to explore the overall usage of different types of metacognitive reading strategies by non-native English language speakers at International Burch University, Bosnia and Herzegovina. A total number of 140 undergraduate students with 38 being first-grade students, 35 second-grade students, 30 third-grade students and 37 fourth-grade students participated in the study. The questionnaire consisting of 22 statements, each of which uses a 5-point Likert scale ranging from 1 ("I never do this") to 5 ("I always do this") contains both analytic cognitions aimed at reading comprehension, and pragmatic behaviors aimed at studying and academic performance. The result showed a significant correlation among gender, grade level, study field and the use of metacognitive reading strategies, but students' nationality has less impact on the overall use of metacognitive reading strategies.

Rastegar et al (2017) explored the relationship between EFL learners' metacognitive reading strategies use and their reading comprehension achievement in an Iran context. 120 Iranian EFL college students majoring in English Literature and English Translation participated in the study. The data analysis based on the survey of reading strategies by Mokhtari and Sheorey (2008) shows that the Pearson correlation coefficient between overall metacognitive reading strategies uses and reading comprehension achievement is 0.65 with the p-value of 0.00 which is less than the significant level of $\alpha = 0.05$. As a result, a significant positive relationship was found between overall metacognitive reading strategies use and reading achievement.

Ntim (2015) conducted an experimental research to look into the cognitive and metacognitive processes that distinguish proficient readers from less proficient readers in word-to-text integration. 240 students from a junior high school in Ghana between the ages of 14-16 years old were used as purposive sampling. Two (2) schools were randomly selected from each Municipality. Thirty (30) students were chosen from each school. Out of these thirty students purposively selected from each school to participate in this study half (15) were assumed to be proficient readers and the other half (15) were considered less proficient readers. Findings reveal that reading comprehension is much more complex. It requires the

ability to coordinate lower lexical processes as well as and the integration of other higher components of cognitive skills over and above single word identification. Findings also showed that skilled readers used more cognitive and metacognitive strategies compared to less skilled readers.

The study by Abundis-Gutierrez, et.al (2018) compared the regressions and reading comprehension between low and middle-skilled readers. Eye-tracking technique is used in the process of regressions when reading. Studies have been found regressions (return to previously read text) are a common behaviour during reading, and sometimes they are used as a rereading strategy to improve RC. Regressions can be used a s tool to improve reading comprehension. Eighteen college students were chosen to participate in this study. Their eye movements were recorded when they performed their reading comprehension activities. Findings showed that there were statistically marginal relation between regressions during narrative text and text-based reading comprehension on low-skilled readers. Low-skilled readers used inferences in the text instead of retrieving key information using regressions.

Conceptual Framework

This study is adapted from Zhang et al (2017) who reported that when reading, learners use meta cognitive strategies to make sense of what they are reading. In the context of this study (figure 1), there are three main stages in the use of metacognitive strategies in reading. The first is planning and this is when the readers plan what they wanted to do before they even started reading. They also planned to ensure the goal of reading is clear. The second stage is evaluating. This is when the readers evaluate the information presented in the text. The also evaluate the plan of test completion constantly. The third stage is monitoring. This is when the readers took down notes to increase the understanding. They also adjusted the reading speed to increase comprehension.

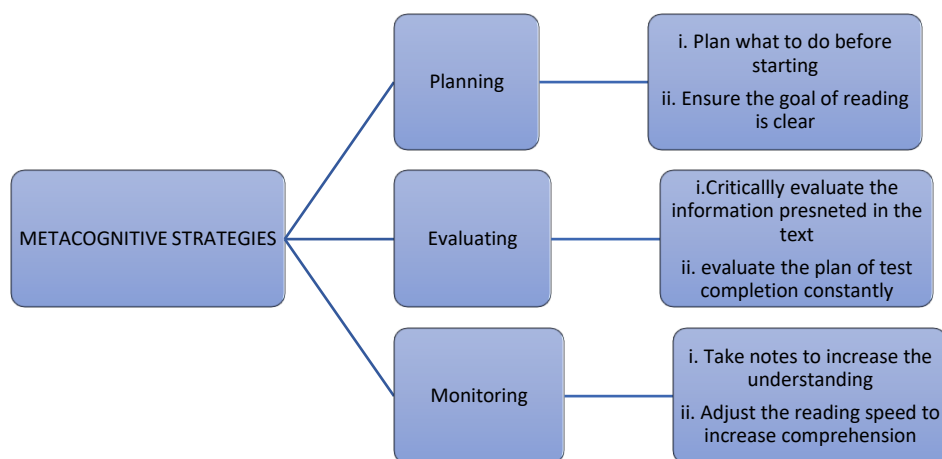


Figure 1- Conceptual Framework of the Study- Metacognitive Reading Strategies

Methodology

This qualitative study reports the pilot study done to investigate the behaviours of EFL readers when they use metacognitive strategies to answer reading comprehension exercises. Specifically, this study compares the behaviors of a high achiever and a low achiever reader using metacognitive strategies. The two EFL readers were purposively chosen to fit the

description needed based on the scores obtained for EFL learners from a university English Test. Student A (high achiever) obtained a score of 200 out of 248 for the Reading test while student B obtained a score of 125 for the same test.

They were both given a reading comprehension exercise to complete the test while also performing think-aloud protocol (TAP) as they continued doing the exercise. The two participants were then interviewed by the researcher. Data from the transcript of the think aloud (TAP) and interview are analysed and categorized based on metacognitive strategies (table 1) by (Zhang et al., 2017). Analysed data is then presented to answer the three research questions.

Table 1

Metacognitive strategies (Zhang et al., 2017)

Sub-Strategy	Indicators
Planning (P)	Plan what to do before starting
	Ensure the goal of reading is clear
Evaluating (E)	Critically evaluate the information presented in the text
	Evaluate the plan of test completion constantly
Monitoring (M)	Take notes to increase the understanding
	Adjust the reading speed to increase comprehension

Fiindings

This section presents analysis of data take from the transcript of think aloud protocol (TAP) and also transcript from the interview. According to Zhang et al (2017), metacognitive strategies refer to test-takers conscious and purposeful cognitive activities of controlling their test-taking and reading processes which can be sub-categorized into (a) Planning, (b) Evaluating, and (c)Monitoring. Metacognitive strategies are regarded important in reading as they are associated with better reading achievement (Muhid et al., 2020; Zhang & Seepho, 2013). The following parts illustrate how high achiever and low achiever in Chinese EFL reading differ in their use of planning, evaluating, and monitoring metacognitive strategies.

Findings for Planning

This section presents data to answer research question 1- How does a foreign language learner use planning strategies in reading comprehension? In the context of this study, planning involves (i) Plan what to do before starting and (ii) Ensure the goal of reading is clear. Data is presented based on the findings for (a) High Achiever (Student A) and (b) Low Achiever (Student B)

(a) High Achiever (Student A)

Student A: "First, I'll take a look at the questions."(line 1 of TAP for Student A)

Student A:"The first passage is ...have a look at the questions first." (line 2 of TAP for for Student A)

The high achiever begins planning by "taking a look at the questions". By doing this, the high achiever, starts with a birds' eye of the reading task. It indicates that a top-down processing was adopted. In a top-down processing, the reader directs the eyes to the most likely places in the text to find useful information(Grabe & Stoller, 2013). This was further proved by the participant in interview, as shown in the following excerpt.

Interviewer: what do you usually do before you start the reading test?

Student A: ...I'll read the questions to know what I should do.

(b) Low Achiever (Student B)

Student B: "Translate the questions first and see what it means, then read the passage." (line 2 of TAP for Student B)

The low achiever began by translating the questions to "see what it means". Getting to know the meaning of the questions is her attempt to get the goal of reading (-to answer the questions) which is top-down processing. But a bottom-up processing involved with word-by-word translation were adopted to construct meaning. The slow mechanical translation process indicates that the low achiever suffers from difficulties in reading comprehension. Fast and efficient processing is the hallmark of fluent reading comprehension abilities (Grabe & Stoller, 2013).

(ii) Ensure the goal of reading is clear

(a) High Achiever (Student A)

Student A: "First, I'll take a look at the questions. There are 10 questions, 2 passages.

The first paragraph, the first question is "what does the author mainly discuss in the passage?" (line 1 of TAP from Student A)

Student A: "The first paragraph, the first question is "what does the author mainly discuss in the passage?" (Line 92 from TAP Student A)

The high achiever ensures the goal of reading by read the questions and count the number of questions and passages. This indicates that the participant was aware that the goal of reading task was to answer the questions as soon as possible in limited time allotment. She made a metal note of the question to help research for corresponding information while reading(Lee, 2018).

(b) Low Achiever (student B)

B: "Here are two passages, and several questions." (Line 2 form TAL Student B)

The low achiever ensured the goal of reading by skimming the paper to get a general idea on the reading task. Then she planned to translate the questions before reading the passage. The participant knows the format of reading test since she was informed about the task before reading. The assertion of tasks showed an inefficient use of the strategy. According to Lee (2018), high scoring reading test takers tend to skimming the passage quickly to note the chief points before reading the questions. They usually focus on the title of the passage, the first sentence and concluding sentence of each paragraph while skimming.

Findings for Evaluating

This section presents data to answer research question 2- How does a foreign language learner use monitoring strategies in reading comprehension? In the context of this study, two indicators are analysed and they are (i) critically evaluate the information presented in the text, and (ii) evaluate the plan of test completion constantly. Data is presented based on the findings for (a) High Achiever (Student A) and (b) Low Achiever (Student B)

i) Critically evaluate the information

(a) High achiever (Student A)

A: "The sixth question was mentioned in the first paragraph, that is to say, what trends has been?" (Line 216 from TAP Student A)

Critical reading requires the readers to go beyond the literal and interpretative comprehension of the reading text (Par, 2018). It involves the readers' judgment on the authenticity of the ideas stated in the text by investigating the implied main idea, determining the purposes, separating the facts and opinions, recognizing the writers' tone, or taking inference and conclusion to grasp the information from the texts effectively. After reading the first paragraph of passage two, the high achiever evaluated the content by stating: the sixth question was mentioned in the first paragraph. She summarized the main idea of paragraph as a trend revealed by the report.

(b) Low achiever (Student B)

B: "Then, no, I don't think that's right." (Line 102 from TAP, Student B)

B: "The second passage, non-GMO, it's hard." (line 125 from TAP, student B)

The low achiever also applied "critically evaluate the information" strategy in the study. When answering the second question of passage one, she located to S11 of the passage for inferencing, and evaluated the information by denying its correspondence to the options as "no, I don't think that's right." (as shown in Appendix C-2, Line 102). She found the right portion of the text that the question refers to but made a wrong decision of the answer. This indicated that she didn't understand the sentence. However, no think aloud report was made on the reason of the decision. The participant also evaluated the difficulty of passage when she captured the capitalized word "non-GMO" with its translation "非转基因的" in brackets. Since the participant didn't read the passage, the judgment was made based on her prior knowledge of the topic.

ii) Evaluate the plan of test completion constantly

High achiever (Student A)

A: "Now, the first question. I should read the first paragraph again to find the answer" (line 87, TAP from Student A)

A: "Ok, read the first paragraph again, if I can't find it in paragraph one, then, I can move to paragraph two, it should be found from the first two paragraphs." (Line 96, TAP from Student A)

The high achiever planned the essential steps to complete the test and evaluate the plan. For example, when she was dealing with the first question of passage one, she planned to read the first paragraph of the passage again to find the answer. After reading the options, she evaluated the plan and said: "If I can't find it in paragraph one, then, I can move to paragraph two, it should be found from the first two paragraphs. The participant shows her confidence in being a strategic reader.

(a) Low achiever (Student B)

No evidence shown that the low achiever evaluated her plan to complete the test.

Findings for Monitoring

This section presents data to answer research question 3- How does a foreign language learner use evaluating strategies in reading comprehension? In the context of this study, the two indicators analysed are (i) take notes to increase the understanding and (ii) adjust the reading speed to increase comprehension. Data is presented based on the findings for (a) High Achiever (Student A) and (b) Low Achiever (Student B)

i) Taking notes to increase the understanding

Note-taking is an important strategy advocated in learning. It offloads cognitive processes and extends our 'in head' cognitive abilities as it aids remembering (Makany et al., 2009). Both the high achiever and the low achiever applied note-taking strategy in their reading.

(a) High achiever (Student A)

Student A: "The question asks...then, this is the subject." (line 9, TAP from Student A)

Student A: "It is a powerful communication medium that, this is an adverb, I don't know its meaning, so I underline it. (underline "simultaneously", add "adv." to it).(Line 22 from TAP from Student A))

Student A: 很广泛去使用 (it's used wildly, just like, hiring process, what process it is? I don't know, so, I add a question mark here. (Line 33, TAP from Student A))

The high achiever took notes frequently (Frequency=14) in completing the reading task. The noted information is mainly: 1) key words of the sentence; 2) unknown words; 3) confused part. The high achiever usually underlined or circled the key words(see Appendix C-1, Line 9), added abbreviation of the part of speech to the unknown word(see Appendix C-1, Line 22), or labelled the confused part with a question mark(see Appendix C-1, Line 33). These helped the participant remember the gist, locate the information quickly in rereading for answers, reduce anxiety in reading caused by difficulties.

(b) Low achiever (Student B)

Student B: Will have just the 什么积极的一面 (underline "opposite" , by, by what *injecting fear into* , what is by? is it a preposition? (Line 148, TAP from Student B)

The low achiever also took notes in reading, but the frequency (frequency=3) is less than the high achiever. Besides, she only underlined unknown words(As see in Appendix C-2, Line 148). Note-taking is an important instrument that helps readers gather information they may need later in their comprehension. it's a constructive process in reading(Chang & Ku, 2015). According to Chang and Ku (2015), active note-takers usually a) extract the concepts with critical thinking; b) reorganize text information; and c) apply different representations from the original text(Chang & Ku, 2015). In reading test settings, strategic readers use notes to help them memorize and search information quickly. Marking on the unknown words by the low achiever didn't contribute to efficient reading. This was approved by the low achiever in her report. When she failed to find the information, she said "It appeared. But where? I don't know, I forgot as if I didn't read."(Line 115, TAP from Student B).

ii) Adjust the reading speed to increase comprehension(M-M-17)

(a) High achiever (Student A)

Student A; I'm going to read the question without its options. (Line 4, TAP from Student A)
Student A: I will go back here later, I can't figure it out now. (Line 58, TAP from Student A)

The high achiever adjust her reading speed by selecting what to read and what not to read (Line 4 from TAP Student A), or by postponing dealing with a difficult item (as shown in Line 58 from TAP student A).

(b) Low achiever (Student B)

Student B: It has appeared. Let it go. I can't find it. (Line 73, TAP from Student B)

The low achiever adjusted her speed by skipping missing information. Searching for specific information slows reading. When the participant couldn't find the needed information, she tended to give up searching to keep pace. (As shown in Line 73 TAP student B).

Conclusion

Summary of Findings and Discussion

In summary, the reading comprehension behaviours of high and low achievers show interesting patterns. In the context of this study, the high achiever is reported to be more global when it comes to reading comprehension strategies. She attempts the reading comprehension activity from a bird's eye view. She sticks to her purpose of the activity and continually took down notes as she read - this is an indication of planning by the reader. The low achiever, on the other hand, on more than one occasion, focused on minute details. Her note-taking behaviour was also reported to be not consistent. On one occasion, the low achiever, arrived at a difficult question and chose to give up and quickly moved on to the next item. This study is consistent with past findings on the behaviour of low-skilled readers. According to Abundis-Gutierrez, et.al (2018), low-skilled readers tend to go back to minute information to improve their understanding while better readers used regressions as a skill to answer reading comprehension questions.

Ntim (2015) also found that skilled readers used more cognitive and metacognitive reading skills compared to their less skilled counterparts. The ability to find the right answer in answering reading comprehension questions depend more on the readers' successful use of skills and strategies and high achievers tend to depend of global skills compared to low achievers.

Pedagogical Implications and Suggestions for Future Research

Among some of the success of reading comprehension activities is not whether the readers have good language skills. It is the ability to use suitable reading comprehension strategies. Instructors of reading should focus on teaching reading comprehension strategies as part of the reading process. Readers need to internalize good reading comprehension strategies to make sense of what they are reading and also to successfully answer reading comprehension questions that follow. Future researchers could look into how low and high achievers behave when they use different reading strategies. Future research could also look into why different types of readers use the strategies that they chose.

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