

ความแตกต่างของการใช้กลวิธีในการอ่านเชิงวิชาการในภาษาต่างประเทศของนักศึกษาสายวิทยาศาสตร์ในระดับปริญญาตรีที่มีความแตกต่างทางเพศ และระดับความสามารถในการอ่าน
Differences in Academic Reading Strategy Employment among Male and Female Science-oriented Undergraduate Students with Different Levels of EFL Reading Proficiency

รักชนก แสงภักดีจิต (Rakchanok Saengpakdeejit)^{1*}
 ชาณุณรงค์ อินทรประเสริฐ (Channarong Intarprasert)²

บทคัดย่อ

การวิจัยในครั้งนี้ มีวัตถุประสงค์เพื่อศึกษาความแตกต่างของความถี่ในการใช้กลวิธีในการอ่านเชิงวิชาการของนักศึกษาที่มีระดับความสามารถในการอ่านเชิงวิชาการในภาษาต่างประเทศแตกต่างกัน ระหว่างเพศหญิงและเพศชาย กลุ่มตัวอย่างในการวิจัยในครั้งนี้ประกอบด้วยนักศึกษาสายวิทยาศาสตร์ที่ได้ลงทะเบียนเรียนในรายวิชา ESP จำนวน 1,096 คน เครื่องมือที่ใช้ในการสำรวจการใช้กลวิธีในการอ่านเชิงวิชาการของนักศึกษาคือ แบบสอบถามที่ผู้วิจัยได้สร้างขึ้น ($\alpha = 0.95$) ผลการวิจัยในครั้งนี้พบว่า ความถี่ในการใช้กลวิธีในการอ่านแต่ละกลวิธีของนักศึกษายู่ในระดับปานกลาง และในภาพรวมของการใช้กลวิธีในการอ่านเชิงวิชาการ พบความสัมพันธ์อย่างมีนัยสำคัญระหว่าง การใช้กลวิธีในการอ่านเชิงวิชาการของนักศึกษาเพศหญิง และนักศึกษาที่มีระดับความสามารถในการอ่านเชิงวิชาการในระดับสูง นอกจากนี้แล้ว การวิจัยในครั้งนี้ยังได้พบความสัมพันธ์อย่างมีนัยสำคัญระหว่างเพศของนักศึกษา ระดับความสามารถในการอ่านของนักศึกษา และการใช้กลวิธีในการอ่านเชิงวิชาการใน 2 กลวิธีหลัก ได้แก่ 1) กลวิธีในการอ่านจริง และ 2) กลวิธีในการเพิ่มพูนความเข้าใจจากการอ่าน

Abstract

The present large scale study focused on an investigation of the differences in the frequency of reading strategy used by male and female students with different levels of reading proficiency when reading academic materials. Participants were 1,096 science-oriented students who enrolled in ESP courses. The researcher-constructed reading strategy questionnaire (Alpha Coefficient (α) = 0.95) was used as the main instrument in collecting data. Results of the study reveal that most of the students' responses in terms of individual strategies were at the medium level. In the case of overall reading strategy use, the present study found significantly greater overall use of reading strategies among the students with high reading proficiency

¹Assistant Professor, Nong Khai Campus, Khon Kaen University ; Ph.D. Candidate, School of English, Institute of Social Technology, Suranaree University fo Technology

²Associate Professor (Ph.D.), School of English, Institute of Social Techonology, Suranaree University of Technology

*Corresponding author, e-mail: namprung@hotmail.com

level, and female students. Additionally, significant differences by reading proficiency level and gender in the use of two main strategy categories (1: actual reading strategies; and 2: textual comprehension enhancement strategies) were found.

คำสำคัญ: กลวิธีในการอ่าน, เพศ, ระดับความสามารถในการอ่าน

Keywords: reading strategies, gender, level of reading proficiency

Introduction

1. English situation in Thailand

In the case of the Thai educational system, English is a compulsory subject from the primary school onwards (Ministry of Education, 2002). Moreover, passing an English examination is a prerequisite for further education, especially at the tertiary degree. In spite of its importance, Thai students' proficiency in English is low because of the limitations in everyday use. According to Silapasatham (1999), language teaching and learning in Thai education is in crisis because a great number of university graduates cannot use English effectively.

At the tertiary level, English reading proficiency becomes an extremely important requirement for the students because many universities in Thailand take advantage of academic materials written in English. The students are expected to understand what they read regardless of the subject matter they study. Therefore, reading skills are of significant importance in such environments (Ozek, 2006). With strengthened reading skills, EFL students will make greater progress and attain greater development in academic areas.

Since the late 1970's, many researchers have begun to recognize the importance of the strategies students use while reading (Song, 1998). Several empirical investigations have been conducted on reading strategies and their relationships to different variables, such as level of language proficiency,

gender and students' field of study (Hosenfeld, 1977; Block, 1986; Kletzien, 1991; Swicegood, 1994; Sheorey and Mokhtari, 2001).

To date, in the Thai context, there has not been sufficient study that examines the relationship between students' reading strategy use and various independent variables. Hence, the aims of this study are to examine the frequency of strategy use by Thai students with different reading proficiency levels and determine how it is influenced by the students' gender.

2. Review of Literature

2.1 Literature review on reading strategy use by reading proficiency

Reading proficiency level has been seen as one of the factors that has played a role in influencing the use of strategies. Researchers in foreign language reading (Hosenfeld, 1977; Kletzien, 1991) have demonstrated that strategies used between more proficient readers and less proficient ones are different, with greater use of strategies among high proficient readers.

One of the most well-known studies of proficiency level and strategy use using a think-aloud procedure was conducted by Hosenfeld (1977) who studied reading strategies used by 40 students (20 successful readers and 20 non-successful readers) in western New York. The purpose of this study was to discover the differences that existed between the strategies of these two groups of students.

Lau (2006) also employed a think-aloud method to explore the differences between Chinese good and poor readers in their strategy use. The findings of this study indicated that Chinese good readers used more strategies and had better ability and knowledge of strategy use than did poor readers.

Kletzien (1991) carried out a study on reading strategy use using self-reports with 48 students (24 good students and 24 poor students) studying in 10th grade at a suburban high school in the U.S. The findings revealed that the two groups used the same type and number of strategies on the easy passage, but as the passage difficulty increased, good students used more types of strategies and used strategies more often than the poor students did.

2.2 Literature review on reading strategy use by gender

Several studies on language learning strategy use demonstrate that more females are active strategy users than their male counterparts (Green and Oxford, 1995; Goh and Foong, 1997). On the other hand, the results of studies on gender and reading strategy use do not show greater differences in results for either males or females (Sheorey and Mokhtari, 2001; Phakiti, 2003; Poole, 2005).

One of the studies that specifically looks at gender differences in reading strategies is that of Sheorey and Mokhtari (2001), who examined differences in the reported use of reading strategies of native and non-native English speakers when reading academic materials. Participants were 302 college students (150 native-English-speaking US and 152 ESL students). There were 92 male (60.5%) and 60 (39.5%) female students in the ESL group of students. The sample of US students included 73 male (48.7%) and 77 female (51.3%) participants. The data for this study were collected through the *Survey of Reading Strategies* (SORS), which is

intended specifically to discover the reading strategies purportedly used by students. The results show that in the US group, the females report significantly higher frequency of strategy usage; this gender effect is not reflected in the ESL sample.

Phakiti (2003) examined gender differences in cognitive and metacognitive strategy use in the context of English as a foreign language reading comprehension. The researcher investigated how 173 males and 211 females Thai university students utilized cognitive and metacognitive strategies while taking a multiple-choice reading comprehension test, and who then completed a questionnaire on their strategy use. The researcher found that males and females did not differ in their reading comprehension performance in terms of the cognitive strategy use. Unexpectedly, males reported significantly higher use of metacognitive strategies than females.

In a study carried out by Poole (2005), the results revealed that males and females did not significantly differ in their strategy use. The participants in this study were 248 ESL students. One hundred and ten students were female, while 138 were male. They were taken from six universities and one community college, all of which were in the United States. The mechanism to carry out this study was a quantitative survey called the *Survey of Reading Strategies*, or the SORS.

Although the results revealed by many researchers (Hosenfeld, 1977; Block, 1986; Sheorey and Mokhtari, 2001; Phakiti, 2003; Poole, 2005) cast light on the relationships between reading strategy use and reading proficiency level, as well as gender differences, more studies need to be conducted in order to draw conclusions about these relationships. Consequently, this study attempted to discover the relationship between gender differences and strategy use by comparing the reading strategies employed by male and female undergraduate students studying

at government universities in Thailand, as well as to examine how those reading strategies are affected by students' different reading proficiency levels.

Research questions

The present study was undertaken in order to describe reading strategy use employed by the subjects. The following research questions guide the study:

- Are there any differences between male and female students in their use of reading strategies while reading academic materials?
- Are there any differences among students with high, moderate, and low levels of reading proficiency in their use of reading strategies while reading academic materials?
- Do male and female students with different reading proficiency levels report employing academic reading strategies with different frequency?

Method

Participants

The study was carried out at ten government universities in five different geographical regions of Thailand obtained through stratified sampling and purposive sampling methods. At the time of data collection, participants enrolled in ESP courses. One thousand and ninety-six science-oriented students were identified as participants in the study. For the exact numbers of students, see Table 1. Before collecting the data, the students were given a brief, informative oral overview of the purpose of the study. All of them took the RPTEST (Reading Proficiency Test in English for Science and Technology-RPTEST) in order to investigate their reading proficiency level-high, moderate, and low.

The RPTEST is a researcher-constructed proficiency test which was constructed specifically to use in the present study in order to divide the subjects into three different proficiency levels, not related to or designed for any particular courses of study. The test consists of four reading passages with 50 comprehension question items. It reliably measured students' reading proficiency by virtue of their reading comprehension and vocabulary. Prior to the actual use of the test, it was developed and piloted for content; moreover, reliability and validity analyses were conducted. Item difficulty and item discrimination tests were also performed. After reading each passage, the students were required to answer the questions for which the question formats varied for each reading task, e.g. sorting events in order, True/False (Dichotomous items), and matching. Various types of test formats were selected for use because there is no one best format for reading tests, and each format has its own strengths and weaknesses (Alderson, 2000).

The total score for the RPTEST is 50. Then, the 'Third Technique' as suggested by Madsen (1983) was employed in managing the students' test scores in order to identify the students' level of reading proficiency. Through this procedure, the scores obtained through the RPTEST were grouped as the 'top third' scoring, 'middle third', and the 'bottom third' scoring. Any students whose test scores fall in the top third (scoring from 34-50) are considered as 'high-proficiency', middle third (with scoring between 17-33) as 'medium-proficiency', and the bottom third (with scores range from 0-16) as 'low-proficiency'. In sum, students who obtained scores below 17 points were classified as the low level of reading proficiency, those who scored between 17-33 points were classified as the moderate level and those who scored above 34 points were classified into the high level.

Table 1. Distribution of Subjects by Reading Proficiency Level and Gender

Reading Proficiency Level	Gender		Total
	Female	Male	
High	170	69	239
Moderate	411	233	644
Low	94	119	213
Total	675	421	1,096

Research Instrument

The data for this study were collected through the researcher-constructed reading strategy questionnaire. It was used as the main tool for examining students' use of reading strategies while reading academic materials. The questionnaire was based on a reading strategy inventory which was developed by the researcher. The reading strategy inventory was generated from the data obtained through the oral semi-structured interview carried out with 39 science-oriented students in four different government universities in Thailand. Purposive sampling was used to select four government university subjects for interview session. Each university was a representative of each region.

The questionnaire consisted of 39 items, each of which used a four-point Likert scale adapted from the descriptors by Oxford (1990) ranging from 1 ('never or almost never true of me') to 4 ('always or almost always true of me'). Students were asked to read each statement carefully and choose the number that applies to them, indicating the frequency with which they use the reading strategy implied in the statement. A background questionnaire, which was administered along with the reading strategy statements, asked students to provide information about their gender, institution, field of study, and high school background. The 39-item questionnaire was used to measure two main categories of reading strategies: 1) actual reading strategies (henceforward

"AR"); and 2) comprehension enhancement strategies (henceforward "CE").

The reading questionnaire used in this study was conducted in English and then translated into Thai. The Thai translation of the reading strategy questionnaire was conducted in order to help maximize ease of administration and ensure greater accuracy of results. The questionnaire was administered in the respondents' native language, in which they were most proficient and comfortable with. This was to guarantee successful data collection and avoid comprehension difficulties that respondents might encounter when given the English version (Zhang and Wu, 2009). The translated version was reviewed by three native Thai speakers who were highly proficient in both English and Thai for clarity, readability, and appropriateness. Before the actual use of the questionnaire, it was piloted with a group of 31 science-oriented undergraduate students (15 were Health Science students, 16 were Science and Technology students) from Khon Kaen University in order to check clarity and comprehensibility of each item. A pilot study "will significantly improve the quality of the data obtained" (Seligler and Shohamy, 1989). After the piloted Thai version was tested, revisions on some individual questionnaire items were made. Some items were discarded because they were considered repetitive. Some were rephrased and needed improvement because they were ambiguous. Then, the sequence of items in the original reading strategy

questionnaire were developed and rearranged, so that it would be easier for the respondents to complete the strategy questionnaire. The final questionnaire consisted of 39 items, with 28 items falling into the AR category, and 11 into CE category (see Table 2 for details).

The internal reliability coefficients (as determined by Cronbach's alpha, α) for the two main strategy categories were as follows: 1) actual reading strategies ($\alpha = 0.94$); and 2) textual comprehension enhancement strategies ($\alpha = 0.91$). The overall reliability coefficient was 0.95, indicating a dependable measure of the questionnaire because all constructs exhibited a high degree of internal consistency (Glass and Hopkins, 1996). The existing questionnaire (SORS) was not employed in this study because from interviewing the students, it was found that different strategies were employed while the students were reading academic texts. However, some strategy items existing in SORS were adopted, for example, using context clues, predicting or guessing text meaning, re-reading for better understanding, and underlining information in the text. A brief

description of each category and the number of items within each category are given below:

1. Actual reading strategies (AR) are the actions and procedures that the reader employs when faced with academic reading materials (28 items). The strategies in this category can be divided into three purposes as follows:

1.1 Strategies employed to comprehend the text before doing the actual reading (BAR)

1.2 Strategies employed to comprehend the text while doing the actual reading (WAR)

1.3 Strategies employed to comprehend the text after having done the actual reading (AAR).

2. Textual comprehension enhancement strategies (CE) are mechanisms to help the reader in understanding new vocabulary items found while reading (11 items). The strategies in this category can be divided into two purposes as follows:

2.1 Strategies for solving problems dealing with unknown vocabulary items found while reading (CEUV)

2.2 Strategies to retain knowledge of newly-learned vocabulary items (CERKV).

Table 2. Description of researcher-constructed reading strategy questionnaire

Category	Description	Example	Item
1) AR	Strategies for textual comprehension in the actual reading		1-28
1.1 Purpose 1 (BAR)	Strategies employed to comprehend the text before doing the actual reading	Searching for the meanings of new vocabulary items (BAR 1)	1-11
1.2 Purpose 2 (WAR)	Strategies employed to comprehend the text while doing the actual reading	Taking notes on the important information (WAR3)	12-22
1.3 Purpose 3 (AAR)	Strategies employed to comprehend the text after having done the actual reading	Making a summary of the whole reading text (AAR 3)	23-28
2) CE	Strategies for textual comprehension enhancement		29-39
2.1 Purpose 1: (CEUV)	Strategies for solving problems dealing with unknown vocabulary items found while doing the actual reading	Looking at the root of a new vocabulary item (CEUV 2)	29-33
2.2 Purpose 2: (CERKV)	Strategies to retain knowledge of newly-learned vocabulary items	Associating real objects with vocabulary items (CERKV 4)	34-39

Data Collection and Data Analysis

Procedures

All data were collected during the first three months of the first semester of the 2008 academic year (the second week of June - the first week of September, 2008). Students were informed at the beginning of the data collection that responses would not affect course grades and there were no right or wrong answers. To determine significance throughout the study, a significance level of 0.05 ($p < 0.05$) was set.

All subjects were requested to complete the reading strategy questionnaire immediately after finishing taking the RPTEST. They were given one hour and twenty-five minutes for taking the test, and another ten minutes for completing the questionnaire. The 'Third Technique' as suggested by Madsen (1983) was employed in managing the students' test scores in order to identify the students' level of reading proficiency.

The data obtained through the questionnaire were analyzed using descriptive statistical procedures as well as an analysis of variance (ANOVA) in order to investigate whether significant differences existed between male-female students with different levels of reading proficiency with respect to reported reading strategy use. In examining reading strategy use among these students on the reading strategy questionnaire scale, which ranges from 1 to 4, three levels of strategy use as adapted from Oxford and Burry-Stock's usage levels (1995) were identified for general reading strategy use: high (mean of 3.00 or higher), medium (mean of 2.00-2.99), and low (1.00-1.99).

Results

The students' responses in terms of the individual strategies as well as the two main strategy categories (i.e. 1: strategies for textual comprehension in the actual reading; and 2: strategies for textual comprehension enhancement) are shown in Tables 3 and 5 below. Table 3 shows the results obtained in answer to the first research question: *Are there any differences between male and female students in their reported reading strategy use while reading academic materials?* The means of individual items ranged from a medium of 2.74 to a low of 1.73 for male students (overall mean = 2.21) and 2.95-1.75 for female students (overall mean = 2.39), indicating a moderate overall use of reading strategies according to the criteria of the established strategy use mentioned earlier. For male students, 9 of the 39 strategies (23.08%) fell in the low level of strategy use (mean below 2.00), while the remaining 30 strategies (76.92%) had means between 2.00 - 3.00, indicating medium level of strategy use. For female students, 7 strategies (17.95%) fell in the low level of strategy use because they had means below 2.00, whereas the remaining 32 (82.05%) fell in the medium level of strategy use. Unexpectedly, none of the strategies fell in the high level of strategy use. Females students had higher mean scores (indicative of their more frequent use of strategies) for 38 of the 39 strategies. Only one strategy from CE strategy category (CERKV 3: Reciting vocabulary items in rhymes) was reported to be used more frequently by males. Moreover, the mean of 29 strategies varied significantly ($p < 0.05$). The difference in the overall means of the two groups of students was statistically significant ($p < 0.05$). The female means for both two strategy categories were higher than those for males; furthermore, the means for both AR and CE categories varied significantly ($p < 0.05$).

Table 3. Differences in reported reading strategy use between male and female students

Strategy	Male (n=421)		Female (n=675)		P-value
	Mean	S.D.	Mean	S.D.	
BAR 1: Searching for the meanings of new vocabulary items	2.12	.78	2.32	.79	.000
BAR 2: Reading the title of the text	2.35	.97	2.56	.88	.000
BAR 3: Going through the text quickly	2.23	.90	2.45	.84	.000
BAR 4: Reading the first and the last paragraphs	2.22	.92	2.28	.86	.302
BAR 5: Looking at pictures/charts/tables/figures that appear in the text	2.61	1.06	2.75	.96	.023
BAR 6: Looking at questions about the text (if any)	2.31	.98	2.51	.94	.001
BAR 7: Scanning for main ideas	2.41	.97	2.54	.86	.023
BAR 8: Thinking of one's background knowledge about the text	2.24	.94	2.33	.85	.117
BAR 9: Reading the abstract or introductory part	2.15	.92	2.33	.86	.001
BAR 10: Looking for the parallel article(s) in Thai (if any)	2.08	.97	2.18	.89	.085
BAR 11: Predicting what might happen in the text	2.54	1.05	2.66	.90	.045
WAR 1: Searching for the meanings of new vocabulary items	2.42	.85	2.65	.82	.000
WAR 2: Analysing a sentence structure	2.02	.79	2.12	.73	.031
WAR 3: Taking notes of the important information	2.10	.90	2.20	.84	.051
WAR 4: Guessing the meaning of the text from context or other techniques	2.64	.91	2.75	.81	.038
WAR 5: Rereading certain part(s) of the text	2.43	.96	2.66	.86	.000
WAR 6: Reading certain part(s) of the text slowly	2.45	.92	2.65	.84	.000
WAR 7: Avoiding a difficult part	2.33	.86	2.37	.76	.391
WAR 8: Highlighting important information or difficult vocabulary items by underlining	2.45	.94	2.85	.93	.000
WAR 9: Highlighting important information or difficult vocabulary items by making symbol(s)	2.33	.93	2.57	.94	.000
WAR 10: Thinking about the meaning of the reading text in Thai	2.24	.86	2.52	.86	.000
WAR 11: Doing a summary of certain part(s) of the reading text in either Thai or English, or both	2.10	.83	2.32	.81	.000
AAR 1: Searching for the meanings of new vocabulary items	2.15	.92	2.45	.92	.000
AAR 2: Discussing the reading text with classmate(s) or friend(s)	1.79	.80	1.98	.78	.000
AAR 3: Doing a summary of the whole reading text	1.74	.77	1.99	.78	.000
AAR 4: Retelling oneself or other people about what has been read	1.83	.81	1.96	.77	.012
AAR 5: Reviewing one's own notes	1.88	.82	2.14	.84	.000
AAR 6: Translating the reading text into Thai in the written scripts	1.93	.87	2.25	.89	.000
CEUV 1: Guessing the meaning of a new vocabulary item with or without looking at the context	2.74	.89	2.87	.76	.012
CEUV 2: Looking at the root of a new vocabulary	2.52	.91	2.62	.83	.053
CEUV 3: Looking up the meaning of a new vocabulary item from electronics resources e.g. Talking dictionary, dictionary program in a computer, and the Internet	2.53	.93	2.95	.92	.000
CEUV 4: Looking up the meaning of a new vocabulary item in a dictionary either English – English or English – Thai	2.48	.89	2.89	.83	.000
CEUV 5: Appealing for assistance from other people about the meaning of a new vocabulary item	2.30	.80	2.57	.79	.000
CERKV 1: Using new vocabulary items to converse with classmates and friends	1.86	.73	1.96	.71	.025
CERKV 2: Memorising new words with or without a list	2.06	.81	2.18	.80	.017
CERKV 3: Reciting vocabulary items in rhymes	1.85	.81	1.81	.75	.387
CERKV 4: Associating real objects with vocabulary items	2.09	.84	2.11	.80	.702
CERKV 5: Associating the sound of a Thai word with that of a new English vocabulary item	1.93	.82	1.99	.80	.250
CERKV 6: Tutoring one's classmate(s) or friend(s) for the reading lesson	1.73	.77	1.75	.73	.945
AR Category	2.22	.56	2.40	.51	.000
CE Category	2.19	.55	2.34	.50	.000
Overall Reading Strategies	2.21	.51	2.39	.46	.000

The data according to the two main strategy categories were further analyzed. The mean scores for these categories revealed a medium strategy use (means 2.00 - 3.00) as shown in Table 3.

Table 4 shows the top five and bottom five individual reading strategy preferences of male and females students. In order to make it easier to see the whole picture of students' reported frequency of reading strategy use, these strategies are presented

in order of their mean frequency scores, ranging from the highest to the lowest (that is, the most often used to the least used strategies). Surprisingly, the strategy which was reported to be used the most frequently by both male and female students was one of the strategies for textual comprehension enhancement (CE Category), and the one used the least frequently was also one of the strategies for textual comprehension in the actual reading.

Unexpectedly, the strategy which was reported to be used the least frequently by both groups of students was the same strategy (CERKV 6: Tutoring one's classmate(s) or friend(s) on the reading lesson).

Table 4. Reported reading strategies used most and least by male and female students

Male Students		Female Students	
Code	Reading Strategy	Code	Reading Strategy
CEUV 1	Guessing the meaning of a new vocabulary item with or without looking at the context	CEUV 3	Looking up the meaning of a new vocabulary item from electronics resources e.g. Talking dictionary, dictionary program in a computer, and the Internet
WAR 4	Guessing the meaning of the text from context or other techniques	CEUV 4	Looking up the meaning of a new vocabulary item in a dictionary either English – English or English – Thai
BAR 5	Looking at pictures/charts/tables/figures that appear in the text	CEUV 1	Guessing the meaning of a new vocabulary item with or without looking at the context
BAR 11	Predicting what might happen in the text	WAR 8	Highlighting important information or difficult vocabulary items by underlining
CEUV 3	Looking up the meaning of a new vocabulary item from electronics resources e.g. Talking dictionary, dictionary program in a computer, and the Internet	BAR 5	Looking at pictures/charts/tables/figures that appear in the text
CEUV 2	Looking at the root of a new vocabulary	WAR 4	Guessing the meaning of the text from context or other techniques
CEUV 4	Looking up the meaning of a new vocabulary item in a dictionary either English – English or English – Thai	BAR 11	Predicting what might happen in the text
WAR 8	Highlighting important information or difficult vocabulary items by underlining	WAR 5	Rereading certain part(s) of the text
WAR 6	Reading certain part(s) of the text slowly	WAR 1	Searching for the meanings of new vocabulary items
WAR 5	Rereading certain part(s) of the text	WAR 6	Reading certain part(s) of the text slowly
WAR 1	Searching for the meanings of new vocabulary items	CEUV 2	Looking at the root of a new vocabulary item
BAR 7	Scanning for main ideas	WAR 9	Highlighting important information or difficult vocabulary items by making symbol(s)
BAR 2	Reading the title of the text	CEUV 5	Appealing for assistance from other people about the meaning of a new vocabulary item
WAR 7	Avoiding a difficult part	BAR 2	Reading the title of the text
WAR 9	Highlighting important information or difficult vocabulary items by making symbol(s)	BAR 7	Scanning for main ideas
BAR 6	Looking at questions about the text (if any)	WAR 10	Thinking about the meaning of the reading text in Thai
CEUV 5	Appealing for assistance from other people about the meaning of a new vocabulary item	BAR 6	Looking at questions about the text (if any)
BAR 8	Thinking of one's background knowledge about the text	BAR 3	Going through the text quickly
WAR 10	Thinking about the meaning of the reading text in Thai	AAR 1	Searching for the meanings of new vocabulary items
BAR 3	Going through the text quickly	WAR 7	Avoiding a difficult part
BAR 4	Reading the first and the last paragraphs	BAR 8	Thinking of one's background knowledge about the text
BAR 9	Reading the abstract or introductory part	BAR 9	Reading the abstract or introductory part
AAR 1	Searching for the meanings of new vocabulary items	BAR 1	Searching for the meanings of new vocabulary items
BAR 1	Searching for the meanings of new vocabulary items	WAR 11	Doing a summary of certain part(s) of the reading text in either Thai or English, or both
WAR 3	Taking notes of the important information	BAR 4	Reading the first and the last paragraphs
WAR 11	Doing a summary of certain part(s) of the reading text in either Thai or English, or both	AAR 6	Translating the reading text into Thai in the written scripts
CERKV 4	Associating real objects with vocabulary items	WAR 3	Taking notes the important information
BAR 10	Looking for the parallel article(s) in Thai (if any)	BAR 10	Looking for the parallel article(s) in Thai (if any)
CERKV 2	Memorising new words with or without a list	CERKV 2	Memorising new words with or without a list
WAR 2	Analysing a sentence structure	AAR 5	Reviewing one's own notes
AAR 6	Translating the reading text into Thai in the written scripts	WAR 2	Analysing a sentence structure
CERKV 5	Associating the sound of a Thai word with that of a new English vocabulary item	CERKV 4	Associating real objects with vocabulary items
AAR	Reviewing one's own notes	AAR 3	Doing a summary of the whole reading text
CERKV 1	Using new vocabulary items to converse with classmates and friends	CERKV 5	Associating the sound of a Thai word with that of a new English vocabulary item
CERKV 3	Reciting vocabulary items in rhymes	AAR 2	Discussing the reading text with classmate(s) or friend(s)
AAR 4	Retelling oneself or other people about what has been read	AAR 4	Retelling oneself or other people about what has been read
AAR 2	Discussing the reading text with classmate(s) or friend(s)	CERKV 1	Using new vocabulary items to converse with classmates and friends
AAR 3	Doing a summary of the whole reading text	CERKV 3	Reciting vocabulary items in rhymes
CERKV 6	Tutoring one's classmate(s) or friend(s) on the reading lesson	CERKV 6	Tutoring one's classmate(s) or friend(s) on the reading lesson

Tables 5 and 6 demonstrate the results obtained for the second research question: Are there any differences among students with high, moderate, and low levels of reading proficiency in their reported reading strategy use while reading academic materials? As Table 5 shows, the means of individual items ranged from a medium of 2.63 to a low of 1.74 for students with a low level of reading proficiency (overall mean = 2.15), 2.83-1.72 for students with a moderate level of reading proficiency (overall mean = 2.32), and a high of 3.05 to a low of 1.77 for students with a high level of reading proficiency (overall mean = 2.46), indicating a moderate overall use of reading strategies according to established strategy use criteria described earlier. For low reading proficiency students, 11 of the 39 strategies (28.21%) fell in the low level or strategy use (mean below 2.00), while the remaining 28 strategies (71.79%) had means 2.00 - 3.00, indicating medium level of

strategy use. For moderate reading proficiency students, 6 strategies (15.38%) fell in the low level or strategy use, whereas the remaining 33 strategies (84.62%) fell in the medium level of strategy use. For high reading proficiency students, two of the 39 strategies (5.13%) fell in the high level of strategy use (mean of 3.00 or above), 33 strategies (84.62%) fell in the medium level of strategy, while the remaining four strategies (10.26%) fell in the low level or strategy use. Students with a high level of reading proficiency had higher mean scores (indicative of their more frequent reported use of strategies than students with moderate and low levels) for 34 of the 39 strategies. Moreover, the mean of 30 strategies varied significantly ($p < 0.05$). When taking a close look at the two strategy categories, the means for both AR and CE categories also varied significantly ($p < 0.05$), and revealed a medium strategy use (means 2.00 - 3.00) as shown in Table 5.

Table 5. Differences in reported reading strategy use among high, moderate, and low reading proficiency students

Strategy	Low (n=213)		Moderate (n=644)		High (n =239)		p-value
	\bar{x}	S.D.	\bar{x}	S.D.	\bar{x}	S.D.	
BAR 1: Searching for the meanings of new vocabulary items	2.00	.66	2.25	.79	2.44	.85	.000
BAR 2: Reading the title of the text	2.17	.84	2.47	.90	2.76	.97	.000
BAR 3: Going through the text quickly	2.03	.76	2.39	.86	2.62	.91	.000
BAR 4: Reading the first and the last paragraphs	2.13	.85	2.27	.88	2.33	.92	.043
BAR 5: Looking at pictures/charts/tables/figures that appear in the text	2.63	1.01	2.67	1.00	2.83	.98	.070
BAR 6: Looking at questions about the text (if any)	2.20	.85	2.40	.95	2.73	1.02	.000
BAR 7: Scanning for main ideas	2.29	.89	2.48	.89	2.67	.94	.000
BAR 8: Thinking of one's background knowledge about the text	2.17	.84	2.28	.88	2.43	.92	.008
BAR 9: Reading the abstract or introductory part	2.07	.85	2.26	.88	2.45	.92	.000
BAR 10: Looking for the parallel article(s) in Thai (if any)	2.06	.90	2.16	.93	2.19	.92	.264
BAR 11: Predicting what might happen in the text	2.49	.98	2.63	.95	2.69	.98	.074
WAR 1: Searching for the meanings of new vocabulary items	2.30	.78	2.57	.83	2.78	.90	.000
WAR 2: Analysing a sentence structure	1.97	.75	2.08	.76	2.21	.73	.003
WAR 3: Taking notes on the important information	2.12	.88	2.15	.85	2.23	.89	.329
WAR 4: Guessing the meaning of the text from context or other techniques	2.41	.82	2.71	.83	2.96	.87	.000
WAR 5: Rereading certain part(s) of the text	2.19	.88	2.59	.88	2.87	.89	.000
WAR 6: Reading certain part(s) of the text slowly	2.23	.89	2.58	.85	2.85	.85	.000
WAR 7: Avoiding a difficult part	2.27	.82	2.36	.79	2.40	.80	.177
WAR 8: Highlighting important information or difficult vocabulary items by underlining	2.54	.95	2.69	.94	2.85	.98	.004
WAR 9: Highlighting important information or difficult vocabulary items by making symbol(s)	2.45	.95	2.49	.95	2.47	.93	.837
WAR 10: Thinking about the meaning of the reading text in Thai	2.33	.87	2.45	.86	2.38	.89	.165
WAR 11: Doing a summary of certain part(s) of the reading text in either Thai or English, or both	2.07	.79	2.23	.81	2.39	.86	.000
AAR 1: Searching for the meanings of new vocabulary items	2.13	.87	2.33	.92	2.53	.96	.000
AAR 2: Discussing the reading text with classmate(s) or friend(s)	1.85	.74	1.87	.77	2.04	.88	.011
AAR 3: Doing a summary of the whole reading text	1.81	.73	1.87	.77	2.02	.86	.010
AAR 4: Retelling oneself or other people about what has been read	1.81	.74	1.90	.80	2.03	.84	.011
AAR 5: Reviewing one's own notes	1.93	.78	2.02	.81	2.20	.93	.002
AAR 6: Translating the reading text into Thai in the written scripts	2.04	.84	2.11	.88	2.24	.96	.046
CEUV 1: Guessing the meaning of a new vocabulary item with or without looking at the context	2.56	.87	2.83	.78	3.05	.80	.000
CEUV 2: Looking at the root of a new vocabulary item	2.41	.90	2.57	.85	2.77	.84	.000
CEUV 3: Looking up the meaning of a new vocabulary item from electronics resources e.g. Talking dictionary, dictionary program in a computer, and the Internet	2.40	.88	2.83	.94	3.03	.91	.000
CEUV 4: Looking up the meaning of a new vocabulary item in a dictionary either English – English or English – Thai	2.35	.84	2.81	.86	2.85	.87	.000
CEUV 5: Appealing for assistance from other people about the meaning of a new vocabulary item	2.26	.80	2.48	.80	2.61	.79	.000
CERKV 1: Using new vocabulary items to converse with classmates and friends	1.94	.74	1.90	.70	1.97	.75	.432
CERKV 2: Memorising new words with or without a list	1.98	.73	2.16	.80	2.21	.80	.004
CERKV 3: Reciting vocabulary items in rhymes	1.76	.71	1.80	.77	1.96	.83	.008
CERKV 4: Associating real objects with vocabulary items	1.95	.73	2.09	.83	2.26	.84	.000
CERKV 5: Associating the sound of a Thai word with that of a new English vocabulary item	1.84	.76	2.01	.82	1.97	.81	.026
CERKV 6: Tutoring one's classmate(s) or friend(s) on the reading lesson	1.74	.68	1.72	.76	1.77	.76	.725
AR Category	2.17	.55	2.33	.52	2.49	.53	.000
CE Category	2.11	.55	2.29	.51	2.40	.50	.000
Overall Reading Strategies	2.15	.51	2.32	.47	2.46	.48	.000

Table 6 shows the top five and bottom five individual reading strategy preferences of students with three different levels of reading proficiency.

Table 6. Reported reading strategies used most and least by high, moderate, and low reading proficiency students

Low proficiency students	Moderate proficiency students	High proficiency students
Reading Strategy	Reading Strategy	Reading Strategy
BAR 5: Looking at pictures/charts/tables/figures that appear in the text	CEUV 1: Guessing the meaning of a new vocabulary item with or without looking at the context	CEUV 1: Guessing the meaning of a new vocabulary item with or without looking at the context
CEUV 1: Guessing the meaning of a new vocabulary item with or without looking at the context	CEUV 3: Looking up the meaning of a new vocabulary item from electronics resources e.g. Talking dictionary, dictionary program in a computer, and the Internet	CEUV 3: Looking up the meaning of a new vocabulary item from electronics resources e.g. Talking dictionary, dictionary program in a computer, and the Internet
WAR 8: Highlighting important information or difficult vocabulary items by underlining	CEUV 4: Looking up the meaning of a new vocabulary item in a dictionary either English – English or English – Thai	WAR 4: Guessing the meaning of the text from context or other techniques
BAR 11: Predicting what might happen in the text	WAR 4: Guessing the meaning of the text from context or other techniques	WAR 5: Rereading certain part(s) of the text
WAR 9: Highlighting important information or difficult vocabulary items by making symbol(s)	WAR 8: Highlighting important information or difficult vocabulary items by underlining	WAR 6: Reading certain part(s) of the text slowly
WAR 4: Guessing the meaning of the text from context or other techniques	BAR 5: Looking at pictures/charts/tables/figures that appear in the text	WAR 8: Highlighting important information or difficult vocabulary items by underlining
CEUV 2: Looking at the root of a new vocabulary item	BAR 11: Predicting what might happen in the text	CEUV 4: Looking up the meaning of a new vocabulary item in a dictionary either English – English or English – Thai
CEUV 3: Looking up the meaning of a new vocabulary item from electronics resources e.g. Talking dictionary, dictionary program in a computer, and the Internet	WAR 5: Rereading certain part(s) of the text	BAR 5: Looking at pictures/charts/tables/figures that appear in the text
CEUV 4: Looking up the meaning of a new vocabulary item in a dictionary either English – English or English – Thai	WAR 6: Reading certain part(s) of the text slowly	WAR 1: Searching for the meanings of new vocabulary items
WAR 10: Thinking about the meaning of the reading text in Thai	WAR 1: Searching for the meanings of new vocabulary items	CEUV 2: Looking at the root of a new vocabulary item
WAR 1: Searching for the meanings of new vocabulary items	CEUV 2: Looking at the root of a new vocabulary item	BAR 2: Reading the title of the text
BAR 7: Scanning for main ideas	WAR 9: Highlighting important information or difficult vocabulary items by making symbol(s)	BAR 6: Looking at questions about the text (if any)
WAR 7: Avoiding a difficult part	BAR 7: Scanning for main ideas	BAR 11: Predicting what might happen in the text
CEUV 5: Appealing for assistance from other people about the meaning of a new vocabulary item	CEUV 5: Appealing for assistance from other people about the meaning of a new vocabulary item	BAR 7: Scanning for main ideas
WAR 6: Reading certain part(s) of the text slowly	BAR 2: Reading the title of the text	BAR 3: Going through the text quickly
BAR 6: Looking at questions about the text (if any)	WAR 10: Thinking about the meaning of the reading text in Thai	CEUV 5: Appealing for assistance from other people about the meaning of a new vocabulary item
WAR 5: Rereading certain part(s) of the text	BAR 6: Looking at questions about the text (if any)	AAR 1: Searching for the meanings of new vocabulary items
BAR 2: Reading the title of the text	BAR 3: Going through the text quickly	WAR 9: Highlighting important information or difficult vocabulary items by making symbol(s)
BAR 8: Thinking of one's background knowledge about the text	WAR 7: Avoiding a difficult part	BAR 9: Reading the abstract or introductory part
BAR 4: Reading the first and the last paragraphs	AAR 1: Searching for the meanings of new vocabulary items	BAR 1: Searching for the meanings of new vocabulary items
AAR 1: Searching for the meanings of new vocabulary items	BAR 8: Thinking of one's background knowledge about the text	BAR 8: Thinking of one's background knowledge about the text
WAR 3: Taking notes on the important information	BAR 4: Reading the first and the last paragraphs	WAR 7: Avoiding a difficult part
BAR 9: Reading the abstract or introductory part	BAR 9: Reading the abstract or introductory part	WAR 11: Doing a summary of certain part(s) of the reading text in either Thai or English, or both
WAR 11: Doing a summary of certain part(s) of the reading text in either Thai or English, or both	BAR 1: Searching for the meanings of new vocabulary items	WAR 10: Thinking about the meaning of the reading text in Thai
BAR 10: Looking for the parallel article(s) in Thai (if any)	WAR 11: Doing a summary of certain part(s) of the reading text in either Thai or English, or both	BAR 4: Reading the first and the last paragraphs

Table 6. Reported reading strategies used most and least by high, moderate, and low reading proficiency students (Cont.)

Low proficiency students Reading Strategy	Moderate proficiency students Reading Strategy	High proficiency students Reading Strategy
AAR 6: Translating the reading text into Thai in the written scripts	BAR 10: Looking for the parallel article(s) in Thai (if any)	CERKV 4: Associating real objects with vocabulary items
BAR 3: Going through the text quickly	CERKV 2: Memorising new words with or without a list	AAR 6: Translating the reading text into Thai in the written scripts
BAR 1: Searching for the meanings of new vocabulary items	WAR 3: Taking notes on the important information	WAR 3: Taking notes on the important information
CERKV 2: Memorising new words with or without a list	AAR 6: Translating the reading text into Thai in the written scripts	WAR 2: Analysing a sentence structure
WAR 2: Analysing a sentence structure	CERKV 4: Associating real objects with vocabulary items	CERKV 2: Memorising new words with or without a list
CERKV 4: Associating real objects with vocabulary items	WAR 2: Analysing a sentence structure	AAR 5: Reviewing one's own notes
CERKV 1: Using new vocabulary items to converse with classmates and friends	AAR 5: Reviewing one's own notes	BAR 10: Looking for the parallel article(s) in Thai (if any)
AAR 5: Reviewing one's own notes	CERKV 5: Associating the sound of a Thai word with that of a new English vocabulary item	AAR 2: Discussing the reading text with classmate(s) or friend(s)
AAR 2: Discussing the reading text with classmate(s) or friend(s)	AAR 4: Retelling oneself or other people about what has been read	AAR 4: Retelling oneself or other people about what has been read
CERKV 5: Associating the sound of a Thai word with that of a new English vocabulary item	CERKV 1: Using new vocabulary items to converse with classmates and friends	AAR 3: Doing a summary of the whole reading text
AAR 3: Doing a summary of the whole reading text	AAR 2: Discussing the reading text with classmate(s) or friend(s)	CERKV 1: Using new vocabulary items to converse with classmates and friends
AAR 4: Retelling oneself or other people about what has been read	AAR 3: Doing a summary of the whole reading text	CERKV 5: Associating the sound of a Thai word with that of a new English vocabulary item
CERKV 3: Reciting vocabulary items in rhymes	CERKV 3: Reciting vocabulary items in rhymes	CERKV 3: Reciting vocabulary items in rhymes
CERKV 6: Tutoring one's classmate(s) or friend(s) on the reading lesson	CERKV 6: Tutoring one's classmate(s) or friend(s) on the reading lesson	CERKV 6: Tutoring one's classmate(s) or friend(s) on the reading lesson

Table 6 shows the top five and bottom five individual reading strategy preferences of students with high, moderate, and low levels of reading proficiency arranged in descending order by their mean frequency scores in order to make it easier to see the whole picture of students' reported frequency of reading strategy use. Unexpectedly, the strategy which was reported to be used the least frequently among three groups of students was the same strategy (CERKV 6: Tutoring one's classmate(s) or friend(s) on the reading lesson).

Tables 7 and 8 show the results obtained to answer the third research question: *Do male and female students with different reading proficiency levels report employing academic reading strategies with different frequency?* ANOVA was employed to analyse the students' responses which could help to compare the 'high' reading proficiency students to the 'moderate', and 'low' reading proficiency students within male and female student groups. The results obtained through the students' responses demonstrated statistically significant differences for a number of individual strategies among the high, moderate, and low reading proficiency groups as shown in Tables 7 and 8 below.

Table 7. Differences in reported reading strategy use among male students with high, moderate, and low reading proficiency (n=421)

Strategy	Low (n=119)		Moderate (n=233)		High (n=69)		p-value
	\bar{X}	S.D.	\bar{X}	S.D.	\bar{X}	S.D.	
BAR 1: Searching for the meanings of new vocabulary items	1.97	.68	2.18	.81	2.14	.83	.044
BAR 2: Reading the title of the text	2.12	.87	2.38	.94	2.64	1.12	.001
BAR 3: Going through the text quickly	1.97	.80	2.32	.92	2.38	.94	.001
BAR 4: Reading the first and the last paragraphs	2.12	.86	2.26	.93	2.29	.97	.324
BAR 5: Looking at pictures/charts/tables/figures that appear in the text	2.61	1.07	2.58	1.04	2.74	1.11	.544
BAR 6: Looking at questions about the text (if any)	2.18	.88	2.32	.99	2.49	1.08	.112
BAR 7: Scanning for main ideas	2.26	.93	2.46	.98	2.48	.99	.143
BAR 8: Thinking of one's background knowledge about the text	2.16	.87	2.27	.96	2.29	.99	.538
BAR 9: Reading the abstract or introductory part	2.01	.90	2.19	.91	2.28	1.00	.101
BAR 10: Looking for the parallel article(s) in Thai (if any)	1.99	.93	2.13	.97	2.07	1.05	.434
BAR 11: Predicting what might happen in the text	2.50	1.07	2.58	1.03	2.48	1.09	.680
WAR 1: Searching for the meanings of new vocabulary items	2.32	.80	2.45	.86	2.46	.90	.344
WAR 2: Analysing a sentence structure	1.91	.74	2.06	.81	2.10	.83	.164
WAR 3: Taking notes on the important information	2.16	.94	2.08	.87	2.03	.92	.593
WAR 4: Guessing the meaning of the text from context or other techniques	2.44	.84	2.68	.90	2.83	1.03	.009
WAR 5: Rereading certain part(s) of the text	2.15	.92	2.54	.95	2.52	.96	.001
WAR 6: Reading certain part(s) of the text slowly	2.21	.91	2.54	.91	2.55	.95	.004
WAR 7: Avoiding a difficult part	2.34	.85	2.32	.84	2.33	.93	.960
WAR 8: Highlighting important information or difficult vocabulary items by underlining	2.50	.94	2.45	.92	2.35	1.03	.578
WAR 9: Highlighting important information or difficult vocabulary items by making symbol(s)	2.49	.92	2.31	.93	2.13	.89	.035
WAR 10: Thinking about the meaning of the reading text in Thai	2.29	.88	2.27	.82	2.07	.93	.187
WAR 11: Doing a summary of certain part(s) of the reading text in either Thai or English, or both	2.03	.85	2.12	.79	2.13	.93	.637
AAR 1: Searching for the meanings of new vocabulary items	2.05	.86	2.18	.95	2.22	.94	.353
AAR 2: Discussing the reading text with classmate(s) or friend(s)	1.78	.72	1.78	.80	1.81	.93	.960
AAR 3: Doing a summary of the whole reading text	1.71	.73	1.77	.79	1.70	.77	.715
AAR 4: Retelling oneself or other people about what has been read	1.74	.74	1.87	.82	1.86	.88	.341
AAR 5: Reviewing one's own notes	1.84	.78	1.90	.80	1.91	.92	.784
AAR 6: Translating the reading text into Thai in the written scripts	1.97	.83	1.92	.86	1.91	.92	.828
CEUV 1: Guessing the meaning of a new vocabulary item with or without looking at the context	2.52	.93	2.79	.87	2.97	.80	.002
CEUV 2: Looking at the root of a new vocabulary item	2.36	.95	2.56	.89	2.67	.89	.056
CEUV 3: Looking up the meaning of a new vocabulary item from electronics resources e.g. Talking dictionary, dictionary program in a computer, and the Internet	2.23	.86	2.65	.95	2.67	.90	.000
CEUV 4: Looking up the meaning of a new vocabulary item in a dictionary either English – English or English – Thai	2.21	.83	2.59	.90	2.54	.87	.001
CEUV 5: Appealing for assistance from other people about the meaning of a new vocabulary item	2.16	.78	2.34	.82	2.42	.72	.051
CERKV 1: Using new vocabulary items to converse with classmates and friends	1.88	.74	1.86	.71	1.83	.80	.880
CERKV 2: Memorising new words with or without a list	1.96	.74	2.12	.83	2.04	.85	.201
CERKV 3: Reciting vocabulary items in rhymes	1.71	.72	1.88	.81	2.00	.92	.051
CERKV 4: Associating real objects with vocabulary items	1.93	.70	2.14	.88	2.20	.88	.044
CERKV 5: Associating the sound of a Thai word with that of a new English vocabulary item	1.82	.78	2.00	.84	1.91	.84	.174
CERKV 6: Tutoring one's classmate(s) or friend(s) on the reading lesson	1.70	.68	1.77	.81	1.67	.78	.535
AR Category	2.14	.55	2.25	.56	2.26	.58	.174
CE Category	2.04	.54	2.25	.55	2.26	.53	.003
Overall Reading Strategies	2.11	.51	2.25	.51	2.26	.52	.044

Among male students, significant differences ($p < 0.05$) were found for the mean scores of the

CE Category ($p = 0.003$) as well as the mean scores of the overall reading strategy use ($p = 0.044$).

Furthermore, the results shown in Table 7 reveal that the group of students with high reading proficiency had the highest mean scores for 22 of the 39 strategies, the moderate reading proficiency

group had the highest means for 10 strategies, whereas the low reading proficiency group had the highest means for 7 strategies.

Table 8. Differences in reported reading strategy use among female students with high, moderate, and low reading proficiency (n=675)

Strategy	Low (n=94)		Moderate (n=411)		High (n=170)		p-value
	\bar{x}	S.D.	\bar{x}	S.D.	\bar{x}	S.D.	
BAR 1: Searching for the meanings of new vocabulary items	2.05	.65	2.29	.78	2.55	.84	.000
BAR 2: Reading the title of the text	2.23	.80	2.53	.87	2.81	.90	.000
BAR 3: Going through the text quickly	2.10	.72	2.42	.82	2.72	.88	.000
BAR 4: Reading the first and the last paragraphs	2.15	.86	2.28	.85	2.35	.89	.184
BAR 5: Looking at pictures/charts/tables/figures that appear in the text	2.67	.93	2.73	.98	2.86	.93	.193
BAR 6: Looking at questions about the text (if any)	2.21	.80	2.45	.92	2.83	.99	.000
BAR 7: Scanning for main ideas	2.32	.85	2.50	.83	2.75	.91	.000
BAR 8: Thinking of one's background knowledge about the text	2.18	.80	2.29	.83	2.48	.89	.010
BAR 9: Reading the abstract or introductory part	2.15	.78	2.29	.86	2.52	.88	.001
BAR 10: Looking for the parallel article(s) in Thai (if any)	2.14	.85	2.17	.91	2.24	.87	.585
BAR 11: Predicting what might happen in the text	2.48	.88	2.66	.90	2.78	.92	.031
WAR 1: Searching for the meanings of new vocabulary items	2.27	.76	2.63	.81	2.91	.87	.000
WAR 2: Analysing a sentence structure	2.04	.76	2.09	.74	2.25	.69	.024
WAR 3: Taking notes on the important information	2.06	.80	2.18	.84	2.31	.87	.062
WAR 4: Guessing the meaning of the text from context or other techniques	2.38	.81	2.72	.79	3.01	.79	.000
WAR 5: Rereading certain part(s) of the text	2.23	.84	2.61	.84	3.01	.81	.000
WAR 6: Reading certain part(s) of the text slowly	2.27	.82	2.60	.82	2.97	.78	.000
WAR 7: Avoiding a difficult part	2.17	.77	2.39	.76	2.43	.74	.019
WAR 8: Highlighting important information or difficult vocabulary items by underlining	2.61	.98	2.83	.93	3.05	.88	.001
WAR 9: Highlighting important information or difficult vocabulary items by making symbol(s)	2.39	.99	2.59	.94	2.61	.91	.156
WAR 10: Thinking about the meaning of the reading text in Thai	2.39	.87	2.56	.87	2.51	.84	.244
WAR 11: Doing a summary of certain part(s) of the reading text in either Thai or English, or both	2.11	.71	2.30	.82	2.51	.80	.000
AAR 1: Searching for the meanings of new vocabulary items	2.23	.87	2.41	.90	2.65	.94	.001
AAR 2: Discussing the reading text with classmate(s) or friend(s)	1.94	.76	1.92	.75	2.13	.84	.012
AAR 3: Doing a summary of the whole reading text	1.93	.72	1.93	.75	2.15	.86	.006
AAR 4: Retelling oneself or other people about what has been read	1.89	.73	1.91	.78	2.10	.82	.021
AAR 5: Reviewing one's own notes	2.04	.78	2.09	.81	2.31	.91	.008
AAR 6: Translating the reading text into Thai in the written scripts	2.13	.85	2.22	.87	2.38	.94	.057
CEUV 1: Guessing the meaning of a new vocabulary item with or without looking at the context	2.61	.79	2.85	.72	3.08	.79	.000
CEUV 2: Looking at the root of a new vocabulary item	2.48	.81	2.58	.82	2.82	.82	.001
CEUV 3: Looking up the meaning of a new vocabulary item from electronics resources e.g. Talking dictionary, dictionary program in a computer, and the Internet	2.63	.86	2.93	.93	3.17	.88	.000
CEUV 4: Looking up the meaning of a new vocabulary item in a dictionary either English – English or English – Thai	2.53	.83	2.94	.80	2.98	.85	.000
CEUV 5: Appealing for assistance from other people about the meaning of a new vocabulary item	2.39	.81	2.56	.78	2.68	.80	.017
CERKV 1: Using new vocabulary items to converse with classmates and friends	2.01	.74	1.92	.70	2.03	.73	.213
CERKV 2: Memorising new words with or without a list	2.00	.72	2.18	.79	2.27	.78	.026
CERKV 3: Reciting vocabulary items in rhymes	1.81	.69	1.75	.74	1.94	.79	.023
CERKV 4: Associating real objects with vocabulary items	1.98	.78	2.07	.80	2.29	.82	.002
CERKV 5: Associating the sound of a Thai word with that of a new English vocabulary item	1.86	.74	2.02	.80	1.99	.81	.213
CERKV 6: Tutoring one's classmate(s) or friend(s) on the reading lesson	1.79	.67	1.69	.74	1.81	.76	.183
AR Category	2.21	.55	2.38	.49	2.58	.48	.000
CE Category	2.19	.55	2.32	.48	2.46	.49	.000
Overall Reading Strategies	2.20	.52	2.36	.44	2.54	.44	.000

As for female students, the results obtained revealed significant differences ($p < 0.05$) for each of the two strategy categories: AR and CE Categories ($p = 0.000$) as well as the overall strategy use ($p = 0.000$). Among these students, the high reading proficiency group means were the highest for 37 of the 39 strategies, whereas the moderate proficiency group had the highest means for the two remaining strategies. The differences were found statistically significant for 21 strategies from AR Category (BAR 1, 2, 3, 6, 7, 8, 9, and 11; WAR 1, 2, 4, 5, 6, 7, 8, and 11; AAR 1, 2, 3, 4, and 5), and eight strategies from CE Category (CEUV 1, 2, 3, 4, and 5; CERKV 2, 3, and 4).

Discussion

This study attempted to explore whether there were any significant differences in the reported use of reading strategies between male and female students with different levels of reading proficiency while reading academic materials. Five interesting findings revealed from the results are worthy of notice. These findings can be summarized below.

1. The major (statistically significant differences, $p < 0.05$) distinction between male and female students reported reading strategy use is in each of the two main strategy categories (see Table 3 for details). The female group means for AR and CE Categories were higher than the male group means for the same categories ($p = 0.000$). Furthermore, the distinction among the students with high, moderate, and low reading proficiency levels is in each of those two strategy categories (see Table 5 for details). The high reading proficiency group means for each of the two categories were the highest ($p = 0.000$).

2. When taking a close look at the Tables 4 and 6, CEUV 1 (Guessing the meaning of a new vocabulary item with or without looking at the context) and CEUV 3 (Looking up the meaning of a new vocabulary item from electronics resources) were shown in the top five individual reading strategy preferences of students (that is, the most often used strategies).

3. Both male and female high reading proficiency students show comparable degrees of higher reported use for AR and CE Categories than moderate and low reading proficiency students (see Tables 7 and 8 for details).

4. CERKV 6 (Tutoring one's classmate(s) or friend(s) on the reading lesson) was reported to be used the least frequently by the male-female student group, and group of high, moderate, and low reading proficiency students.

5. In the female group, which included comparable numbers of high, moderate, and low reading proficiency students, the high proficiency students reported high frequency of reading strategy use for each of the two categories. This proficiency effect was not reflected in the male group for AR Strategy Category ($P > .05$, see Tables 7 and 8 for details).

The findings mentioned above are worthy of further discussion. First, in the case of male and female students in this study, the results seem consistent with a number of studies on language learning strategies (not specifically reading strategies) which have found that females reported using strategies more often than their male counterparts (Green and Oxford, 1995; Goh and Foong, 1997). However, the results may not be consistent with the findings of some previous studies on reading strategy use which do not show greatly different results for either males or females (Sheorey and Mokhtari, 2001;

Phakiti, 2003; Poole 2005). The results of the differences in strategy use by gender showed that female students in general reported using certain reading strategies more frequently than did their male counterparts. Female students reported employing 38 of the 39 strategies more frequently than male students. There was only one strategy (CERKV 3: Reciting vocabulary items in rhymes) reported to be used more frequently by male students. Moreover, these differences were statistically significant for 30 strategies. In addition, the mean scores of the overall reading strategy use as well as the two strategy categories were higher for female students, with statistically significant differences ($p < 0.001$) found.

Furthermore, these results are consistent with the general tenor of previous studies on reading strategy use and proficiency level (Hosenfeld, 1977; Kletzien, 1991; Lau, 2006), the analysis of the differences in reading strategy use by reading proficiency level showed that students with high level of reading proficiency in general reported employing certain strategies more frequently than did the students with moderate, and low levels of reading proficiency. High reading proficiency students reported using 36 of the 39 strategies more frequently than moderate and low reading proficiency students; however, these differences were statistically significant for 29 strategies. Furthermore, the mean scores of the overall reading strategy use as well as the two strategy categories were higher for high reading proficiency students, with statistically significant differences ($p < 0.001$) found.

Second, the analysis of the differences in reading strategy use showed that students in general reported using strategies in AR Category more frequently than strategies in CE Category. However, a closer inspection of the data in Tables 4 and 6 shows that the most often used individual strategies

are the strategies from CE Category. Perhaps, this is because a number of strategies in each of these two categories are not balanced. That is, the AR strategies outnumbered the CE strategies by 100%.

Finally, the analysis of the differences among high, moderate, and low reading proficiency students with regard to their gender showed that gender was related to the students' reported use of those strategies. Female high reading proficiency students reported a higher use of almost all of the reading strategies in the questionnaire except one of the CE strategies (CERKV 3: Reciting vocabulary items in rhymes) than did male high reading proficiency students. These differences were statistically significant for the mean scores of the overall reading strategy use as well as for the two reading strategy categories. These findings can provide support for prior studies on the relationship among reading strategy use, reading proficiency level, and gender.

The findings reported in this study pertain to the reported reading strategies among male and female science-oriented undergraduate students with different levels of reading proficiency. The authors believe it is important for all students to be aware of employing reading strategies when reading academic materials. It may be the important duty of language teachers to recognize which strategies may be more appropriate for their students. The more the teachers know about the differences of their students, the more the teachers can provide appropriate strategies for their reading classes.

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