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The Relationship between Non-English Major Students' Metacognitive Reading Strategies use and Reading Comprehension Performance at Dong Nai Technology University

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***Abstract**: The purpose of this study is to investigate the relationship between non-English major student's metacognitive reading strategies use and their reading comprehension performance. This study was done at Dong Nai Technology University with the participation of 82 students aged from 19 to 22. In order to obtain the required data, two instruments were utilized: the Metacognitive Awareness of Reading Strategies Inventory (MARSI) by Mokhtari and Reichard, 2002 and a reading test – TOEIC to measure their reading performance. After collecting the required data, the statistical procedures were done using SPSS. The results revealed that students' metacognitive reading strategy use is at a moderate level and the most frequent and least frequent strategies that they used is Problem-solving and Global strategies respectively. Additionally, it found that more proficient readers used metacognitive strategies more frequently more successfully, and more appropriately than less proficient readers and vice versa.*

***Keywords:** reading comprehension, metacognitive reading strategies use, non-English major students, Viet Nam, metacognition*

I. INTRODUCTION

In the setting of global integration, English is considered to be an international language. Proficiency in English including listening, speaking reading, and writing skills is seen as a desirable goal for learners over the world, not except for Vietnam. In four language skills, reading can be considered one of the most essential skills for a university student because it provides written input so as to facilitate English skills. Therefore, there is a need for students to be able to comprehend what they read in order to succeed in their academic life and beyond. However, reading is one of the most difficult skills to develop to a high level of proficiency (Grabe & Stoller, 2002). What's more, many researches show that reading comprehension is a complex process and students usually have difficulties in constructing meaning from writing text (Grabe & Stoller, 2002) because the fact that reading comprehension is a mental process and it privately happens in the mind with very little observable action (Alderson, 2002). This difficulty has been focused by researchers for a long time and in recent years; they suggested that metacognitive reading strategy is an effective factor that improves reading comprehension among readers (Salataki & Akyel, 2002). And most of the studies shared an agreement that metacognitive strategies are helpful to second language learners.

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Rationale of the study

Many studies about these fields yet both theoretical and empirical studies tend to show conflicting perspectives and findings and they have a number of limitations as well. Those studies were conducted following either a qualitative or quantitative method. Most studies found that poor or unsuccessful learners are unable to or less frequently use metacognitive strategies in their reading processes. Thus, there is still a gap in which there are just few studies investigating the relationship between metacognitive reading strategy use and reading comprehension performance in the context of Vietnamese education.

Research questions

Based on main objectives, this research is mainly to answer the following questions:

1. What are the most frequently and least frequently used metacognitive reading strategies that non-English major students of Dong Nai Technology University employed?
2. Is there any significant relationship between these non-English major students' overall metacognitive reading strategies use and reading comprehension performance?

II. LITERATURE REVIEW

Metacognitive use of reading strategies

Metacognitive use of reading strategies can be defined as "the knowledge of the readers" cognition relative to the reading process and the self-control mechanisms they use to monitor and enhance comprehension" (Sheorey & Mokhtari, 2001, p. 432). In new approach, metacognitive reading strategy use is defined as any choice, behavior, thought, suggestion and technique used by a reader to help their learning process (Oxford, 1990; Cook, 2001; Macaro, 2001).

Relationship between metacognitive reading strategies use and reading comprehension

There have been many studies related to this field in the international context and local settings as well. Nevertheless, the results and findings are inconsistent and have been left inconclusive. On one hand, the metacognitive reading strategy was argued to be significantly correlated to reading comprehension. Awareness and use of metacognitive reading strategies have positive and direct relationship with reading comprehension performance; thus, students who use these strategies perform better in reading proficient tests (Sheorey & Mokhtari, 2001; Ilustre, 2011; Hong-Nam, 2014; Mokhtari and Reichard, 2002; Monos, 2003; Oxford, 1996; Nguyen T. M. T. & Trinh Q. L. ,2011). For example, Sheorey and Mokhtari (2001) investigated the difference in metacognitive awareness and us e of reading strategies between 150 English native and 152 non-native university students in the U.S. while reading academic texts. The Survey of Reading Strategies (SORS) (Mokhtari & Sheorey, 2002) was used in this study. The results suggested that there was a relationship between the students' reading ability and the reported reading strategies.

In addition, Mokhtari and Reichard (2002) assessed learners' level of reading strategies by using the Metacognitive Use of Reading Strategies Inventory (MARSI). Their findings showed that there were significant differences in the use of global and problem-solving reading strategies, but no significant differences in the use of support reading strategy. As a result, many studies found positive correlations and effects of metacognitive strategies on reading comprehension.

While most studies found positive correlations and effects of metacognitive strategies on reading comprehension, some found quite the opposite. Carrell (1989) examined metacognitive use of reading strategies by two groups of learners in their L1 and L2: the first group comprised 45 native speakers of Spanish learning English as an L2 in an intensive program and the second group comprised native speakers of English learning Spanish as a foreign language. The study also investigated the relationship between their use and reading comprehension. The results indicated a negative correlation between bottom-up reading strategies and reading performance. Nevertheless, this correlation was found to be positive for L2 readers.

The above-mention results with negative correlation share some differences with the findings in the local context. In a study by Hong-Nam (2014), he investigated the metacognitive use and reading strategies use

of high school-aged English language learners (ELLs) and the relationship between ELL reading strategy use and reading proficiency. Results reveal that participants reported moderate use of reading strategies overall. Moreover, Problem-solving strategies were most preferred by ELLs, followed by Global Reading strategies and Support Reading strategies. Although the differences in strategy use by reading proficient were not statistically significant, ELLs with intermediate proficient in reading reported using more strategies. For instance, Nguyen T. M. T. & Trinh Q. L. (2011) conducted a research exploring learners' metacognitive strategy use and reading comprehension of eighty-four students at grade 11 in an upper secondary school in a remote area of the Mekong Delta in Vietnam. Results showed that participants used Problem-solving strategies most often. On the contrary, Support strategies, least often. Although the study found a rather strong interaction between participants' use of these strategies and their achievement in reading comprehension, the similar studies in Vietnamese context are still useful

From the discussion above, it seems that metacognitive use and reading comprehension relate to each other to some extent, but it is still insufficient to reach any firm conclusion and the results are inconsistent and conflicting due to the differences in contexts, methods, and research subjects. As a result, there is still a gap in that there are few studies analyzing the relationship between metacognitive reading strategy use and reading comprehensionperformance in particularly in the context of Vietnamese education. The current study, therefore, has intention to bridge this research gap and would hopefully contribute to research in such field.

III. METHODOLOGY

The research settings

This study was done in the Dong Nai Technology University which located in Bien Hoa city with the participation of 82 non-English major students. Dong Nai Technology University (DNTU), a young and aspiring university in vibrant Bien Hoa City. The English level of the students is still not high. Most of students said that they were afraid of learning English and they learned English since it was an obligatory subject. However, the teaching quality is always a criterion placed in school's top position.

Research Design

A quantitative method collected data from a questionnaire survey and the test. Because it was impossible to observe how students at DNTU used metacognitive strategies in reading comprehension.

Population and Sample

The research was conducted in Dong Nai Technology University. The participants in this study consisted of 86 non-English major students drawn from three intact classes; however, only 82 students (32 females, 39%, 50 males, 61%) aging from 19 to 22 were considered as subjects of the study.

Data collection instruments

The first instrument is the questionnaire to measure metacognitive reading strategy use which is the revised version of the Metacognitive Awareness of Reading Strategies Inventory (MARSI). The Metacognitive Awareness of Reading Strategies Inventory (MARSI) developed by Mokhtari and Reichard (2002) to assess students' metacognitive awareness and perceived use of reading strategies. The MARSI comprises 30 items with five-point Likert scale ranging from "never" to "always". Three categories of metacognitive reading strategies are all testified, particularly global strategies (13 items), problem-solving strategies (8 items), and support strategies (9 items).

The reading comprehension section of TOEIC test is chosen to test students' reading comprehension performance. The reading section (part seven) of TOEIC test consists of fourteen passages and 48 questions. It takes about 50 minutes to complete the test. The score method for the test used in this study is that correct answer was given 1 and an incorrect answer received 0. Therefore, the maximum possible score for this test is 48 for the 48 items on the test.

Data collection procedure

Students were asked to do the reading comprehension section of TOEIC test in approximately 50 minutes. After administering the test, Metacognitive Awareness of Reading Strategies Inventory (MARSI) was given to students in order to assess their awareness and use of the metacognitive strategies in reading comprehension. All the test and questionnaires formats were introduced to students by the researcher beforehand. For scoring the reading comprehension, one score was assigned to each correct answer.

Data analyses procedure

Firstly, to answer research question 1 , I used descriptive statistical procedures. Secondly, Pearson correlation was used to explore the relationship between metacognitive reading strategy use and reading comprehension performance and then independent t-test was used to compare the differences between the mean frequencies of strategies used by two independent groups: more-proficient readers (subjects scoring above 24) and less-proficient readers (subjects scoring below 24). All the calculations were done with the support of The Statistical Package for the Social Sciences (SPSS) version 20. Finally, the results were analyzed and discussed in the light of previous studies and teaching implications were drawn.

IV. FINDINGS AND DISCUSSION

Analysis of data

The overall pattern, type and frequency of metacognitive reading strategies use reported by non-English major students at DNTU

Regarding the first research question, descriptive statistics including mean scores and standard deviations of students' responses were calculated and analyzed as follows.

Table 1. ***Descriptive statistics for the three subscales and overall use of metacognitive strategies by non-English major students at DNTU (N=82)***

	N	Mean	Std. Deviation
GLOBAL STRATEGY	82	3.23	.529
PROBLEM-SOLVING STRATEGY	82	**3.64**	.518
SUPPORT TRATEGY	82	3.36	.592
MARSI	82	**3.41**	.442
Valid N (listwise)	82		

The overall mean of reading strategy use is 3.41 suggesting a moderate level of metacognitive reading strategy use. In other words, non-English major participants in DNTU seem to be moderately aware of metacognitive reading strategies. As suggested by the designer in the previous part, the average means of 3.5 or higher are considered as high level of metacognitive use, 2.5-3.4 as medium level, and 2.4 or lower as low level.

Referring to the three subscales, the highest means is 3.64, associated with Problem- solving strategy followed by Support strategy (M = 3.36, SD = .592); whereas, Global strategy accounts for the lowest mean of 3.23. It means that among the three main categories of metacognitive strategies in MARSI, the most frequent use of the metacognitive reading strategies was found to be Problem-solving strategy (M = 3.64, SD = .518), followed by support strategy (M = 3.36, SD = .592), and the least frequent metacognitive reading strategies that the learners used are Global strategy (M = 3.23, SD = .529).

The relationship between participants' metacognitive reading strategies use and their reading comprehension performance

Table 2. Descriptive statistics of metacognitive reading strategy and reading comprehension scores

	Mean	S.D	Skewness	Kurtosis
TOEIC score	24.89	7.565	.595	-.600
MARSI	3.41	.442	.016	-.470
Valid N	**82**			

As indicated in Table 2, the skewness and kurtosis of the two variables in this study are in acceptable ranges [-1; 1], indicating that they are normally distributed (Bachman, 2004). Therefore, Pearson correlation can be used as a means of answering the second research question. The results of this statistical test are presented in Table 3.

Table 3. ***Pearson Correlations between the observed variables***

		ReadingScore	GLOBAL STRATEGY	PROBLEM SOLVING STRATEGY	SUPPORT TRATEGY	Total
Reading score	Pearson Correlation	-	**.517****	**.258***	**.368****	**.471****
	Sig. (2-tailed)		.000	.019	.001	.000
GLOBAL STRATEGY	Pearson Correlation		-	.330**	.633**	.811**
	Sig. (2-tailed)			.002	.000	.000
PROBLEM SOLVING STRATEGY	Pearson Correlation			-	.459**	.728**
	Sig. (2-tailed)				.000	.000
SUPPORT TRATEGY	Pearson Correlation				-	.879**
	Sig. (2-tailed)					.000
Total	Pearson Correlation					-
	Sig. (2-tailed)					
	N	82	82	82	82	82

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

As demonstrated in Table 3, the overall reading strategies and the reading comprehension performance were significantly and positively correlated (r = .471, p = .000). It means that the students who used more metacognitive strategies tended to score higher on the reading comprehension test, whereas the students who used fewer metacognitive strategies were likely to get low scores. Furthermore, all the three subscales were also positively correlated with reading achievement. Among them, Global strategies held the highest correlation with reading comprehension achievement (r = .517, p = 000), Support strategies ranked the second (r = .368, p = .001) and Problem-solving strategies ranked the last (r=.258, p= .019). Generally, metacognitive reading strategy use correlates with reading comprehension significantly; especially the three subscales

namely Global strategies, Problem-solving, Support strategies also have correlations with reading comprehension themselves.

These results did not provide sufficient evidence to support the relationship between reading comprehension and metacognitive reading strategies in general. In other words, it is not reliable to draw any conclusion without further analysis. Hence, independent Sample T-test was run to further explore the differences between more-proficient readers and less-proficient readers of non-English major students at DNTU in terms of metacognitive reading strategy use.

Based on scores from the reading comprehension test, 82 non-English major students are divided into two groups: more-proficient readers (involving 32 students who score more than or equal to 24) in TOEIC and less-proficient readers (including 52 students who score less than 24 in TOEIC). In fact, the maximum score is 48 with 48 correct answers. Descriptive statistics and Independent Sample T-test, which was to compare the level of MARSI of participants who were more-proficient readers and less-proficient readers, were conducted. The results are illustrated in Table 4 and Table 5.

Table 4. ***Descriptive statistics for the three subscales and overall use of metacognitive strategies in both groups (more-proficient readers and less-proficient readers)***

	Reading score	N	Mean	Std. Deviation
Total	More- proficient readers (>= 24.00)	34	**3.70**	.372
	Less- proficient readers (< 24.00)	48	**3.21**	.374
GLOBAL STRATEGY	More- proficient readers (>= 24.00)	34	3.59	.435
	Less- proficient readers (< 24.00)	48	2.97	.432
PROBLEM-SOLVING STRATEGY	More- proficient readers (>= 24.00)	34	3.81	.451
	Less- proficient readers (< 24.00)	48	3.53	.534
SUPPORT TRATEGY	More- proficient readers (>= 24.00)	34	3.68	.470
	Less- proficient readers (< 24.00)	48	3.14	.567

Table 4. shows the means and standard deviations of the overall metacognitive strategies and the three subscales of more-proficient and less-proficient readers. It depicts that the level of overall metacognitive reading strategies of more-proficient readers was slightly higher than that of less-proficient readers. For the more-proficient readers, the mean was 3.70 and the standard deviation was .372. Meanwhile, for the less-proficient readers, the mean was 3.21 and the standard deviation was .374. However, the standard deviation of the level of metacognitive reading strategies indicated that the amount of spread among more-proficient and less-proficient readers was not wide. In particular, with respect to more-proficient readers, the Problem-solving strategies were the most highly used strategies (M=3.81), followed by support strategies (M=3.68) and global strategies (M=3.59) respectively. The differences between more-proficient and less-proficient readers when using metacognitive strategy were indicated in Table 5 below.

Table 5. ***Independent sample T-Test for the three subscales and overall use of metacognitive strategies in both groups (more-proficient readers and less-proficient readers)***

	Levene's Test		t-test for Equality of Means		
	F	Sig.	t	Sig. (2-tailed)	Mean Difference
GLOBAL STRATEGY	.237	.627	5.787	**.000**	.484
PROBLEM-SOLVING STRATEGY	.100	.752	6.369	**.000**	.619
SUPPORT TRATEGY	1.158	.285	2.565	**.012**	.288
Total	1.732	.192	4.599	**.000**	.546

According to the data showed in the Table 5, more-proficient readers employed more metacognitive strategies than less-proficient readers (p=0.000<0.05). In addition, among three categories, there are significant differences in the use of metacognitive strategies between two groups, in particular Global strategies (t=5.787, p=.000), in Problem-solving strategies (t=6.369, p=.000), in Support strategies (t=2.565, p=.012).

In brief, non-English major students at DNTU use metacognitive reading strategies with a medium frequency. The most frequent use of the metacognitive reading strategies was found to be problem solving strategy, followed by support strategy, and then global strategy. Furthermore, overall reading strategies and the reading comprehension performance were significantly and positively correlated.

Discussion

The overall pattern, type and frequency of metacognitive reading strategies reported by non-English major students at DNTU

It can be inferred that the different metacognitive reading strategies are moderately used by the participants. This result supports the general findings of Sheorey & Mokhtari (2001); Ilustre (2011); Hong-Nam (2014); Mokhtari and Reichard (2002); Anderson (1991); Monos (2003); Oxford (1996); Chern (1993) EFL students' respectively moderate use and use of metacognitive reading strategies. It also supports the findings of Hong-Nam and Page (2014) on the moderate use of metacognitive reading strategies of ELLs in America. However, this particular result of the study does not coincide with the general findings of previous researches showing active high overall use of metacognitive reading strategies by EFL students in Malaysia (Pammu, Amir, & Maasum, 2014) and Magogwe, (2013). The possible reason for this astounding result may be because of the fact that the use of metacognitive strategies vary depending on language learners' settings and orientations. Another possible explanation for the medium habit may be that a number of differences such as L1 language, testing conditions, educational background, age… Overall, in comparison to other studies in other countries, despite the same pattern of using metacognitive strategy, the figures that participants in Vietnam reported seems to be a little lower than that figure.

The relationship between participants' metacognitive reading strategies use and their reading comprehension performance

The statistic test was performed at the level of .000 and the Pearson r value is 0.471, which denotes a positive relationship between metacognitive strategy use and reading comprehension (n= 82, r = .471, p = .000). Based on the findings of this part of the study, one may conclude that there appears to be a strong relationship between the effectiveness of strategy instruction and reading proficient level.

The findings of this study are, therefore, in line with those obtained by some previous studies (Anderson, 1991; Baker & Brown, 1984; Carrell et al., 1989; Pressley & Afflerbach, 1995; Zhang, 2001) that found there is a significant correlation between metacognitive use and reading comprehension among EFL and

ESL readers, suggesting that the higher the students' second language proficient, the higher their L2 reading comprehension performance would be. These results seem to support the findings of several studies in both second and foreign language learning (Singhal, 2001; Monos, 2003; O'Reilli and Mcnamara, 2007; Oxford, 2006) proposing that frequency and range of metacognitive strategy use increase as students become more proficient. It was not very surprising to see the positive relationship between metacognitive strategy use and reading achievement since this has been tested through numerous previous studies. However, the result of the current study demonstrated that such a relationship was not very strong (r = .471).

However, the findings are in sharp contrast with those reported by previous studies (Alhaqbani & Riazi, 2012; Monos, 2005; Sheorey & Mokhtari, 2001). The above finding did not confirm the findings of Alsamadi (2009) showing no significant relationship between Saudi EFL learners' comprehension performance and their use of reading strategies. It also does not support the findings of Mehrdad, Ahghar, and Ahghar (2012) revealing that use of metacognitive reading strategies has no significant relationship on the reading comprehension performance of elementary and advanced level Iranian EFL students. One interesting results is that correlation in the present study is quite lower comparing with results other studies for example Phakiti (2003), Monos (2003)and even Nguyen T. M. Thao & Trinh Q. Lap (2011) in Vietnam context. The possible explanation is the various cutural bachgrounds, learning situations, contexts. One more reason is that because MARSI is a self-reported questionnaire, participants can reflect what the think about their use of metacognitive strategies. Consequently, participants may overestimate or underestimate their use of metacognitive strategies.

V. CONCLUSION

The results revealed that students' metacognitive reading strategy use level is at a moderate level. "Problem-solving strategies" was the metacognitive strategy of highest frequency. The least frequent metacognitive reading strategies that the learners used are "Global strategies".

The students who score higher on the reading comprehension test demonstrate more frequent, more successful, and more appropriate use of metacognitive strategies and vice versa. This study confirmed the positive relationship between metacognitive strategies and reading comprehension performance. Furthermore, all the three sub metacognitive strategies were positively correlated with reading comprehension performance. The Global strategies held the highest correlation with reading achievement, Support strategies ranked the second and the Problem-solving strategies ranked the last. It was also concluded that the awareness and use of reading strategies had a positive and strong correlation with reading comprehension performance.

Limitations and suggestions for further studies

Despite its contributions, the study certainly has some limitations. First of all, due to the restricted number of participants and the short period time, it is unable to take a random sampling. Secondly, due to the constraint of research conditions, the research site is restricted to a single university. Thus, the results cannot be generalized to all Vietnamese students but just applicable in the research site and similar settings. As it is a self-report questionnaire, it should have been supported by another qualitative method such as class observation, focus group, case studied so that the results could be more accurate and reliable. The Vietnamese translation of questionnaire MARSI could be also a limitation to obtain information because the translation version cannot truly convey the same meaning as the original one does. Additionally, this research may be subject to the risk of biased results, as the surveyed sample was male-dominated with 50 males versus 32 females. This shortcoming might reduce the generalizability of the whole sample, thus should be thoughtfully considered (Kemper et al, 2003). What is more, the researcher could not control the other individual factor which may affect the results and the findings as well, for example, age, gender, attitudes, motivation,…

Notwithstanding the limitations, the study does offer some insights into the research issue. Future studies can, thus, focus and explore the correlation between reading comprehension performance and other factors. Further research needs to be conducted exploring the reading strategies used by students with

different professions and educational backgrounds so as to obtain a full picture of metacognitive strategy use in ESL students' reading comprehension. It is recommended that future studies should keep good control of the sampling process to ensure the homogeneity and the representation of the sample. Moreover, research sites should be extended into larger areas. Besides, the relationship between two variables can be clarified in terms of causality by conducting experimental research. Additionally, the research problems may be extended to different subjects and contexts. It would be helpful to conduct a multiple data-collecting method such as class observation, focus group, case studies in order to be more accurate and reliable in the results. With such findings and recommendations, the present study hopes to be informative to further studies.

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