An Application of Metacognitive Strategies in Academic Reading of Graduate Students Studying at the International Graduate Studies Human Resource Development Department (IG-HRD), Burapha University, Thailand.

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Abstract. *The purposes of this research were to examine and to compare the relationships between the use of metacognitive strategies and academic reading proficiency levels among the TESL/TEGL graduate students studying at the IG-HRD Center, Burapha University, and to investigate the problems encountered in their academic reading. The participants were 39 graduate students categorized into three groups namely high, medium, and low reading proficiency levels on the basis of their academic reading test scores. A questionnaire on Metacognitive Strategies for Reading and semi-structured interview questions were employed to collect the data. Mean, standard deviation, and effect size were statistical devices for the data analysis. Content analysis was used to analyze the data from the interview.*

The findings revealed that the overall relationship between the use of metacognitive reading strategies and academic reading proficiency levels of the TESL/TEGL graduate students was related in a negative direction (r = -.21). The relationships between each strategy of metacognitive strategies and academic reading proficiency were: Planning (r = -.272), Monitoring (r = .056), and Evaluating (r = .203). There were slight differences in the use of metacognitive reading strategies between those of high and medium reading proficiency levels (ES= 0.03); between those of high and low reading proficiency levels (ES= 0.15); and between those of medium and low reading proficiency levels (ES= 0.13). Finally, the problems the graduate students most frequently encountered were reading habits and attitudes, vocabulary, and prior knowledge, respectively.

Keywords: Metacognitive Strategies for Reading, Academic Reading, TESL/TEGL Graduate Students

Introduction

With the importance of English as a world language and the changes that came with the National Education Act, (1999) plus the challenges of new technology as one of the eleven policy guidelines for implementation stated in the National Scheme of Education

of B.E. 2545-2559 (2002-2016) (Office of the National Education Commission, 2003) that manpower development in science and technology for self-reliance and enhanced competitiveness is really in need. Consequently, Thai and non-native English students entering an international program at the International Graduate Studies Human Resource Development Department (IG-HRD) in Burapha University encountered adjusting difficulties to the new environment both academically and culturally. The diversity of language background and cultural background can create a complication of communication, language and literacy needs in the English learning context which can cause a lot of frustration, confusion, and stress among non-English speaking background graduate students. Levine, Ferenz and Reves (2000) mentioned that the ability to read academic texts is one of the most important skills because academic reading with comprehension is associated with the requirement to perform identifiable cognitive and procedural tasks such as taking a test, writing a paper or giving a speech. As a result, they have tried hard to master the language of their academic success.

Metacogntive strategies are regarded as a part of the effective strategies that enhance learners' reading ability (Cohen, 1998). To be able to read effectively and intelligently, students need to refine their reading ability by integrating their prior knowledge, language proficiency, and metacognitive strategies with the understanding of words and sentences in a text (Hammadou, 1991). Metacognitive strategies involve thinking about what one is doing while reading, checking the outcome of problem-solving techniques, planning how to use an effective strategy, controlling the effectiveness of an action plan, testing, revising, and evaluating one's learning strategy (Block, 1992; Salataci & Akyel, 2002). These strategies should play their roles in reading tasks as they can help learners plan, organize or control, and evaluate or remediate the reading process (Chumpavan, 2000). This is the direction in which reading research in the country should focus on and go towards.

Statement of the Problem

This research focused on graduate students because they have to read a large amount of academic texts. However, many of them in an international program are unprepared for this kind of a reading task. They show inability to get the purpose of reading and discarding what is significant (Benson, 1991). Some of them often present low level reading strategy knowledge (Dreyer, 1998) and a shortage of the strategies needed to successfully understand the academic texts. Flavell (1979), Baker and Brown (1984) stated that language learners are not used to taking control of their own reading and are lacking in metacognition, knowledge, and control of the four variables: person, goal, task, and strategies. In addition, Aegpongpaow (2008) stated that most Thai students do not understand reading passages thoroughly because they do not apply the appropriate reading strategies.

Objectives of the Research

This study aimed at exploring reading difficulties and the relationships between the use of metacognitive strategies in academic reading proficiency and academic reading proficiency levels among TESL/TEGL graduate students studying an international program at the International Graduate Human Resource Development Center of Burapha University.

Research Questions

The three research questions were:

1. Are there any relationships between the use of metacognitive strategies for reading and reading proficiency levels of graduate students studying at the International Graduate Studies Human Resource Development Department (IG-HRD) of Burapha University?

2. Are there any differences in the use of metacognitive reading strategies among graduate students studying at the International Graduate Studies Human Resource Development Department (IG-HRD) of Burapha University with high, medium and low English reading proficiency levels?

3. What are the problems of graduate students studying at the International Graduate Studies Human Resource Development Center (IG-HRD) of Burapha University when faced with academic reading?

Significance of the Research

This study explored the non-native English TESL and TEGL graduate students' awareness/ knowledge, use, and control of learning strategies to enhance reading comprehension in a learning context for strategic knowledge use in reading.

Literature Review

Flavell (1979) defined metacognition as "knowledge that takes as its object or regulates any aspect of any cognitive behavior". Flavell (1979) defined metacognition as metcognitive knowledge, experiences, tasks and strategy inteactions which regulate the monitoring of cognitive behavior. It means that the function of metacogniton is to monitor or regulate cognitive strategies. Also, the term metacognition has many definitions but most of these definitions focus on the major role of metacognition in ensuring enhanced, active, and independent learning. In addition, metacognition is an awareness of a human's own thought processes, and it plays a central role in explaining and describing the learning process. This leads to the all-important question of how metacognitive skills and habits can be developed in the classroom at the elementary, secondary, undergraduate, or graduate levels. Students have the opportunity to practice and should be in situations that require metacognition. They should know the meaning and importance of metacognition so as to be able to check the outcome of any attempts to solve a problem, planning one's next move, monitoring the effectiveness of any attempted action, testing, revising and evaluating one's own strategies for learning (Baker & Brown 1984).

O'Malley and Chamot (1990) stated that metacognitve strategies are higher order executive skills which involve knowledge about cognitive self-evaluating after the learning activities have been completed. Oxford (1990), furthermore, considered the metacognitive strategies as "actions which go beyond purely cognitive devices, and which provide a way for learners to coordinate their own learning process." (p. 136).

According to the definitions of metacognition mentioned above, it can be summarized that metacognitive strategies involve planning for learning, thinking about the learning process, monitoring comprehension and self-evaluation that become an important part of the learning activity. Metacognitive strategies are regarded as high order executive skills that make use of knowledge of cognitive processes and constitute as attempts to regulate a learner's own learning by means of planning, monitoring and evaluating. In reading,

metacognitive strategies are self-monitoring and self-regulating activities, focusing on both the process and the product of reading. They include the readers' awareness of whether or not they can comprehend what they read, the learners' ability to judge the cognitive demands of the reading task, and their knowledge of when and how to apply a specific cognitive reading strategy according to the text difficulty and the readers' own cognitive strategies. Metacognitive strategies in reading are those strategies created to increase the reader's knowledge of awareness and control, to improve reading comprehension, and to evaluate if the attempt at comprehension has been successful.

Research Method

A mixed method research design was used for this research study as Creswell and Clark (2011) commented that such a design was a process of investigation that included or associated both quantitative and qualitative forms in an explanatory sequential design. This research first started with the quantitative data, which was collected and analyzed from the academic reading comprehension test and the questionnaire and then the qualitative data was encoded by content analysis. This research first started with the quantitative data, which was collected and analyzed from the academic reading comprehension test in March, 2014. Then, the questionnaire was adapted to assess the metacognitive strategies for reading by the participants because they have not been trained regarding this strategy before. Finally, a semi-structured interview was encoded for the use of metacognitive reading strategy and their reading problems by content analysis.

Data Analysis

The participant levels in reading proficiency were classified by dividing them into three reading proficiency groups of high, medium, and low levels and using a plus or minus one standard deviation shift of the mean score (Bachman 2004). Then, the questionnaires were analyzed by means of descriptive statistical devices to find the Mean, Standard Deviation and Percentage. The Pearson Correlation Coefficient and Effect Size were employed to calculate the relationships and differences among the three reading proficiency high, medium, and low level groups.

Summary of the Results

Quantitative Data

Research Question 1: Are there any relationships between the use of metacognitive strategies for reading and reading proficiency levels of graduate students studying at the International Graduate Studies Human Resource Development Department of Burapha University?

Table 1 presents the number of students with their scores of the academic reading test classified into three groups; high, medium and low English reading proficiency. Judging the sample group levels was based on the reading proficiency levels as follows; a score of 19 or below was a Low level, from 20 - 23 was a Medium level, and 24 or above was a High level and these scores were based on the reading of an academic test using the following criteria for scoring; understanding text structure / organization, understanding conceptual meaning, understanding reference in the text, dealing with difficult words and sentences, and critical reading.

Table 1 Students with Reading Proficiency Scores (Total 30 points).

Scores	Reading Proficiency	Number of Participants	%
24 and above	High	9	23
20-23	Medium	17	44
19 and below	Low	13	33
Total Number		39	

A mean score ($\mu = 21.41$) was calculated to classify the three groups which were: the score from 19 and below (low reading proficiency level), the score 20-23 (medium reading proficiency level), and the score from 24 and above (high reading proficiency level). As a result of this classification, 23 percent had a high level; 44 percent had a medium level, and 33 percent had a low level with regards to reading proficiency. The mean score of metacognitive reading strategies for the participants of all reading proficiency levels was obtained by using the following criteria; planning which involved advance organizing, organizational planning and selective attention. Monitoring which involved self management, comprehension monitoring, and task monitoring. Evaluating which involved self-assessment, self-evaluation and self-reflection.

Table 2 Metacognitive Reading Strategies Reported by Participants of All Reading

Metacognitive reading strategies	N = 39	
	μ (M)	σ (S.D)
Planning Strategy	3.95	.32
Monitoring Strategy	3.75	.28
Evaluating Strategy	3.54	.32
Average Mean Score	3.75	.31

Proficiency Levels.

According to Table 2, the average mean score of metacognitive reading strategies use was at 3.75 ($\mu = 3.75$); Planning strategy ($\mu = 3.95$) was the highest mean score, followed by the Monitoring strategy at 3.75 ($\mu = 3.75$), and the Evaluating strategy at 3.54 ($\mu = 3.54$).

Strategies Use among three Reading Proficiency Levels.

Table 3 Comparison of the Mean Score of Each Strategy of Metacognitive Reading

Reading Proficiency Level	N(39)	%	Mean Score of Metacognitive Reading Strategies (μ)		
			Planning	Monitoring	Evaluating
High	9	23	3.78	3.90	3.73
Medium	17	44	3.99	3.72	3.66
Low	13	33	4.02	3.70	3.30
Average Mean Score			3.95	3.75	3.54

Table 3 shows the mean score of the use of metacognitive reading strategies among three reading proficiency levels. Twenty-three per cent of graduate students with high reading proficiency employed the Planning strategy ($\mu = 3.78$), Monitoring strategy ($\mu = 3.90$), and Evaluating strategy ($\mu = 3.73$); 44 per cent of graduate students with medium reading proficiency used the Evaluating strategy ($\mu = 3.66$), Monitoring strategy ($\mu = 3.72$), and Planning strategy ($\mu = 3.99$); 33 per cent of graduate students with low reading proficiency employed the Evaluating strategy ($\mu = 3.30$), Monitoring strategy ($\mu = 3.30$) and Planning strategy ($\mu = 4.02$).

Table 4 Correlations between Metacognitive Reading Strategies and Reading Proficiency Levels.

Metacognitive Reading Strategies	Analyses	Reading Proficiency
Planning Strategy	Pearson Correlation	-.272
	Sig. (2-tailed)	.094
Monitoring	Pearson Correlation	.056
	Sig. (2-tailed)	.736
Evaluating	Pearson Correlation	.203
	Sig. (2-tailed)	.215
Overall Metacognitive Reading Strategies	Pearson Correlation Sig. (2-tailed)	-.021 .899

Table 4 presents the relationships between metacognitive reading strategies and the overall reading proficiency levels which indicated a non significant negative correlation ($r = -.021$). In other words, there was no relationship between the metacognitive reading strategies and high, medium and low reading proficiency levels. The relationship between each strategy of metacognitive reading strategies and the overall reading proficiency levels revealed: first, a negative relationship between the Planning strategy and the overall reading proficiency levels ($r = -.272$); second, a positive relationship between the Monitoring strategy and the overall reading proficiency levels ($r = .056$); and finally, a positive relationship between the Evaluating strategy and the overall reading proficiency levels at .203.

Table 5 Relationships between Metacognitive Reading Strategies and High Reading Proficiency Level.

Metacognitive Reading Strategies	Analyses	High Reading Proficiency Level
Planning Strategy	Pearson Correlation	-.683*
	Sig. (2-tailed)	.042
Monitoring Strategy	Pearson Correlation	-.576
	Sig. (2-tailed)	.104
Evaluating Strategy	Pearson Correlation	-.436
	Sig. (2-tailed)	.241
Overall Metacognitive Reading Strategies	Pearson Correlation	-.615
	Sig. (2-tailed)	.078

* Correlation is significant at .05 level (2-tailed).

Table 5 shows the relationship between the overall metacognitive reading strategies and the high reading proficiency level which indicated a non significant negative correlation (r = -.615). Also, significant negative relationships were found between the Planning strategy and high reading proficiency, between the Monitoring strategy and high reading proficiency, and between the Evaluating strategy and high reading proficiency, with the negative correlations found at -.683; -.576; and -.436, respectively.

Table 6 presents the relationship between the overall metacognitive reading strategies and medium reading proficiency level which indicated a negative correlation (r = -.210). There were negative relationships between the Planning strategy and medium reading proficiency, and between the Monitoring strategy and medium reading proficiency level at -.326, and -.224, respectively. On the other hand, the Evaluating strategy and medium reading proficiency had a positive correlation at .166.

Table 6 Relationships between Metacognitive Reading Strategies and Medium Reading Proficiency Level.

Medium Reading Proficiency	Analyses	Medium Reading Proficiency Level
Planning	Pearson Correlation	-.326
	Sig. (2-tailed)	.201
Monitoring	Pearson Correlation	-.224
	Sig. (2-tailed)	.388
Evaluating	Pearson Correlation	.166
	Sig. (2-tailed)	.524
Overall Metacognitive Reading Strategies	Pearson Correlation	-.210
	Sig. (2-tailed)	.420

Table 7 presents the relationship between the use of overall metacognitive reading strategies and low reading proficiency level (r = -.118). There were negative relationships between the Planning strategy and low reading proficiency, and between the Evaluating strategy and reading proficiency with negative correlations found at -.028 and -.380. Also, there was the relationship between the Monitoring strategy and low reading proficiency with a positive correlation found at .098.

Table 7 Relationships between Metacognitive Reading Strategies and Low Reading proficiency.

Metacognitive Reading Strategies	Analyses	Low Reading Proficiency
Planning	Pearson Correlation	-.028
	Sig. (2-tailed)	.928
Monitoring	Pearson Correlation	.098
	Sig. (2-tailed)	.750
Evaluating	Pearson Correlation	-.380
	Sig. (2-tailed)	.200
Overall Metacognitive Reading Strategies	Pearson Correlation	-.118
	Sig. (2-tailed)	.700

Research Question 2: Are there any differences in the use of metacognitive reading strategies among graduate students studying at the International Graduate Studies Human Resource Development Department of Burapha University with high, medium and low English reading proficiency levels?

Table 8 presents the effect size of the use of metacognitive reading strategies for three pairs of reading proficiency levels. The three pairs of reading proficiency levels were found to be slightly different in the use of metacognitive reading strategies. A small effect size was found between the high reading proficiency level and the medium reading proficiency level (*ES*= 0.03) in the use of metacognitive reading strategies. Second, the effect size (*ES* = 0.15) was found between the high reading proficiency level and the low reading proficiency level in the use of metacognitive reading strategies. Finally, there was a small effect size (*ES* = 0.13) between the medium reading proficiency level and the low reading proficiency level in the use of metacognitive reading strategies.

Table 8 Comparison of Effect Size in Graduate Students using Metacognitive Reading Strategies with Three Pairs of Reading Proficiency Levels.

Students' Proficiency	N	μ	σ	Sig.(2-tailed)	Cohen's *d*	ES
High	9	152.55	17.60	.341	0.03	Small
Medium	17	151.52	14.11			
High	9	152.55	17.60	.574	0.15	Small
Low	13	148.15	9.63			
Medium	17	151.52	14.22	.086	0.13	Small
Low	13	148.15	9.63			

Qualitative Data

Research Question 3: What are the problems of graduate students studying at the International Graduate Studies Human Resource Development Department of Burapha University when faced with academic reading?

From the Content Analysis.

A: The use of Metacogntive Reading Strategies.

The data of the use of metacognitive reading strategies (Planning, Monitoring and Evaluating strategies) were collected from the semi-structured interview questions among 22 graduate students with high, medium, and low reading proficiency levels.

1. Planning Strategy.

Some of the graduate students paid attention to the main points in a reading task to get a general understanding and ignoring irrelevant details.

"Planning or preparing something before complete the tasks is helpful from a large assignment into a smaller parts because it is manageable" (Student No.1)

2. Monitoring Strategy.

All of the graduate students with high, medium and low reading proficiency levels used the reading strategies for the Monitoring strategy to have ideas to make sense in order to check the clarity of their understanding.

"I selected scanning the key words but skimming helps me list whole context or mention the important details when I am reading" (Student No.2)

3. Evaluating Strategy.

Most of all the reading proficiency levels used the Evaluating strategy to assess how well a strategy worked for them which helped the students decide which strategies they preferred to use on specific tasks.

"After reading or answering the question, I always go back to myself make sure that my understanding goes in the same way in the directions."(Student No.3)

B: Problems of graduate students mostly encountered in their academic reading.

Three categories of problems encountered by the graduate students were the ones about reading habits and attitudes, vocabulary, and prior knowledge.

Category 1: Reading habits and attitudes.

Some revealed information about their reading habits and attitudes: did not frequently read academic texts in their leisure time or on holidays, reading the academic texts for only assignments or examinations, and a dislike of reading because of past bad experiences.

Category 2: Vocabulary.

Some graduate students lack the mastery of vocabulary: not having the mastery of vocabulary; however were aware of the importance of vocabulary for reading.

Category 3: Prior Knowledge.

Most of the three reading proficiency level graduate students did not relate what they had read to their prior experiences to make reading more understandable. Some agreed that prior knowledge was the most important aspect of the reading experience.

Conclusion and Discussion

The present study aimed to investigate the relationships between the use of metacognitive reading strategies and reading proficiency levels, to compare the differences in the use of metacognitive reading strategies of graduate students with different reading proficiency levels, and to examine academic reading problems encountered by graduate students.

To begin with, the present study pointed out that the relationship between metacognitive reading strategies and the overall reading proficiency level was a negative correlation. In other words, graduate students with a low reading proficiency level employed less metacognitive reading strategies, and the high-reading proficiency level students used more metacognitive strategies. The finding in this study was consistent with the study by Nematolla, Mazrae, Zar'ee, Ramezan poo r, & Rashidi, (2014). The possible explanations for this result were that the participants might not have been aware of their metacognitive reading strategies use while they were reading or their purpose of reading might not need metacognitive strategies. To elaborate on this, the participants reported during the interview that they did not employ planning, monitoring, and evaluating strategies while reading because they only wanted to comprehend the text. As a result of this report, the present study did not find a significant relationship between metacognitive strategies and reading proficiency level.

Regarding the differences in the use of metacognitive reading strategies among graduate students with different reading proficiency levels (high, medium, and low), the result in this study indicated that there was a small difference. The finding in this study was consistent with Zhang & Wu (2009). When examining the possible explanation for this result, the number of participants in each proficiency level might have impacted the result. To elaborate, the number for the high proficiency level was 9, the medium was 17, and the low was 13. These numbers might not be adequate to calculate statistical procedure. Therefore, the present study only found a small difference with the metacognitive reading strategies use.

When examining each subcategory of metacognitive reading strategies (planning, monitoring, and evaluating) closely, the present study found that that planning strategy was employed the most by participants with a low proficiency reading level. This might be because they needed time to plan before reading, but graduate students with high reading proficiency level can read the text without making a plan because they can do it automatically. For the monitoring strategy, the graduate students with a high reading proficiency level employed this strategy the most. This might be because they were concerned with their reading comprehension, so they used this strategy to check their understanding. For the evaluating strategy, the graduate students with a high reading proficiency level employed this strategy the most. This might be because they recognized their weaknesses and strengths and they wanted to improve their reading the next time.

With regards to the reading problems encountered by graduate students, the results showed that the major problems of graduate students included reading habits and attitudes, vocabulary and prior knowledge. To elaborate on this, the participants reported their negative experience, being forced to read when they were young, so they did not want to read. When they had to read, their negative experience came up. They also emphasized the importance of vocabulary and prior knowledge because the two helped them comprehend the text.

Based on the findings discussed above, educators and practitioners learned that metacognitive reading strategies might not work for every reading goal. When trying to use metacognitive reading strategies, educators and practitioners should think about the purpose of reading. Do metacognitive reading strategies match with the goal of reading? How do they match? Additionally, the results of this study indicated that graduate students with different reading proficiency levels employed metacognitive reading strategies differently. Educators and practitioners should be able to find ways to support their low-level reading proficiency students to master all metacognitive reading strategies (planning, monitoring, and evaluating). Finally, the reading problems reported by graduate students might be a useful knowledge base for educators and practitioners to consider when designing future reading courses and curricula. Educators should help their students realize their prior background, build up reading confidence, and implant a repertoire of vocabulary.

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