Learners' Reported Use of Cognitive and Metacognitive Reading Strategies: A Study of Thai Undergraduate Students

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Research on EFL readers' reported use of cognitive and metacognitive strategies in reading can shed light onto classroom teaching approaches. In this study, perceived use of strategies reported by Thai undergraduate students at Thammasat University—both higher and lower-reading-ability groups— while they were engaged in an academic reading task was investigated. The participants were asked to complete a reading strategy self-report form immediately after they had completed their academic reading task. The results show that the two groups of learners had a significantly different awareness of cognitive but not of metacognitive strategy use; that is the high-proficiency group deployed substantially more cognitive strategies—particularly higher-level processing ones— than their low-proficiency peers. All the findings obtained from this present study have implications for strategy training and could lead to useful practical applications in the EFL reading context.

Key words: Cognitive and metacognitive reading strategies, EFL reading instruction

การรายงานการใช้กลวิธีการอ่านแบบพุทธิปัญญาและอภิปัญญาของนักศึกษาไทยระดับปริญญาตรี

งานวิจัยรายงานผลการใช้กลวิธีการอ่านทั้งแบบพุทธิปัญญา (Cognitive) และ อภิปัญญา (Metacognitive) ของผู้อ่านที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศสามารถนำไปสู่วิธีการสอนการอ่านในห้องเรียนที่เหมาะสม ในงานวิจัยนี้ผู้วิจัยได้ศึกษาการใช้กลวิธีการอ่านของนักศึกษามหาวิทยาลัยธรรมศาสตร์ที่กำลังศึกษาในระดับปริญญาตรี ขณะอ่านบทความเชิงวิชาการและตอบคำถามท้ายเรื่อง นักศึกษาที่เข้าร่วมงานวิจัยแบ่งออกเป็น 2 กลุ่ม ได้แก่ กลุ่มที่มีความสามารถในการอ่านสูงกว่าและกลุ่มที่มีความสามารถในการอ่านอ่อนกว่า นักศึกษาทั้ง 2 กลุ่มตอบแบบสำรวจการใช้กลวิธีการอ่านทันทีหลังจากที่ตอบคำถามท้ายเรื่องที่อ่านเสร็จ ผลการวิจัยพบว่านักศึกษาทั้ง 2 กลุ่ม มีการใช้กลวิธีการอ่านแบบพุทธิปัญญาที่แตกต่างกันอย่างมีนัยสำคัญทางสถิติ แต่สำหรับการใช้กลวิธีการอ่านแบบอภิปัญญานั้นไม่ปรากฏว่ามีความแตกต่างกันแต่อย่างใด ผลการวิจัยได้ชี้ให้เห็นว่า กลุ่มผู้อ่านที่มีความสามารถสูงกว่ารายงานการใช้กลวิธีการอ่านแบบพุทธิปัญญาเป็นจำนวนมากกว่า โดยเฉพาะอย่างยิ่งกลวิธีการอ่านแบบพุทธิปัญญาประเภทที่ต้องใช้เทคนิคการคิดขั้นสูง ข้อมูลที่ได้จากงานวิจัยนำมาสู่ข้อสรุปในประเด็นที่เกี่ยวข้องกับการฝึกการใช้กลวิธีการอ่าน และข้อเสนอแนะเพื่อใช้ปฏิบัติในห้องเรียนในบริบทของการอ่านภาษาอังกฤษเป็นภาษาต่างประเทศ

คำสำคัญ: กลวิธีการอ่านแบบพุทธิปัญญาและอภิปัญญา การสอนการอ่านภาษาอังกฤษเป็นภาษาต่างประเทศ

Introduction

This paper describes a quantitative and qualitative investigation of Thai EFL learners' reported use of cognitive and metacognitive reading strategies when they deal with an IELTS academic reading task. The study was designed to shed light onto what particular strategies two groups of learners—higher-reading-ability and lower-reading-ability—employed and what they did and did not do when handling the IELTS reading text and test. This was assessed through their self-report. Insights into their perceived use of strategies and the nature of this particular group of learners' use of strategy were gained which could have implications for practical applications for EFL strategy instruction.

A great deal of research on both L1 and L2 reading comprehension over many years has emphasised the significant role of readers' use of strategies in achieving their reading goals (Cohen & DÖrnyei, 2002; Ediger, 2006; Gascoigne, 2008; Sheorey & Mokhtari, 2001). The literature on strategic reading has shown that a high number of appropriate strategies used and readers' awareness of 'when', 'how', and 'why' to use them are likely to increase their ability to interactively construct a text meaning (Ediger, 2006). The research in this area is quite well-developed and a cluster of good strategies consciously deployed by successful readers have now been identified, leading to some practical implications on how teachers can actually use them in a classroom. Combining cognitive and metacognitive strategies has been considered to be the most effective method for reading success (Erler & Finkbeiner, 2007; Gascoigne, 2008).

The term '*strategies*' is defined in this study as both mental processes and behaviours which are subject to conscious use (Macaro, 2006). They are differentiated from '*skills*', which are used in an automatic manner. Macaro (2006), who proposes a notion of strategies grounded in cognitive psychology and information processing, emphasizes that strategies must be also goal-oriented to serve learners' satisfaction in their learning goals and to enable them to transfer from one task to another. Macaro also proposes that the habitual use of a cluster of strategies can result in learning styles and the automation of strategies over time can contribute to the development of skilful behaviours. Cognitive strategies are involved in working memory processing, which consists of "perception, decoding, processing, storage, and retrieval" (Macaro, 2006, p. 328). Ediger (2006) explains that cognitive strategies "include strategies for interacting with the author and the text, strategies involving different ways of reading, strategies for handling unknown words, and those making use of one's prior knowledge in some way" (p.305).

While cognitive strategies are directly engaged with working memory processing, metacognitive strategies are rather the strategies a reader deploys to indirectly support and evaluate their use of cognitive strategies (Macaro, 2006; Oxford, 1990). The term '*metacognition*' involves two important aspects of reading: awareness of a reader's strategy use and their ability to regulate the comprehension process. 'Strategic awareness' or 'knowledge about cognition', according to Baker & Brown (1984, p. 353), is comprised of "the ability to reflect on one's own cognitive process, to be aware of one's own activities while reading, solving problems and so on". The other critical element of metacognition, or regulation of cognition, entails activities such as having a purpose or reading goal in mind, planning one's action, monitoring reading activities to ensure comprehension, repairing and evaluating one's strategy use (Chamot, 2005; Stoller, 1994).

Research on Cognitive and Metacognitive strategies in L2 reading

There have been attempts to investigate the characteristics of both successful and less successful L2 readers in terms of their reported use of L2 reading strategies since 1970s to shed light on what strategies good readers deploy and propose instructional implications to improve learners' strategic reading. However, most of the work in 70s and 80s (e. g. Block, 1986; Hosenfeld, 1979; Papalia, 1987; van Dijk & Kintsch, 1983) appeared to explore and classify only types of cognitive strategies which are commonly trained rather than metacognitive ones. Overall, these studies, which started to view reading as a process not a product, confirmed the existence of differences between good and poor readers, explaining that good readers appeared to have better decoding skills, recognize every word with an automatic process, thereby achieving the meaning without relying excessively on guessing strategies. Or even when they did rely on contextual clues, they tended to do so without much difficulty. By contrast, poor readers were unable to recognize words correctly and spent considerable amounts of time decoding word by word.

According to Hosenfeld (1984)'s classification of 13 good L2 reading strategies, only one strategy 'evaluating their guesses' can be categorized as metacognitive whereas the remaining strategies are cognitive such as 'identifying the grammatical category of words', 'examining illustrations', and 'recognizing cognates.' Likewise, Van Dijk & Kintsch (1983), who regarded the linguistic knowledge of more successful readers as an advantage, reaffirm that 'The good reader is more adroit at exploiting the regularities and redundancies inherent in language and does not bother much with laborious bottom-up decoding letter by letter or word by word' (p. 23).

The studies focusing on what good readers did and what poor readers did not do have still continued with the development of more or less different classification of reading strategies throughout 1980s and 1990s. However, a clearer picture of reading strategy classification was marked by the work of Anderson (1991), who investigated the reading strategies three individual L2 readers employed while handling a reading comprehension test and reading academic texts. With the use of think-aloud protocols, his analysis of the three subjects displayed individual differences in strategies used between the good reader and the two weaker ones. He explained that the good reader tended to use strategies in his five categories in the same way— *supervising strategies*, *support strategies*, *paraphrase strategies*, *strategies of establishing coherence in a text*, and *test-taking strategies* (p. 463). The good reader's strategies included 'monitoring comprehension by identifying when comprehension fails'; 'relating sentences from one part of the text to another'; and 'monitoring affective feelings about the text' (p. 466). Interestingly, the weakest appeared to use the same strategies as the student who gained the highest score, but appeared to lack the knowledge of how to monitor the use of strategies. Anderson, thus, proposed that 'strategic reading is not only a matter of *knowing what* strategy to use, but also the reader must *know how* to use a strategy successfully and orchestrate its use with other strategies' (p. 469).

The study of Anderson (1991)'s work has sparked researchers' interest in exploring the use of metacognitve strategies in L2 reading and a number of them stressed the importance of introducing not only cognitive but also metacognitive strategies in the classroom context (Block, 1992; Carrell & Grabe, 2002; Nassaji, 2003; Phakiti, 2003). These studies argued that cognitive strategies alone cannot assist both high and low-proficiency L2 readers in overcoming comprehension barriers. Phakiti (2003), for instance, focused on the use of cognitive and metacognitive strategies of Thai L2 test-takers in performing a reading comprehension test. The results suggested that high use of metacognitive strategies, such as evaluating whether the text makes sense, monitoring and maintaining one's understanding of the text, significantly correlated with high scores on a reading comprehension test. The higher the subjects' scores, the higher their reported use of metacognitive strategies while performing the test. A closer investigation revealed that the high-scoring test-takers were aware of why and how to use both cognitive and metacognitive strategies to succeed on the test. This suggests pedagogical implications for the way that both cognitive and metacognitive strategies should be promoted in L2 reading strategy instruction.

Until recently, the trends in L2 strategic reading research have focused on an exploration of individual learners' use of both cognitive and metacognitive strategies in a more localized context (Benson & Gao, 2008; Cohen, 2007; Grenfell & Macaro, 2007; Takeuchi, Griffiths, & Coyle, 2007). Among these studies, the work of Ikeda & Takeuchi (2006), who explored 10 Japanese EFL learners' learning process of reading strategies, was able to disclose six major differences in the learning process of reading strategies between the higher and the lower proficiency students through the use of portfolio analysis. Interestingly, the higher proficiency group tended to deploy more cognitive and metacognitive reading strategies than their counterparts as well as displaying their clear understanding of the purpose and merit of those strategies while the other group did not. This study further explained that the higher proficiency group could understand the conditions that increased the effectiveness of strategy use as well as using reading strategies in an orchestrated manner and in a variety of contexts. The last difference between the higher and lower proficiency group was that the former knew how to evaluate the efficacy of their strategy use. The pedagogical implications were specifically tailored to improve Japanese EFL learners' use of reading strategies.

The recent reading strategy research conducted by Malcolm (2009), who again paid much attention to the localization rather than globalization concept of learners, investigated reported academic reading strategy use of 160 Arabic-speaking medical students in Bahrain. The students were divided into two groups according to their English proficiency level and year of study—low and high-proficiency groups. The study showed significant differences in reported use of metacognitive strategies that were related to translating from English to Arabic. To be precise, the low-English proficiency reported translating the text more whereas the high-proficiency group did not translate that much and deployed more metacognitive strategies, such as skimming to note text characteristics, using text features and critically evaluating. Such an emphasis on the "view of the learner as individual" (Benson & Gao, 2008, p. 36) has played a critical role in the area of current strategy research as the way to discover individual use and specific problems and offer pedagogical implications appropriate for each particular group of learners.

With the significance of the 'learner as individual' view in mind, the center of interest for this study lies on the survey of my Thai students' perceived use of both cognitive and metacognitive strategies in the localized context. The fact that all participants in the study have undertaken a strategic reading course that emphasizes cognitive strategies intrigued me to further investigate whether a different level of proficiency causes them to deploy cognitive and

metacognitive strategies in a different way. This research aims at answering the following questions:

a) Were there any differences between the higher-reading-ability and the lower-reading-ability students in their perceived use of cognitive and metacognitive strategies while reading an academic text?
b) Did the higher-reading-ability and the lower-reading-ability students report using cognitive strategies in the same way as they took control of metacognitive strategies while reading an academic text?
c) What cognitive and metacognitive strategies did the higher-reading-ability and the lower-reading-ability students report using to a significantly different level of frequency?

The significance of the study is two-fold. First, this study provides insights into patterns of cognitive and metacognitive strategies currently used by both higher- and lower-reading-ability students while dealing with the IELTS reading text and test. It also offers implications for classroom instruction in the EFL reading context.

Method

Participants

The participants in this study were 32 undergraduate students at Thammasat University who had previously undertaken a *Reading for Information*, a course which focused on building up learners' basic reading strategies. All the participants came from the Humanities and Social Sciences field despite the fact that they were majoring in different disciplines—English, Linguistics, Japanese, Commerce and Accountancy, Drama, and History. This particular group of students was also a mix of 17 second and 15 third-year students.

In order to investigate whether good and poor reading-ability learners reported using cognitive and metacognitive strategies in the same way, the participants were divided into two groups, called the higher-reading-ability and the lower-reading-ability group, according to the mean score (M = 11.37, SD = 2.57, total score = 20) on their IELTS academic reading test, conducted through SPSS statistical procedures. The total number of 18 students or those whose scores were above the mean score were placed in the higher-reading-ability group, whereas the remainder (N= 14) whose scores were below the mean were labelled as the lower-reading-ability group. Table 1 illustrates the details of the participants' disciplines in both groups.

Table 1: Details of the Participants' Disciplines in both Groups

Majors	**Higher-Proficiency Group**		**Lower-Proficiency Group**	
	Frequency	**Percent**	**Frequency**	**Percent**
English	11	61.1	3	16.7
Accounting	4	22.2	3	16.7
Linguistics	2	11.1	1	5.6
International Relations	1	5.6	-	
Japanese	-		3	16.7
Drama	-		2	11.1
Marketing	-		1	5.6
History	-		1	5.6
Total	18	100	14	100

Concerning their prior strategy training, these participants were introduced to L2 reading strategy instruction in their high school years as well as in their first two years in university. Nevertheless, they might not yet be able to resort to a cluster of good reading strategies while reading the L2 text. This could be that the teaching and learning at high school in Thailand is mainly teacher-oriented and intensive, with an emphasis on the Grammar-Translation Method, as well as a predominant focus on test-taking strategies to enable students to pass the entrance examination for university. Insufficiency of learners' opportunities to apply reading strategies when doing their own reading has been claimed to have a negative impact on the effectiveness of their use of strategies (Oxford & Leaver, 1996). However, this study does not aim to focus on these two factors but the association between the students' reading proficiency and their reported use of strategies.

Experimental Tools

Academic Reading Text and Test: The reading passage entitled *Working in the Movies* was selected from Harrison and Whitehead (2006)'s *Exam Essentials: IELTS Practice Tests* to be used as a tool to test the students' reading proficiency and to solicit their use of reading strategies. The *Working in the Movies* text discusses step-by-step methods on how to subtitle a film and the difficulties that are faced by people whose work involves subtitling films. The thematic content of the text which was familiar and of general interest was one of the factors making it an appropriate choice for this group of learners. Even though the text seemed to be quite difficult for the participants in terms of vocabulary and sentence structures, given the element mentioned earlier—content familiarity—the students were expected to be able to make use of a variety of strategies in order to understand the overall text meaning. The *Working in the Movies* text is approximately 600 words in length, a moderate text length which the students were expected to complete within an hour.

The rationale for using the IELTS' 13- item questions was that they focused on three different levels of comprehension—literal, analytical, and inferential levels. The students were expected to employ different kinds of strategies they had previously learnt. In addition to these follow-up questions taken directly from the IELTS test, I added a summary section requiring the participants to summarize the reading passage as a whole, suggesting that they begin the first sentence with the main idea or thesis and then give the necessary major supporting details to support the thesis. The 13-item follow-up questions were worth one point each whereas the summary part accounted for 7 points. Table 2 illustrates the test specifications.

Table 2: Test Specifications

Test Items	**Test Specifications**
Items 1-5	Skimming for main ideas, Identifying major supporting details
Items 6-9	Making inferences
Items 10-13	Understanding the text as a whole, Retrieving specific information
Part 2: Summarizing	Summarizing

Reading-Strategy Report Form: The reading-strategy report form used in this present study consisted of two major sections: (a) the reported use of metacognitive and cognitive strategies in the form of a checklist and (b) the participants' reading journal. The first part of the reading-strategy report form was adapted from Ediger's (2006) *Key Reading Strategies* (pp. 305-307), in which Ediger proposed a list of a variety of metacognitive, cognitive, and affective and social strategies an L2 reader employed while dealing with a text. To design the report form, 12 metacognitive out of 16 Ediger's purpose-oriented, comprehension-monitoring and repair strategies and another 12 cognitive out of 12 Ediger's strategies for interacting with author and text were selected. The remaining metacognitive strategies listed by Ediger—such as 'comparing information from one text with that of another' and 'evaluating the quality of a text' were excluded from the report form because they were not relevant to the nature of the IELTS reading text and test. Each reading strategy shown in the report form appears with its L1 equivalent translation to assist the students to grasp the idea of what each strategy concerns.

The second section of the reading-strategy report form was presented in the form of a reading journal requiring the students to describe their reading processes in detail. The students were expected to describe what strategies they used first and which ones they used next and why they decided to employ them. They were also asked to describe their feelings or problems, if any, while coping with the text. This part of the reading-strategy report form was used to provide

qualitative data in the form of participants' revelation of their own reading processes, which would be used to support the discussion of the participants' self-report strategy checklist (Carson & Longhini, 2002).

Data Collection

The participants were told to read the *Working in the Movies* text and then to complete the test. They were also informed at the beginning that they would have to complete the reading-strategy report form immediately after they completed the test. They, however, had neither seen nor been explained what the report form was exactly about at that stage. The time spent on the reading and the follow-up questions was one hour and 30 minutes. Immediately after they completed the test within the time limit, they were asked to complete the reading-strategy report form. At this stage, clear oral instructions and explanations of each strategy shown in the checklist were given to the students in Thai, to ensure that the participants would do as directed. In relation to the reading journal, they were asked to describe their observations of strategy use in Thai, to encourage them to be elaborate on their use of reading strategies and reading processes. The time spent on the reading-strategy report form was approximately 30 minutes.

Data Analysis

My first two research questions aimed to investigate whether or not there were any differences between the higher-reading-ability and the lower-reading-ability students in their perceived use of cognitive and metacognitive strategies and whether the higher-reading-ability and the lower-reading-ability students displayed their awareness of cognitive strategies in the same way as they took control of metacognitive strategies while reading an academic text. To answer these questions, I collected the data from the checklist section of the reading-strategy report form in a simple tally. In addition, I conducted independent-samples *t*-tests to explore any significant differences between the two groups of students' perceived use of both cognitive and metacognitive strategies as well as to investigate any significant differences between the reported use of these two types of strategies within each group.

To answer the third research question, *What cognitive and metacognitive strategies did the higher-reading-ability and the lower-reading-ability students report using to a significantly different level of frequency?*, the chi-square test for independence was performed to determine whether there was any difference in the proportion of the higher-reading-ability and the lower-reading-ability students reporting using each particular strategy while dealing with the text. The

data collected from the checklist section of the reading-strategy report form was also collected in a tally and presented in the form of frequency tables showing the number and percentages of frequency of reported use of each individual strategy (see Tables 7-8).

In addition to the quantitative analysis, the participants' written description of their actual reading processes and their feelings towards the way they read were collected and translated into English (all participants wrote their journals in Thai). This qualitative data was presented to support and strengthen the discussion of students' use of strategies.

Results and Discussion

This study was designed to investigate three distinctive aspects of Thammasat students' perceived use of reading strategies: (a) differences between the higher- and the lower-reading ability students in their reported use of cognitive and metacognitive strategies; (b) differences in the students' use of cognitive and metacognitive strategies within each group of students; and (c) cognitive and metacognitive strategies which the higher- and the lower-reading-ability students reported using to a significantly different level of frequency. Both quantitative and qualitative data collection was conducted and the participants' reported use of the two types of reading strategies is described as follows.

Research Question 1: Were there any differences between the higher-reading-ability and the lower-reading-ability students in their perceived use of cognitive and metacognitive strategies while reading an academic text?

In response to this research question, the independent-samples *t*-test revealed no significant difference in the perceived use of metacognitive strategies between the higher- and the lower-reading-ability group ($t_{(30)} = .89$, $p = .38$, *two-tailed test*, $d = .59$), although the higher-reading-ability group reported using metacognitive strategies slightly more than their counterparts. This statistical data showed that both higher- and lower-reading-ability students displayed an awareness of metacognitive strategy use, while coping with the text *Working in the Movies*, in more or less the same way. Table 3 presents the means of the students' perceived use of metacognitive strategies.

Table 3: Higher- and Lower-Reading-Ability Students' Means of Metacognitive Strategy Use

Thammasat Students	**N**	**Mean**	**S.D**	**S.D Error Mean**
Higher-Proficiency	18	5.44	2.28	.54
Lower-Proficiency	14	4.86	1.02	.27

Unlike the results obtained in relation to their use of metacognitive strategies, the independent-samples *t*-test showed a significant difference in the perceived use of cognitive strategies between the two groups of students ($t_{(30)} = 2.26$, $p = .03$, *two-tailed test*, $d = 1.58$). To be more precise, the higher-reading-ability group ($N = 18$, $M = 6.44$, $SD = 2.01$) reported using cognitive strategies significantly more than the lower-reading-ability group did ($N = 14$, $M = 4.86$, $SD = 1.92$). Table 4 reveals the means of the students' reported use of cognitive strategies.

Table 4: Higher- and Lower-Reading-Ability Students' Means of Cognitive Strategy Use

Thammasat Students	**N**	**Mean**	**S.D**	**S.D Mean**	**Error**
Higher-Proficiency	18	6.44	2.01	.47	
Lower-Proficiency	14	4.86	1.92	.51	

The higher-reading-ability group's descriptive written journals are also in agreement with the quantitative data discussed above. They provided a number of positive descriptions confirming the survey reports of their perceived use of cognitive strategies employed during their actual reading processes as follows:

> I felt there were a number of words I didn't know the meanings of. So I tried to guess the meaning of those unknown words from context clues. I also scanned for the answers from the passage. I didn't read every word in each paragraph. When I found the part that was supposed to be the answer, I translated it into Thai to increase my understanding... I first skimmed the text to roughly grasp its overall meaning and then I tried to connect different parts of the text together. I also reread part of the text for greater detail. When I got stuck with some difficult words, I guessed their meaning from context clues. But too many difficult words could sometimes discourage me from reading...

Research Question 2: Did the higher-reading-ability and the lower-reading-ability students report using cognitive strategies in the same way as they took control of metacognitive strategies while reading an academic text?

To answer this research question, an independent-samples *t*-test was implemented to examine any differences in reported number of metacognitive and cognitive strategies used within each group. In the case of the higher-reading-ability group, an independent-samples *t*-test revealed no significant difference in the number of metacognitive and the number of cognitive strategies used by this group of students ($t_{(34)} = -1.39$, $p = .17$, *two-tailed test*, $d = -1.0$), even though they reported using cognitive strategies more than metacognitive ones. Table 5 presents the means of the higher-reading-ability group's metacognitive and cognitive strategy use.

Table 5: Higher-Reading-Ability Group's Means of Metacognitive and Cognitive Strategy Use

Types of Strategies Higher-Reading-Ability Reported Using	N	Mean	S.D	S.D Error Mean
Metacognitive	18	5.44	2.28	.54
Cognitive	18	6.44	2.01	.47

Likewise, an independent-samples *t*-test was conducted with the data from the lower-reading-ability group and it also showed no significant difference between the number of metacognitive and the number of cognitive strategies used by the lower-reading-ability group ($t_{(26)} = .11$, $p = .91$, *two-tailed test*, $d = .07$). Nevertheless, unlike their higher-ability peers, the lower-reading-ability students reported using metacognitive strategies slightly more than they reported using cognitive ones when dealing with their academic reading. Table 6 shows the means of the lower-reading-ability group's metacognitive and cognitive strategy use.

Table 6: Lower-Reading-Ability Group's Means of Metacognitive and Cognitive Strategy Use

Types of Strategies Lower-Reading-Ability Reported Using	N	Mean	S.D	S.D Error Mean
Metacognitive	14	4.86	1.03	.27
Cognitive	14	4.79	2.19	.58

The data obtained from the participants' reading journals also reflect their awareness of not only cognitive but also metacognitive strategies. The first sample excerpt written by a higher-level participant whose score was relatively high (16 out of 20) displays a well-balanced proportion of cognitive and metacognitive knowledge while coping with his academic reading. He was aware of a number of good cognitive strategies including 'identifying the main points,' 'connecting one part of the text to another,' 'guessing the meaning of unknown words from context,' while at the same time he was conscious of his own reading weaknesses and of ways to improve them.

> I made all efforts in identifying the main points of each paragraph and then I tried to connect all the main points together to see how they were related to each other. I also tried to specify the writer's purposes in writing each section and guessed the meaning of some unknown words from context clues. While reading, I felt that I needed to concentrate a lot on this passage because English was not my mother tongue. Sometimes, well, actually a lot of time when I got lost, I wasn't able to understand and grasp the main points. On top of that, I thought not knowing the meaning of vocabulary could be a great barrier to text understanding. We need to have sound vocabulary knowledge... (Descriptive journal writing of a higher-level participant)

Another example is the descriptive journal written by a lower-level student who received 9.5 out of 20. Similar to his high-proficiency peer, he was able to make use of some cognitive strategies—'scanning,' 'rereading,' 'identifying the main points'—despite his negligence of 'guessing the meaning of unknown words.' Apart from the cognitive strategies, it is obvious that he

was aware of his own actions while reading and constantly checked whether or not he understood the text.

> I started off by reading questions in the test and then I read the text by trying to find out which section was related to each question. Also while reading, I underlined important sentences or parts I thought should be the answers to the questions. When I finished reading, I tried to summarize the whole text. I also reread the paragraphs that I couldn't understand or find the answers. I felt very confused and had reservations about the answers. However, I felt much better when I could locate the answers... (Descriptive journal writing of a lower-level participant)

Research Question 3: What cognitive and metacognitive strategies did the higher-reading-ability and the lower-reading-ability students report using to a significantly different level of frequency?

In the third research question, I further explored if there was any metacognitive and cognitive reading strategy that the higher- and lower-reading ability group reported using to a significantly different level of frequency by implementing a chi-square test for independence for the statistical analysis. The results obtained from the chi-square test showed no significant difference at all in the proportion of the higher-reading-ability and the lower-reading-ability group who reported using each individual metacognitive strategy. However, significant differences were established in the students' reported use of two cognitive strategies, namely 'connecting one part of the text to another' ($X^2_1 = 4.09$, $df = 1$, $p = .04$, $N = 32$) and 'guessing the meaning of a new word from context' ($X^2_1 = 4.26$, $df = 1$, $p = .04$, $N = 32$). To be precise, around 78 and 100 percent of the higher-reading-ability group reported connecting one part of the text to another and guessing the meaning of a new word from context, while only 43 and 79 percent of their counterpart did the same. Tables 7 and 8 illustrate both higher- and lower-reading-ability group's reported use of metacognitive and cognitive strategies in greater detail.

Table 7: Higher and Lower-Reading-Ability Group's Reported Use of Metacognitive Strategies

Strategies	**High-Proficiency**		**Low-Proficiency**	***X²***	***P***
Metacognitive	**N**	**Percent**	**Percent**		
1. Specifying a purpose for reading	10	55.6%	42.9%	.50	.47
2. Planning what to do	2	11.1%	28.6%	1.57	.20
3. Predicting the contents of the text	12	66.7%	78.6%	.55	.45
4. Checking predictions	4	22.2%	35.7%	.70	.40
5. Posing questions about the text to yourself	6	33.3%	14.3%	1.52	.21
6. Finding answers to posed	5	27.8%	28.6%	.01	.96

questions					
7. Summarizing information	13	72.2%	71.4%	.01	.96
8. Checking comprehension	9	50%	28.6%	1.49	.22
9. Identifying difficulties	8	44.4%	28.6%	.84	.35
10. Judging how well objectives are met	8	44.4%	35.7%	.25	.61
11. Taking steps to repair faulty comprehension	9	50%	28.6%	1.49	.22
12. Reflecting on what you have learnt from the text	13	72.2%	64.3%	.23	.63

Table 8: Higher and Lower-Reading-Ability Group's Reported Use of Cognitive Strategies

Strategies	**High-Proficiency**		**Low-Proficiency**		***X²***	***P***
Cognitive	**N**	**Percent**	**N**	**Percent**		
1. Skimming	11	61.1%	9	64.3%	.03	.85
2. Connecting text to background knowledge	13	72.2%	8	57.1%	.79	.37
3. Making inferences	8	44.4%	2	14.3%	3.33	.06
4. Connecting one part of the text to another	14	77.8%	6	42.9%	4.09	.04*
5. Paying attention to text structure	5	27.8%	2	14.3%	.83	.36
6. Rereading	16	88.9%	14	100%	1.65	.19
7. Guessing the meaning of a new word from context	18	100%	11	78.6%	4.25	.04*
8. Using discourse markers to see relationships	11	61.1%	4	28.6%	3.34	.06
9. Critiquing the author	2	11.1%	2	14.3%	.07	.78
10. Critiquing the text	3	16.7%	2	14.3%	.03	.85
11. Analyzing words and sentence structure	5	27.8%	2	14.3%	.83	.36
12. Translating a word or phrase into L1	8	44.4%	5	35.7%	.24	.61

In addition to the significant differences found in the students' use of 'connecting one part of the text to another' and 'guessing the meaning of a new word from context', there were two cognitive strategies which the higher- and lower-reading-ability groups used in a different level of frequency—'using discourse markers to see relationships' ($X^2_1 = 3.34$, $df = 1$, $p = .06$, $N = 32$) and 'making inferences'($X^2_1 = 3.33$, $df = 1$, $p = .06$, $N = 32$). Around 61 and 44 percent of the higher-reading-ability group reported using discourse markers to see relationships and making inferences, while 29 and 14 percent of their lower-proficiency peers reported using them. Even though the *P* value received from the chi-square test for these two higher-level strategies did not establish a significant difference, it was very close to the critical value.

Interestingly, the data from the participants' reading journals appear to be consistent with the quantitative findings. That is the higher-reading-ability students displayed their awareness of those higher-level cognitive strategies whereas their lower-proficiency peers tended not to resort to them in the same quantity as their counterparts did. Examples from the descriptive journals are provided below.

> I read the title and the first paragraph of the text first to help me visualize what the whole text was about. I read the text paragraph by paragraph and tried to locate the topic sentence of each paragraph and then underlined or marked it. When I came across some difficult vocabulary, I tried to guess their meaning from context and also marked the clues. When I finished reading, I summarized the whole text to see what I had learnt from it. (Descriptive journal writing of a higher-level student)

> I read through the text and then read the questions. Then I tried to find out the answers by reading each paragraph focusing on key words. I read it again and again until I could find the answers. I felt the text was difficult and that was because I personally don't like reading, but I knew that it's important. I, therefore, tried to do my best. (Descriptive journal writing of a lower-reading-ability student)

In analyzing the individual strategies which the higher- and lower-reading-ability group frequently employed and tended not to pay attention to, based on their perception, I performed a simple tally, counting the number of participants who reported their use of each individual strategy. This type of quantitative analysis showed that the higher-reading-ability group viewed these metacognitive strategies—'summarizing information,' 'reflecting on what you have learnt from the text,' 'predicting the contents of the text,' 'specifying a purpose for reading,' 'checking comprehension,' and 'taking steps to repair faulty comprehension'—as their preference. All these strategies might more or less associate with their reading performance on the test. However, some of the metacognitive strategies, such as 'planning what to do,' 'checking predictions,' and 'posing and answering questions to oneself' were the least frequently used. One reason why they did not resort to these strategies might be that they could be very competent at them and thus used them unconsciously as skills. In contrast, it might simply be that they were not aware of them and even that they might rarely resort to them when they read texts in their L1.

On the students' perceived use of cognitive strategies, the higher-reading-ability group placed importance on strategies such as 'guessing the meaning of a new word from context,' 'rereading,' 'connecting one part of the text to another,' 'connecting text to background knowledge,' and 'skimming the text,' whereas 'critiquing the author and text,' 'paying attention to text structure,' and 'analyzing words and sentence structure' were overlooked in their academic reading. In addition to the reasons mentioned previously, the reasons why this group did not make

use of the critiquing strategies might be related to the text type and purpose for reading. The higher-reading-ability students, furthermore, might aim at global comprehension and that might answer our question as to why they did not focus on analyzing words and sentence structure (Alderson, 2000).

When compared to their higher-level peers, the lower-reading-ability group resorted to similar cognitive strategies. Among the cognitive strategies, 'rereading' was the most frequently used, followed by 'guessing the meaning of a new word,' 'skimming the text,' 'connecting text to background knowledge,' and 'connecting one part of the text to another,' while the least frequently used ones were 'critiquing the text,' 'analyzing words and sentence structure,' 'paying attention to text structure,' 'making inferences,' and 'critiquing the author.' What seemed to be a distinctive difference between the two groups was that the lower-level group was not aware of the use of 'drawing inferences,' whereas the higher-level students were.

With regard to the lower-reading-ability students' perceived use of metacognitive strategies, they placed a priority on 'predicting the contents of the text,' 'summarizing information,' 'reflecting on what you have learnt from the text,' 'specifying a purpose for reading,' and 'checking predictions.' In spite of the fact that they used a variety of these strategies, they displayed their lack of awareness of the strategies, such as 'planning what to do,' 'posing questions about the text to yourself,' 'checking comprehension,' and 'taking steps to repair faulty comprehension.' In contrast, the latter two were in fact used very frequently by the higher-level group.

Pedagogical Implications and Practical Classroom Applications

I will now reflect on the implications I drew from the findings of the students' perceived use of both metacognitive and cognitive reading strategies. These cover four crucial areas of EFL strategy instruction: combination of cognitive and metacognitive strategy training, significance of cognitive strategies, roles of higher-level type of reading strategies, and important strategies to be emphasized in the classroom context.

First of all, this study offers clear evidence that a combination of cognitive and metacognitive strategy use can contribute to learners' reading performance. This research paper has led to a solid conclusion that no readers seem to use a single type of processing as they read. Yet, good readers are likely to resort to both types of reading strategies, to a widely varying degree. This conclusion is also consistent with Carrell & Grabe (2002), who suggested that L2 readers should be

taught to use a wide variety of reading strategies, not merely a single one, over an extensive period of time in order to make use of them effectively.

It also provides support for the argument that cognitive strategies seem to be the key to learners' academic reading success. Even though not only cognitive but also metacognitive strategies contribute to reading comprehension, it seems that cognitive strategies are directly related to more chance of success in comprehension, requiring great effort and time in practicing using them until they become automatized.

Given the fact that the higher-reading-ability students were able to display a significantly higher awareness of four types of cognitive strategies—'connecting one part of the text to another,' 'guessing the meaning of a new word from context,' 'using discourse markers to see relationships,' and 'making inferences,' we can conclude that higher-level processing strategies can maximize learners' academic reading success. Islam & Mares (2003) highlight the importance of higher-level cognitive strategies stating that they enable learners to "hypothesize, predict, infer, make connections and associations and visualize" (p. 90). These types of higher-level processing strategies can also engage readers with the text.

Finally, the study offers evidence that metacognitive strategies which are likely to be associated with a high reading performance are 'summarizing information,' 'reflecting on what you have learnt from the text,' 'predicting the contents of the text,' 'specifying a purpose for reading,' and 'checking comprehension.' In addition, it leads us to conclude that 'guessing the meaning of a new word from context,' 'rereading,' 'connecting one part of the text to another,' 'connecting text to background knowledge,' and 'skimming the text' are major cognitive strategies of high-reading-ability readers and thus can contribute to reading performance.

Considering the implications drawn from the data in this study, I shall propose some recommendations for practical classroom applications, particularly in the Thai university context. First of all, reading strategy training as well as reading materials design should integrate the training of both metacognitive and cognitive strategies throughout to maximize learners' success in reading. This can be done by implementing explicit strategy training of why and how to apply a cluster of cognitive and metacognitive strategies in various specific reading situations to serve students' reading needs. As outlined in the literature review section, strategies are defined as conscious or deliberate mental and behavioral process, and thus they can be taught. Explicit

strategy training can raise students' awareness of which strategies to employ and how to employ them, despite their low proficiency, to promote their ability to remedy reading difficulties and, more importantly, to increase their autonomous learning and self-regulation during reading (Oxford, 1996; Weaver & Cohen, 1998)

It is also recommended that higher-level strategies—such as 'connecting one part of the text to another,' 'guessing the meaning of a new word from context,' 'using discourse markers to see relationships,' and 'making inferences'—should be emphasized in the classroom context and in materials design and development. Despite the fact that they have an awareness of all these higher-level cognitive strategies, low-proficiency readers might not yet be able to apply them fluently and skillfully in their contextualized reading. Since these are advanced strategies, long-term strategy instruction, preferably over two consecutive semesters, which emphasizes the use of high-level processing strategies in the actual reading context, should be used to provide students with sufficient practice. In addition to this, clear purpose and importance of all higher-level processing strategies and of reading itself should be incorporated. Understanding the purpose and importance of each strategy can motivate readers to apply strategies more effectively and thus contributes to their better performance.

Specific tasks and activities also need to be implemented to improve learners' use of those higher-level reading strategies (e.g. using discourse markers to see relationships). The use of story grammar (Gascoigne, 2008), for example, is likely to enhance learners' understanding of how the author organized his ideas throughout as well as how ideas are connected. Such a task specifically tailored to serve learners' needs is required, in addition to using only traditional multiple-choice questions.

As the data of this study illustrates, both higher- and lower-reading-ability students were not aware of some metacognitive strategies—'posing questions about the text to yourself', 'finding answers to your posed questions', 'checking predictions' and 'planning what to do'. Therefore, strong emphasis, in terms of direct explanation and task design, on these in the classroom context would assist them to take more control of their reading activities.

Conclusion

The study provides information about the patterns of cognitive and metacognitive strategies currently used by Thai undergraduate participants when asked to deal with academic reading.

Significant differences between the higher- and lower-reading-ability groups were merely established in their use of cognitive reading strategies, particularly in their use of higher-level cognitive types. The study substantially supports the focus on higher-level processing in the classroom context as a way to promote EFL learners' reading performance. Future instructional research should be conducted to investigate (a) students' perceptions of the emphasis on higher-level cognitive strategies in the classroom context (b) their progress in reading performance after being trained to apply higher-level strategies and (c) teachers' views on implementing higher-level strategy-based training.

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Appendix 1: Reading Text and Test

You should spend about 20 minutes on Questions 1-13 which are based on the following passage.

Working in the movies

Subtitling is an exacting part of the translation profession. Melanie Leyshon talks to Virginie Verdier of London translation company VSI about the glamour and the grind.

When people ask French translator Virginie Verdier what she does for a living, it must be tempting to say enigmatically: 'Oh me? I'm in the movies'. It's strictly true, but her starring role is behind the scenes. As translating goes, it doesn't get more entertaining or glamorous than subtitling films. If you're very lucky, you get to work on the new blockbuster films before they're in the cinema, and if you're just plain lucky, you get to work on the blockbuster movies that are going to video or DVD.

Virginie is quick to point out that this is as exacting as any translating job. 'You work hard. It's not all entertainment as you are doing the translating. You need all the skills of a good translator and those of a top-notch editor. You have to be precise and, of course, much more concise than in traditional translation work.'

The process starts when you get the original script and a tape. 'We would start with translating and adapting the film script. The next step is what we call 'timing', which means synchronizing the subtitles to the dialogue and pictures.' This task requires discipline. 'You play the film, listen to the voice and the subtitles are up on your screen ready to be timed. You insert your subtitle when you hear the corresponding dialogue and delete it when the dialogue finishes. The video tape carries a time code which runs in hours, minutes, second and frames. Think of it as a clock. The subtitling unit has an insert key to capture the time code where you want the subtitle to appear. When you press the delete key, it captures the time code where you want the subtitle to disappear. So each subtitle would have an 'in' point and an 'out' point which represent the exact time when the subtitle comes in and goes out. This process is then followed by a manual review, subtitle by subtitle, and time-codes are adjusted to improve synchronization and respect shot changes. This process involves playing the film literally frame by frame as it is essential the subtitles respect the visual rhythm of the film.'

Different subtitlers use different techniques. 'I would go through the film and do the whole translation and then go right back from the beginning and start the timing process. But you could do it in different stages, translate let's say 20 minutes of the film, then time this section and translate the next 20 minutes, and so on. It's just a different method.'

For multi-lingual projects, the timing is done first to create what is called a 'spotting list', a subtitle template, which is in effect a list of English subtitles pre-timed and edited for translation purposes. This is then translated and the timing is adapted to the target language with the help of the translator for quality control.

'Like any translation work, you can't hurry subtitling', says Virginie. 'If subtitles are translated and timed in a rush, the quality will be affected and it will show.' Mistakes usually occur when the translator does not master the source language and misunderstands the original dialogue. 'Our work also involves checking and reworking subtitles when the translation is not up to standard. However, the reason for redoing subtitles is not just because of poor quality translation. We may need to

adapt subtitles to a new version of the film: the time code may be different, the film may have been edited or the subtitles may have been created for the cinema rather than video. If subtitles were done for cinema on 35 mm, we would need to reformat the timing for video, as subtitles could be out of synch or too fast. If the translation is good, we would obviously respect the work of the original translator.'

On a more practical level, there are general subtitling rules to follow, says Virginie. 'Subtitles should appear at the bottom of the screen and usually in the centre.' She says that different countries use different standards and rules. 'In Scandinavian countries and Holland, for example, subtitles are traditionally left justified. Characters usually appear in white with a thick black border for easy reading against a white or light background. We can also use different colours for each speaker when subtitling for the hearing impaired. Subtitles should have a maximum of two lines and the maximum number of characters on each line should be between 32 and 39. Our company standard is 37 (different companies and countries have different standards)'.

Translators often have a favourite genre, whether it's war films, musicals, comedies (one of the most difficult because of the subtleties and nuances of comedy in different countries), drama or corporate programmes. Each requires a certain tone and style. 'VSI employs American subtitlers, which is incredibly useful as many of the films we subtitle are American,' says Virginie. 'For an English person, it would not be so easy to understand the meaning behind typically American expressions, and vice-versa.'

Source: Harrison, M & Whitehead, R. (2006). *Exam Essentials: IELTS Practice Tests*. London: Thomson ELT. 96-97.

Directions: After finishing reading the text, answer the following questions or do as directed (20 points).
Questions 1-5 (one point each)
Complete the flow chart below.
Use **NO MORE THAN THREE WORDS** from the passage for each answer.

The Subtitling Process
Stage 1: Translate and adapt the script
Stage 2:

- (1) _____-matching the subtitles to what is said
- Involves recording time codes by using the (2) _____ and _____ keys

Stage 3: (3) _____- in order to make the (4) _____ better
Multi-lingual projects
Stage 1: Produce something known as a (5) _____ and translate that

Questions 6-9 (one point each)
Do the following statements agree with the information given in the reading passage?
Write

TRUE if the statement agrees with the information
FALSE if the statement contradicts the information
NOT GIVEN if there is no information on this

6. For translators, all subtitling work on films is desirable. _____
7. Subtitling work involves a requirement that does not apply to other translation work. _____
8. Some subtitling techniques work better than others. _____
9. Few people are completely successful at subtitling comedies. _____

Questions 10-13 (one point each)
Complete the sentences below with words from the reading passage.
Use **NO MORE THAN THREE WORDS** for each answer.
10. Poor subtitling can be a result of the subtitler not being excellent at _____.
11. To create subtitles for a video version of a film, it may be necessary to _____.
12. Subtitles usually have a _____ around them.
13. Speakers can be distinguished from each other for the benefit of _____.

Source: Harrison, M & Whitehead, R. (2006). *Exam Essentials: IELTS Practice Tests*. London: Thomson ELT. 98-99.

Write a summary of the reading passage. Begin the first sentence with the main idea and then provide some major supporting details (7 points)

_____

_____

_____

_____

Biodata
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