GENDER DIFFERENCES IN THE USE OF METACOGNITIVE AND COGNITIVE STRATEGIES IN AN ENGLISH READING COMPREHENSION TEST

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ความแตกต่างระหว่างเพศในการใช้กลวิธีด้านอภิปัญญาและกลวิธีการเรียนรู้ในการทำแบบทดสอบการอ่านภาษาอังกฤษเพื่อความเข้าใจ

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วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรดุษฎีบัณฑิต
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Field of Study	English as an International Language
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จำปูน สำอาง : ความแตกต่างระหว่างเพศในการใช้กลวิธีด้านอภิปัญญาและกลวิธีการเรียนรู้ในการทำแบบทดสอบการอ่านภาษาอังกฤษเพื่อความเข้าใจ (GENDER DIFFERENCES IN THE USE OF METACOGNITIVE AND COGNITIVE STRATEGIES IN AN ENGLISH READING COMPREHENSION TEST) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: ดร. สุทธิรักษ์ ทรัพย์สิรินทร์, 251 หน้า.

งานวิจัยนี้มีจุดประสงค์เพื่อศึกษาความแตกต่างในการใช้กลวิธีการทำแบบทดสอบ, กลวิธีด้านการเรียนรู้และกลวิธีด้านอภิปัญญาระหว่างการใช้กลวิธีตามการรับรู้กับกลวิธีแบบที่ใช้จริงในการทำแบบทดสอบและศึกษาความแตกต่างระหว่างเพศต่อการใช้กลวิธีด้านการเรียนรู้และการใช้กลวิธีด้านอภิปัญญาตามการรับรู้และแบบที่ใช้จริงในการทำแบบทดสอบการอ่านภาษาอังกฤษเพื่อความเข้าใจ กลุ่มตัวอย่างที่ใช้ในการวิจัยครั้งนี้เป็นนักเรียนชั้นมัธยมศึกษาปีที่ 4 จำนวน 250 คน โดยแบ่งออกเป็นเพศชายจำนวน 125 คนและเพศหญิงจำนวน 125 คน เครื่องมือที่ใช้ในการวิจัยประกอบด้วยแบบสอบถามและแบบทดสอบการอ่านภาษาอังกฤษเพื่อความเข้าใจ ขั้นตอนในการเก็บข้อมูลมีดังนี้ หนึ่งนักเรียนกลุ่มตัวอย่างตอบแบบสอบถามการใช้กลวิธีตามการรับรู้ จากนั้นสองสัปดาห์นักเรียนกลุ่มตัวอย่างทำแบบทดสอบการอ่านภาษาอังกฤษเพื่อความเข้าใจและให้ตอบแบบสอบถามการใช้กลวิธีตามแบบที่ใช้จริงทันทีหลังจากที่ทำแบบทดสอบเสร็จ นักเรียนจำนวน 40 คนจากกลุ่มตัวอย่างแบ่งเป็นเพศชายจำนวน 20 คนและเพศหญิงจำนวน 20 คน ถูกเลือกมาเพื่อทำรายงานความคิดย้อนหลังออกมาเป็นคำพูด การวิเคราะห์ข้อมูลใช้การวิเคราะห์เชิงปริมาณคือการวิเคราะห์ความแปรปรวนแบบพหุ และการวิเคราะห์เชิงคุณลักษณะคือการวิเคราะห์เนื้อหาของการรายงานความคิดย้อนหลังออกมาเป็นคำพูด

ผลการศึกษาพบว่า 1) ไม่มีความแตกต่างกันทางสถิติอย่างมีนัยสำคัญในการใช้กลวิธีการทำแบบทดสอบ, กลวิธีด้านการเรียนรู้และกลวิธีด้านอภิปัญญาระหว่างการใช้กลวิธีตามการรับรู้กับแบบที่ใช้จริงในการทำแบบทดสอบ 2) นักเรียนชายและนักเรียนหญิงใช้กลวิธีด้านการเรียนรู้และใช้กลวิธีด้านอภิปัญญาตามการรับรู้แตกต่างกัน คือนักเรียนหญิงใช้กลวิธีด้านการเรียนรู้มากกว่านักเรียนชาย แต่นักเรียนชายและนักเรียนหญิงใช้กลวิธีด้านอภิปัญญาไม่แตกต่างกัน 3) นักเรียนชายและนักเรียนหญิงใช้กลวิธีด้านการเรียนรู้และการใช้กลวิธีด้านอภิปัญญาแบบที่ใช้จริงในการทำแบบทดสอบไม่แตกต่างกัน ผลการศึกษาเหล่านี้บ่งบอกว่านักเรียนชั้นมัธยมศึกษาปีที่ 4 ได้รับการเรียนการสอนที่เหมือนกัน ดังนั้นนักเรียนชั้นมัธยมศึกษาปีที่ 4 จึงใช้กลวิธีไม่แตกต่างกัน 4) การรายงานความคิดย้อนหลังออกมาเป็นคำพูดของนักเรียนแสดงให้เห็นว่านักเรียนชายและนักเรียนหญิงใช้กลวิธีที่หลากหลายแต่อย่างไรก็ตามทั้งนักเรียนชายและนักเรียนหญิงโดยปกติแล้วใช้กลวิธีไม่แตกต่างกัน จากผลการศึกษาเหล่านี้บ่งบอกว่า 1) การใช้กลวิธีการทำแบบทดสอบ, กลวิธีด้านการเรียนรู้และกลวิธีด้านอภิปัญญาอาจจะไม่แตกต่างกัน นอกจากนี้ผลการศึกษาบ่งบอกว่าเพศอาจไม่มีผลต่อการใช้กลวิธีด้านการเรียนรู้และกลวิธีด้านอภิปัญญาในการอ่าน สาเหตุที่เป็นเช่นนี้อาจจะเกิดจากนักเรียนชั้นมัธยมศึกษาปีที่ 4 มีความสามารถในการอ่านที่ไม่แตกต่างกันและการได้รับการสอนในชั้นเรียนที่เหมือนกัน

สาขาวิชา ภาษาอังกฤษเป็นภาษานานาชาติ ลายมือชื่อนิสิต .....

ปีการศึกษา 2558 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

5387761020 : MAJOR ENGLISH AS AN INTERNATIONAL LANGUAGE
KEYWORDS: GENDER DIFFERENCES / PERCEIVED STRATEGIES / ACTUAL USE STRATEGIES / COGNITIVE STRATEGIES / METACOGNITIVE STRATEGIES / TEST TAKING STRATEGIES

CHAMPOON SAM-ARNG: GENDER DIFFERENCES IN THE USE OF METACOGNITIVE AND COGNITIVE STRATEGIES IN AN ENGLISH READING COMPREHENSION TEST. ADVISOR: SUTTHIRAK SAPSIRIN, Ph.D., 251 pp.

The objectives of this study were to investigate the differences in the use of test taking strategies, cognitive and metacognitive strategies between perceived and actual use strategies in testing conditions, and to investigate gender differences in the use of cognitive and metacognitive strategies in perceived strategies and in actual use strategies in an English reading comprehension test. The participants were 250 Grade 10 Thai students (125 males, 125 females). The research instruments consisted of strategy questionnaires (i.e. a perceived strategy questionnaire, and an actual use strategy questionnaire), and an English reading comprehension test. The data collection procedure consisted of the following stages. First, the participants were asked to complete the perceived strategy questionnaire. Two weeks later, they were asked to take the English reading comprehension test. After the participants finished the test, they immediately answered the actual use strategy questionnaire. Forty participants (20 males, 20 females) from the samples were selected for retrospective verbal reports. The data were analyzed by quantitative and qualitative approaches. The quantitative approach was MANOVAs, and the qualitative approach was content analysis of verbal protocols.

The findings were as follows. First, there were no statistically significant differences in the use of test taking strategies, cognitive and metacognitive strategies between perceived strategies and actual use strategies in testing conditions. Second, there were gender differences in the use of cognitive and metacognitive strategies in perceived strategies. That is, females reported more frequent use of cognitive strategies than males did, while there were no statistically significant differences between males and females for metacognitive strategies. Third, there were no gender differences in the use of cognitive and metacognitive strategies in actual use in testing conditions. Finally, the verbal report analysis showed that males and females used a wide range of strategies. Generally, grade 10 students did not use strategies differently. These findings could suggest that, first, they may not have been exposed to many types of reading tasks or tests. In addition, the findings indicate that males and females may not affect the way students actually used cognitive and metacognitive strategies in reading. This may be due to the same reading ability as well as English reading instruction.

Field of Study: English as an International Language Student's Signature .....
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INTRODUCTION

1.1 Background of the study

Several language testing researchers have been concerned with the identification and characterization of the factors that influence variations in the performance of students on language tests (Lan & Oxford, 2003). The factors that influence the language tests results can be the communicative language ability (CLA), the processing strategies, personal characteristics as well as the test methods and test tasks (Bachman, 1990).

Researchers have investigated how people learn the language and how they use the strategies to understand, and remember what they have learnt (Lee, 2010). A number of researchers have defined language learner strategies in various ways. For example, language learner strategies are techniques or devices that learners use to acquire their knowledge (Rubin, 1975). The strategies include special ways of thinking or behaving to comprehend, learn, or retain new information (O' Malley & Chamot, 1990). Cohen (1988) classified the strategies into language learning strategies and language use strategies. Language learning strategies and language use strategies are the processes that learners consciously choose in order to learn and use a second or foreign language (Cohen, 1998). Furthermore, language learner strategies are divided into perceived and actual use strategies (Phakiti, 2008). Perceived strategies are used across contexts, while actual use strategies are used in a particular context (Phakiti, 2008). A context can be a learning situation; a target language use situation such as in

reading, speaking, listening, or writing; and a language testing situation (Khalil, 2005; Lan & Oxford, 2003; Liyanage & Bartlett, 2012; Phakiti, 2003b).

Many research studies have been conducted on either perceived strategies (e.g. Bacon, 1992; Gerami & Gaijhlou, 2011; Lan & Oxford, 2003; Malcolm, 2009) or actual use strategies (e.g. Cohen & Upton, 2007; Lan & Oxford, 2003; Young & Oxford, 1997). Two sets of strategies that have been investigated are metacognitive and cognitive strategies. Cognitive strategies are mental processes that students use while learning, using a target language, and taking language tests (Wenden & Rubin, 1987; Young & Oxford, 1997). The strategies are directly used to help students manipulate and transform the target language (O'Malley & Chamot, 1990; Oxford, 1990). Metacognitive strategies are an executive function that affects cognitive strategies (Macaro, 2006; O'Malley & Chamot, 1990; Oxford, 1990; Wenden, 1991). Learners use metacognitive strategies to control their learning processes (Irwin, 2007). Similar to cognitive strategies, metacognitive strategies are involved in a target language use and a test-taking situation (Irwin, 2007; Purpura, 1999).

Gender differences are one set of variables that researchers study when they investigate perceived and actual use strategies. Several researchers (e.g. Bacon, 1992; Khalil, 2005; Lee, 2012; Liyanage & Bartlett, 2012; Oxford, 1996; Phakiti, 2003) have found inconsistencies in the association between language learner strategies and the gender of second language students. Some researchers (e.g Khalil, 2005; Lee, 2012; Liyanage & Bartlett, 2012) did find gender differences, in that females use strategies more often than males do, whereas some researchers (e.g. Oxford, 1996; Poole, 2005; Young & Oxford, 1997) did not find gender differences in the use of strategies. Therefore, research studies in this area may not produce conclusive evidence of gender

differences in the use of language learner strategies. Further research study should investigate gender differences in perceived and actual use strategies (Phakiti, 2003a), because the interaction in perceived strategies and actual use strategies are complex. Males and females may use strategies in normal reading conditions differently from the way they use the strategies in specific conditions like in test taking conditions (Phakiti, 2003b). Furthermore, investigating gender differences may offer insights into the similarities and differences between genders' cognitive processes in language acquisition (Young & Oxford, 1997). Although, there are several research studies on perceived and actual use strategies, not many research studies (e.g. Al-Melhi, 1999; Alsheikh, 2011; Lee, 2012; Phakiti, 2008) have investigated cognitive and metacognitive strategies in both perceived and actual use strategies.

In order to investigate strategies used in taking a test, test tasks must be one of many factors that should be given careful consideration. This is because test tasks influence test-taker performance (Bachman, 1990), and the changes of operational settings influence individuals' construction of context and the use of metacognitive strategies (Chapelle, 1998). To assess reading comprehension, Alderson (2003) points out that there is no one best test task for assessing reading. He explains that no single test task covers the diverse reading skills which testers attempt to evaluate (Alderson, 2003). However, he states that a multiple-choice test is normally used in a reading test because test takers are familiar with the test task, and it is easy to score and practical to assess students' ability. Testers can control the answers of the test takers by restricting the choices available (Alderson, 2003). Moreover, multiple-choice is a test format that can assess both complex levels of knowledge and the ability to perform certain tasks (Bacon, 2003; Sankarakumar, Chandrakanthi, & Malathy, 2012). Nevertheless, there

are some limitations of multiple-choice test. For example, the test is limited in its ability to assess authentic language use (Phakiti, 2008) and cannot reflect real-world tasks (Cohen, 2001). The nature of multiple choice may allow test takers to artificially boost their scores by guessing the answer without reading the passages or using test wiseness strategies to answer the questions (Alderson, 2003; Cohen, 2001; Kobayashi, 2002).

To test students' reading comprehension, a short-answer test is an alternative test format that can be used. Alderson (2003) states that a short-answer test is a semi-objective test task which is subjectively evaluated. A semi-objective test task is a task that does not provide a choice of answers for the test takers to select from. They have to find the answer in the passage and then write it on the provided space. According to Alderson (2003), a short-answer test is used as a semi-objective alternative to the multiple-choice test. The justification for using this test is that it enables testers to see students' interpretation of the reading passage in their response to a question, which can show to what extent they have really understood the text (Alderson, 2003; 2005). Alderson (2003) also points out that a short-answer test is close to what a student may have to do in the real world task because "one can imagine a discussion between readers that might use such questions, and one can even imagine readers asking themselves the sorts of questions found in short-answer tests" (Alderson, 2003, p 249).

To study language learner use strategies, many researchers have employed a variety of instruments such as self-report questionnaires (Lan & Oxford, 2003; Liyanage & Bartlett, 2012; Purpura, 1999; Song, 2005), and verbal reports (Young & Oxford, 1997; Cohen & Upton, 2007). However, each instrument has its own limitation, so using only one instrument may not enable students to demonstrate all of their strategies in language learning (Cohen, 1998; O'Malley & Chamot, 1990).

Students, for example, may report what they believe they do rather than what they really do (Bacon, 1992). Thus, using another instrument such as verbal reports (e.g. a retrospective interview) together with a self-report questionnaire may reduce the problem of using only one research instrument (Bacon, 1992; Cohen, 1998).

In summary, it is notable that not many studies have been conducted in perceived and actual use strategies. Furthermore, the effect of gender differences is still a gray area in language strategy research. There have been inconclusive findings about which gender employs cognitive and metacognitive strategies more often in language learning and reading. Therefore, the present study aims to investigate the use of test taking strategies, cognitive and metacognitive strategies between perceived and actual use strategies as well as gender differences in the use of cognitive and metacognitive strategies. Furthermore, self-report questionnaires and verbal reports were employed in order to triangulate the data.

1.2 Objectives of the study

1. To investigate the differences in the use of test taking strategies, cognitive and metacognitive strategies between perceived strategies and actual use strategies in testing conditions.
2. To investigate gender differences in the use of cognitive and metacognitive strategies in perceived strategies.
3. To investigate gender differences in the use of cognitive and metacognitive strategies in actual use in testing conditions.
4. To explore the gender differences in the use of cognitive and metacognitive strategies in testing conditions.

1.3 Research questions

1. Are there statistically significant differences in the use of test taking strategies, cognitive and metacognitive strategies between perceived strategies and actual use strategies in testing conditions?
2. Are there statistically significant gender differences in the perceived use of cognitive and metacognitive strategies?
3. Are there statistically significant gender differences in cognitive and metacognitive strategies in actual use in testing conditions?
4. To what extent do males and females differ in the actual use of cognitive and metacognitive strategies in testing conditions?

1.4 Statement of hypotheses

1. Test taking strategies, cognitive and metacognitive strategies in actual use in testing condition do not differ from perceived strategies.
2. There are no significant differences in the perceived use of cognitive and metacognitive strategies between male and female students.
3. There are no significant differences in the use of cognitive and metacognitive strategies between male and female students in actual use in testing conditions.

1.5 Scope of the study

1. The population of the study was 625 grade 10 students from Benchamaracharungsarit School in Chachoengsao, Thailand. The population consisted of male and female students at the age of about 15-16 years old.
2. Multiple-choice and short-answer reading comprehension questions were used in the reading comprehension test.
3. The strategy questionnaires: perceived and actual use strategy questionnaire consisting of cognitive and metacognitive strategies, and test taking strategies.

1.6 Limitations

1. The participants in this study were grade 10 high school students in Thailand, so the generalizability of the findings must be carefully interpreted.
2. The test taking strategies, cognitive and metacognitive strategies that were evaluated in this study were those used in performing a multiple-choice and short-answer reading comprehension test, so the findings cannot be generalized to other test tasks.

1.7 Definitions of terms

1. **Perceived strategies** are the strategies that students use across the contexts (Phakiti, 2008). In this study, students report the strategies that they habitually use when they learn, read, and take an English reading comprehension test. Perceived strategies consist of cognitive and metacognitive reading strategies, and test taking strategies (i.e. test-management, and test-wiseness strategies).

2. **Actual use strategies** are the strategies that students perform in a particular context (Phakiti, 2008). In this study, the particular context refers to the situation in which students take the English reading comprehension test. Actual use strategies consist of cognitive and metacognitive reading strategies, and test taking strategies (i.e. test-management and test-wiseness strategies).

3. **Testing conditions** refer to the situation in which students take the English reading comprehension test in their English class.

4. **Cognitive strategies** involve the participants' interaction with the reading passages in the reading test by manipulating it mentally and physically (O'Malley & Chamot, 1990).

In this study, cognitive strategies are a set of strategies or processes that each student uses to understand, learn, or use language in some contexts. The context in this study refer to the situation in which students take the English reading comprehension test. Cognitive strategies in this study consist of skimming, scanning, repeating, deduction, inferencing, transferring, translation, note-taking, highlighting, elaboration, and summarization strategies.

4.1 Skimming strategies are used by students to read the whole passage or a portion of the passage rapidly to determine topics or main ideas.

4.2 Scanning strategies are used by students to read the whole passage or a portion of the passage rapidly to find specific details of their interest.

4.3 Repeating strategies refer to when students reread the passage in order to improve their reading comprehension.

4.4 Deduction strategies relate to students applying their learned English grammar rules to comprehend the passage. The strategies also involve students determining the meaning of unknown words by breaking them down into small parts such as using prefixed, suffixes, or roots.

4.5 Inferencing strategies refer to the use of available information in the passage to guess the meaning of unknown words or phrases, using context clues to guess the meaning of unknown words, and using the information in the passage to fill in missing information.

4.6 Transferring strategies refer to the knowledge of Thai words or Thai structures which students apply in order to understand the English passage.

4.7 Translation strategies involve translating from English to Thai.

4.8 Note-taking strategies help the reader to keep track of the main ideas by taking notes and writing down keywords or important ideas from the passage as they read.

4.9 Highlighting strategies help the read to pick out the main ideas by highlighting, underlining, circling, or starring keywords, and to understand the relationships between words and ideas by creating a map or drawing related ideas.

4.10 Elaboration strategies relate information in the passage to reader's prior knowledge or experience.

4.11 Summarization strategies mean making mental summary of the passage.

5. **Metacognitive strategies** are executive function influencing cognitive strategies (O'Malley & Chamot, 1990; Oxford, 1990). Metacognitive strategies consist of planning, monitoring and evaluating strategies. In this study, metacognitive strategies are used for planning for reading, monitoring one's comprehension and production, and evaluating how well one has achieved a reading objective.

   5.1 Planning strategies consist of setting goals and objectives for reading, considering which reading strategies to be used for handling the reading tasks, choosing to focus on specific information such as keywords, phrases, or main ideas to help one understand the passage, and deciding in advance to attend to specific aspects of reading passage such as length and text organization.

   5.2 Monitoring strategies include checking one's understanding of the reading passages or words, checking how well reading strategies that students use are working, checking how well a plan that they make earlier is working, double-checking their understanding of the passage, their reading strategy use, and how the plan is working, and using typographical aids such as bold, italics, font sizes, font types, or punctuation and using pictures in the passage.

   5.3 Evaluating strategies are used by students to judge their reading ability and their reading strategy use after they finish reading.

6. **Test-taking strategies** are the strategies that test takers use in order to help them complete an English reading comprehension test. In this study, the reading comprehension test consists of multiple-choice and short-answer questions. Test-taking strategies consist of test-management and test-wiseness strategies. Test takers use in doing the test.

   6.1 Test-management strategies refer to strategies that test takers use to respond to the reading test meaningfully.

   6.2 Test-wiseness strategies are used by test takers to increase their chances of correctly guessing the answer, based on their knowledge of test formats and other peripheral information to answer the reading comprehension test.

1.8 Significance of the study

The results of this study are expected to be significant in several areas.

1. For theoretical contributions, the results provide a better understanding in the use of test taking strategies, cognitive and metacognitive strategies used between perceived and actual use strategies in testing conditions. The results also reveal the empirical evidence regarding gender differences in the use of cognitive and metacognitive strategy use in perceived and actual strategies.
2. For pedagogical contributions, the results of this study suggest a clear understanding of how grade 10 Thai students use test taking strategies, cognitive and metacognitive strategies as well as how male and female students use cognitive and metacognitive strategies. The results from the present study could help teachers, especially grade 10 teachers design suitable instruction, and teaching materials and activities for their reading class.

CHAPTER II

LITERATURE REVIEW

This chapter presents literature review covering L1 and L2 reading strategies, the nature of language learner strategies, the nature of reading strategies and gender differences, as well as the nature of test taking strategies. In addition, the characteristics of a reading comprehension test.

2.1 L1 and L2 reading strategies

Second language (L2) is different from first language (L1) because it involves two languages (Koda, 2007). L2 learners utilize a two-language system when they engage in a L2 reading (Grabe, 2009; Grabe & Stoller, 2002). Beginning and less proficient readers are a group of readers who apparently show the differences between L1 and L2 reading (Grabe, 2009). Grabe and Stoller (2002) categorized the differences between L2 and L1 into linguistic and processing differences; individual and experiential differences; and socio-cultural and institutional differences.

Linguistic and processing differences are related to language transfer, an L2 threshold, differences across various student L1s and the simple fact that two languages are involved in comprehension processing in L2 settings. Individual and experiential differences are related to students' proficiency levels in L1 literacy skills, prior L2 reading experiences, motivations for L1 and L2 reading, attitudes toward authentic texts, and training in the use of various supporting resources. Socio-cultural and institutional differences are related to L2 readers' socio-cultural backgrounds,

ways of organizing discourse and texts, and expectations of L2 educational institutions.

Several strategy researchers investigate the differences between L1 and L2 reading. Sarig (1987), for example, investigated reading processes that characterized the performance of main ideas analysis and overall message synthesis tasks in L1 (Hebrew) and L2 (English), as well as explored the reading processes in the first language transferred to the foreign language. Ten female high school students reported strategies used through verbal protocol. The participants were divided into low, intermediate and high English proficiency levels. The strategies were classified into technical-aid, clarification and simplification, coherence-detecting, and monitoring. The results indicated that all readers could transfer the strategies from L1 to L2 reading. Although, clarification and simplification strategies contributed to be unsuccessful in both L1 and L2 reading, coherence-detecting and monitoring strategies contributed to be successful in both L1 and L2 reading.

Another research investigating the influences of L1 transfer is Seng and Hashim (2006). They investigated the use of first language (L1) while tertiary ESL students were reading second language (L2) texts in a collaborative situation. Four students, whose L1 was Bahasa Malayu, were placed in a group and asked to think aloud while reading English texts. Analyses based on the think aloud protocols were made to identify the reading strategies utilized by the students. The results showed that the L1 was used by all the students in the study. Translation was a strategy in which L1 was used most followed by paraphrasing, questioning – idea related, guessing, inferencing, and recognition of word.

Carrell (1989) investigated the metacognitive awareness of second language readers about reading strategies in both L1 and L2 and the relationship between their metacognitive awareness and their comprehension in both first and second language reading. Metacognitive awareness was categorized into confidence, repair, effectiveness, and difficulty. The participants were divided into two groups. Group one consisted of 45 Spanish native speakers studying in America. Group two consisted of 75 English native speakers studying Spanish in America. Through metacognitive questionnaires and the multiple-choice reading comprehension test, the results indicated that in the first language, no confidence item or repair strategies were significantly related to reading performance. By contrast, in the second language, there were some of confidence and repair strategies that were significantly related to reading performance.

Morrison (2004) investigated the role of comprehension monitoring in L1 (English) and L2 (French) reading proficiency. Reading comprehension tests as well as a monitoring task in both languages were given to 52 undergraduate students from two French as second language (FSL) backgrounds, French immersion (FI) and core French (CF). Results showed that successful monitoring, as measured by error detection performance at the discourse and propositional levels, transfers across languages, and that monitoring performance was highly correlated with reading proficiency in both languages.

Kong (2006) examined the reading strategies that four Chinese adult readers use in reading both Chinese and English texts. The strategies that they used are analyzed into two broad categories: the text-initiated strategies and the reader-initiated

strategies. All participants demonstrated more strategy use in reading the English texts than in reading the Chinese text. In general, participants were more critical in evaluating the author's opinions with the Chinese texts than the English texts. Those who had a moderate to high L2 proficiency level showed more transfer of strategy use from reading the Chinese to reading the English than the one who had a low L2 proficiency level. However, L2 proficiency level does not seem to predict the readers' use of higher level thinking strategies. The readers' prior experiences with L1 reading and L2 learning as well as their exposure to the L2 culture all seem to contribute to affect the readers' strategy use in L2.

Yildiz-Genc (2009) examined the relationship between L1 and L2 reading and the nature of reading strategies used by Turkish EFL learners in their L1 and L2. The reading strategies were categorized into top-down and bottom-up strategies. Think aloud protocols and retrospective interviews indicated that there were considerable differences between L1 and L2 reading in terms of the strategies and time used to process the information in the texts. When reading in their L1, participants used more top down strategies than bottom up strategies. However, when they read in L2, they used more bottom-up strategies. Furthermore, they spent more time when reading L2. The performance of L2 readers was predicted by their L2 proficiency. According to the result, the researcher concluded that proficiency in L2 was necessary for good L1 readers to transfer their L1 reading strategies to reading in L2. This was because good L1 readers might not be good at reading L2. Similarly, Kong (2006) found that moderate and high L2 readers could transfer strategy use from L1 (Chinese) to L2 (English).

Alsheikh and Mokhtari (2011) examined the metacognitive awareness and reading comprehension strategies used by 90 advanced proficiency ESL readers. The study looked at the perceived use of reading strategies by Arabic native speakers in Arabic and English and their actual use of these strategies in reading academic texts in the two languages. A survey of Reading Strategies (SORS) (Mokhtari & Sheorey (2002) and a think-aloud protocol were used. The researchers found that the participants reported using a higher rate of reading strategies when reading English than when reading Arabic. This report was supported by qualitative data from verbal report. In addition, the researchers did not find the differences in reported strategy use in global reading strategies between two languages.

Alsheikh (2014) explored the systematic use of metacognitive reading strategies by high school students when reading in English and Arabic. The participants were 390 high school students in United Arab Emirates (UAE), and ten participants were randomly selected to participant in the think aloud protocol. The researchers found that the participants preferred using problem solving, when reading the English text, whereas they preferred using global when reading the Arabic text. Moreover, the researchers did not find an evidence of strategies transfer from L1 to L2.

Regarding the aforementioned studies, it might be stated that L2 learners used transferring, translation, as well as backgrounds or experience in order to comprehend the reading passages. Further, monitoring was also found to be important for L2 readers to be successful in L2 reading. Nevertheless, this study should be further investigated due to the population. Different population (i.e. ESL, EFL) might find different results.

2.2 The nature of language learner strategies

Since 1970s, research studies into language learner strategies have increased significantly. Several researchers are interested in how language learners learn the second or foreign language and process new information and what types of strategies they use to understand, learn, or remember the information (Lee, 2010). Consequently, the term of language learner strategies may be defined and categorized in many ways.

Rubin (1975) defines language learner strategies as "the techniques or devices which a learner may use to acquire knowledge". The strategies consist of using clues to guess the meaning and communicating, using a circumlocution or paraphrase the sentence, analyzing, categorizing and synthesizing the information, practicing, and monitoring their learning and mistakes. Expanding the definitions and classifications in 1975, Rubin (1987) defines language learner strategies as behavior, step or technique that assist learners to understand the language. She suggests three kinds of strategies contributing directly and indirectly to language learning which are learning, communication, and social strategies.

Learning strategies are the strategies that contribute directly to the development of the language system. The strategies consist of cognitive and metacognitive strategies which language learners create. Communication strategies are not directly related to language learning. This is because the strategies emphasize on the processes of communication through the conversation and getting meaning across or clarifying what the speaker intended. Social strategies refer to the activities that learners are exposed to the opportunities that can be a great help to practice their knowledge (Rubin, 1987).

Another definition of language learning strategies is from Stern (1983). They are defined as "particular form of observable learning behavior, more or less consciously employed by the learners" (Stern, 1983, p. 405). The strategies consist of planning, active, empathic, formal, experimental, semantic, practice, communication, monitoring, and internalization strategies. After proposing the list of ten strategies, Stern (1992) reclassifies the strategies into five main categories that good language learners employ to enhance their language learning. The strategies are comprised of management and planning, cognitive, communicative-experiential, interpersonal, and affective strategies.

Management and planning strategies are the strategies that learners plan for learning, setting objectives, assessing the learning, and evaluating the achievement relating to their goals. Stern (1992) points out that management and planning strategies are metacognitive strategies consisting of planning, monitoring, and evaluation. Cognitive strategies are techniques that learners use in their study, and practice the target language. Communicative-experiential strategies refer to the situations that enable learners to use the language in a real-life situation and to keep a conversation going. Interpersonal strategies refer to the strategies that learners use in order to ask someone help or to solve the problem. Affective strategies are the strategies that involve positive attitudes, emotions, and motivation in language learning.

O'Malley and Chamot (1990) define language learner strategies as "the special thoughts or behaviors that individuals use to help them comprehend, learn, or retain new information" (p. 1). They categorize the strategies into metacognitive, cognitive, and social or affective strategies.

Metacognitive strategies are thinking about the learning process, planning for learning, monitoring a learning task, and evaluating how well a learner has learnt. The strategies consist of planning, directed attention, selective attention, self-management, self-monitoring, problem identification, and self- evaluation. Cognitive strategies involve the interacting with the material in learners' hands, manipulating the material mentally or physically, or applying a specific technique to a learning task. The strategies consist of repetition, resourcing, grouping, note taking, deduction or induction, substitution, elaboration, summarization, translation, and inferencing. Social or affective strategies refers to the strategies that learners use when they interact with other people in order to help them learn or use a learning task. The strategies comprise questioning for clarification, cooperation, self-talk, and self-reinforcement.

Oxford (1990) gives the definitions of language learner strategies towards the development of communicative competence. The strategies are defined as "special action taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situation" (Oxford, 1990, p. 8). Her classifications were obtained from a questionnaire - Strategy Inventory of Language Learning (SILL), and the strategies are divided into direct and indirect strategies.

Direct strategies are the strategies used to deal with the new language, and to work with the language itself in a variety of specific tasks or situations, and are sub-divided into memory, cognitive, and compensation strategies. Memory strategies are comprised of creating mental linkages, applying images and sounds, reviewing, and employing action. Cognitive strategies consist of practicing, receiving and sending

messages, analyzing and reasoning, creating structure for input and output. Compensation strategies consist of guessing intelligently, and overcoming limitation in speaking and writing.

Indirect strategies refer to the strategies used to manage learning without directly involving the target language and are divided into metacognitive, affective, and social strategies. Metacognitive strategies consist of centering your learning, arranging and planning your learning, and evaluating your learning. Affective strategies comprise lowering your anxiety, encouraging yourself, and taking your emotional temperature. Social strategies are asking questions, cooperating with others, and empathizing with others.

In Oxford's (1990) classification system, memory strategies help learners store and retrieve new information, while cognitive strategies help learners understand and produce new language. Compensation strategies help learners comprehend and produce the new language, even though their knowledge is limited. On the other hand, metacognitive strategies assist learners to regulate their own cognition and to focus, plan, and evaluate their progress. Affective strategies assist learners to regulate their emotions, motivations and attitudes, and social strategies assist learners to learn through interacting with other people.

Wenden (1991, p. 18) defines her language learner strategies as "mental steps or operations that learners use to learn a new language and to regulate their efforts to do so" The strategies consist of cognitive and self-management strategies or metacognitive strategies. Cognitive strategies are mental steps or operations that learners use to process linguistic and sociolinguistic content. Wenden (1991) classifies

cognitive strategies into selecting information from incoming data, comprehending it, storing it, and retrieving it for use. Self-management or metacognitive strategies are the strategies that learners use to oversee or manage their learning. The strategies consist of planning, monitoring, and evaluation.

Another definition of learner strategies is from Cohen (1998). He defines language learner strategies as:

> Learning processes which are consciously selected by the learner. The element of choice is important here because this is what gives a strategy its special character. These are also moves which the learner is at least partially aware of, even if full attention is not being given to them (p. 4).

Cohen (1998) classifies language learner strategies into language learning and language use strategies. Language learning and language use strategies can be described as:

> processes which are consciously selected by learners and which may result in action taken to enhance the learning or use of a second or foreign language, through the storage, retention, recall, and application of information about that language (p. 4).

Language learning strategies consist of identifying, distinguishing, grouping, repeating, and memorizing, whereas language use strategies consist of retrieval strategies, rehearsal strategies, cover strategies, and communication strategies.

According to Cohen (1998), test taking strategies are a part of language use strategies. He states that test taking strategies are the strategies that learners apply to a

task in a language test. Cohen (2011), not only classifies strategies into learning and using strategies, but he also points out that strategies might be classified according to skill areas (e.g. reading, writing, speaking), or according to functions (e.g. metacognitive, cognitive, memory).

Among the definitions and classifications of language learner strategies mentioned above, it can be noticed that a majority of strategy researchers had received their learner strategies based on learners perceive how they learn second or foreign languages rather than how they actually use the language. Either an interview or a questionnaire has been used to collect the data. The researchers have collected the data through an interview or a questionnaire without having a specific task. Therefore, the strategies might be the processes or techniques that learners employ for learning and use in a specific task or situation. The strategies might be defined and classified regarding the language skills and functions. However, the processes of establishing the definitions and classification systems for language learner strategies are far from being straightforward because some terms are overlapping and conflicting opinions. Different researchers may define and classify strategies differently. Nevertheless, there are some similarities and differences among these language learner strategies (see Appendix I).

2.3 The natures of reading strategies

Reading strategies are essential tools for L1, L2 and foreign language learning (McNeil, 2011; Raftari, Seyyedi, & Ismail, 2012; Yang, 2006). Reading strategies are conscious processes or actions that readers use to comprehend the written materials, to fix the problems when reading passages, and to monitor the problems that they intend to fix (Abbott, 2006; Acosta, 2012; Anastasiou & Griva, 2009; Barnett, 1988; Block, 1986; Grabe, 2009; Grabe & Stoller, 2002; Irwin, 2007; Mebarki, 2011; McNeil, 2011; Olshavsky, 1976-1977; Paris, Lipson & Wixon, 1983; Rupp, Ferne & Choi, 2006, Yang, 2012).

Since 1970s, a number of strategy researchers have conducted research on the use of reading strategies. A majority of reading strategies have been classified differently, for example, main-meaning line and word-solving strategies (Hosenfeld, 1977), clause level or text level and word level strategies (Barnett, 1988; Olshavsky, 1976-1977), general comprehension and local linguistic strategies (Block, 1986), and local or bottom-up and global or top-down strategies (Abbott, 2006; Carrell, 1989; Sarig, 1987; Young & Oxford, 1999).

Main-meaning line strategies refer to the strategies that readers use when they do not understand the meaning in the sentence, while word-solving strategies refer to the strategies that readers use when they come to unknown words or phrases (Hosenfeld, 1977). Clause level or text level strategies are used to assist readers to comprehend the reading passage, whereas word level strategies are used to assist readers to guess the meaning of the words (Barnett, 1988; Olshavsky, 1976). General comprehension strategies pertain to comprehending reading passages, while local linguistic strategies pertain to solving the word-meaning problems (Block, 1986).

Global or top-down strategies refer to processes used to find the meanings. The strategies are related to background knowledge, text gist, and textual organization which can help readers comprehend reading passages (Abbott, 2006; Carrell, 1989; Sarig, 1987; Young & Oxford, 1999). Local or bottom-up strategies are decoding processes, and the strategies are related to sound-letter, word-meaning, sentence-syntax, and text-detail which can support readers to find the meaning of unknown words or phrases (Abbott, 2006; Carrell, 1989; Sarig, 1987; Young & Oxford, 1999).

Additionally, reading strategies are categorized into three board categories such as identifying and learning text content, monitoring, and evaluating (Pressley & Afflerbach, 1995), global, problem-solving and support strategies or compensation strategies (Alsheikh, 2011, 2014; Alsheikh & Mokhtari, 2011;Boudreaux, 2007; Martinez, 2008; Mokhtari & Reichard, 2002, 2004; Mokhtari & Sheorey, 2002; Tabatabaei & Assari, 2010; Temur et al., 2010). Identifying and learning text content are plans that help readers construct meaning of the text (Pressley & Afflerbach, 1995). This occurs before, during, and after reading. Monitoring refers to the processes that regulate readers' comprehension and learning, while evaluating is the reflection that readers respond to the text (Pressley & Afflebach, 1995).

In another way to categorize reading strategies, global strategies are generalized, intentional reading strategies which are aimed at setting the stage for the reading acts (Mokhtari & Reichard, 2002). Readers use global strategies to monitor or manage their reading (Mokhtari & Sheorey, 2002). The strategies consist of such strategies as setting purpose, making prediction, previewing the text content, and predicting what the text is about (Mokhtari & Reichard, 2002). Problem-solving

strategies are used to solve the reading problems. The strategies, for example, consist of rereading for better understanding, trying to stay focus on reading, checking their understanding on encountering conflicting information (Mokhtari & Reichard, 2002; Mokhtari & Sheorey, 2002). Support strategies or compensation strategies involve the use of outside reference materials such as taking notes, underlining or highlighting, using a dictionary (Mokhtari & Reichard, 2002; Mokhtari & Sheorey, 2002).

In addition, reading strategies are also grouped into metacognitive and cognitive strategies (Akyol, Sungur & Tekkaya, 2010; Anastasiou & Griva, 2009; Garner, 1987; Grabe, 2009; Griva et al., 2012; Imtiaz, 2004; Jimenez, Garcia, & Pearson, 1995, 1996; Purpura, 1996, 1999; Yang, 2006). Some researchers also include support or compensation strategies (Anderson, 1991; Malcolm, 2009; Sheory & Mokhtari, 2001; Yang, 2012) when they investigate the use of reading strategies.

As it can be seen from the aforementioned studies, the classifications of reading strategies vary from study to study. Different researchers have used different terms to categorize the strategies. Many of them have classified their reading strategies based on language learner strategies. This study classified reading strategies into cognitive and metacognitive reading strategies. The definitions and classification were discussed as followed.

2.3.1 Metacognitive and cognitive reading strategies

Metacognitive and cognitive strategies are indispensable strategies for readers to enhance their reading performance (Chou, 2013; Phakiti, 2003b). Metacognitive strategies are used to monitor strategies or comprehension and to evaluate the

appropriateness of strategy used, while cognitive strategies are used to process the texts (Hus, 2008).

Definitions and classifications of reading strategies are varied. For example, Purpura (1996), for example, took the definitions and classifications of metacognitive strategies from language learner strategies. He defines metacognitive strategies based on Wenden (1991) as “a set of conscious and unconscious mental behavioral activities that are directly or indirectly related to some specific stage of the overall process of language acquisition, use, or testing” (Purpura, 1996, p. 16). According to Purpura, metacognitive strategies are divided into goal setting, planning, and assessment. Goal setting refers to specific goals and objectives that readers or test takers identify and choose before or during an activity. Goal setting consists of planning about the time used before completing the task, setting one’s own goal in learning language, and thinking about the final goal when reading and taking a test.

Planning strategies consist of formulating a plan and learning to learn. Formulating a plan refers to a plan that readers formulate before they attempt a language task or complete it. Further, when they complete the task, they may change or use their plan of action. The strategies are, for example, understanding the purpose of activities in their English class, concentrating on what they are doing when reading or taking a test, and having a dictionary before doing an English assignment. Another planning strategy is learning to learn. This strategy help readers or test takers accomplish language tasks. The strategy also help readers find out how they should learn the language, use, and test effectively as well as how they can remember new words in English.

The other metacognitive strategies proposed by Purpura (1996) are assessment strategies. The strategies are the processes that readers use before, during and after doing a task. The strategies consist of assessing situation, monitoring, and evaluation. Readers or test takers assess situation by using knowledge, available internal and external resources, and constraints of the situation. Readers or test takers assess the situation or activity before doing it. The strategies are, for example, thinking about grammar rules before using English; trying to see which parts are easy and what parts are difficult and also which parts are the most important before beginning the test; or thinking about how the test will be scored before beginning an English test. Monitoring refers to the ability that readers or test takers reflect on their performance during the activities or tasks such as checking the test before submitting, and knowing how much time has gone by when taking a test. Evaluation is the ability that readers or test takers assess their performance of a task after taking the activity or task such as learning from mistakes; thinking about how they can do better the next time after taking a test.

Another group of researchers deriving the definitions and classifications of metacognitive strategies based on language learner strategies is Anastasiou and Griva (2009). They define metacognitive strategies based on O'Malley and Chamot (1990) as "higher order executive tactics that entail planning for learning, monitoring, identifying and remediating causes of comprehension failure or evaluating the success of a learning activity; that is, the strategies of self-planning, self-monitoring, self-regulating, self-questioning and self-reflecting" (Anastasiou & Griva, 2009, p. 284). Metacognitive strategies are divided into monitoring and planning, and evaluating strategies. Monitoring and planning strategies consist of, for example, rereading,

looking for the main idea, key meanings, slowing down reading, self-questioning, comprehension control, and concentrating on the task, defying distraction, task persistence. Evaluating strategies consist of problem identification, self-correction, and error explanation.

Anderson (1999), for example, define metacognitive strategies as thinking about thinking or planning. Metacognitive strategies consist of, for example, setting goal, making lists of relevant vocabulary to prepare for reading, and evaluating what the readers have learned and how well they are doing.

Sheorey and Mokhtari (2001, p. 463) define metacognitive strategies as "those intentional, carefully planned techniques by which learners monitor or manage their reading." Such strategies include having a purpose in mind, previewing the text as to its length and organization, using context clues, using typographical aids and tables and figures, predicting or guessing text meaning, and confirming predictions.

Grabe (2009, p. 233) defines metacognitive strategies as "the strategies that require an explicit awareness of reading itself and that strongly support goals of reading." Metacognitive strategies are comprised of setting reading goal, making inferences, monitoring comprehension, summarizing the main ideas, using various strategies to repair an incoherent interpretation, relating text to background knowledge, reading carefully, and evaluating reading input. Among these metacognitive strategies, Grabe (2009) states that summarizing, monitoring, and inferencing are the strategies that support reading comprehension.

According to Baker and Brown (1984a), metacognitive strategies in reading comprehension include clarifying the purpose of reading, identifying the important

aspects of a message, focusing on the major content rather than unimportant information, monitoring comprehension, self-questioning, and taking corrective action when failures in comprehension are found.

Additionally, Urquhart and Weir (1998) have surveyed metacognitive strategies that are beneficial for second language readers. These essential strategies are grouped into pre-reading (planning), while-reading (monitoring), and post-reading (evaluation) strategies. Pre-reading strategies consist of previewing and predicting a text. While-reading strategies consist of self-questioning and self-monitoring, and post-reading strategies consist of evaluation and personal response.

Unlike metacognitive strategies, which can be applied to all types of learning activities, cognitive strategies are directly related to specific tasks (O'Malley & Chamot, 1990; Oxford, 1990; Phakiti, 2003a; Purpura, 1996; Sheorey & Mokhtari, 2001; Wenden, 1991). Similar to metacognitive strategies, Purpura (1996, p. 15) defines cognitive strategies based on Wenden (1991) as "a set of strategies or processes that are related to behaviors associated which each stage of learning processes, language use and language testing." Cognitive strategies are divided into three categories: comprehending, storing, and retrieval strategies. Comprehending strategies consist of analyzing contrastively, analyzing inductively, clarifying or verifying, inferencing, and translating. Storing strategies are comprised of summarizing, associating, repeating or rehearsing, and using prior knowledge. Retrieval strategies consist of applying rules, practicing naturalistically, and transferring.

Anastasiou and Griva (2009) define cognitive strategies based on O'Malley and Chamot (1990) as "direct 'interaction' with the text and contribute to facilitating comprehension, operate directly on oncoming information, manipulating it in ways that enhance learning" (Anastasiou & Griva, 2009, p. 284). Cognitive strategies are classified into underlining, using titles, using dictionary, writing down, guessing from the context, imagery, activating prior knowledge, keeping meaning in mind, summarizing, using linguistic clues, using text markers, skipping the difficult parts, and repeating words or phrases.

Anderson (1999) defines cognitive strategies as "thinking". The strategies consist of predicting the content of an upcoming passage or section of the text, concentrating on grammar in order to understand unfamiliar constructions, understanding the main ideas in order to comprehend the entire reading, expanding vocabulary and grammar to increase reading ability, guessing the meaning of unfamiliar words or phrases, analyzing style, and connections to improve reading comprehension, distinguishing between fact and opinion, breaking down larger phrases into smaller parts, linking what have known in first language with second language, creating a map or drawing of related ideas, and writing a short summary.

Sheorey and Mokhtari (2001, p. 463) define cognitive strategies as "the actions and procedures readers use while working directly with the text. These are localized, focused techniques used when problems develop in understanding textual information". Cognitive strategies consist of using prior knowledge, reading aloud when text become hard, reading slowly and carefully, trying to stay focus on reading, adjust reading rate, paying close attention to reading, pausing and thinking about

reading, visualizing information read, evaluating what is read, resolving conflicting information, rereading, and guessing meaning of unknown words.

Grabe (2009, p. 223) states that cognitive strategies are "the strategies that readers are trained to use". Readers employ strategies such as guessing from context, noting discourse organization, recognizing a transition phrase, skipping a word, identifying unknown word parts, forming a question about an author, using visual graphics and graphic organizers, or identifying a main idea.

To conclude, a number of reading strategies have been categorized in various ways such as main-meaning line and word-solving strategies, cognitive and metacognitive reading strategies, and global, problem-solving, and support reading strategies. Therefore, this study focused on cognitive and metacognitive strategies. Studied on cognitive and metacognitive strategies enable researchers to understand what, when, why and how readers use strategies (Cohen, 1996b; Purpura, 1999). Readers may apply cognitive and metacognitive strategies to enhance their learning processes (Garner, 1990; Macaro, 2006; Rubin, 1987). Both strategies interact with one another in L2 processes (Macaro, 2006), and they are important and related to L2 reading performance (Chou, 2013; Phakiti, 2003b).

2.4 Reading strategies and Gender differences

Gender differences are one of the factors that several strategy researchers have investigated. Research studies on gender differences reveal that it is not as clear-cut as it appears (Lietz, 2006). Some studies show that there are gender differences. For example, females outperform males in the use of strategies (e.g. Aivazoglou & Griva, 2014; Griva et al., 2012; Xue, 2015), while some studies (e.g. Lee & Oxford, 2008;

Khamkhien, 2010; Phakiti, 2003b) revealed that males outperform females. Further there are some research studies showing that there are no gender differences. Both males and females usually use the same strategies (e.g. Al-Shobani, 2013; Goh & Foong, 1997; Shikano, 2015). Different researchers, furthermore, carry out their research studies in different ways. Some of them ask their participants to report the use of reading strategies across the context or perceived strategies, while some researchers ask the participants to report the use of reading strategies in a specific context or actual use strategies.

2.4.1 Previous research on gender differences in perceived use

A number of strategy researchers have explored gender differences by asking participants to report the use of reading strategies across the context (perceived strategies). Among these studies, the researchers found gender differences between males and females. Females were found to be better and used strategies more often than male counterparts did (Green & Oxford, 1995; Griva et al., 2012; Liyanage & Bartlett, 2012; Martinez, 2008). Green and Oxford (1995) investigated gender differences in the use of learning strategies. SILL questionnaire (Oxford, 1990) was used to collect data from 374 university students. The results indicated that females employed cognitive and metacognitive strategies more often than males did. Also, there was a relationship between proficiency levels and gender. Proficiency level had a significant effect for cognitive and metacognitive strategies, but the mean scores fell within the medium range of 2.5 to 3.4. Interestingly, the researchers found that males and females used different approaches to language learning due to underlying learning styles, motivations and attitudes.

Liyanage and Bartlett (2012) investigated gender differences and strategy use among 886 Sri Lankan learners in five different learning contexts -- speaking in class, listening in class, listening and speaking outside class, reading in class, and writing in class. The SILL questionnaire (Oxford, 1990) was utilized. They found that females used cognitive and metacogntive strategies more frequently than males did. In reading contexts, females reported greater use on some metacognitive strategies (e.g. planning and self-management strategies), and some cognitive strategies (e.g. note-taking, inferencing and resourcing). The researcher, further, found that gender differences in reported strategy use varied according to learning contexts.

In addition, Martinez (2008) investigated gender differences in the use of metacognitive awareness and perceived strategy use of English for Specific Purpose (ESP) university students in reading academic texts. A self-report questionnaire, MARSI (Mokhtari & Reichard, 2002), was used to collect data. The questionnaire consisted of global, problem solving, and supporting strategies. The results revealed that females reported significantly using higher frequency of support reading strategies (e.g. note-taking, summarizing, underlining or circling information in the text) strategies more often than males did.

Another research study showing that females employed strategies more often than males was Kolic-Vehovec and Bajšanski (2006). They explored comprehension monitoring and perceived use of reading strategies as factors of reading comprehension. Participants were 526 elementary school students from the fifth to the eighth grade. A Strategic reading questionnaire (Kolic-Vehovec & Bajsanski, 2006) was applied as a measure of perceived use of strategies during reading. The

researchers found gender differences in the strategy use. Girls in all grades employed reading strategies more often than males did. The researchers claimed that gender differences in this study were related to motivations, especially academic motivation. Girls were more ready to regulate their learning and reading than boys did.

In addition to Kolic-Vehovec and Bojsanski (2006), Kolić-Vehovec et al. (2010) conducted meta-analysis to explore the relationship between metacognition and reading comprehension with regard to gender differences among elementary and high school students in Croatia. The metacognition consisted of metacognitive knowledge about reading strategies, and metacognitive awareness of strategy use. The results indicated that females performed better on metacognition in reading, especially on the monitoring tasks and the use of metacognitive awareness. Females used reading strategies more often than males did in both metacognitive knowledge and metacognitive awareness.

Parallel to aforementioned investigations, Bozinovic and Sindik (2011), Ok (2003), Sengpakdeejit (2014), Xiying (2010) and Zeynali (2012) still found gender differences in the use of cognitive and metacognitive strategies.

Ok (2003) investigated the use of language learning strategies of 325 Korean secondary school students (163 males, 162 females) employing the SILL questionnaire (Oxford, 1990). The researcher found that the reported frequency of strategy use by the students was moderate overall. Girls showed more frequent use of cognitive and metacognitive strategies than boys. In addition, Ok (2003) found a correlation between cognitive strategies and metacognitive strategies.

Xiying (2010) investigated gender differences in the use of learning strategies through the SILL questionnaire (Oxford, 1990). The participants were 406 middle school students. The results showed that the females use both strategies more frequently than males did. Based on this, the researcher proposes techniques that helped teachers improve their English teaching such as developing personalized English learning strategy, English learning strategy diagnosis and training and respecting gender differences to promote full development of learning strategies and so on.

Additionally, Bozinovic and Sindik (2011) found gender differences in the use of reading strategies. Females used strategies more frequently than males did. One hundred and eighty-one (72 males, 109 females) college students were asked to complete the SILL questionnaire (Oxford, 1990). The results revealed that there were gender differences in language learning strategy use. Females employed all strategy types more frequently than males did, except for the socio-affective strategies. The results also showed that the use of metacognitive strategies were quite rare. The researchers assumed that students lacked sufficient intrinsic motivation for foreign language learning and therefore the use of metacognitive strategies which were used to self-direct, plan, focus or evaluate language learning progress was quite rare.

Zeynali (2012) investigated the differences between female and male Iranian learners in the use of language learning strategies. A total of 149 learners were asked to complete the SILL questionnaire (Oxford, 1990). The findings showed that female learners had tendency to use overall language learning strategies more often than males.

Saengpakdeejit (2014) investigated gender differences and reading proficiency level in the use of reading strategies. The participants were 549 third year Thai university students. They were asked to complete the SORS questionnaire (global strategies, problem solving strategies, and supporting strategies). The results from ANOVA showed that there were gender differences in the use of reading strategies. Female students reported using all three strategy categories more frequently than males did. Males and females had their own choices of reading strategies.

In addition, some researchers found that females reported using either cognitive or metacognitive strategies more often than males did. Oxford, Park-Oh, Ito, and Samrall (1993), for example, explored the factors influencing language achievement when Japanese students studied through satellite television. The factors consisted of motivation, learning styles, learning strategy use, gender, previous language learning experience, and course level. One hundred and seven participants (males = 41, females = 60) responded to the Japanese learning survey (JLS), the strategy inventory for Japanese language learning-by Satellite (SZJALL), the Japanese Language Achievement Test (JLAT), and the Learning Channel Preference Checklist (LCPC). The results showed that motivation was by far the most significant determiner of achievement, and learning strategy use was also very influential. Gender and learning style (visual, auditory, and hands-on) played important roles. The researchers stated that females reported using cognitive more often than males did, whereas they did not find gender differences in the reporting of metacognitive strategy use.

Kaylani (1996) investigated gender differences from 255 grade 12 students in Jordan. The results revealed that females reported using cognitive strategies more frequency than males did. However, she did not find gender differences in the perceived use of metacognitive strategies. The researcher explained reasons why females reported using cognitive strategies more often than male did because they would like to be approved by their society. This was related to their Muslim culture.

El-Dib (2004) explored factors relating to gender and language level. Seven hundred and fifty university students (244 males, 260 females) were asked to complete the SILL questionnaire (Oxford, 1990). The results indicated that there were gender differences in the use of cognitive and compensation strategies. Females reported using all strategies, particularly cognitive and compensation strategies more frequently than males did. The researcher explained that cultural environment affected the use of strategies. Since females was in a conservative society where they might not had many opportunities to socialize with speakers of English, Females had to find some opportunity to practice the language. Thus, classroom might be the only place that they could learn and practice the language.

Hsu (2006) found that females used cognitive strategies more often than males. He designed his own questionnaire based on O'Malley and Chamot (1990) to examine gender differences in the use of cognitive, metacognitive, and social and effective reading strategies. Forty- one 4th year technical college students (7 males and 34 females) in Taiwan participated in the study. The results showed that females reported grater use on cognitive strategies than males did. The results reflected that

females processed information summarized, recognized, interacted with others or self-assurance more frequently.

Poole (2010) found gender differences in the use of reading strategies. He investigated gender differences in the use of academic reading strategies with 190 high school students (103 males, 96 females) from grade 8 to 10 in Columbia. An SORS questionnaire was used to collect the data. The results indicated that there were statistically significant differences between males and females. Females reported higher use of global and supporting strategies than males did, but there were no gender differences in the use of problem-solving strategies.

Salahshour, Sharifi, and Salahshour (2013) found gender differences in cognitive and metacognitive strategy use. They explored the relationship between the choices of learning strategies and frequency of the strategy use and gender differences and proficiency levels. SILL was employed to collect the data from 65 high school students (25 males, 40 females). The results indicated that there were gender differences in the use of language learning strategies. Females reported that they used cognitive strategies more often than males did, while there were no gender differences in the use of metacognitive strategies.

Kamran (2013) examined gender differences in the use of language reading strategies. One hundred and forty-four participants (54 males, 60 females) did the survey of reading strategy (SORS), a reading test, and a demographic information questionnaire. The results of t-test revealed that there was no statistically significant difference between male and female participants on their overall reading strategy use. No gender impact was sought in use of global and support subscales of reading

strategies. Nevertheless females were found to outperform their male counterparts in use of problem solving subscale of reading strategies.

Zhou and Intaraprasert (2015) examined the use of language learning strategy employed by English-major pre-service teachers in China in relation to their gender. The SILL questionnaire adapted based on Oxford (1990) was employed to collect the data from 836 university students (78 males, 758 females). The researchers found gender differences in the use of cognitive strategies. Female used cognitive strategies more often than males did, whereas there were no gender differences in metacognitive strategy use.

On the other hand, there were some studies indicating that males intended to use either cognitive or metacognitive strategies or both strategies more often than females did. Tercanlioglu (2004), for example, studied gender differences in language learning strategies used by foreign language learners in a Turkish University. One hundred and eighty-four university students (44 males, 140 females) participated in the study. The SILL questionnaire (Oxford, 1990) was used to gather information about the strategies that the individual learners employed to learn a foreign language. The results showed significant gender differences. Males used all strategies more often than girls did.

Zarei (2013) conducted a study on gender differences in language learning strategy use through the SILL questionnaire (Oxford, 1989). Fifty university students (15 males, 35 females) were asked to complete the questionnaire. Similar to Tercanlioglu (2004), Zarei (2013) found that males reported using cognitive and metacognitive strategies more frequently than females did.

Lee and Oxford (2008) studied factors affecting Korean students in learning the language. The factors consisted of strategy awareness, English-learning self-image, and Importance of English on language learning strategy use. The participants were 1, 110 middle school, high school, and university students. The SILL (Oxford, 1990) including two open-ended questions was used to collect the data. The results showed that males reported using metacognitive strategies more often than females did, but the researchers did not find gender differences in cognitive strategy use. The researchers also found that gender did not have significant effects with these factors. In fact, gender showed significant interaction effects with other variables. As the researchers expected, strategy awareness and strategy use were related to the Korean cultural context.

Similar to Lee and Oxford (2008), Ghezlou et al. (2014) investigated gender differences in reading strategy use (i.e. compensation and metacognitive strategies), reading self-efficacy, and their perceptual learning styles. One hundred and twenty seven high intermediate EFL students (65 males, 62 females) were randomly selected from two universities in Iran. The participants were given three questionnaires including; the Reading Strategy Use Questionnaire (SILLs), Reading Self-efficacy Questionnaire, and Perceptual Learning Style Questionnaire. Gender differences were found in the use of metacognitive strategies. Males used metacognitive strategies more often than females did.

Different from Ghezlou et al. (2014), Khamkhien (2010) and Lee (2012) found male students used cognitive strategies more frequently than females did. Khamkhien (2010) investigated the relationship between three variables (i.e.

motivation, experience in studying English, and gender) and language learning strategy use by Thai and Vietnamese university students. One hundred and thirty-six undergraduates (84 Thai, and 52 Vietnamese) completed the SILL questionnaire (Oxford, 1990). His main objective were 1) to investigate how gender, motivation and experience in studying English affect the choices of language learning strategies; and 2) to compare the roles of these factors and the pattern of language learning strategy used by Thai and Vietnamese students. The results revealed that there were gender differences on strategy use among Thai students. Thai male students used cognitive strategies more frequently than Thai females did, while there were no gender differences in metacognitive strategy use. A possible explanation was that gender differences might not influence the choice of strategies. These might be other strategies that affected strategy use such as age, attitude toward learning, expectancy, interest and need. Also, the results revealed that Thai students with higher motivation in learning English used strategies more often than the less-motivation groups.

Lee (2012) investigated gender differences in the use of perceived reading strategies among 156 college students (84 males, 72 females) in Taiwan through the SILL questionnaire (Oxford, 1990). She found the differences between males and females in the use of cognitive and metacognitive strategies were significant. Male students used cognitive strategies more frequently than female students did, while female students used metacognitive strategies more frequently than male counterparts did. That females reporting the use of metacognitive strategies might be interpreted that females might be better language learners in L2 learning environment than males did. Further, the researcher found the correlation between metacognitive and cognitive strategies. Both strategies could predict students' strategic behaviors of reading.

Veloo, Rani and Hariharan (2015) investigated metacognitive awareness reading strategies used by university students in Malaysia. Three hundred and eighteen students (97 males, 221 females) were asked to complete the MARSI questionnaire. The results revealed that there were gender differences in the use of metacognitive awareness reading strategies. Female students reported to use supporting strategies more frequently than males did. Conversely, there were no gender differences in the use of global and problem solving strategies.

On the other hand, there is evidence that there are no gender differences in the use of reading strategies across the context. Goh and Foong (1997), for example, studied the frequency of language learning strategies used by 175 ESL Chinese students and to investigate how it was influenced by the learners' proficiency level and gender. The participants were divided into 3 groups (low, medium, and high). The SILL questionnaire (Oxford, 1990) was administered. Results from the survey indicated that there were no gender differences in the cognitive and metacognitive strategy use.

Sheorey and Mokhtari (2001) explored the use of reading strategies between males and females in the US group and ESL group. The participants were 302 college students (150 native-English-speaking US, and 152 ESL students). They were asked to fill out the Survey of Reading Strategies (SORS) comprising metacognitive, cognitive, and support strategies. They found that there were no gender differences in the use of cognitive and metacognitive strategies among ESL students, but there were gender differences among US group. Female students reported significantly higher frequency of strategy usage than male students did. The researcher interpreted that no gender differences in the ESL group was due to an uneven distribution between males (n = 92),

and females (n = 60). Furthermore, the researchers suggested that metacognitive strategies should be taught in the L2 classroom in order to help students to increase their metacognition about reading.

Poole (2005) investigated gender differences in the use of academic reading strategies of 248 (138 males and 110 females) advanced college ESL students. The SORS questionnaire (Mokhtari & Sheorey, 2002) which was different from Sheorey and Mokhtari (2001) was used to collect the data. The questionnaire comprised of global, problem-solving, and supporting strategies. The results indicated that males and females did not significantly differ in their overall strategy use. Both males and females used problem-solving strategies with high frequency, while global and support strategies were used with medium frequency. Poole (2005) explained that the reason why gender differences were not found in his study was language proficiency. The participants in his study were advanced university students. Besides, he found that contextual motivation played an important role in L2 reading. Males and females who wanted to achieve higher L2 reading proficiency used the same strategies to achieve their goal.

Shikano (2015) examined the relationship between the reading use and readers' gender and reading proficiency. One hundred and thirty Japanese university students (58 males, 72 females) were asked to complete SORS questionnaire (Mokhtari & Sheorey, 2002). The results indicated that there were no gender differences in overall use of strategies. Nevertheless, the researcher found that females reported that they used problem solving strategies (e.g. reread the text to increase their understanding, try to get back on track when I lost concentration, adjust

the reading rate) more often than males did. The researcher pointed out that females may be careful readers than males did. In addition, the results also indicated that proficiency is strongly correlated with the variety and frequency of strategy use.

Other research studies revealing no gender differences in reading strategies used were Kasimi (2012), Radwan (2011), Sani et al. (2011), and Munsakorn (2012). Radwan (2011) investigated the use of language learning strategies and gender differences. Oxford's (1990) Strategy Inventory for Language Learners (SILL) was used to collect the data from 128 university students in Oman. The result showed that metacognitive strategies were the most strategy use by general Omani students. Gender differences were not found in the use of cognitive and metacognitive strategies, but it was found in social strategy use. This might be because of cultural background of participants.

Munsakorn (2012) examined the types and frequency of reading strategy use and compared the English reading strategy awareness of male and female students. Three hundred and eighty first year university students in Thailand were asked to complete a questionnaire which consisted of eight reading strategies: scanning, skimming, schema, identifying main ideas and supporting details, using grammatical clues, using word parts, using context clues, and making inferences. The results showed that there were no gender differences in the overall use of strategy. Males and females use the same of overall strategies as well as individual reading strategy.

Kasimi (2012) investigated the relationship and differences between Iranian and Turkish participants' reports on the use of cognitive and metacognitive reading strategies at English Language Teaching Departments in Turkey and Iran. Moreover,

gender differences among groups in terms of using strategies were explored. The questionnaires were used to collect the data through 461 advanced level participants (326 females, 135 males). The results indicated that there were no gender differences in the use of cognitive and metacognitive strategies. In addition, there was a significant and strong correlation between the participants' use of cognitive and metacognitive reading strategies. The findings showed that an increase or decrease in the use of cognitive strategies might affect the use of metacognitive strategies.

Xue (2015) examined the use of language learning strategies of Chinese EFL students in a British university as well as explored the impacts of gender on the selection of these strategies. One hundred and two post graduate students (53 females, 49 males) answered the SILL questionnaire (Oxford, 1987) and 20 participants were selected for semi-structured interviews. The interview was utilized to confirm the finding from the questionnaire and to explore why and how the participants applied those categories of strategies in their actual learning. The results indicated that there were gender differences in the use of language learning strategies. Females significantly employed more frequent cognitive and metacognitive strategy use than males did.

According to previous research, it seems that a variety of researchers used the questionnaires such as SILL, SORS or MARSI to collect strategies across the contexts in their own countries (e.g. China, Thailand, and Korea). The participants reported using reading strategies across the contexts. The researchers interpreted the quantitative results that the participants intended to use those strategies in the actual situation. Nevertheless, there has been no conclusive evidence in the perceived use of cognitive and metacognitive strategies between males and females. Some studies

reveal that females reported using cognitive and metacognitive more often than males did (e.g. Green & Oxford, 1995; Liyanage & Bartlett, 2012; Saengpakdeejit, 2014) or vice versa (e.g. Tercanliogly, 2004; Zarei, 2013). In addition, there are some studies revealing that females reported using either cognitive or metacognitive strategies more often than males did (e.g. Kaylani, 1996; Hus, 2006; Zhou & Intaraprasert, 2015) or vice versa (e.g. Lee, 2012). Furthermore, some studies revealed that there were no gender differences in the use of cognitive and metacognitive strategies (e.g. Goh & Foong, 1997; Shikano, 2015; Sheorey & Mokhtari, 2001).

Consequently, it might be interesting to further study for gender differences in the perceived use of cognitive and metacognitive strategies. The results might reveal another evidence of perceived strategy use between males and females, especially in Thailand.

2.4.2 Previous research on gender differences in actual strategy use

In addition to exploring strategy use across the contexts or perceived use, other groups of the strategy researchers have examined the use of reading strategies between males and females in a specific context or actual use strategies. A number of studies were conducted in a reading situation to investigate the actual strategies used. Among these research studies, the researchers found that there were gender differences in the strategy use. Females used strategies more frequently than males did.

Griva et al (2012a), for example, investigated gender differences in the use of cognitive and metacognitive strategies when 32 primary students (16 males, 16 females) engaged in a reading task. Think-aloud and retrospective interviews were used to collect the reading strategies and the reading processes that the participants employed

while they were completing the task. The results from verbal reports were coded and analyzed through t-test. The analyses of verbal reports showed that students employed cognitive strategies (e.g. skimming, scanning, underlining) to facilitate reading and to make the text more comprehensible. Students also used metacognitive strategies to reread the passage for their comprehension. Besides, the results from t-test showed that there were statistically significant differences between males and females in the use of cognitive and metacognitive strategies. The researchers interpreted that females had more strategic knowledge and flexible in using both cognitive and metacognitive strategies than males did.

Similarly, Aivazoglou and Griva (2014) investigated gender differences in the use of reading strategies in first (L1) and foreign language (FL). The participants were 455 grade 5 and 6 students categorized into skilled and less skilled L1 and EFL readers. The participants were asked to complete a reading comprehension test and then the SORS questionnaire; problem solving, global, and supporting strategies. The findings revealed that females reported using strategies more frequently than males did. Females were proved to be more aware of their reading strategies use with than boys did.

Peart, Ibarra and Salazar (2015) investigated the effect of gender on L2 reading comprehension in Spanish at the third semester of instruction in a U. S. university. Two types of assessment were used: multiple choice and written recall. Also, the cognitive strategies used by students to understand the texts provided were evaluated. The statistical analyses revealed that there was a significant difference between female and male participants in the use of strategies. Females showed higher used of strategy than

males did when they accessed a text in Spanish. It seemed that females may be better readers than males.

Inconsistent with previous research findings in which females used strategies more often than males did, Phakiti (2003b) found males used metacognitive strategies more often than females did, and males and females did not differ in their use of cognitive strategies. He examined test taker's reported strategy use in a reading test with a self- report questionnaire and a retrospective interview. The data were collected from 384 Thai University students. The participants took a reading comprehension test and then immediately answered the questionnaire. A retrospective interview was conducted with 8 students.

By contrast, other research findings show that there are no gender differences when using strategies in a specific context or actual use strategies. Young and Oxford (1997), for example, investigated gender differences in the use of local and global reading strategies when students read English and Spanish passages. The participants were 49 (23 females and 26 males) native English undergraduate students studying Spanish. Think aloud was used to collect data. The results indicated that participants in every level of learning used 'local strategies' to process Spanish passages and they used 'global strategies' to process English passages. In addition, there were no gender differences in the use of overall reading strategies to process Spanish and English passages.

Weiying (2006) investigated gender differences in using reading strategies among Chinese university students. Eighty three university students answered the questionnaire and 30 participants in the sample were randomly selected for think aloud

protocol. The reading strategies in the questionnaire were adapted based on Hosenfeld's (1977), Carrell's (1989), and Anderson's (1991). The questionnaire consisted of supervising strategies, support strategies, paraphrase strategies, and strategies for establishing coherence in text. Weiying (2006) did not find gender differences in the overall use of reading comprehension strategies. However, the findings from verbal reports showed that females reported more strategies than males did. Many female participants were aware of the strategies and applied them on purpose, while strategies in reading reported by males were very limited. It seemed that males used many strategies consciously.

Taki and Sooleimani (2012) investigated the online reading strategies used by Iranian EFL students and the differences between male and female learners in terms of online reading strategy use. Participants were 30 MA students (15 males and 15 females) in Iran. The Survey of Reading Strategies (SORS) and Online Survey of Reading Strategies (OSORS) were adapted. First, the participants were asked to read three online passages. Then they responded to OSORS to identify the online reading strategies used by the participants. The results from t-test indicated that participants used online reading strategies moderately. Problem-solving strategies and global reading strategies were used the most. Males and females did not significantly differ in terms of online reading strategy use.

Afsharrad, Benis, and Reza (2015) examined gender differences and reading comprehension ability between bilingual and monolingual learners in the use of cognitive, metacognitive, and total reading strategies. The participants were 50 Persian–Turkish bilinguals (19 males, 31 females) and 36 Persian monolinguals (19

males, 17 female). A standard test of reading comprehension and two questionnaires (i.e. a background questionnaire and a reading strategy questionnaire) were employed for data collection. The participants were asked to take the reading test around 30 minutes and then immediately respond to the questionnaire. The results from ANOVA showed that there were no gender differences in using cognitive and metacognitive strategies. Moreover, the researchers had suggested that cognitive and metacognitive strategies should be taught together.

Similar to Afshrrad et al. (2015), Nourdad (2015) detected no gender differences in the use of reading strategies. Nourdad (2015) explored gender differences in various EFL majors (i.e. English literature, Teaching English and English Translation) in the way test takers applied cognitive and metacognitive test-taking strategies and their ultimate reading comprehension test performance. Two hundred and fourteen students were asked to complete a reading test and then a questionnaire. The researcher found that there were no gender differences in the use of cognitive and metacognitive test taking strategies. Males and females did not employed strategies differently due to the similar syllabus design and material used in the classes.

Consistent with studies on perceived use strategies, a number of researchers could not find conclusive evidence. Some researchers found that females reported using cognitive and metacognitive more often than males did (e.g. Aivazoglou & Griva, 2014; Griva et al., 2012; Xue, 2015). Further, some researchers found that there were no gender differences in the use of cognitive and metacognitive strategies (e.g. Taki & Sooleimani, 2012; Weiying, 2006; Young & Oxford, 1997). The questionnaire followed by a verbal report were used to collect the data. The results

from the studies of actual use might be different from the studies of perceived use. This was because the participants actually used those strategies with the task at hand rather than they reported their perceived strategy use.

To sum up, although these studies were conducted either across the context or in specific contexts, it seems that the results in the use of cognitive and metacognitive reading strategies between males and females are mixed. Some studies (e.g. Griva et al., 2012; Lee, 2012; Maritinez, 2008; Sani et al., 2011) revealed that there were gender differences, while some studies (e.g. Cheng, 2009; Hus, 2006; Poole, 2005; Young & Oxford, 1997) revealed that there were no gender differences. Among these previous studies, questionnaires such as the SILL, SORS and MARSI were employed to collect the strategy use. Apart from the questionnaire, verbal protocols were suggested to be used in order to triangulate the data. Accordingly, the present study investigated gender differences in the use of cognitive and metacognitive between perceived and actual use strategies. The questionnaire and verbal report were utilized.

2.4.3 Previous research on learner strategies used in both perceived and actual use strategies

There is a group of researchers who has investigated the use of both perceived and actual use strategies in reading in the same study. For example, Al-Melhi (1999) explored the reported and actual reading strategies and the metacognitive awareness used by fourth-year Saudi college students while they were reading in English as a foreign language. The participants were divided into skilled reader (SR) and less skilled readers (LSR). The participants were asked to complete a survey, then a reading proficiency test, and think aloud protocols. The researchers found that skilled readers reported using reading strategies the same as they actually used.

Ikeda and Takeuchi (2002) conducted the research to find whether the data collected through a questionnaire was affected by the presence or absence of the actual tasks to do, and to find whether the data collected through a questionnaire were affected by the difficulty of the tasks to complete. The participants were 192 university students (97 high proficiency, 95 low proficiency) in Japan. The participants were first asked to respond to the questionnaire without doing any reading task. Two week later, they were asked to do the easy reading task and then responded to the questionnaire. One months after that, the same participants were asked to do the difficult reading task and then responded to the questionnaire. The results showed that students in both proficiency groups reported using strategies in non-testing condition more frequent than the two conditions (either easy or difficult reading task conditions). The researchers indicated that the participants tended to overestimate their strategy use. In addition, the results showed that task difficulty affected strategy use. The more difficult tasks, the more strategies used.

Following Ikeda and Takeuchi's (2002) study, Oxford, Cho, Leung and Kim (2004) investigated the effects of including or not including a language task as part of strategy assessment procedures and how students' reported strategies differed when the language task was easy versus difficult. Thirty-six participants divided into proficiency and less proficiency participated. Similar to Ikeda and Takeuchi's, the participants first respond to the questionnaire without doing any reading task. One week later, they were asked to do the easy reading task and then responded to the questionnaire. Two weeks after that, the same participants were asked to do the difficult reading task and then responded to the questionnaire. The researchers found that tasks and language proficiency had effect on strategy use. Low proficiency

students used strategies more often than high proficiency students when they did the difficult reading task.

Alsheikh (2011) investigated the metacognitive reading strategies of three advanced proficient trilingual readers whose native language was Hausa. The aim of the study was to compare the reading strategy profiles of trilingual readers through perceived use and actual use of reading strategies. The research instruments consisted of a survey of reading strategies (SORS), a set of reading passages in three languages, and a think-aloud. The findings revealed that the participants reported the same strategies as they actual used.

In addition, Lee (2012) investigated the use of metacognitive online reading strategies among students in Korea to see whether there were any similarities and discrepancies between perceived and actual use of strategies. An online survey was administered to 33 students, and two students from the sample were selected for a think-aloud reading task. The results revealed that there were no significant differences in the use of strategies between perceived and actual use.

Similarly, it might seem that a number of researchers could not find conclusive results in perceived and actual use strategies. Further research might be essential to investigate.

2.5 The nature of test taking strategies

Test taking strategies are another area that strategy researchers investigate. Test taking strategies are the processes that test takers use to answer the questions and do the test tasks and the perceptions that test takers have about the questions and tasks before, during, and after responding to them (Cohen, 1998). Test takers apply the strategies while they are solving language test tasks (Nikolov, 2006). The selections

of the strategies are guided by a specific testing format that is used such as multiple-choice, constructed response, paragraph sorting, oral cloze (Rupp, Ferne, & Choi, 2006) and contexts (e.g. using the strategies across the contexts, using strategies in non-testing contexts, using strategies in a testing conditions) (Phakiti, 2003a).

Cohen (1998) classifies test taking strategies into language use strategies, and test-wiseness strategies. Language use strategies are steps or actions that test takers consciously select to complete language tasks. The strategies are comprised of retrieval, rehearsal, cover, and communication strategies. Cohen (1998) explains that when test takers take the test, they might look for the technique that help them to do the tasks. For example, they might rehearse a task (e.g. in speaking or writing) before using it. Test takers might use cover strategies to help them look good or avoid being unprepared. For example, they may use a memorized and partially understood phrase in the conversation to keep the action going on. The test takers might need to be in the real situation in order to practice their speaking.

Test-wiseness strategies are the strategies that do not depend on test takers' proficiency in language being assessed (Cohen, 1998). However, the strategies depend on test takers' knowledge of test formats and other peripheral information to answer test items. Test-wiseness strategies are, for example, opting out of the language task at hand, making use of material from a previous item when it 'gives away' the answer to a subsequent one, not reading the text as instructed but simply looking immediately for the answer to the given reading comprehension questions, and selecting the option because it appears to have a word or phrase from the passage in it–possibly a key word (Cohen, 1998).

Nevertheless, Cohen (2006) reclassified his test taking strategies into test-wiseness, test management, and language learner strategies. Test wiseness strategies refer to short-cuts that assist test takers to arrive at the answer. Test management strategies are the strategies that test takers use to respond to the test items and tasks meaningfully. Test management strategies are, for example, going back to the questions for clarification, reading the question and considering the options before going back to the passage or portion, using background to guess, and selecting option through elimination of other options (Cohen & Upton, 2006).

Language learner strategies are the strategies that test takers use when they respond to basic skills such as reading, writing, speaking, and listening. Cohen (2006) explains that when test takers take a reading comprehension test, they use reading strategies which he defines as language learner strategies to look for markers of meaning in the passage, such as definitions, examples, indicators of key ideas, guides to paragraph development, test management strategies to select options through the elimination of other options, and test-wiseness strategies to select the option because it appears to have a word or phrase from the passage in it–possibly a key word to help them complete the test task (Cohen, 2006).

In addition, there are other researchers investigating test taking strategies in terms of metacognitive and cognitive strategies (Anani sarab & Reihani, 2010; Phakiti, 2003a, 2003b, 2008; Purpura, 1996). As mentioned earlier, metacognitive strategies are "the test-takers' deliberate mental behaviors for directing and controlling their cognitive strategy processing for successful performance" (Phakiti, 2003a: p. 30). The strategies might consist of planning and monitoring strategies

(Phakiti, 2003a). Cognitive strategies are, on the other hand, "the test-takers' ongoing mental activities to use their language and world knowledge to solve the given tasks" (Phakiti, 2003a: p. 30). For example, the strategies consist of making prediction, translating, summarizing, linking with prior knowledge or experience, applying grammar rules and guessing meaning from contexts (Phakiti, 2003a).

Furthermore, some researchers investigate test taking strategies in terms of general, text-related, and question-related strategies (Rupp et al., 2006). General strategies consist of budgeting your time, reading the text first before reading the questions, reading the questions first before reading the text, identifying major reading or question types, looking for key words, remembering that the questions follow the order of the passage, don't try to read every word, trying to summarize after reading. Text-related strategies consist of reading the first sentence of each paragraph for the main idea, looking for how the text is organized and ignoring details, predicting the author's points, getting the gist of each paragraph, paying special attention to the first part of the passage, finding short sentences within paragraphs, previewing key sentences, forming ideas about the text when reading, relating what you read to what you already know, using context clues to find the meaning of an unfamiliar word. Question-related strategies are comprised of answering the questions you know first, using the process of elimination to make the best educated guess, avoiding choices that are too specific or too broad, looking for choices that sound consistent with the main idea, using prior knowledge to answer questions.

To conclude, the test taking strategies might be influenced by specific test formats and contexts. Cohen (2006) divided test taking strategies into test management, test wiseness as well as language learner strategies related to language skills such as reading, writing, or listening. The students use the strategies in order to complete the test tasks. In this study, test taking strategies are included test management and test wiseness strategies as well as reading strategies.

2.5.1 Previous research on test taking strategies

2.5.1.1 Test taking strategies in a multiple-choice reading test

Several strategy researchers explore the use of test taking strategies differently. Some of them examine strategy use while test takers are responding to the multiple-choice questions (e.g. Alavi & Bordbar, 2012; Cohen & Upton, 2006; Salehi, 2011).

Cohen and Upton (2006), for example, investigated reading and test-taking strategies (test management and test-wisenes strategies) used on the reading section of the LanguEdge Courseware (2002) materials developed to design the new TOEFL. Test takers responded to the traditional single selection multiple-choice formats (i.e., Basic Comprehension and Inferencing questions) and the new selected-response (multiple selection, drag and drop) Reading to Learn items. Thirty two participants took the test and then they did a verbal protocol. The analyses of verbal protocols were grouped according to the item types— basic comprehension, basic inference, and reading to learn. The researchers found that although there were some strategies used for specific item types and not for others, there were two reading strategies (i.e. reading a portion of the passage carefully and reporting, paraphrasing, or translating

words, phrases, or sentences – or summarizing paragraphs/ passage- to aid or improve understanding) and six test taking strategies that test takers employed to respond to the full range of item types (i.e. going back to the question for clarification; rereading the question, going back to the question for clarification: paraphrasing (or confirming) the question or task; reading the question and then reading the passage/portion to look for clues to the answer either before or while considering options, considering the options and postponing consideration of the option; selecting options through vocabulary; sentence, paragraph, or passage overall meaning; and discarding options based on vocabulary, sentence, paragraph, or passage overall meaning as well as discourse structure.) However, the researchers did not find the use of test-wiseness strategies among the participants. The researchers explained that the participants might be reluctant to use test-wiseness strategies because they knew that the researchers were observing their behavior closely.

Other researchers that investigated test taking strategies based on Cohen and Upton's (2006) are Salehi (2011) and Alavi and Bordbar (2012). Salehi (2011) investigated the use of the test taking strategies while 40 Ph.D. candidates were taking a high-stake reading test. The participants were asked to answer the checklist included only test taking strategies (test management and test wise-ness strategies). The findings revealed that test takers selected suitable strategies to respond to the test items. For example, the test takers used rereading the question, paraphrasing (or confirming) the question or task when they did the difficult items. Further, when they took the items that asked for meanings of vocabulary, they would consider the choices and went back to the text to check the vocabulary in the context.

Unlike Salehi (2011), although Alavi and Bordbar (2012) adapted Cohen and Upton's (2006) test taking strategies, they investigated only reading strategies for different test item types in a reading section in TOEFL iBT. Sixty-six respondents took a sample of reading comprehension test and then they responded the checklist of reading strategies. The results showed that reading strategies (e.g. making a mental note of what is learned from the pre-reading; considering prior knowledge of the topic) played an important role to assist test takers to respond to each item type.

In addition to reading, test management, and test-wiseness strategies, there are other research studies investigating the use of cognitive and metacognitive strategies when test-takers respond to a multiple choice reading test. Anderson (1991), for instance, explored the use of cognitive, metacognitive, compensation reading strategies, and test taking strategies while the participants were taking a multiple-choice reading comprehension test and reading an academic text. Think aloud was used to collect data from 28 Spanish-speaking students. The participants reported their reading strategies after they read the passages, and reported test-taking strategies after they took the test. The results indicated that the reading strategies had a positive relationship with language proficiency. The participants who reported using more strategies on reading the textbook and taking the reading test tended to score higher. Further, he found that monitoring strategy which was under metacognitive strategies was a necessary strategy to help readers comprehend the texts and complete the test.

Similar to Anderson (1990), Barati and Kashkoul (2013) found that monitoring strategies was the most frequently used. They examined the effect of task-based assessment on the type and frequency of test-taking strategies. The participants were

70 EFL university undergraduates divided into 3 proficient groups (high, intermediate, and low). A questionnaire consisting of metacognitive strategies (i.e. planning, monitoring, and evaluation) and test-wiseness strategies was used after the participants took each sub-test. The findings showed that among three proficiency groups, monitoring strategies was significantly used more often than other strategies.

Phakiti (2003a) examined test taker's reported strategy use in an English reading comprehension test. A self- report questionnaire and a retrospective interview were used to collect the data from 384 Thai University students. The questionnaire was developed and based on the literature in reading, learning and test taking strategies. Participants took a multiple- choice test and a gap-filling reading test and then immediately responded to the questionnaire. Eight participants from the samples were selected for a retrospective interview. The results indicated that cognitive and metacognitive strategies had a positive relationship to the reading test performance. Students used the strategies when they encounter with difficult tests. Highly successful test-takers used more metacognitive strategies than less successful test-takers. According to the qualitative results, the researcher found that cognitive strategies (e.g. elaboration, inferencing, transferring) occurred in association with metacognitive strategies. For example, a test taker should have metacognitive strategies when they used cognitive strategies.

Another research study investigating metacognitive and cognitive strategies in a testing condition is from Anani sarab and Reihani (2010). They explored the relationship between test takers' cognitive and metacognitive strategy use and their second language reading test performance. Seventy female participants completed a

checklist and a questionnaire. The participants did the checklist after they selected an answer to each test item. After the participants finished a multiple-choice test, they were asked to reply to the questionnaire. The results revealed that returning to the passage after reading a question and choices and guessing were the most frequently used when participants responded to easy and difficult test items. In addition, reading the passage first and noting main points while reading were the most frequently used cognitive strategies, and spending more time on difficult questions was the most frequently used metacognitive strategies. Further, the researchers found that wild guessing was the most frequently used when test takers answered multiple choice questions.

2.5.1.2 Test taking strategies in a short-answer reading test

In addition to the use of test taking strategies in a multiple-choice reading test, there are a number of researchers investigating the use of test taking strategies in a short-answer reading test. Kang (2005), for example, investigated the differences in the use of test taking strategies among good, intermediate, and poor readers when they did the short-answer questions. Ninety Korean junior high school students did a 7-question SAQ format reading test. After answering each item, they immediately wrote down the strategies that helped them answer the questions. The results showed that strategies used by three groups of the students were quite broad and did not find some informative details in content and restricted in number. The researchers interpreted that the students were not familiar with short answer questions. Mostly, they were familiar with a multiple-choice format.

Another research study was from Jamil, Sallehhudin, and Razak's (2010). They explored test taking strategies used by high and low proficient female students

when they responded to a short-answer reading comprehension test. Ten participants were selected based on purposive sampling. The retrospective protocols were used after the participants completed the test. The results indicated that high and low proficient students used the strategies nearly the same as each other. It can be inferred that the number of strategy use did not affect the participants' abilities to respond to a test or their arriving at the answer. However, it seems that the way they employed the chosen strategies played a big role in obtaining the correct answer.

Weigle, Yang and Montee (2013) investigated cognitive processes involved in reading and responding to short-answer questions (SAQs). The study was divided into two phases. In phase 1, the researchers investigated how second language readers approached the short answer questions. Five university students were asked for verbal (think-aloud) protocols, retrospective interviews, and semi-structured interviews after they completed the test. Semi-structured interview was used to explore the perceptions of the test and what the participants thought the test was measuring. The results were grouped according to how the participants approached the test, how they took note while reading the passage, and what strategies that the participants used to answer the questions.

Phase 2 enhanced the results on phase 1. The researchers collected the data in phase 2 with the same procedures as in phase 1. However, the number of participants was larger. Thirty nonnative English-speaking university students participated in the study. Think aloud protocols were transcribed into paraphrase, elaboration (i.e. self-explanation, surface text connection, irrelevant association, and prediction), evaluation, comprehension problem, comprehension success, and goal setting. The results indicated that paraphrasing was the most frequently used followed by

elaboration, evaluation, and comprehension problem. Similarly, the researchers found that scanning and guessing strategies should not be used when test takers responded to short answer questions, while both strategies were used successfully in responding to multiple-choice questions. The researcher also came up with evidence of short-answer question that the processes of reading and responding to questions in responding to this short-answer appeared to elicit reading behaviors that were similar to real world reading processes. Besides, responding to short-answer questions required a high level of academic language proficiency to be able to comprehend the text and construct appropriate responses.

Furthermore, there is another research study showing some strategies might be used in short-answer questions rather than using in multiple-choice questions. Pressley, Ghatala, Woloshyn, and Pirie (1990) investigated the use of test taking strategies when test-takers took a multiple-choice or a short-answer question. The researchers hypothesized that short answer questions could lead test takers to use rereading and reprocessing of inconsiderate text more often than multiple-choice questions. Verbal protocol analysis was used to collect data with 54 Canadian university students. Each student read a passage and answered either short answer or multiple-choice questions, and then they made a decision whether to move forward (if he or she thought the answer was probably correct) or to look back in the text and try the question again (if he or she believed the response was probably incorrect). The researchers found that monitoring and rereading strategies were slightly applied to the short-answer rather than to the multiple-choice questions.

In addition to Pressley et al. (1990), Alderson (1990) and Tsagari (1994) investigated test taking strategies used in multiple-choice and short answer questions.

Alderson (1990b) conducted a pilot study to investigate the use of test taking strategies when students took short answer and multiple-choice questions. Two intermediate ESL university students participated in the study. One student was asked for an introspective interview, while another student was asked for a retrospective interview. The results revealed that when responding to short answer and multiple-choice questions, students read through questions first. They skimmed rapidly through the questions before they began to answer the questions. Further, they identified keywords when they encountered unknown vocabulary or matched keywords in the questions with the same or similar words in the passage. The results also indicated that when students answered multiple-choice questions, they eliminated implausible distracters before identifying the correct one. Moreover, when they completed the multiple-choice test, they might change their answer.

Tsagari (1994) investigated test taking and reading strategies used between short answer and multiple-choice questions. The tests, a checklist of test-taking strategies, and questionnaires were completed by 57 ESL graduate students, and two students were selected for retrospective interviews. The researcher found that when test takers responded to short answer questions, they used guessing the answer without any particular considerations, using background knowledge, looking for the answer in chronological order, looking for the answer in the passage, trying to match a word/ words/ phrase in the questions with the same or similar one in the passage, trying to give an answer based on what I could remember from the passage, receiving clues from answering another question, and skipping the questions and returning to it later. In addition, the strategies used to respond to multiple-choice questions were similar to the strategies in short answer questions. Nonetheless, the researcher added two more test

taking strategies used to respond to multiple-choice questions. They were choosing one of the alternatives not because it was thought to be correct but because the others did not seem reasonable, seemed similar or were not understandable, and choosing one of alternatives through deductive reasoning. Although the researchers found that returning to a specific part in the text to find clues to answer the questions was frequently used in both test formats, the test takers often used in a short-answer question. Additionally, when responding to short answer questions, students frequently used clues from another question, skipped the questions and returned to answer later, and answered in chronological order, whereas they frequently used deductive reasoning to eliminate the distracters and choose the appropriate answer and matched a word (s) or phrase in the question when they answered multiple choice questions.

2.5.2 Test taking strategies used in perceived and actual use strategies

Apart from collecting data in a testing condition, there are other researchers investigating the use of test taking strategies both across the contexts or non-testing context and in a testing condition. For example, Phakiti (2008) examined the relationship of test-takers using strategies across the context or perceived strategy use and strategies used in a testing condition or actual use strategy. The data were gathered on two occasions (during the mid-term and final examination periods). Five hundred and sixty-one Thai university test-takers filled out a questionnaire before taking the mid-term and final exam. After completing the mid-term and final exam, they immediately responded to the same questionnaire again. The results revealed that metacognitive strategies used across the context directly and strongly affected cognitive strategies used across the context. Further, cognitive strategies used across the context did not greatly affect cognitive strategies used in a testing condition, while

metacognitive strategies used across the context directly affected metacognitive strategies used in a testing condition. Another finding showed that cognitive strategies used in a testing condition directly affected a specific language test performance.

Similar to Phakiti (2008), Rupp, Ferne, and Choi (2006) found the differences in the use of strategies in a non-testing context and in a testing condition. They explored the use of test taking strategies in multiple-choice questions. Think-aloud protocols were used with ten non-native adult English readers while they were responding to reading comprehension questions. They found that the behavior predicted by models about reading in a non-testing context differed from the response behavior for multiple-choice questions based on reading passages in a testing context. Test takers tended to use the strategies based on the previous experiences. However, scanning strategy was used when the test takers encountered difficulty. In addition, the test takers used key words that were relevant to the questions, underlined or highlighted individual words or phrases to help them understand the texts or answer the questions.

Chou (2013) explored strategy use for reading English for General Academic Purpose (EGAP) and English for Specific Academic Purposes (ESAP) in non-testing and testing contexts. In a non-testing context, 92 Chinese-major university students were asked to complete a questionnaire and a retrospective self-report. The same materials plus short answer questions were used in a testing context. The results indicated that in non-testing contexts, metacognitive strategies were applied when the participants read EGAP and ESAP articles. However, cognitive strategies were used more frequently when participants read ESAP articles than EGAP articles. Using the dictionary, writing down the definitions of unknown English words, translating English

words and sentences into Chinese, reading the texts several times until they felt they understood them, and combining pieces of information together were the most frequently used cognitive strategies. Nonetheless, reading strategies were not used differently across the two types of articles. In testing contexts, test management strategies (e.g. reading questions several times, going back to confirm answer frequently, and dealing with the certain questions first before moving on to uncertain one) were more frequently used when participants answered ESAP than EGAP test items.

Consistent with the other studies on reading strategies, researchers have explored test taking strategies used with a group of different language proficiency. Proficient students used strategies more often than the less proficiency groups. Students responded their actual test taking strategy use with questionnaires as well as verbal reports. Not many studies have investigated the use of test taking strategies between perceived and actual use strategies. Therefore, the present study included test-taking strategies to explore how grade 10 students reported and used the strategies.

2.6 The characteristics of a reading comprehension test

2.6.1 The test specification

To write a reading comprehension test, test writers should begin with a test specification (Alderson et al. 1995; Bachman & Palmer, 1996; Hughes, 2000). The test specification is able to help test writers determine the appropriate texts and response formats. The test specification consists of purposes of the test, characteristics of test takers, level of the test, the construct to be measured, text types, and characteristics of

input, response, and relationship between input and response (Bachman & Palmer, 1996).

Finding the appropriate texts to become a passage in a reading test is the next step for test writers (Alderson et al., 1995) because the topics of text influence test takers' strategy selection (Rupp et al., 2006). Alderson et al. (1995) defined the appropriate texts as the texts that can match the test specification and can provide suitable items. Applying authentic texts such as from novel, magazine, newspaper, academic journal, letter, timetable, public notices, maps etc. in the reading test (Green, 2014; Heaton, 1988; Hughes, 2000) is preferable for test writers as well as classroom teachers. These text types enable test takers to demonstrate how the target language is employed in real-life situation (Heaton, 1988).

Furthermore, texts should cover topics of test takers' interest and should be avoided if they have already been read (Green & Hawkey, 2011; Hughes, 2000; Murphy, 2003). Texts which are adequately familiar with test takers should be used because they could motivate the test takers to deploy suitable skills and strategies to comprehend the texts (Urquhart & Weir, 1998). Nevertheless, some researchers argue that text that are familiar with or related to test takers' general knowledge or their cultural knowledge should not be employed (Hughes, 2000). Besides, a variety of text types including verbal and non-verbal texts should be applied in the reading tests (Alderson et al., 2005; Heaton, 1988; Hughes, 2000). This is because employing different types of text enable test takers to avoid using their background knowledge (Alderson et al., 2005) and can obtain acceptable reliability (Hughes, 2000).

In addition to interesting topics, text familiarity, and a variety of text type, length of text should be considered when test writers construct the test. This is because it can affect the use of strategies (Cohen, 1994; Urquhart & Weir, 1998). Long texts can enable test takers to utilize skimming or scanning strategies when they take the multiple-choice questions, while short-answer questions cannot.

2.6.2 The test formats

Apart from text selection, the test formats are another consideration. It is one of the factors affecting the use of strategies (Cohen, 2003, 2006; McNeil, 2012; Rupp et al., 2006; Wenden, 1991). The different test formats cause the different strategy use (Rupp et al., 2006) and the use of metacognitive strategies (Chapelle, 1998). The test formats also influence on test takers' characteristics (Bachman, 1990). Since there are no test formats that can accomplish the various purposes of the test writers, when designing the test, the test writers should understand the characteristics of each test format and make the best selection which one serves the purposes of test in each context (Alderson, 2003; In'nami & Koizumi, 2009).

A number of test formats are employed to assess students' reading comprehension. That is, a cloze test, gap filling test, multiple- choice test, matching technique, ordering task, dichotomous items and editing test, c-test, cloze elide test, short answer test, free recall test, the summary test, the gapped summary, and information-transfer technique (Alderson, 2003). The multiple-choice test format is, however, widely used to assess students' reading comprehension (Alderson, 2003; Bachman & Palmer, 1996; Bacon, 2003; Brown, 2004; Far et at., 1990; Hughes, 2000; Phakiti, 2008; Pressley et al., 1990; Rupp et al., 2006). The format has been used

because of easy to score, easy to administer, and practical to assess (Alderson, 2003; Bacon, 2003; Brown, 2004; Brown & Hudson, 1998; Hughes, 2000). The scorings from multiple-choice tests are reliable and rapid (Brown, 2004; Brown & Hudson, 1998; Cohen, 1994; Hughes, 2000). Besides, possible answers and students' thought processes when responding to the format could be controlled (Alderson, 2003). In Thailand, the multiple-choice test format is more generally used than other test formats because of reliable and practical in scoring (Prapphal, 2008).

However, some limitations are found in the use of a multiple-choice test. For instance, the test is difficult for the test writers to construct (Brown & Hudson, 1998). Test writers spend much time to design appropriate items (Urguhart & Weir, 1998). Additionally, the format cannot avoid test takers using test-wiseness strategies (Alderson, 2003; Hughes, 2000; Kobayashi, 2002). Test takers might guess the answer without understanding the passages (Urguhart & Weir, 1998; Kobayashi, 2002). Further, the format might not reflect the real world task (Brown & Hudson, 1998; Cohen, 1998a). It does not enable test takers to employ productive language when they respond to the choice that they do not encounter in the real lives (Brown & Hudson, 1998).

Although suitable test formats are rarely found to achieve test writers' purposes (Alderson, 2003; In'nami & Koizumi, 2009), several researchers investigate appropriate test formats for reading comprehension. Kobayashi (2002), for example, investigated the effects of test organization and response formats on L2 learners' performance in a reading comprehension test. A short-answer, summary writing and cloze test were used instead of a multiple-choice test due to avoiding guessing strategy.

The results showed that short-answer questions and summary writing were as reliable as cloze tests when assessing reading comprehension.

Similar to Kobayashi (2002), Bacon (2003) found that a short-answer format was a reliable test format. He found the correlation between a multiple choice format and a short-answer format in the convergent validity. Both formats measured the same construct. Additionally, there were no gender differences in the use of both formats. Multiple-choice and short-answer formats did not benefit either males or females.

Kang (2005) investigated the substitutability of short-answer-question (SAQ) format for multiple-choice-question (MCQ) format in measuring EFL learners' L2 reading ability. Ninety Korean junior high school students were the participants. He found that SAQ format could be used as an effective alternative to MCQ format with its stronger construct validity, practicality, and reliability in assessing EFL test-takers' reading comprehension ability. Further, Kang (2005) found that the instructions of SAQ format test-taking strategies could be benefit for students who were not good in reading skills.

Regarding the aforementioned studies, a short-answer format might be another test format used to assess students' reading comprehension. This is because the format is as valid, reliable and practical as a multiple-choice format (Bacon, 2003; Kang, 2005; Kobayashi, 2002). A short-answer format can replace a multiple-choice test format (Kang, 2005). However, only one test format may not be sufficient to assess students' reading comprehension (Heaton, 1988; Rodriguez, 2003). Different tests format may assess differently (Rodriguez, 2003). Therefore, when constructing a reading comprehension test, test writers may use more than one test formats to assess

comprehension of the same reading passage (Heaton, 1988). Accordingly, in this study, multiple-choice and short answer questions will be designed to assess reading comprehension.

2.6.3 The types of reading comprehension questions

In addition to the test formats, a reading comprehension test consists of questions and passages (Steensel, Oostdam, & Gelderen, 2012). The questions using in the test should be simpler and easier than the passage (Alderson, 2003; Du, 2010; Nuttal, 2005), and the questions used in the class can be applied to a reading comprehension test (Anderson, 2005). When constructing the questions, test writers should avoid using the questions that require test takers to match words and phrases (Heaton, 1988). Instead, the test writers should employ the questions requiring test takers to digest and interpret what they have read from the passages (Heaton, 1988). Moreover, the questions used in the test should not require the world knowledge because test takers can answer the questions without reading the passages (Du, 2010).

Several types of questions are employed in a reading comprehension test. Nuttall (2005), for example, classified the types of questions based on the skills that teachers necessarily entail from the students. The questions are comprised of question of literal comprehension, questions involving reorganization or reinterpretation, questions of inference, questions of evaluation, questions of personal response, and questions concerned with how writers say what they mean.

Questions of literal comprehension are questions requiring readers to find the answers directly and explicitly from the passage. The questions can be answered in the words of the text itself. Unlike questions of literal comprehension, questions involving

reorganization or reinterpretation are the question requiring readers to interpret or obtain the information from various parts of the passage and put it together in a new way. Such questions are valuable in making readers to consider the text as a whole rather than thinking of each sentence. Similarly, questions of inference are the questions requiring readers to put together the information that are scattered throughout the passage to answer the question. To respond to this type of question, readers have to imply the answer which does not state explicitly. Questions of evaluation are the questions requiring readers to consider and judge about the passage in term of what the writers is trying to do or how far he or she has achieved it. Unlike the questions of evaluation, questions of personal response are the questions requiring readers' opinions or ideas to respond to the questions. Nevertheless, when responding to this type of questions, the answer should base on the understanding of the reading passage. Questions concerned with how writer say what they mean concern how the writers say and what they mean in the passage.

The other types of questions utilized in a reading comprehension test is Bloom's Taxonomy (1965). Bacon (2003), for example, applied lower three levels of Bloom's Taxonomy (1965) to his short-answer and multiple-choice reading comprehension questions. Indeed, the questions of Bloom's Taxonomy (1965) are divided into 6 levels - knowledge, comprehension, application, analysis, synthesis, and evaluation- arranged from less to more complex.

The lower 3 levels are knowledge, comprehension, and application. Knowledge is the level that students can recall or recognize information, ideas, and principles in the approximate form that students have learnt. Comprehension is the level that students

can compare, translate, comprehend, state main ideas, or interpret information based on their prior learning. Application is the level that students can apply, select, or transfer knowledge in a different or new way.

The higher 3 levels are analysis, synthesis, and evaluation. Analysis is the level that students can distinguish, classify, make inferences and relate the assumptions, hypotheses, evidence, or structure of a statement or question. Synthesis is the level that students can originate, integrate, and combine ideas into a product, plan or proposal that is new to them. Evaluation is the level that student can assess, or critique on a basis of specific standards and criteria.

Apart from the test specification, the test formats, and the type of reading comprehension question, multiple-choice and short-answer questions were designed. The types of the questions were mainly adapted from Nutall (2005). That is, question of literal comprehension, and questions involving and reorganization or reinterpretation (see Appendix III).

2.7 Verbal protocol analysis (VPA)

To investigate strategy use, many researchers use not only a self-report questionnaire to collect second language strategy use, but they also use verbal protocols to confirm or triangulate the data. That is because using only a self-report questionnaire might not be sufficient (e.g. Aivazoglou & Griva, 2014; Bacon, 1992; Lee, 2012). The participants might report what they believe of what they will use. Hence, in order to reduce this problem, a simulated verbal report retrospective with a self-report questionnaire is used.

Verbal protocol analysis is one type of strategy assessment methodology based on the statement that individual's verbalization may be seen to be an accurate record of information that is attended to as a particular task (Green, 1998). It is also a tool for the classroom teachers to ask the students to verify what they are doing while they are doing a given task such as reading (Anderson, 1999). The informants are asked either to think aloud or talk aloud what they do to complete the tasks. This technique becomes a tool to use in cognitive psychology (Bacon, 1992; Cohen & Upton, 2007; Green, 1998).

In the area of language testing, verbal protocol analysis provides qualitative information to investigate what informants are doing without being obtrusive (Cohen, 2006; Green, 1998). Researchers use verbal protocol to describe and codify strategies that informants respond to different item types and testing procedure (Cohen & Upton, 2007; Cohen, 1998a, 2006). The description and code are related to describe mental processes or cognitive processes that language learners use to understand target language including second language strategies (Anderson, 1999; Cohen & Scott, 1996; Cohen & Upton, 2007). Furthermore, researchers have used verbal protocol to investigate how proficiency level and other learner characteristics (e.g. gender) relate to strategy use and test performance (Bacon, 1992; Cohen, 2006; Kaylani, 1996; Phakiti, 2003a, 2003b; Young & Oxford; 1997).

The method to collect verbal protocol may be different depending on the types of research questions that are to be stated (Green, 1998). Bacon (1992) proposes three types of verbal protocol: retrospective report, directed report and think-aloud (introspection) protocol. She states that "retrospective report record what subjects say they have done while performing the tasks, while directed reports focus on certain

aspects or a tasks and thinking-aloud (introspection) protocols ask subjects to report on their thinking processes during the performance of the tasks" (p 162).

Green (1998) mentions that if the researchers immediately use retrospective report to the informants, they will receive the information that is presented in the working memory. In contrast, if the researchers delay gathering the data, they will not fruitfully receive the information that they want to. She points out that some informants may report what they believe that researchers want them to respond, omitting information that they have actually done in the tasks or may change the report to give the impression of completeness or coherence. According to Green (1998), collecting verbal report immediately may assist researchers not to be influenced by these unwanted variables. Nevertheless, Bacon (1992) suggests that when collecting introspective or retrospective data, researchers may realize that the informants may report only conscious strategies and processes and the strategies that they report may vary depending upon the phrase of the task.

To use verbal protocol analysis to yield data on cognitive processes of the informants, the researchers should ensure that the data are valid and reliable. Green (1998) suggests some characteristics that the researchers should consider. For instance, the informants should be trained to understand the method before being interviewed. Also, when collecting data, the researchers should provide the questions that can encourage informants to react easily and try not to interrupt the informants while reporting. The researchers, moreover, should be aware of individual differences. Researchers should pay special attention for each informant so that researchers can

receive information that they desire. Finally, the report should be conducted while the informants taking the test since a delay report may provide an error in data.

According to aforementioned studies, verbal protocol can be used to collect the data in cognitive processes and second language strategy used (e.g. Bacon, 1992; Cohen, 1998, 2006; Khalil, 2005; Young & Oxford, 1997). The data from verbal protocol can be possible generalized. Consequently, a stimulated verbal report was used in the present study.

To conclude, the present study investigated the use of test taking, cognitive, and metacognitive strategies between perceived and actual use in testing condition. Males and females are the other factors used to explore. Quantitative and qualitative data were reported.

CHAPTER III

RESEARCH METHODOLOGY

This section presents the methodological approaches and data collection procedures and analyze relevant to the present study.

3.1 Research design and approach

The research design and approach were set to explore the four research questions as specified earlier. The questions include:

1. Are there statistically significant differences in the use of test taking strategies, cognitive and metacognitive strategies between perceived strategies and actual use strategies in testing conditions?

2. Are there statistically significant gender differences in the perceived use of cognitive and metacognitive strategies?

3. Are there statistically significant gender differences in cognitive and metacognitive strategies in actual use in testing conditions?

4. To what extent do males and females differ in the actual use of cognitive and metacognitive strategies in testing conditions?

The present study used mixed methods procedures, explanatory design, in which the qualitative findings were used "to help explain, refine, clarify or extend quantitative results" (Ivankova & Creswell, 2009, p 139). The study investigated gender differences in the use of metacognitive and cognitive strategies in an English reading comprehension test.

3.2 Population and sample

The population of the study was Thai high school students who were at the age of about 15-17 years old. They studied English as a foreign language. The sample was selected from grade 10 high school students at Benchamaracharungsarit School in the first semester, academic year 2015 by cluster sampling. The total number of the classrooms in this school was 13 classrooms with approximately 45-50 students in each class. Seven classrooms were randomly selected and 250 participants (125 males, 125 females) were selected based on Yamane's (1967) table (as cited in Isreal, 1992) (see Appendix I). Forty participants in the sample group (20 males and 20 females) were randomly selected for verbal reports.

3.3 Research procedures

The study consisted of 2 phases: 1) developing research instruments including a pilot study and 2) conducting the main study. Research instruments were comprised of a reading comprehension test and the questionnaires used to collect data between perceived and actual use strategies. In the first phase, the instruments were developed and checked to ensure their validity, reliability and usefulness. The pilot study was conducted to try out the instruments. The purpose of the pilot study was to reduce the problems before the main study (Alderson, Clapham & Wall, 1995). In the second phase, the main study, the participants were asked to complete a perceived strategy questionnaire. Two weeks after that, the participants took an English reading comprehension test. After they finished the test, they immediately responded to an actual use strategy questionnaire. Forty participants were randomly selected for verbal reports. The research procedures and stages were outlined as follows:

Phase 1: The development of research instruments

Stage 1: Analyzing and synthesizing the literature and English curriculum for Thai secondary schools to develop the framework and the research instruments.

Stage 2: Developing the framework and research instruments

Stage 3: Conducting content validity by asking three experts to check the validity of the research instruments- a reading comprehension test and strategy questionnaires.

Stage 4: Conducting a pilot study to try out the instruments and to investigate the reliability of the reading comprehension test and strategy questionnaires.

Phase 2: Main study

Stage 1: Selecting the participants

Stage 2: Data collection

2.1 Distributing the perceived strategy questionnaire

2.2 Administering the English reading comprehension test

2.3 Distributing the actual use strategy questionnaire

2.4 Conducting simulated verbal reports

Stage 3: Data analysis

3.4 Research instruments

The research instruments were developed by the researcher. The instruments consisted of an English reading comprehension test and strategy questionnaires.

3.4.1 An English reading comprehension test

An English reading comprehension test was a criterion-referenced test (Brown, 1996). The test consisted of four passage with 20 items followed by multiple-choice and short-answer questions. The test was developed based on Bachman and Palmer's (1996) framework. Their test development framework comprised three stages: design, operationalization and administration.

Stage 1: Design

The six activities involved in the design stage were described below.

1.1 The purposes of the test

The test was designed to assess students' reading comprehension. The content of the test were based on an English reading and writing course for grade 10 students. The reading comprehension skills consisted of guessing the meaning of the unknown words from known words, roots, prefixes, suffixes, and context clues, identifying topics and main ideas, analyzing reference words, and skimming and scanning text for general and specific information (Benchamaracharungsarit School, 2014).

1.2 Tasks in the Target Language Use (TLU) domain

Target language use domain was defined as 'students reading in their daily lives'. The reading materials were the articles from online magazine, online newspaper, and online advertisements.

1.3 The characteristics of test takers

The test takers were grade 10 students at Benchamarachrungsarit School in Chachoengsao, Thailand. They were males and females at the age about 15-17 years old. The test takers were a homogeneous group because of their nationalities and their first language (Thai). They studied English as a foreign language. Their general level and profile of language ability varied from beginning to pre-intermediate based on the twenty percent of Ordinary National Educational Test (O-NET) scores and their GPA before entering the secondary school (GPA > 2.50). O-NET, a national proficiency test, measured students in mathematics, language, and sciences before entering the secondary and university levels.

1.4 The construct to be measured

The constructs to be measured consisted of guessing the meaning of the unknown words from prefix, suffix and context clues, identifying topic, and main idea, and skimming and scanning text for general and specific information.

1.5 A plan for evaluating the qualities of usefulness

The qualities of test that were evaluated were reliability, content validity, and practicality. Three experts were asked to check the content validity (see Appendix II). Then the test wa revised based on experts' recommendation (see Appendix IV). The revised test was administered to the pilot group.

1.6 Inventory of available resources and plan for their allocation and management

Many resources such as human resources (e.g. clerical support) and material resources (e.g. rooms for test development, computer and library resources) were available for the test writer.

Stage 2: Operationalization

This step involved the development of test specifications and the actual test tasks. The test specifications were developed based on Bachman and Palmer's (1996) framework. The test specifications were as follows.

2.1 The purposes of the test

The test was designed to assess students' reading comprehension in an English reading and writing course (อ 31201). The skills consisted of guessing the meaning of the unknown words from known words, roots, prefixes, suffixes, and context clues, identifying topics and main ideas, analyzing reference words, and skimming and scanning text for general and specific information (Benchamaracharungsarit School, 2014).

2.2 The characteristics of test takers

As stated earlier, test takers were grade 10 students at Benchamaracharungsarit School in Chachoengsao, Thailand. They were males and females at the age about 15-17 years old. They were a homogeneous group because of their nationalities and their first language (Thai). The students also studied English as a foreign language. Their general level of language ability varied from beginning to pre-intermediate level based on twenty percent of Ordinary National Education Test (O-NET) scores and their GPA before entering the upper secondary school.

2.3 The level of the test was between beginning and pre-intermediate level.

2.4 The characteristics of the test task

The test consisted of 4 passages with 20 items. In each passage, there were 5 items in multiple-choice and short-answer question formats. Students spent 30 minutes to complete the test. Flesch-Kincaid Grade Level index was used to find the level of reading difficulty in each passage (Flesch, 2013: online). The level of difficulty was between 4.0 - 7.0 based on the reading exercises and previous tests in an English reading course. Similarly, the length of the passage was between 150 – 300 words based on the reading exercises and previous tests in an English reading and writing course (อ. 31201) (see appendix V).

2.5 The definition of the construct to be measured

The construct to be measured was 'the ability to understand, interpret, and/or express opinions on various reading passages that students have read such as articles in the newspaper or magazine, advertisements, timetables, graphs'. This definition was based on the syllabus used in an English reading and writing course (อ. 31201). The reading sub-skills were the ability to find the meaning of the unknown words from known words, roots, prefixes, suffixes, and context clues, the ability to understand topics and main ideas, the ability to find the reference words, and the ability to recognize general and specific information (Benchamaracharungsarit School, 2014).

2.6 Text types and other text features

The types of texts were online articles from a newspaper, and advertisements (See Appendix III)

2.7 The characteristics of the setting of the test task

2.7.1 Physical setting

The test was administered in the classroom where the test takers sat individually.

2.7.2 Participants

The participants were grade 10 students who were studying an English reading and writing course (อ. 31201), and a researcher. There were approximately 45-50 students taking the test in each classroom. The test was administered by the researcher.

2.7.3 Time of task

The test administration varied according to students' class schedule. Students spent 30 minutes to complete the test.

2.8 Instructions for responding to the task

The instructions written in both English and Thai were a set of general instructions. The instructions were in the first page of the test explaining the purposes of the test, characteristics of the test, how the test takers responded to the test task, and how the test would be scored. The sample answers for answering a multiple-choice and a short answer question were also provided in the first page.

2.9 Characteristics of input, response, and relationship between input and response

2.9.1 Characteristics of the input

2.9.1.1 Format

The input was visual in the form of target language (English). The length of the format was approximately between 150-300 words. In a multiple-choice format, test takers were asked to choose the correct answer from four choices, and in a short-answer format, test takers are asked to write a specific response.

2.9.1.2 Characteristics of the expected response

The responses were a selected response and a limited production response. A selected response was a multiple-choice format. The correct answer was selected among four choices. A limited production response was a short-answer format. The responses were written in the target language (English). The length of the response was a word, a phrase, or a short sentence.

2.9.1.3 The relationship between input and response

Since the test was an English reading comprehension test, it was non-reciprocal. The answers from the students could not be changed the form of subsequent material in the reading passage.

Stage 3: Test administration

This stage was divided into two phrases: try-out and operational test use.

Phase 1: Try-out

Before the test was tried out, it was validated by three experts (see Appendix II). The experts were asked to give their comments on the appropriateness of the test as an instrument used to measure reading skills (See Appendix III, IV). At least two out of three experts agreed on the appropriateness of the reading test in all aspects. Therefore, there was no major revision.

The test was tried out with a pilot group. Sixty participants who were not in the main study took the reading test. All of participants were informed about the purposes of the test and spent 30 minutes to complete the test. When the researcher observed the participants, it seemed to her that 30 minutes was an appropriate time for the students to complete the test.

The reliability of the test questions was investigated by using the Kuder Richardson Coefficient of reliability (KR 20). The standardized alpha for 20 questions was .563, indicating that the test might have limited applicability (see Appendix V). Therefore, the test was revised by item facility. The items and questions that were too difficult or too easy were redesigned.

The test was tried out with another pilot group. Sixty participants who were not in the main study took the revised test. They were informed about the purposes of the test and spent 30 minutes to complete the test. The Kuder Richardson Coefficient of reliability (KR 20) was used. The standardized alpha for 20 questions was .70, indicating that the test was adequate for interpretation (see Appendix V).

Phrase 2: Operational test use

The revised test was administered in the main study. The test was administered in the classroom. Seven classrooms were selected. There were approximately 40-45 students in each class. The students took the test and they were required to remain in their seats until the end of the exam. The test results were scored and analyzed.

3.4.2 Strategy questionnaires: perceived and actual use strategies

Strategy questionnaires used in this study were self-report questionnaires developed to investigate students' cognitive and metacognitive strategies, and test taking strategies. There were two sets: a perceived strategy questionnaire and an actual use strategy questionnaire. Both questionnaires were drawn from the analysis and synthesis of cognitive and metacognitive strategies and test taking strategies from theoretical framework and the literature review. The cognitive and metacognitive strategies items were applied based on O'Malley and Chamot (1990) and Oxford (1990), and the test taking strategy items were applied based on Cohen and Upton (2006). A 6-point Likert scale (0= never, 1= rarely, 2 = sometimes, 3 = often, 4 = usually, and 5 = always) was used in the questionnaire (Phakiti, 2008). Both questionnaires were translated into Thai in order that the participants could understand the items.

The content in both questionnaires was divided into 3 parts: demographic information, cognitive and metacognitive reading strategies and test taking strategies. The first part collected the general information concerning the participants' gender, age, class, GPA, and grade of the English subject. The second part consisted of cognitive and metacognitive reading strategy items and the third part consisted of test

taking strategies (test management strategies and test wiseness strategies). The strategies composited in the questionnaire were presented in the table below.

Strategies	Sub-scale	No. of item	items
1. Cognitive strategies	Repeating	1	7
	Skimming	1	5
	Scanning	1	6
	Deduction	2	8,9
	Inferencing	2	10,11
	Translation	1	13
	Transferring	1	12
	Note-taking	1	14
	Summarization	1	18
	Highlighting	1	15
	Elaboration	2	16, 17
	subtotal	**14**	
2. Metacognitive strategies	Planning	4	1,2,3,4
	Monitoring	4	19, 20, 21, 22
	Evaluating	2	23, 24
	subtotal	**10**	
3. Test taking strategies	Test management strategies	19	1,2,3,4,5,6,7,9,10,11,13, 14,15,16,17,22,23,24,25
	Test-wiseness strategies	6	8,12,18,19,20,21
	Subtotal	**25**	
	total	**49**	

In the perceived strategy questionnaire, the items were in the ‘Present Simple Tense’ to reflect students’ habitual strategy use, while the items in the actual use strategy questionnaire were in the ‘Past Simple Tense’ to reflect students’ actual use in testing conditions (Phakiti, 2008). The two sets of the questionnaires were in Appendix VII.

After the development, the English and Thai version of the questionnaires were validated by three experts who were in the areas of language teaching with

experience in doing research studies on reading comprehension (See Appendix II). The experts validated the items in the questionnaires by using the index of item-objective congruence (IOC) (See Appendix VIII). The evaluation criteria of IOC consisted of +1, 0 and -1. The score of +1 was assigned to the items which were congruent with the objectives or the content, while the score of 0 was assigned to the items in which the raters were not certain whether it was related to the objectives or the content. The score of -1 was assigned to the items which were not congruent with the objectives or content (See Appendix IX). According to the experts' validation, the value of IOC was > .50, so the items in the questionnaire were acceptable (Turner & Carlson, 2003).

A perceived strategy questionnaire and an actual use strategy questionnaire translated into Thai were tried out in a pilot study. To investigate the internal consistency of the test, the Cronbach's alpha was used to estimate the internal consistency. The Cronbach's alpha based on standardized items was estimated to be .936 for a perceived strategy questionnaire and .935 for an actual use strategy questionnaire. Both values indicated high reliability.

In examining cognitive and metacognitive strategy use between male and female students on the questionnaire scale, which ranges from 0 to 5 (0= never, 1= rarely, 2 = sometimes, 3 = often, 4 = usually, and 5 = always). The interpretation of scores were based on Oxford and Burry-Stock (1995) for general language learning strategy use. An average of 3.50-5.0 were considered high strategy use; 2.50-3.49 were designated medium strategy use; and 1.0-2.49 were regarded as low strategy use (Oxford & Burry-Stock, 1995).

3.5 Data collection

The main study was conducted in the same way as the pilot study. Before conducting the main study, the parents of the participants read and signed the consent form. The data collection was divided into 3 stages. First, the participants answered the questionnaire in perceived strategies. The length of time to complete the questionnaire was approximately 20 minutes. Second, two weeks after that, the participants were asked to do the English reading comprehension test. The test consisted 20 items, and the amount of time allotted to the test was 30 minutes. Based on the reading test that the participants had just done, they were asked to fill out the actual use strategy questionnaire. The participants were instructed to consider the strategies used during they did the reading test while they were responding to the questionnaire. The length of time to complete the questionnaire was approximately 20 minutes. Finally, 40 participants were asked for verbal reports. The length of time was approximately 60-90 minutes per each participant.

3.5.1 A retrospective stimulated report

A retrospective stimulated report was used to collect cognitive and metacognitive strategy use in actual use strategies. The retrospective stimulated report was used because it did not interrupt the participants while they were taking the reading test. The retrospective stimulated report was conducted in Thai, so that the questions were understandable for Thai students and the participants could report their strategies in their native language.

The procedures of the verbal reports were tried out in a pilot study. There were eight participants (4 males, 4 females) in the pilot study. Each participants in the pilot study were first trained to give the retrospective verbal reports before taking the

English reading comprehension test. First, they were asked to do the mathematic tasks and then reported what they thought when they did the task. After that, the same participants were asked to practice the second task which was two short reading passages. The participants read only the first passage, and reported what they thought when they read the passage, how they understood the passage. If the participants did not seem to understand the processes of verbal reports, they were again asked to do the second passage. However, if they seemed to understand the processes of the verbal report, he/she might not read the second paragraph. The participants spent approximately 7-8 minutes to read each passage. Finally, the participants were asked to do the third task which was reading and answering one multiple-choice and one short-answer question. They spent 15 minutes to complete the task. When they finished, they were asked to report what they thought when they did the reading task.

After trying out, the researcher found that the practice tasks could not elicit the cognitive and metacognitive reading strategy use from the participants. Therefore, the practice tasks were redesigned (see Appendix X) and tried out with the other groups of participants. They were asked to do the same processes as the previous group had done.

The researcher collected the verbal reports in the main study from July 2015 to August 2015. They lasted from 60 to 90 minutes depending on how long the participants provided the reports. The retrospective verbal report was conducted as follows. First, the researcher wrote a letter of consent describing the purpose of this study to the parents of the selected participants at the beginning of the semester to ask for their permission. Asking for their permission was important because the participants were under 18 years old. The researcher waited for a week to collect the

letter back. Second, after receiving the parents' permission, the participants filled out a background information sheet consisting of their demographic information. Then they were trained to give verbal reports. The processes of the verbal protocol training were the same as the pilot study.

After the training, the selected participants took the English reading comprehension test. After the participants finished reading each passage and doing the test items that followed, they were asked to report what strategies they used while they were responding to the selection in the reading test after they finished one passage. At this stage, the reading comprehension test was provided as a stimuli for the participants so they could recall and report on what processes they used in the reading test.

The data in the pilot and main study were transcribed, coded and analyzed by a researcher and an English teacher who had an experience in doing research in verbal reports. The researcher coded the entire set of protocols. The English teacher coded 20% of the set of protocols. To investigate coder consistency, an inter-coder reliability analysis using the Kappa statistic was performed. As a rule of thumb values of Kappa from 0.40 to 0.59 are considered moderate, 0.60 to 0.79 substantial, and 0.80 outstanding (Landis & Koch, 1977). The inter-coder reliability for the raters was found to be Kappa = 0.97 ($p < 0.001$). The results of the Kappa could be interpreted that the two raters had almost perfect agreement (Ladis & Koch, 1977).

The outline of the data collection procedures in the main study was described in Figure 1.

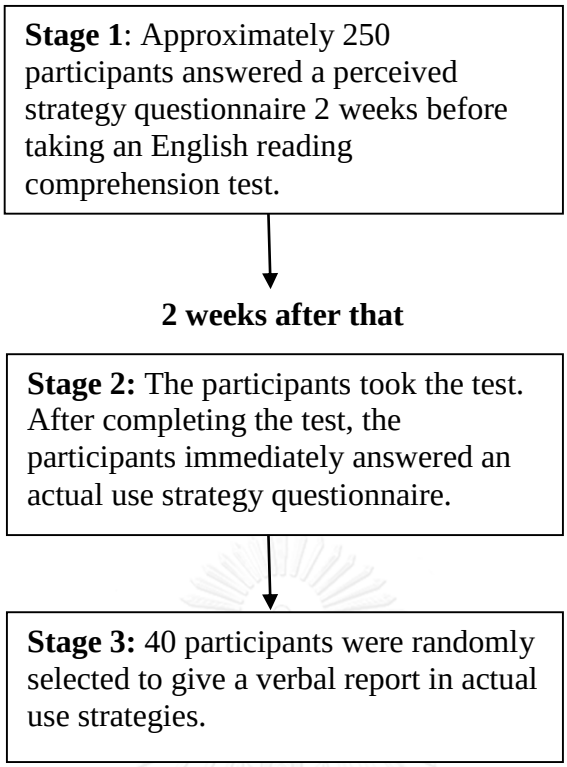

Figure 1 A flow chart of data-collection procedure in the main study

3.5.2 Rating of test responses

The rating of test responses was conducted by the researcher and an English teacher. The scoring methods were divided into two parts, a multiple-choice format and a short-answer format. For the multiple-choice format, test takers chose the choice that they thought was the best answer in each item. The test takers got "1" if the answer was correct and they got "0" if the answer was wrong. For the short-answer format, the test was scored based on reasonableness of response. Test takers got "1" if the answer was correct or made sense and they got "0" if the answer was wrong or did not make sense. Grammar, spelling and punctuation were not marked in the scoring system (Urguhart & Weir, 1998; Weir, 2005). The models of answer in the multiple-choice and short-answer format were provided for the raters.

3.6 Data analysis

There were quantitative and qualitative data analysis in the present study. For the quantitative data analysis, multivariate analysis of variance (MANOVA) which was set at a significant level of 0.05 was used. Statistical package for the Social Science (SPSS) was used for statistical analysis (i.e. descriptive statistics, MANOVAs). For the qualitative data analysis, the coding of a retrospective stimulated report interview was used.

For the first research question "1) Are there statistically significant differences in the use of test taking strategies, cognitive and metacognitive strategies between perceived strategies and actual use strategies in testing conditions?" Repeated measures multivariate analysis of variance (RM MANOVA) (within-subjects designs) was used for the analyses of test taking strategies, cognitive and metacognitive strategies when they were measured two times, in perceived use and actual use.

One-way repeated measure analyses assume a normal distribution of the outcome for each level of the within-subjects factor. The errors are assumed to be uncorrelated between subjects. Within a subject the multiple measurements are assumed to be correlated.

For the second research question, "2) Are there statistically significant gender differences in the perceived use of cognitive and metacognitive strategies?" and the third research question, "3) Are there statistically significant gender differences in cognitive and metacognitive strategies in actual use in testing conditions?", there was only quantitative analysis to answer these questions as the participants did not provide an answer to the open-ended questions in the questionnaire. One way MANOVA was used to analyze the data from the Likert-scaled questionnaire items. One-way

MANOVA was used to investigate gender differences in the use of cognitive and metacognitive strategies in the perceived use and in actual use in testing conditions.

To answer research question 2, the independent variable was gender (males and females), and the dependent variables were cognitive and metacognitive strategies used in the perceived use. The magnitude of correlation between dependent variables was checked. As a mean of checking multicollinearity, the multivariate correlation should be low to moderate. If the multivariate correlation were .90 (or above), diagnosis was slightly more difficult because multivariate statistics were needed to find the offending variable (Tabachnick & Fidel, 2007).

Box's M test was used to test the homogeneity of the variance-covariance matrices of dependent variables across all level combinations of the between-subjects factors. Box's test should not be significant ($p > 0.001$) (Tabachnik & Fidell, 2007). Nevertheless, if sample sizes were equal, Box's test may not be used (Field, 2013). On the other hand, if the assumption of homogeneity of variance-covariance is violated, Pillai's Trace were used instead of Wilk's Lambda to evaluate multivariate significance (Tabachnik & Fidel, 2007). Pillai's Trace is the robust statistical tests against violations of assumption. In addition, Pillai's Trace could be used for any number of groups, whereas Wilk's is used with the independent variable which has more than two groups (Mayers, 2013).

Univariate ANOVA was used on each dependent measure separately to determine the locus of statistically significant multivariate effect. The Levene's test of Equality of Error Variances was used to test the assumptions of MANOVA and ANOVA in that the variances of each variable were equal across the groups. The results of the Levene's test should be non-significant ($p > .05$). If the assumption was

violated, Brown-Forsythe F or Welch's F should be used (Mayer, 2013). Nevertheless if the samples were large, the violation of assumption might not matter as much (Cohen, 1992; Field, 2013)

Similar to the second research question, the independent variable in research question 3 was gender (males and females), and the dependent variables was cognitive and metacognitive strategy use in actual use in testing conditions. Assumptions in MANOVA were checked in the same way as for the second research question.

To answer the fourth research question, "4) To what extent do males and females differ in the actual use of cognitive and metacognitive strategies in testing conditions?", the data came from audio-recorded verbal reports. The data were segmented into words, phrases, or sentences, each of which represented a distinct process or strategy and were assigned a code or taxonomy related to cognitive and metacognitive reading strategies.

The coding schemes were developed based on the perceived and actual use strategy questionnaire. The coding schemes consisted of the taxonomies of language learning processes and strategies to deal with an English reading comprehension test. To try out the coding schemes, eight verbal reports (4 males, 4 females) from the pilot study were chosen. Two coders independently coded the reports and discussed the results. In general, they agreed on the coding, but there were some limitation and discrepancies. The coding scheme was then revised for the main study (see Appendix XI).

In conclusion, this chapter presents the research methodology for the present study, research design and approach, population and participants, research

instruments, data collection and data analyze. The next chapter shows the findings of this study.

CHAPTER IV

RESULTS

This chapter presents the results of the main study in relation to the four research questions.

4.1 Research question 1

Are there statistically significant differences in the use of test taking strategies, cognitive and metacognitive strategies between perceived strategies and actual use strategies in testing conditions?

Table 1 shows the results, in percent, of the perceived and actual use of different strategies used by grade 10 students. The bar charts illustrating these percentage are in Appendix XII.

Table 1
Percentages (%) of grade 10 students reporting and using the strategies (n=500)

	0 Never		1 Rarely		2 sometimes		3 often		4 usually		5 always	
	P	A	P	A	P	A	P	A	P	A	P	A
Test taking strategies												
Test management	0.8	0.4	5.6	9.6	44	40.6	44.4	44.4	5.2	5.2	0	0
Test wiseness	0.4	0	15.2	15.6	56.4	58	26.8	21.6	1.2	4.8	0	0
Cognitive strategies												
Repeating	1.6	1.6	9.6	8.0	20.4	18.8	27.2	33.6	26.4	20.4	14.8	17.6
Skimming	1.6	2.0	12.4	10.0	32.8	26.0	26.4	29.6	17.2	20.4	9.6	12.0
Scanning	0.8	1.6	6.8	7.6	30.4	22.4	29.2	32.0	22.4	24.8	10.4	11.6
Deduction	5.2	4.8	23.2	24.4	36.8	36.4	24.8	22.8	7.6	11.6	2.4	0.4
Inferencing	1.6	0.8	8.4	5.6	29.2	30.8	32.4	33.2	21.2	23.2	7.2	6.4
Translation	0.4	1.6	11.6	12.4	15.6	20.0	27.2	30.4	24.4	23.2	20.8	12.4
Transferring	2.0	2.8	13.2	11.6	35.6	34.4	29.2	30.0	12.8	15.2	7.2	6.0
Note-taking	9.6	7.6	25.2	28.4	40.0	36.8	16.4	18.0	4.4	7.6	4.4	1.6
Summarization	4.4	6.0	19.6	16.4	34.4	38.8	17.6	30.0	16.0	13.6	8.0	3.2
Highlighting	4.0	9.2	20.4	20.4	25.6	32.8	22.0	18.8	13.6	12.0	14.4	6.8
Elaboration	3.6	5.6	34.4	31.2	42	43.2	17.6	13.8	2.4	6.0	0	1.2

	0 Never		1 Rarely		2 sometimes		3 often		4 usually		5 Always	
	P	A	P	A	P	A	P	A	P	A	P	A
Metacognitive strategies												
Planning	1.2	1.6	10.4	10.8	50	42.8	30.8	35.6	7.2	8.4	0.4	0.8
Monitoring	4.4	5.6	31.6	23.2	38.8	43.2	16.8	19.6	8	8	0.4	0.4
Evaluating	12	6.2	27.2	29.6	35.2	36	14.4	17.2	8.8	8.4	2.4	2.4

*P = perceived, A= actual use

As shown in Table 1, 44.4 % of grade 10 students perceived that they often used and reported that they actually used test management. 56.4 % of the students perceived that they sometimes used test wiseness strategies, and 58 % of them sometimes used this strategy when doing the reading test.

In terms of cognitive strategies, 27.2 % of the students perceived that they often used repeating, and 33.6 % of them reported that they often used this strategy when they did the reading test. Similarly, 32.4 % of the students reported that they often used inferencing and 33.2 % of them often used it when doing the test. Moreover, 27.2% of them perceived that they often used translation, and 30.4 % of them often used it when doing the test. Furthermore, among these cognitive strategies, 36. 8 % of the students perceived that they sometimes used deduction, and 36.4 % of them reported that they sometimes used it when doing the test. 35.6% of the students perceived that they sometimes used transferring, and 34.4% of them sometimes used it in the test. Moreover, 40% of the students reported that they sometimes used note-taking, and 36.8% of them sometimes used it in the test. 34.4% of the students reported that they sometimes used summarization, and 38.8% of them sometimes used it when doing the test. 25.6% of the students perceived that they sometimes used highlighting, and 32.8% of them sometimes used it when doing the test. Further, 42% of students reported that they sometimes used elaboration, and 43.2% of them sometimes used it in the test.

Nevertheless, there were two cognitive strategies that grade 10 students perceived and actually used them differently. That is, 32.8% and 30.4% of the students reported that they sometimes used skimming and scanning respectively. However, they reported that when they did the reading test, 29.6% and 32% of them often used skimming and scanning respectively.

In addition, Table 1 shows the percentage of metacognitive strategies that students perceived and used in the reading test. 50%, 38.8% and 35.2% of the students perceived that they sometimes used planning, monitoring, and evaluating respectively. Furthermore, 42.8%, 43.2% and 36% of them sometimes used planning, monitoring, and evaluating respectively when they did the reading test.

Table 2 presents descriptive statistics for test taking, cognitive, and metacognitive strategies used, showing the actual vs. perceived use of different strategies.

Table 2
Descriptive statistics of overall strategies used comparing perceived and actual use strategies (n = 500)

Variable	Perceived use			Actual use		
	M	SD	Degree	M	SD	Degree
Test taking strategies						
Test management	2.94	.64	Medium	2.86	.72	Medium
Test wiseness	2.54	.66	Medium	2.58	.68	Medium
Cognitive strategies						
Repeating	3.12	1.26	Medium	3.16	1.24	Medium
Skimming	2.74	1.21	Medium	2.92	1.23	Medium
Scanning	2.97	1.14	Medium	3.05	1.18	Medium
Deduction	2.37	1.06	Low	2.42	1.05	Low
Inferencing	3.07	1.08	Medium	3.13	1.00	Medium
Translation	3.26	1.29	Medium	2.98	1.25	Medium
Transfer	2.59	1.15	Medium	2.61	1.14	Medium
Note-taking	1.94	1.17	Low	1.94	1.10	Low
Summarization	2.45	1.31	Low	2.24	1.34	Low
Highlighting	2.64	1.42	Medium	2.38	1.18	Low
Elaboration	2.05	.86	Low	2.09	1.00	Low
Metacognitive strategies						
Planning	2.71	.80	Medium	2.78	.86	Medium
Monitoring	2.27	.95	Low	2.37	.96	Low
Evaluating	2.09	1.19	Low	2.22	1.10	Low

*Degrees: 3.50-5.0 high strategy use; 2.50-3.49 medium strategy use; and 1.00-2.49 low strategy use

Table 2 shows that grade 10 students reported using and actually used most, but not all, test taking, cognitive, and metacognitive strategies with medium frequency. Some strategies they used with low frequency, namely: deduction, note-taking, summarization, elaboration, monitoring, and evaluating. In addition, although grade 10 students reported using highlighting with medium frequency, they used the strategy with low frequency.

To answer the first research question, the statistical assumptions underlying the use of Repeated measures MANOVA were checked and it was found that they were not violated. A normal distribution of the outcome for each level of the within-

subjects factor was checked and the results indicated that the data were normal. The multivariate correlation was of acceptable limits for MANOVA outcomes (r = .088) (see appendix V). RM MANOVA results indicated that there were no statistically differences in the overall perceived and actual use of test taking, cognitive, and metacognitive strategies. Table 3 shows the results of RM MANOVA that was performed.

Table 3
RM MANOVA Summary Table of Within-subjects Effects for perceived and actual use

Source	*F*	*df*	*P*	η^2
Perceived & actual use	2.56	3	.056	.030

* p < .05

Table 4 shows univariate ANOVA indicated that there were no statistically significant differences in test taking strategies, cognitive strategies, and metacognitive strategies between perceived and actual use strategies.

Table 4
The results of univariate analysis

Source	Measure	*MS*	*F*	*df*	*p*	η^2
Perceived & actual use	Test taking strategies	.332	.812	1	.368	.003
	Cognitive strategies	.007	.016	1	.901	.000
	Metacognitive strategies	1.031	1.75	1	.187	.007

p< .05

4.2 Research question 2:

Are there statistically significant gender differences in the perceived use of cognitive and metacognitive strategies?

Table 5 shows the results, in percent, of male and female students reporting using cognitive and metacognitive strategies. The bar charts illustrating these percentage are in Appendix XIV.

Table 5
Percentages (%) of males and females reporting strategy use

	0 Never		1 rarely		2 sometimes		3 often		4 usually		5 always	
	M	F	M	F	M	F	M	F	M	F	M	F
Cognitive strategies												
Repeating	3.2	0	15.2	4	23.2	17.6	26.4	28	20.8	32	11.2	18.4
Skimming	3.2	0	12	12.8	33.6	31	24	28.8	17.6	16.8	9.6	9.6
Scanning	0.8	0.8	8.8	4.8	28	32.8	29.6	28.8	23.2	21.6	9.6	11.2
Deduction	1.6	3.2	13.6	26.4	39.2	35.2	31.2	26.4	10.4	8	4	0.8
Inferencing	2.4	0.8	12.8	4	28	30.4	33.6	31.2	14.4	28	8.8	5.6
Translation	0.8	0	12	11.2	17.6	13.6	25.6	28.8	28.8	20	15.2	26.4
Transferring	3.2	0.8	11.2	15.2	36.8	34.4	29.6	28.8	13.6	12	5.6	8.8
Note-taking	13.6	5.6	25.6	24.8	36.8	43.2	15.2	17.6	4.8	4	4	4.8
Summarization	4.8	4	23.2	16	35.2	33.6	14.4	20.8	15.2	16.8	7.2	8.8
Highlighting	5.6	2.4	31.2	9.6	29.6	21.6	17.6	26.4	6.4	20.8	9.6	19.2
Elaboration	3.1	3	33.6	35.2	44.8	39.2	16.8	18.4	1.6	3.2	0	0
Metacognitive strategies												
Planning	1.6	0.8	12	8.8	46.4	53.6	28.8	32.8	10.4	4	0.8	0
Monitoring	4.8	4	30.4	32.8	38.4	39.2	16.8	16.8	9.6	6.4	0	0.8
Evaluating	11.2	12.8	24.8	29.6	40	30.4	13.6	15.2	6.4	11.2	4	0.8

*M = males, F = females

As shown in Table 5, 33.6% of males perceived that they sometimes used skimming, and 31% of females perceived that they sometimes used this strategy. 39.2% of males perceived that they sometimes used deduction, and 35.2% of females perceived that they sometimes used it. Furthermore, 36.8% of males perceived that they sometimes used transferring, and 34.4% of females perceived that they sometimes used it. 36.8% of males perceived that they sometimes used note-taking,

and 43.2% of females perceived that they sometimes used it. 35.2% of males perceived that they sometimes used summarization, and 33.6% of females perceived that they sometimes used it. 44.8% of males perceived that they sometimes used elaboration, and 39. 2% of females perceived that they sometimes used it. Moreover, 33.6% of males perceived that they often used inferencing, and 31. 2% of females perceived that they often use this strategy.

Similarly, in terms of metacognitive strategies, 46.4%, 38.4%, and 40% of males perceived that they sometimes used planning, monitoring, and evaluating respectively. Additionally, 53.6%, 39.2%, and 30.4% of females perceived that they sometimes used planning, monitoring, and evaluating respectively.

However, there were four strategies that males and females perceived using them differently. That is, 26.4% of males perceived that they often used repeating, but 32% of females perceived that they usually used this strategy. 32.8% of males perceived that they sometimes used scanning, but 29.6% of females perceived that they often used it. Furthermore, 28.8% of males perceived that they usually used translation, but 28.8% of females perceived that they often used it. 31.2% of males perceived that they rarely used highlighting, but 26.4% of females perceived that they often used it.

Table 6 presents descriptive statistics for male and female students' perceived use of cognitive and metacognitive strategies.

Table 6
Descriptive statistics of male and female students' perceived use of cognitive and metacognitive strategies (n=250)

Variable		Males			Females		
		M	SD	Degree	M	SD	Degree
Cognitive strategies	Repeating	2.80	1.33	Medium	3.43	1.10	Medium
	Skimming	2.70	1.26	Medium	2.78	1.16	Medium
	Scanning	2.94	1.15	Medium	2.99	1.13	Medium
	Deduction	2.72	1.03	Medium	2.36	1.00	Low
	Inferencing	2.92	1.12	Medium	3.22	1.01	Medium
	Translation	3.15	1.27	Medium	3.37	1.31	Medium
	Transfer	2.56	1.13	Medium	2.62	1.17	Medium
	Note-taking	1.84	1.22	Low	2.04	1.12	Low
	Summarization	2.34	1.31	Low	2.57	1.29	Medium
	Highlighting	2.17	1.35	Low	3.11	1.34	Medium
	Elaboration	2.05	0.81	Low	2.06	0.90	Low
Metacognitive Strategies	Planning	2.74	0.87	Medium	2.70	0.96	Medium
	Monitoring	2.30	0.93	Low	2.25	1.03	Low
	Evaluating	2.11	1.19	Low	2.07	1.19	Low

*Degrees: 3.50-5.0 high strategy use; 2.50-3.49 medium strategy use; and 1.00-2.49 low strategy use

Regarding the range of the questionnaire scale, Table 6 shows that males and females reported using most, but not all, cognitive strategies with medium frequency. Further, males and females reported low frequency use of note-taking and elaboration. However, males reported medium frequency use of deduction, while females reported using this strategy with low frequency. In addition, females reported medium frequency use of summarization and highlighting, whereas males reported low frequency use of these strategies.

To answer the second research questions, the statistical assumptions underlying the use of a one-way MANOVA were checked and it was found that they were not violated. The multivariate correlation was of acceptable limits for MANOVA outcomes (r=.685) (See appendix XV). Box's M test of equality of Covariance Matrices was not significant ($p > .001$) – indicating that there were no significant

differences between the Covariance Matrices. Therefore, the assumption was not violated.

Pillai's Trace was used as the criteria, and it was found that the dependent variable was significant affected by gender, Pillai's Trace = .216, F (4, 621) = 14.235, p = .000, multivariate η^2 = .216. The significant F indicated that there were statistically significant gender differences in the perceived use of cognitive and metacognitive strategies (see Appendix XV).

Because the multivariate result was statistically significant, univariate ANOVA was used. Levene's test of equality of error variances indicated that the assumption about homogeneity of variance for each of the dependent measures was not violated.

Table 7 shows univariate ANOVA indicated that there was a significant difference between male and female students for reporting overall cognitive strategies, F = 6.29, p = .013, η^2 = .025. Nevertheless, there were no gender differences for metacognitive strategies, F = .258, p = .612, η^2 = .001.

Table 7
Univariate analysis on reporting overall cognitive and metacognitive strategies

Source	Dependent variables	*MS*	*F*	*df*	*P*	η^2
Gender	Cognitive strategies	2.87	6.29	1	.013*	.025
	Metacognitive strategies	.15	.258	1	.612	.001

* p < .05

4.3 Research question 3:

Are there statistically significant gender differences in cognitive and metacognitive strategies in actual use in testing conditions?

Table 8 presents descriptive statistics of male and female students' reading test scores.

Table 8
Descriptive statistics of grade 10 students' reading test scores (total scores = 20)

Variables	Min	Max	Mean	SD.
Males	2	18	9.04	3.23
Females	3	18	9.78	2.84
Males and females	2	18	9.41	3.06

Table 9
Descriptive statistics of grade 10 males and females' reading test score in short-answer and multiple-choice questions (total scores = 6, 14 respectively)

	Short-answer				Multiple-choice			
Variables	Min	Max	Mean	SD.	Min	Max	Mean	SD.
Males	0	6	2.70	1.70	2	14	6.34	2.12
Females	0	6	3.14	1.62	2	11	6.65	1.79

As shown in Tables 8 and 9, the average scores of the reading test was 9.41. The average score of males was 9.04, while female was 9.78. The average scores of males and females in short-answer questions were 2.70 and 3.14 respectively, whereas the average scores of males and females in multiple-choice questions were 6.34 and 6.65 respectively.

An independent-samples t-test was conducted to compare the reading test scores between males and females. Table 10 presents independent sample t-test of males and females' reading test scores.

Table 10
Independent sample t-test of males and females' test scores

	Males		Females		
	M	SD	M	SD	*p*
The reading test scores	9.04	3.23	9.78	2.84	.334

$p < .05$

As shown in Table 10, an independent-samples t-test indicated that the reading test scores between males and females were not significantly different, t(248) = 1.94, $p = .344$.

Table 11 shows the results, in percent, of cognitive and metacognitive used by male and female students when they did the reading test. The bar chats illustrating these percentage are in Appendix XVI.

Table 11
Percentages (%) of males and females using strategies

	0 never		1 rarely		2 Sometimes		3 Often		4 Usually		5 always	
	M	F	M	F	M	F	M	F	M	F	M	F
Cognitive strategies												
Repeating	2.4	0.8	9.6	6.4	22.4	15.2	37.6	29.6	16.8	24	11.2	24
Skimming	2.4	1.6	13.6	6.4	24	28	27.2	32	19.2	21.6	13.6	10.4
Scanning	1.6	1.6	8.8	6.4	26.4	18.4	28.8	35.2	21.6	28	12.8	10.4
Deduction	6.4	2.4	28	20.8	36	44	26.4	19.2	9.6	13.6	0.8	0
Inferencing	1.6	0	8	3.2	30.4	31.2	33.6	32.8	21.6	24.8	4.8	8
Translation	1.6	1.6	16.8	9.6	21.6	39.2	28.8	28	21.6	12.8	9.6	8.8
Transferring	4	1.6	13.6	8	29.6	18.4	32	32	17.6	24.8	3.2	15.2
Note-taking	11.2	4	25.6	31.2	32.8	40.8	21.6	14.4	7.2	8	1.6	1.6
Summarization	8	4	16.8	16	28	33.6	31.2	28.8	12	15.2	4	4
Highlighting	12.8	5.6	24	16.8	37.6	28	14.4	23.2	8	16	3.2	10.4
Elaboration	5.6	5.6	32.8	29.6	37.6	48.8	15.2	10.4	8	4	0.8	1.6
Metacognitive strategies												
Planning	2.4	7.2	15.2	45.6	40	37.6	30.9	37.6	7.2	9.6	1.6	0
Monitoring	11	4	23	24	39.2	47.2	20.8	18.4	10.4	5.6	0	.8
Evaluating	8	4.8	28	31.2	35.2	36.8	16.8	17.6	8	8.8	4	.8

*M = males, F = females

As shown in Table 11, when males and females actually did the reading test, 36% of males sometimes used deduction, and 44% of females sometimes used this

strategy. 32.8% of males sometimes used note-taking, and 40.8% of females sometimes used it. 37.6% of males sometimes used highlighting, and 28% of females sometimes used it. In addition, 37.6% of males sometimes used elaboration, and 48.8% of females sometimes used it. In addition, in terms of metacognitive strategies, 39.2% and 35. 2% of males sometimes used monitoring, and evaluating respectively, and 47.2% and 36.8% of females used them.

Similarly, 37.6% of males often used repeating, and 29.6% of females often used this strategy. 27.2% of males often used skimming, and 32% of females often used it. Moreover, 28.8% of males often used scanning, and 35.2% of females often used it. 33.6% of males often used inferencing, and 32.8% of females often used it. Furthermore, 32% of males and females often used transferring.

However, there were three strategies that males and females used them differently. That is, 28.8% of males often used translation, but 39.2% of females sometimes used it. 31.2% of males often used summarization, but 33.6% of females sometimes used it. Additionally, 40% of males sometimes used planning, but 45.6% of females rarely used it.

Table 12 shows the descriptive statistics for male and female students using cognitive and metacognitive strategies in actual use in testing conditions.

Table 12
Descriptive statistics of males and females using strategies in the reading testing (n=250)

Variable		Males			Females		
		M	SD	Degree	M	SD	Degree
Cognitive Strategies	Repeating	2.90	1.20	Medium	3.42	1.23	Medium
	Skimming	2.88	1.32	Medium	2.97	1.15	Medium
	Scanning	2.98	1.22	Medium	3.13	1.13	Medium
	Deduction	2.38	1.11	Low	2.49	0.99	Low
	Inferencing	3.04	1.05	Medium	3.22	0.94	Medium
	Translation	2.81	1.27	Medium	3.16	1.22	Medium
	Transfer	2.55	1.15	Medium	2.67	1.14	Medium
	Note-taking	1.92	1.17	Low	1.96	1.04	Low
	Summarization	2.34	1.24	Low	2.42	1.12	Low
	Highlighting	1.90	1.23	Low	2.58	1.37	Medium
	Elaboration	2.14	1.07	Low	2.05	0.93	Low
Metacognitive Strategies	Planning	2.72	0.96	Medium	2.84	0.74	Medium
	Monitoring	2.37	1.03	Low	2.37	0.89	Low
	Evaluating	2.26	1.19	Low	2.18	1.01	Low

*Degrees: 3.50-5.0 high strategy use; 2.50-3.49 medium strategy use; and 1.00-2.49 low strategy use

Regarding the range of the questionnaire scale, Table 12 shows that male and female students used most, but not all, cognitive strategies with medium frequency when they took the reading test. Additionally, males and females used deduction, note-taking, summarization, and elaboration with low frequency. Although, males used highlighting with low frequency, females used it with medium frequency. In addition, males and females used metacognitive strategies with low to medium frequency. That is, both males and females used monitoring and evaluating with low frequency, whereas they used planning with medium frequency.

To answer the third research question, the statistical assumptions underlying the use of a one-way MANOVA were checked and it was found that they were not violated. The multivariate correlation was of acceptable limits for MANOVA outcomes (r = .78). Box's M test of equality of Covariance Matrices was not

significant ($p > .001$) – indicating that there were no significant differences between the Covariance Matrices. Therefore, the assumption was not violated (see Appendix XVII).

Pillai's Trace was used as the criteria, and it was found that the dependent variable was significant affected by gender, Pillai's Trace = .026, F (2,247) = 3.71, p = .030, multivariate η^2 = .029. The significant F indicated that there were statistically significant gender differences in overall use of cognitive and metacognitive strategies in reading testing conditions (see Appendix XVII).

Because the multivariate result was statistically significant, univariate ANOVA was used. Levene's test of equality of error variances indicated that the assumption about homogeneity of variance for each of the dependent measure was not violated.

Table 13 shows that Univariate ANOVA indicated that there were no statistically significant differences between males and females for overall use of cognitive and metacognitive strategies in actual use in testing conditions.

Table 13
Univariate analysis on reporting overall cognitive and metacognitive strategy use

Source	Dependent variables	*MS*	*F*	*df*	*p*	η^2
Gender	Cognitive strategies	1.78	3.59	1	.059	.014
	Metacognitive strategies	.05	.074	1	.786	.000

$p < .05$

4.4 Research question 4:

To what extent do males and females differ in the actual use of cognitive and metacognitive strategies in testing conditions?

This research question investigated the cognitive and metacognitive reading strategies used by grade 10 male and female students taking an English reading

comprehension test. The students are identified with the letter MP and FP and a number from 1 to 20. MP refers to male participants, while FP refers to female participants. The letter 'R' refers to the researcher. Strategies being discussed are represented by ***italics***. The words in parentheses are provided by the researcher to make the transcripts more understandable.

The main strategies used by students taking the English reading comprehension test were found to be cognitive and metacognitive. Other strategies used to cope with reading problems while taking the test were also reported. Table 15 presents the number of males and females using of cognitive and metacognitive strategies.

Table 14
Strategies used between males and females (n = 40)

Strategies	Males (n=20)	Females (n = 20)
Cognitive strategies		
Skimming	20	20
Scanning	20	20
Repeating	15	16
Deduction		
- Applying one's learned English grammar rules	6	5
- Determining the meaning of unknown words by breaking it down into parts	0	1
Inferencing		
- Using the information in the passage to guess the meaning of unknown words.	16	20
Using context clues	10	15
Translation	20	20
Note-taking	0	1
Highlighting	12	8
Elaboration	12	8
Summarization	5	8
Metacognitive strategies		
Planning	3	4
Monitoring	0	3
Evaluating	0	0

The details are discussed as follows:

1. Cognitive strategies

Cognitive strategies involve the participants' interaction with reading passages in the reading test by manipulating it mentally and physically. The strategies consist of skimming, scanning, repeating, deduction, inferencing, transferring, translation, note-taking, highlighting, elaboration, and summarization strategies.

1.1 **Skimming strategies** include reading the whole passage or the portion of the passage rapidly to determine the topics or main ideas. The verbal report analysis showed that 20 male and 20 female participants used skimming when they looked for the main ideas of the reading passages. The following are examples of their reports.

When MP 13, for example, answered questions on passage III, he used skimming in order to help him identify the main idea of the passage.

MP 13 (When I did passage III), ***I read through the passage to understand the main points of the passage first.*** Then, I started doing item 11.

Similar to MP 13, before FP 3 answered the questions in passage I, she first read the passage rapidly in order to know what the passage was about.

FP 3 (When I got the reading test), ***I read the passage first in order to help me know what the story was about.*** This was because the questions might ask about the story in the passage**.** (So I thought) we should know what the passage was about.

MP 3 read the passage to find what the topic was.

MP 3 I read the question. The question was about topic of the passage. So, ***I read through the passage to find the topic of the passage***.

Similarly, after FP 13 read the item 6, which required her to find the topic of the passage, she read the passage quickly to find the answer.

FP 13 I read the question first and found that the question asked me to find out what the topic of the passage was. Thus, ***I read the passage and tried to comprehend what the topic of this passage was quickly.***

1.2 **Scanning strategies** consist of reading the whole passage or the portion of the passage rapidly to find specific details of interest. Similar to skimming strategies, the findings revealed that there were 20 males and 20 females employing this strategies. They used scanning strategies to help them look for the answer in the passage. For example:

MP 3 (When I did item 3: asking how to join the activity), I read the question first (and then the choices) and ***went back to the passage. Then I found the word "email" in the passage.*** So, I selected A (to be my answer).

When FP 1 was doing the item 19 in passage IV. She used scanning in order to help her find the answer for this item quickly.

FP 1 The question in item 19 had the word "who(se)". I thought it might be related to a person. The question also had the phrase "20 dollars". The phrase "20 dollars" was in the last paragraph.

(So,) ***I read the last paragraph to look for the proper name.*** I found Obama and Andrew Jackson (in the last paragraph).

FP 19 When I did question 2 in passage I (multiple-choice: asking about the time that company would to collect the clothes). I guessed it was about the time. So ***I went back to the passage. I saw the number and Wednesday from 8 am. to 5 pm.*** So, I selected B.

1.3 **Repeating strategies** include rereading all or part of the passage in order to comprehend it. The verbal report analysis showed that 15 male and 16 female participants used this strategy. Both males and females used repeating to check their answer or comprehension. The examples of their reports are as follows.

MP 10 (Before I did passage II), I read through the whole passage first to find the main ideas. ***Then I reread the passage to see more detail if I did not understand.***

MP 7 Similar to previous passages, when I did passage III, I read it carefully. When I did the first question asking about main idea, ***I read the passage again in order to understand what the main ideas of the passage was.***

FP 1. (When I did passage I), I read through the passage to look for the answer. ***If I did not understand, I read through it again so that I could understand the passage clearly.***

1.4 **Deduction strategies** involve applying the learned English grammar rules to comprehend the passage, and determining the meaning of unknown words by breaking them down into small parts such as using prefixes, suffixes, or roots.

Regarding the analysis of the verbal reports, it seemed that there were six males and five females applying their learnt English grammar rules to comprehend the passage. For example:

MP 13 In passage IV, I saw the word "stood up for". What does it mean? ***I thought it might be two-word verbs (phrasal verbs). Um… "stood up" might be from "stand up" which meant yeen (ยืน).***

MP 19 (When I did item 19 in passage IV), the question asked about who(se) face was on the 20 dollar today. I knew that ***who(se) might be related to people's name. So, I went back to the passage, and looked for the capital letter.***

FP 10 (While I was reading passage IV), I saw the word "Obama". I asked myself what the name was. ***First, I thought what part of speech it was, a noun or verb, etc. I didn't know its part of speech. Then I spelt it, and recognized that it was a proper name because of the capital letter.*** Now I understood what it was.

FP 12 (When I did item 14 in passage III), I found the word “ones” which was a bold and underlined format. So I used the same technique as I did with the word “them”. ***I looked at the first sentence (in the third paragraph). I saw “they will” and “traditional”. I could translate. It meant that they will rebuild it again. So, I guessed “one” refer to roofs*** because the information in the passage was about the roofs.

According to the verbal report analysis, it seemed that male participants did not report their use of determining the meaning of unknown words by breaking them down into small parts. On the other hand, the analysis showed that one female participant reported using this strategy. When she did passage I, she used this strategies in order to help her guess the meaning of an unknown word. Her report is presented below.

FP 12 I read the passage, and I found “donate your unwanted…”. ***Wanted meant dtong-gaan (ต้องการ). I thought that unwanted meant mai dtong-gaan (ไม่ต้องการ). Things that we did not want.***

1.5 **Inferencing strategies** comprise using information in the passage to guess the meaning of unknown words, using context clues to guess the meaning of unknown words, and using the information in the passage to fill in missing information.

The verbal report analysis revealed that male and female participants used information in the passage, and context clues to guess the meaning of unknown words. Sixteen males and 20 female participants used information in

the passage to help them guess the meaning of the unknown words. For example:

MP 2 ***(When I encountered unknown words in passage III),*** I guessed the meaning of the words that I did not know by using the words in the passage that I knew***. I read and tried to understand what the story was about. (After reading), I connected some information that I have known and guessed what those unknown words meant.***

FP 10 ***When I found some words that I could not translate, (I skipped) and translated the words that I knew first. (When I understood the passage), I came back to the unknown words and guessed what they meant.***

Another inferencing strategies was using context clues to guess the meaning of unknown words. According to the analysis, 10 males and 15 females used this strategy. Their reports are presented below.

MP 3 When I did Item 13 (finding the meaning of "generate"), I saw the underlined word in the second paragraph. (So) I read the second paragraph. ***I read the passage and words that were in front of the underlined word. I saw "electricity" and "the sun is shining"***. Then I selected "C produce" which meant paa-lit (ผลิต) to be my answer.

MP 20 (When I did item 7- finding the meaning of "insomnia"- in passage II), I tried to find the meaning of "insomnia" by ***reading the word that were in front of and after "insomnia",***

but I could not find its meaning. So, I read the first sentence of the paragraph (that "insomnia" was). After that, I could guess its meaning. It might be the problem of the children who could not sleep.

Similar to MP 20, when FP 2 did item 7, which was finding the meaning of the word, she used the same technique. She also stated that she was taught this technique when she was in the class.

FP 2 ***I tried to find the meaning by looking at the sentence that was in front of "insomnia"***. My teacher taught me to do this when we wanted to find the meaning of an unknown word. But, I forgot what this technique was.

FP 12 I tried to guess the meaning of "donate". I guessed that it might mean bor-ri-jaak (บริจาค). (In the passage), ***it showed what things that they wanted and what things that they did not want. The passage also showed the time and the date, and the purpose of why they wanted our things.***

1.6 **Translation strategies** involve translating from English to Thai. The verbal report analysis showed that 20 male and 20 female participants used this strategy.

Both male and female participants used translation in order to help them understand what the passages were about. Regarding the analysis, it seemed that many of male and female participants relied on translation while they were reading in order to comprehend the passages. However, based on the researcher's observation, some of

them could not translate correctly. Also some of them used other strategies to help them translate.

MP 5 While I was reading passage II, ***I translated the words that I knew in order to understand what the main point of that passage was.*** The passage was about a child's sleeping.

MP 15 (When I did passage II), I did the same as when reading the previous passage. ***I read the passage and tried to translate what the passage was once.*** I put my finger at the word I was reading to help me focus and I translated the word one by one.

FP 17 I tried to read the passage I. ***I tried to translate in order to help me know what the passage was about. The passage was about donating clothes***.

FP 19 When I was doing passage IV, ***I translated the words that I knew their meaning.*** I could not translate all words. Thus, I connected the information that I knew to guess what the passage was about.

1.7 **Note-taking strategies** include writing down keywords, or important ideas from the passage, while the participants were reading the passage.

According to the verbal report analysis, it was noticed that there were no male participants reporting note-taking strategies. Further, there was only one female participants taking notes while doing the reading test. A female participant (FP 14) wrote down some keywords to help her remember the details in the passage. Here is her report of the strategies.

R I noticed that you wrote some sentences and underlined some words. What were you thinking at that time?

FP 14 ***I felt that I might forget the story. (Therefore), I wrote some keywords,*** and I continued reading in order to obtain additional information.

Regarding verbal report analysis, a few students stated that they did not taking notes because their teachers did not allow them to write anything on the test, except the answers. This was the reason why there might be only a few students taking note in the test.

1.8 **Highlighting strategies** involve highlighting, underlining, circling, or starring keywords while the participants were reading, and creating a map or a drawing of related ideas to enable the participants to understand the relationships between words and ideas.

The verbal report analysis showed that while males and females were taking the reading test, they underlined keywords or the words that the participants thought they might be the answers. Further, some of them underlined the word that they thought they could or could not translate. However, the data did not show any males and females creating a map or making a drawing of related ideas.

According to the analysis, 12 male and 8 female participants underlined keywords or answers. Their examples are presented below.

MP 1 (when I was reading passage II), ***I underlined some words in the passage because I thought that they might be keywords or they could help me answer the question in the test.***

MP 4 (while I was reading passage II), ***I underlined the words that I knew*** in order to help me translate.

FP 2 (When I was reading passage IV), ***I thought that the words might be keywords, and it might be related to the question***.

FP 5 (While I was reading passage IV), ***I underlined the words that I did not know*** before I moved to the questions.

Regarding the analysis, it seemed that not many males and females used highlighting. Their reasons were the same as note-taking, that is, they were not allowed to write anything on the test. Their examples are presented below.

R When you read the passage, I noticed that you did not write anything. What were you thinking about at that moment?

FP 7 ***I assumed that you did not allow me to write. (Normally my teacher did not allow me to write).***

1.9 **Elaboration strategies** involve relating information in the passage to their prior knowledge or experience.

The findings showed that there were 12 males and 8 of females using the strategies. For example:

MP 14 I read through the passage until I saw "please put these items…", I guessed they might refer to clothes. ***I imagined a picture, like the movies that I have seen. A postman collected and sent the parcel (to that place).***

MP 15 (When I did item 8) living alone was… I found "sometimes going to sleep can seem boring". ***I thought about myself when I was alone at home***. ***Staying at home alone made me want to sleep, which was something that was boring.***

FP 9 (When I did item 3- asking how people join the activities), ***I thought about a story that I have read. It was about an exchange students who lived abroad.*** She said if someone wanted to discard something in their house (because they wanted to buy new things), they would put the stuff in front of their house. Poor people would come to pick it up. So I chose this option "place them in front of the door."

FP 12 (While reading), ***I related the story with my childhood. When I was young, I could not sleep alone because of the dark***.

1.10 **Summarization strategies** include making mental summary of the passage. The findings revealed that five male and eight female participants used the strategies. For example:

MP 16 I read the first paragraph. ***Then I summarized what the story was about.***

MP 17 When I read passage IV, I read it quickly. I looked at the bold and underlined word in the passage. ***Then I summarized what the passage was about***.

FP 1 (After I reread the passage), ***I summarized the passage briefly.***

FP 3 When I read passage II, I analyzed what the topic of this passage was. ***After that, I summarized what the passage was about before I answered the questions***.

2. Metacognitive strategies

Metacognitive strategies are executive function influencing cognitive strategies. Students use metacognitive strategies as processes for planning for reading, monitoring their comprehension and production, and evaluating how well they have achieved a reading objective.

2.1 Planning strategies consist of setting goals and objectives for reading, considering which reading strategies to be used for handling the reading tasks, choosing to focus on specific information such as keywords, phrases, or main ideas to help them understand the passage, and deciding in advance to attend to specific aspects of reading passage such as length and text organization.

The results revealed that male and female participants chose to focus on specific information such as keywords, phrases, or main ideas. Three male participants and four female participants planned to focus on specific information such as keywords, phrases, or main ideas to help them understand the passage when they read the passages, particularly a long passage in the test. For example:

MP 1 I thought passage IV was long, I did not read the whole passage. ***So I planned to read only keywords like 'the little girl' and the underlined words to help me comprehend the reading passage.***

FP 15 When I saw the passage, (I thought) it was long. I thought I could not read the whole. Thus, ***I thought I must look for the main ideas first by looking at the underlined word and surrounded sentences.***

2.2 Monitoring strategies include checking their understanding of the reading passages or words, checking how well reading strategies that they used were working, checking how well a plan that the participants made earlier was working, double-checking their understanding of the passage, their reading strategy use, and how the plan is working. The verbal report analysis revealed that the participants employed checking their understanding of the reading passages or words.

The findings from the verbal reports revealed that male participants did not report they used checking the understanding of the reading passage or words while they were taking the reading test. On the other hand, three female participants reporting using them. The following is the example of one female said:

R Um… I noticed that while you were reading the passage, you underlined and wrote down your translation into the passage. What were you thinking about at that moment?

FP 3 (I wrote my translation because) I was worried that I might forget its meaning. I liked to translate the word while I was reading. (After that), I read the passage to see what it really meant because sometimes the meaning of the word (in the context) may not be the same as I translated. So I wrote the translation first ***and checked what the word really meant (as it***

was used in the passage).

2.3 Evaluating strategies involve judging the participant's reading strategy use after they finished reading, and judging how good their reading ability was after they had finished reading. The analysis of verbal report revealed that male and female participants did not report they used evaluating strategies.

Additional strategies

In addition to the above-mentioned strategies, there were some other strategies that the participants used to cope with their reading problems. For instance, males and females used the information in choices or questions to guess the meaning of unknown words in the passages or to help them understand the passages.

MP 17 (When I read passage II), the passage was difficult to understand. So I read only first paragraph and then I skipped and ***read the questions and choices in order to help me understand what the passage was about***.

FP 2: (While I was reading), I translated words that I could a few words. ***Then I looked at those words in the questions and choices to help me understand the story.***

Furthermore, when participants read the passage, they asked themselves a question. For example:

FP 7: While I was reading, ***I asked myself a question why didn't the children sleep and what was the cause?***

In addition, there were another strategy use. Male and female participants used typographical aids such as bold, italics, font sizes, font types, or punctuation, and pictures when they did the reading test. The following are examples of their reports.

MP 3 (While I was reading passage I which was an advertisement), ***I tried to look for the big letters, bold letters, and a cross to help me comprehend the passage.***

FP 10 (while I was reading passage I), ***I read only big letters,*** time, and date in order to help me know what the passage was about.

In summary, not many male and female participants used strategies differently. Males and females employed cognitive and metacognitive strategies to facilitate their reading and to make the text more understandable. The strategies reported were scanning, translating, highlighting, using information in the passage to guess the meaning of unknown words, rereading the passage relating information in the passages to the prior knowledge or experiences, and making mental summary. However, males and females use skimming strategies differently.

CHAPTER V

DISCUSSION AND CONCLUSION

The final chapter presents summary of research findings, discussion, theoretical implications, pedagogical implications, and recommendations for further studies drawn from the findings.

5.1 Summary of the study

This study aimed to investigate the differences in the use of test taking, cognitive and metacognitive strategies between perceived and actual use in testing conditions. The study also aimed to investigate gender differences in the use of cognitive and metacognitive strategies in perceived and in actual use in an English reading comprehension test.

The study attempted to answer the following four research questions:

1. Are there statistically significant differences in the use of test taking strategies, cognitive and metacognitive strategies between perceived strategies and actual use strategies in testing conditions?
2. Are there statistically significant gender differences in the perceived use of cognitive and metacognitive strategies?
3. Are there statistically significant gender differences in cognitive and metacognitive strategies in actual use in testing conditions?
4. To what extent do males and females differ in the actual use of cognitive and metacognitive strategies in testing conditions?

The research instruments consisted of a perceived strategy questionnaire, an actual use strategy questionnaire, and an English reading comprehension test (multiple-choice and short-answer questions). Two hundred and fifty Grade 10 Thai students (125 males, 125 females) from Benchamaracharungsarit School, Chachoengsao were randomly selected by cluster sampling. First, they were asked to complete a perceived strategy questionnaire. Two weeks later, they were asked to take an English reading comprehension test. After the participants finished the test, they immediately answered an actual use strategy questionnaire. Forty participants (20 males, 20 females) from the samples were selected for a retrospective simulated report interview.

The findings of the study can be summarized in accordance with the research questions: 1) the use of test taking strategies, cognitive and metacognitive strategies between perceived strategies and actual use strategies in testing conditions were not significantly different; 2) There were significant differences in the perceived use of cognitive strategies between male and female students; that is, females reported more frequent use of cognitive strategies than males did, while there were no statistically significant differences between males and females for metacognitive strategies; 3) males and females did not use cognitive and metacognitive strategies differently in actual use in testing conditions; 4) the verbal report analysis showed that male and female grade 10 students did not use strategies differently.

5.2 Discussion

1. With respect to Research Question 1 (Are there statistically significant differences in the use of test taking strategies, cognitive and metacognitive strategies between perceived strategies and actual use strategies in testing conditions?), the

findings from this study revealed that there were no statistically significant differences in the use of test taking, cognitive and metacognitive strategies between perceived and actual use in the English reading comprehension context.

The findings from the present study are consistent with the findings of previous studies (e.g. Al-Melhi, 1999; Alsheikh, 2011; Lee, 2012). Nevertheless, the findings from this study were inconsistent with other researchers (e.g. Ikeda and Takeuchi (2002); Oxford et al., 2004; Rupp et al. 2006) who found that students reported more frequent use of strategies in the perceived use than actual use.

A possible explanation why differences in using test taking, cognitive and metacognitive strategies in the perceived use and actual use were not significant might be that grade 10 students in the present study may not have been exposed to many types of reading tasks or tests (Gao, 2006; Lai, 2009; Oxford et al., 2004). For example, they may not read English outside class much and most of the reading tasks they have been exposed to are reading exercises and tests, especially those with multiple choice format. Thus, when they were asked to report their strategy use in the perceived and actual use questionnaire, they might have thought of the tests or tasks that they had done like reading and answering the questions. Accordingly, their reports in both types of questionnaires were not different.

In addition, regarding individual perceived and actual strategies, nine strategies (i.e. test management, test wiseness, repeating, skimming, scanning, inferencing, translation, transferring, and planning) were reported as being used and actually used with medium frequency, and six strategies (i.e. deduction, note-taking, summarization, elaboration, monitoring, and evaluating) were reported as being used

and actually used with low frequency. Further, there were three strategies where the reported use and actual use was different: highlighting, deduction, and translation.

It might be noticed that students reported using highlighting with medium frequency because they thought that they would use this strategy when they did the reading test. However, although in this study the students were allowed to write anything in the test, a number of students did not do so. This might be interpreted that they might be familiar with their previous educational experience in which they were not allowed to write anything in the test. Thus, highlighting was reported in the actual strategy use questionnaire with low frequency. The result was consistent with their verbal report analysis which revealed that they did not write anything in the test because their English teachers usually did not allow them to write.

In addition, in both perceived and actual use strategies, it was noticed that deduction (i.e. applying the learned grammar rules, and determining the meaning of the word by breaking it into small parts) and translation were reported and used with low and medium frequency respectively. The results might suggest that the reading test might be difficult for the students (Ikeda & Takeuchi, 2002). Regarding the results, though students reported and used deduction with low frequency, it was noticed that they slightly increased this strategy when they did the reading test. Further, though the students reported and used translation with medium frequency, it seemed that they decreased the use of strategy when they did the reading test. This may be because when students were encountered with difficult reading tasks, they might read the passage at vocabulary level as shown from their use of deduction (Ikeda & Takeuchi, 2002). Further, the use of translation might not mean that they translated and understood the whole passage. It might mean that they translated some

words that they knew in order to understand the whole passage. This can be seen from verbal report analysis which shows that students translated only words that they knew to understand the whole passage. Nevertheless, according to the researcher's observation, not all of the students translated words or phrases with correct meanings.

Interestingly, the reasons why some strategies such as note-taking, deduction, monitoring, and evaluation were reported and used with low frequency might be that these strategies had not been practiced in class (Aivazoglou & Griva, 2014). Students who did not practice these strategies in class might avoid reporting and using them.

Apart from cognitive and metacognitive strategies, students reported and used test taking strategies with medium frequency. Further, when they did the reading test, test management and test wiseness strategies were also used with medium frequency. It seems that students might know how to select and use suitable strategies to respond to the test items (Salehi, 2011). In addition, the results might be related to their educational experience. As mentioned earlier, students had previously been exposed to the reading tasks like reading and answering the questions. Thus, the students might know how to apply appropriate test taking strategies to the actual reading test.

2. With reference to Research Question 2 (Are there statistically significant gender differences in the perceived use of cognitive and metacognitive strategies?), there were statistically significant gender differences in the perceived use of cognitive strategies. Female students reported using cognitive strategies significantly more often than male students did. However, males and females did not differ in reporting using metacognitive strategies. The findings were consistent with previous studies (El-Dib, 2004; Hsu, 2006; Kamran, 2013; Kaylani, 1996; Salahshour et. al., 2013; Zhou & Intraprasert, 2015).

However, the findings contradicted previous studies that males employed cognitive strategies more often than females did (Khamkhien, 2010; Lee, 2012). In addition, the findings of this study were inconsistent with previous studies that there were no gender differences in the perceived use of cognitive and metacognitive strategies (Goh & Foong, 1997; Kasimi, 2012; Munsakorn, 2012; Radwan, 2011; Sheorey & Mokhtari, 2001; Shikano, 2015)

The findings that cognitive strategies were reported using significantly more often by female students than male students might be due to social approval or social desirable factors. Some students report higher use of strategies they perceived as desirable, regardless of the degree to which these strategies were actually employed (Denton et al., 2015). Female students in this study might have been more influenced by these social factors than the male students, and therefore reported using cognitive strategies more often than the males.

Nevertheless, there were no gender differences in perceived use of metacognitive strategies. Males and females did not differ in reporting their use of metacognitive strategies, most of which were low frequency. This might be related to the educational context (Denton, 2015; Kamran, 2013). This may indicate that male and female students lacked practice of the use of metacognitive strategies in their language classroom (Bozinovic & Sindik, 2011). Therefore, they did not feel that they used these strategies often.

Another explanation may be that the students in this study may have declarative knowledge but lack procedural knowledge. Teachers in this study may have taught them what metacognitive strategies were and asked them to recall the strategies (declarative knowledge). However, the teachers may not have provided a lot

of exercises or given any techniques to the students (procedural knowledge) (Duke, & Pearson, 2002; Oosterhof, 2011). Consequently, students reported the use of the strategies with low to medium frequency.

3. With reference to Research Question 3 (Are there statistically significant gender differences in cognitive and metacognitive strategies in actual use in testing conditions?), there were no statistically significant gender differences in the actual use of cognitive and metacognitive strategies. The findings were in concord with prior investigations (Afsharrad & Sadegh Benis, 2015; Nourdad, 2015; Taki & Sooleimani, 2012; Weiying, 2006; Young & Oxford, 1997).

However, the findings from this study were inconsistent with Aivazoglou and Griva, 2014, Griva et al. (2012), and Xue (2015), who found that female students employed cognitive and metacognitive strategies more often than male students did. In addition, the findings from this study contradicted Phakiti (2003b), who discovered that male university students employed metacognitive strategies more frequently than female counterparts did. Nonetheless, Phakiti (2003b) did not find gender differences in the use of cognitive strategies.

A possible explanation for the results could be attributed to previous learning experiences of how to approach reading tasks as well as reading tests (Asgarabadi et.al, 2015; Gao, 2006; Nourdad, 2015; Weiying, 2006). As males and females in this study have studied at this school since they were in grade 7, teachers have taught them how to tackle the reading problems in the reading tasks or reading tests similarly. That is, teachers taught them how to use context clues to find the meaning of unknown words; how to scan the information to find the specific information; and how to skim the passage in order to get the topic or main ideas of the passage.

Another possible explanation for no gender differences in the actual use of cognitive and metacognitive strategies could be that males and females had the same reading ability level (Phakiti, 2003a). According to their reading test scores, males' and females' proficiency were not different (p =.334). The results suggested that males and females had the same reading ability. Thus, both genders did not use strategies differently. Phakiti (2003a) and Poole (2005) found that language proficiency did not affect the use of cognitive and metacognitive strategies across gender if the students had the same level of language achievement.

Apart from considering the whole range of strategies used, many males and females used seven strategies (i.e. repeating, skimming, scanning, inferencing, translation, transferring, and planning) with medium frequency and used six strategies (i.e. deduction, note-taking, summarization, elaboration, monitoring, and evaluating) with low frequency. Nevertheless, it was noted that there were three strategies that males and females used differently: highlighting, repeating, and translation. Males used highlighting with low frequency, while females used it with medium frequency. Further, although males and females used repeating and translation with medium frequency, it was noted that females used these strategies more than males did. This suggests that females in this study were more aware of using these strategies than male students.

Further, regarding the results of individual cognitive and metacognitive strategies used, it seemed that males and females used deduction, note-taking, summarization, elaboration, monitoring, and evaluating with low frequency because they did not have an opportunity to practice these strategies, especially note-taking. It seems that males and females studying English as a foreign language do not have

much experience in practicing the language outside the classroom (Aivazoglou & Griva, 2014; Gao, 2006; Lai, 2009). In addition, their teachers may teach them to focus on the strategies that they can apply in a standardized test such as skimming, scanning, and inferencing, and so the other strategies were used much less frequently.

4. With reference to Research Question 4, (To what extent do males and females differ in actual use of cognitive and metacognitive strategies in testing conditions?), the data from the verbal analysis revealed that males and females used a variety of strategies to help them do the reading test.

A majority of males and females mentioned skimming, scanning, repeating, deduction (i.e. applying their learned English grammar rules to comprehend the passage, determining the meaning of unknown words by breaking it down into parts), inferencing, translation, highlighting, elaboration, summarizing, planning, and monitoring. Skimming, scanning, and translation were frequently used by all males and females (20 males, 20 females). However, deduction, summarization, planning, and monitoring were found to be less frequently used by males and females. Moreover, males and females did not mention evaluation. Additionally, the results showed that females rarely used deduction (i.e. breaking it down into parts), note-taking, and monitoring, and males did not mention that they used these strategies at all.

The results of verbal report analysis were consistent with the findings of Research Question 3 that a majority of males and females often used skimming, scanning, translation, repeating, and inferencing when they did the reading test. It seemed that they used these strategies in order to comprehend the reading passage. Moreover, the verbal analysis showed the limited use of deduction, note-taking,

monitoring, and evaluation. This is similar to the result in Research Question 3 which showed that males and females used these strategies with low frequency.

5.2.1 Discussion on gender and perceived and actual use of strategies

The results on perceived and actual use of cognitive and metacognitive strategies between males and females indicate that in terms of perceived strategy use, female students reported significantly more frequent use of cognitive strategies. However, females and males did not differ either in their perceived use of metacognitive or their actual use of cognitive and metacognitive strategies in the reading test. These results suggest that with regard to cognitive strategies, it is possible that "males and females are different in how they report their strategies retrospectively but are not in reality all that different when they actually use strategies" (Oxford, 1996, p.248). This can explain why significant differences were found in perceived use of cognitive strategies but not found in the actual use of such strategies.

In addition, there were no gender differences in the perceived and actual use of metacognitive strategies, most of which were of low frequency (i.e. monitoring, and evaluating). This may indicate that these students lack practice in the use of metacognitive strategies in their language classroom (Bozinovic & Sindik, 2011). Therefore, they did not feel that they generally use these strategies in reading or when they did the reading test.

With regard to individual strategies in perceived and actual use, a majority of males and females reported using repeating, skimming, scanning, inferencing, translation, transferring and planning with medium frequency. This is similar to their actual use strategies which showed that both males and females used these strategies

with medium frequency. The results were also consistent with the verbal reports which showed that a majority of males and females used these strategies when they did the reading test. Furthermore, a majority of males and females reported using note-taking, elaboration, monitoring, and evaluation with low frequency. This is consistent with the results which showed that a majority of males and females used these strategies with low frequency when they did the reading test.

5.3 Conclusions

This study could shed some light on the differences in the use of test taking, cognitive and metacognitive strategies between perceived and actual use in testing conditions. This study also provides some empirical evidence on gender differences with regard to the use of cognitive and metacognitive reading strategies in perceived and actual use in testing conditions. Briefly, the results showed that grade 10 high school students did not report and use test taking strategies, cognitive and metacognitive strategies between perceived strategies and actual use strategies differently. Moreover, there were gender differences in the perceived use of cognitive strategies. Female students reported the use of cognitive strategies more often than male students did, while there were no gender differences in the use of metacognitive strategies. On the other hand, there were no gender differences in the use of cognitive and metacognitive strategies in actual use in the English reading comprehension test. In addition, the verbal report analysis revealed that male and female grade 10 students did not use cognitive and metacognitive strategies differently while they were taking the English reading comprehension test.

5.4 Implications

5.4.1 Theoretical implications

This section presents the theoretical implications for the study. First, as discussed earlier, the findings revealed the effect of learner exposure to English reading tasks or tests on their perceived and actual use of strategies (Gao, 2006; Lai, 2009; Oxford et al., 2004). Students' limited exposure to reading tasks or tests may influence the way they respond to the questionnaires eliciting their perceived and actual use of strategies, resulting in no differences in their responses in both types of questionnaires.

Another factor that may affect the use of cognitive and metacognitive strategies may be students' previous learning experience of tackling reading tasks and tests (Asgarabadi et.al, 2015; Gao, 2006; Nourdad, 2015; Weiying, 2006). Students who share the way they learn how to approach a reading task or test may develop similar ways of using cognitive and metacognitive strategies. Finally, students' use of strategies may be affected by their reading ability (Phakiti, 2003a). That is, students with similar level of reading ability may use similar cognitive and metacognitive strategies when performing a reading test. As can be seen, these characteristics of learners may explain the perceived and actual use of cognitive, metacognitive strategies of males and females. Therefore, research investigating gender differences in cognitive and metacognitive strategies should take these factors into consideration.

5.4.2 Pedagogical implications

This study has revealed that males and females differ in their perception of how they use cognitive strategies when they read in English. Nevertheless, males and females were not different in the way they perceived how they used metacognitive

strategies and the way they actually used cognitive and metacognitive strategies in a reading test context. Therefore, the teachers, especially grade 10 teachers, do not need to provide different reading strategy instruction for males and females. They should teach males and females how to apply suitable reading strategies into the actual reading test task (Anderson, 1991; Sangpakdeejit, 2014; Xiying, 2010).

In addition, students in this study reported and actually used some strategies with low frequency, for example, note-taking, elaboration (e.g. using background knowledge to improve understanding), monitoring, and evaluating. Thus, teachers should find reasons why these strategies were not used as often as the other strategies. Furthermore, students reported and actually used some strategies with medium frequency such as repeating, skimming, scanning, inferencing (e.g. using information in the passage to guess the meaning of unknown words), translation, and planning. Teachers should explore how to encourage students to use these strategies with higher frequency. Providing more exercises or explanation how the students can apply these strategies can help them increase and improve the use of such strategies to enhance their reading performances (Salahshour et al., 2013; Xue, 2015; Zare, 2013).

The literature has shown that reading strategies are teachable (e.g. Carrell, 1998; Chamot, 2005). Teachers can provide the instruction that benefits students, so the students can learn how to use appropriate strategies in their reading tasks or tests (Derakhshan & Nazari, 2015; Duke & Pearson, 2002; Salahshour et al., 2013). Many researchers, particularly in L2 context, recommended explicit instruction because this instruction is more effective than simply asking students to use one or more strategies (Bozinovic & Sindix, 2011; Manoli et al., 2016; O'Malley & Chamot, 1990; Xue, 2015). Duke and Pearson (2002) have suggested an instructional model for teaching

strategies in the classroom. They stated that, first, teachers should explain a particular strategy, and when and how it should be used. Second, teachers and students should practice how to use the strategy together. Finally, teachers should allow each student to practice the strategy individually. Additionally, Duke and Pearson (2002) suggest that although each strategy is taught individually in class, other strategies should be included throughout the process. This is because good readers do not use only one strategy to help them comprehend the passage. Rather, they use multiple strategies. Similarly, cognitive and metacognitive strategies ought to be taught together in class because teaching only metacognitive strategies does not help students improve their reading comprehension (Afsharrad & Shadeghi Benis, 2015).

5.5 Recommendations for further research

The findings of this study might be in part an artifact of the research instruments (i.e. multiple-choice and short-answer questions, questionnaires, and verbal reports) and the skills the study focused on. Moreover, the participants in this study were EFL grade 10 high school students in Thailand; therefore there is limited scope to generalize the findings to participants in other contexts. Therefore, a recommendation for further research is, first, to investigate the differences in the use of test taking, cognitive and metacognitive strategies between perceived and actual use in testing condition in other language skills. Further, the present study used a reading test which contained multiple-choice and short answer questions. Therefore, it is recommended that further studies explore other types of test formats. Moreover, only cognitive and metacognitive strategies were investigated in this study. Future research, then, should include other categories of reading strategies.

In terms of data collection procedure, apart from the questionnaire and audio-recording of verbal reports used in this study, further research should include digital video-recording of test taking. This is because watching a digital video-recording might assist the students to recall their thought process at the time they were doing the test. Further, the video-recording might help researchers observe how students employ their cognitive and metacognitive strategies.

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APPENDIXES

APPENDIX I

Language learner strategy classification

Stern (1975, 1983)	Stern (1992)	Rubin (1975, 1981)	O'Malley and Chamot (1990)	Oxford (1990)	Cohen (1998)
Monitoring strategy - Self-monitoring and critical sensitivity to language use.	**Management and planning strategies** - Learners' intension to direct their own learning: planning their learning, setting objectives, assessing the learning, and evaluating the achievement relating to previously set goals.	**Monitoring (Direct strategies)** e.g. noticing errors (both linguistic and communicative)	**Metacognitive strategies** - Planning - Directed attention - Selective attention - self-management - self-monitoring - problem identification - self-evaluation	**Metacognitive strategies** 1. Centering your learning - Overviewing and linking with already known material - Paying attention - Delaying speech production to focus on listening	
Experimental strategy A methodical but flexible approach, developing the new language into an ordered system and continually revising it.				2 Arranging and planning your learning - Finding out about language learning - Organizing - Setting goals and objectives - Identifying the purpose of a task - Planning for a language task - Seeking practice opportunities 3 Evaluating your learning - Self-monitoring - Self-evaluating	

Stern (1975, 1983)	Stern (1992)	Rubin (1975, 1981)	O'Malley and Chamot (1990)	Oxford (1990)	Cohen (1998)
Communication strategy Willingness to use the language in the real communication.	**Communicative -experiential strategies** - The opportunities to use the language in real-life situation and the opportunities to keep a conversation going. **Interpersonal strategies** -Asking other people for help or to solve the problems	**Creating opportunity to practice (indirect strategies)** e.g. practicing the language with friends, teachers, or native speakers.	**Social and affective strategies** - questioning for clarification - cooperating with other people - self-talk - self-reinforcement	**Social strategies** 1. Asking question - Asking for clarification or verification - Asking for correction 2 Cooperating with others - Cooperating with peers - Cooperating with proficient users of the new language	**Communication strategies (use strategies)** - conveying a meaningful and informative message to listeners and readers.
Empathic strategy A tolerant and outgoing approach to the target language and its speakers.				**Empathizing with others** - Developing cultural understanding - Becoming aware of others' thoughts and feelings	
Internalization strategy Developing the target language more and more as a separate reference system and learning to think in it.					

Stern (1975, 1983)	Stern (1992)	Rubin (1975, 1981)	O'Malley and Chamot (1990)	Oxford (1990)	Cohen (1998)
Planning strategy - A personal learning style or positive learning strategy.	**Affective strategies** Positive attitudes, emotions, and motivation in language learning.			**Affective strategies** - Lowering your anxiety - Using progressive relaxation, deep breathing or mediation - Using music 2 Encouraging yourself - Making positive statements - Taking risks wisely - Rewarding 3 Taking your emotional temperature - Listening to your body - Using a checklist - Writing a diary - Discussing your feelings with others	
Active strategy An active approach to the learning task. **Formal strategy** Technical know-how of how to tackle a language. **Practice strategy** - Willingness to practice the language.	**Cognitive strategies** - Techniques that learners make use of in the deliberate and formal study and practice of the target language.	**Clarification/ verification (Direct strategies)** e.g. asking for an example to clarify or verify unknown words or phrases of the new language.	**Cognitive strategies** - repetition - resourcing - grouping - note taking - deduction/ induction - substitution - elaboration - summarization - translation - transfer - inferencing	**Cognitive strategies** 1 Practicing - Repeating - practicing listening and writing - Recognizing and using formulas and patterns - Recombining - Practicing 2 Receiving and sending messages - Getting the idea quickly 3 Analyzing and reasoning - deduction - Analyzing expressions and contrastively - Translating - transferring	**Rehearsal strategies (use strategies)** - practicing the language - identifying the material that needs to be learnt **(Learning strategies)** - repeating contact with material **(learning strategies)**

Stern (1975, 1983)	Stern (1992)	Rubin (1975, 1981)	O'Malley and Chamot (1990)	Oxford (1990)	Cohen (1998)
		Deductive reasoning (direct strategies) e.g. inferring grammatical rules	Deduction		
		Practice (Direct strategies) e.g. repetition, rehearsal, application of rules, imitation, and attention to detail.			
		Guessing /inductive inferencing (Direct strategies) e.g. using clues or key words to guess			
		Memorization (Direct strategies) e.g. taking notes, writing out items with or without context		**Creating structure for input and output** - taking note - summarizing - highlighting **Memory strategies** 1. Creating mental linkages - Grouping - Elaborating - Placing new words 2 Applying images and sounds - Using imagery - Using keywords - Representing sounds in memory 3 Reviewing well - Structured reviewing	-Grouping the material for language learning **(learning strategies)** - committing the material to memory when it does not seem to be acquired **(learning strategies)** **Retrieval strategies (use strategies)** - using keywords - distinguishing the material from other material **(learning strategies)**

Stern (1975, 1983)	Stern (1992)	Rubin (1975, 1981)	O'Malley and Chamot (1990)	Oxford (1990)	Cohen (1998)
				4 Employing action - Using physical response or sensation - Using mechanical techniques	
Semantic strategy - Constantly searching for meaning.		**Use of production tricks. (indirect strategies)** e.g. using circumlocution and paraphrase to get message across, or repeating sentence or further understanding.		**Compensation strategies** 1 Guessing intelligently 2 Overcoming limitations in speaking and writing - Switching to the mother tongue - Getting help - Using mime or gesture - Avoiding communication partially or totally - Selecting the topic	**Cover strategies (use strategies)** - using circumlocution

APPENDIX II

Yamane's (1986) table

Sample size for +/- 3%, +/- 5%, +/- 7% and +/- 10%. Precision Level where confidence level is 95% and p =.5

Size of Population	Sample Size (n) for Precision (e) of:			
	±3%	±5%	±7%	±10%
500	a	222	145	83
600	a	240	152	86
700	a	255	158	88
800	a	267	163	89
900	a	277	166	90
1,000	a	286	169	91
2,000	714	333	185	95
3,000	811	353	191	97
4,000	870	364	194	98
5,000	909	370	196	98
6,000	938	375	197	98
7,000	959	378	198	99
8,000	976	381	199	99
9,000	989	383	200	99
10,000	1,000	385	200	99
15,000	1,034	390	201	99
20,000	1,053	392	204	100
25,000	1,064	394	204	100
50,000	1,087	397	204	100
100,000	1,099	398	204	100
>100,000	1,111	400	204	100

a = Assumption of normal population is poor (Yamane, 1967). The entire population should be sampled.

APPENDIX III

List of the experts

1. Asst.Prof. Natjiree Jaturapitakkul, Ph.D.
   School of Liberal Arts,
   King Mongkut's University of Technology Thonburi

2. Asst. Prof. Nuwee Chomphuchart, Ph.D
   Department of English for Business Communication School of Humanities,
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3. Dr. Pramarn Subphadoongchone
   Chulalongkorn University Language Institute

APPENDIX IV

The Index of Item Objective Congruence (IOC) for the reading test

Reviewer: _____Date: _____

An English reading comprehension test
The objective of this instrument

The instrument is employed to assess students' reading comprehension that they have studied in an English reading and writing course (ง 31201). The skills consist of guessing the meaning of the unknown words from known words, roots, prefixes, suffixes, and context clues, identifying topics and main ideas, analyzing reference words, and skimming and scanning text for general and specific information (Benchamaracharungsarit School, 2014).

The test consists of four passages with 20 items. Each passage is accompanied by multiple-choice and short-answer questions. The following table shows the reading comprehension skills and types of questions in the test.

Reading comprehension skills	**Multiple-choice questions (MCQ)**	**Short-answer questions (SAQ)**	**Passages**	
			MCQ	**SAQ**
Skimming (identifying topic)	/		II,	
Skimming (identifying main idea)	//		III, IV	
Scanning	/////////	///	I,I,I, I, I, II, II, III, IV	III, III, IV
Analyzing reference words	/	/	IV	II,
Guessing the meaning of unknown words	//	/	III, IV	II,

Instructions: Please read the reading comprehension skills on this form and please indicate the degree to which each test item is congruent with the skill it was written to measure. If you have any comments about the congruence of the test items, please record them in the space provided. Please rate the congruence according to the scale shown below:

+1 = high degree of congruence
0 = uncertainty
-1 = no congruence

Please check √ or cross ✕ the number corresponding to your rating.

Items	**Objectives**	**-1**	**0**	**1**	**Comments**
Passage I					
1.	Scanning				
2.	Scanning				
3.	Scanning				
4.	Scanning				
5.	Scanning				
Passage II					
6.	Skimming (identifying topic)				
7.	Guessing the meaning of unknown words				
8.	Scanning				
9.	Analyzing reference words				
10.	Scanning				

Items	Objectives	-1	0	1	Comments
Passage III					
11.	Skimming (identifying main ideas)				
12.	Scanning				
13.	Guessing the meaning of unknown words				
14.	Scanning				
15.	Scanning				
Passage IV					
16.	Skimming (identifying main ideas)				
17.	Scanning				
18.	Guessing the meaning of unknown words				
19.	Analyzing reference words				
20.	Scanning				

Additional questions

Instructions: Please read the questions and indicate the degree. If you have any comments, please record them in the space provided. Please rate the congruence according to the scale shown below:

+1 = high degree of congruence
0 = uncertainty
-1 = no congruence

Please check √ or cross × the number corresponding to your rating.

Questions	**-1**	**0**	**1**	**Comments**
1. Are the reading passages suitable for Grade 10 students?				
2. Is the level of reading difficulty suitable for Grade 10 students?				
3. Is the length of the passage suitable for Grade 10 students?				

Additional comments and suggestions

References

1. **Passage I**

   From: Rutex LTD (2012, May 5). Clothing collection [Advertisement]. Retrieved from http://galleryhip.com/advertisement-examples-for-students.html

2. **Passage II**

   From: Gavin, M. (2012, January 1). Retrieved May 1, 2015, from http://kidshealth.org/kid/stay_healthy/body/cant_sleep.html?tracking=K_RelatedArticle#

   Word count 189 Sentence count 15

   Reading difficulty Flesch-Kincaid Grade Level 4.4

3. **Passage III**

   Adapted from: Alter, C. (2015, March 31). Exclusive: Read a 9-Year-Old's Letter to Obama About Putting a Woman on U.S. Currency — and His Response. *Time*. Retrieved May 2, 2015, from http://time.com/3765227/woman-us-currency-obama-letter/

   Word count 298 sentence count 20

   Reading difficulty Flesch-Kincaid Grade level 6.9

4. **Passage IV**

   Adapted from: Kress, M. (2015, April 8). Paris goes green. *Scholastic*.

   Words count 205 Sentence count 17

   Reading difficulty Flesch-kincaid grade level 7.0

Experts' recommendation

I. An English reading comprehension test

Instructions: Please read the reading comprehension skills on this form and please indicate the degree to which each test item is congruent with the skill it was written to measure. If you have any comments about the congruence of the test items, please record them in the space provided. Please rate the congruence according to the scale shown below:

+1 = high degree of congruence
0 = uncertainty
-1 = no congruence

Please check √ or cross × the number corresponding to your rating.

Items	**Objectives**	**-1**	**0**	**1**		**Comments**
Passage I						
1.	Scanning	/		//	0.33	
2.	Scanning			///	1.00	
3.	Scanning			///	1.00	
4.	Scanning			///	1.00	
Items	**Objectives**	**-1**	**0**	**1**		**Comments**
Passage I (cont.)						
5.	Scanning			///	1.00	
Passage II						
6.	Skimming (identifying topic)			///	1.00	
7.	Guessing the meaning of unknown words			///	1.00	
8.	Scanning			///	1.00	
9.	Analyzing reference words			///	1.00	
10.	Scanning			///	1.00	

Passage III						
11.	Skimming (identifying main ideas)			///	1.00	
12.	Scanning			///	1.00	
13.	Guessing the meaning of unknown words			///	1.00	
14.	Scanning			///	1.00	
15.	Scanning			///	1.00	
Passage IV						
16.	Skimming (identifying main ideas)			///	1.00	
17.	Scanning			///	1.00	
18.	Guessing the meaning of unknown words			///	1.00	
19.	Analyzing reference words			///	1.00	
20.	Scanning			///	1.00	

Additional questions

Instructions: Please read the questions and indicate the degree. If you have any comments, please record them in the space provided. Please rate the congruence according to the scale shown below:

+1 = high degree of congruence
0 = uncertainty
-1 = no congruence

Please check √ or cross × the number corresponding to your rating.

Questions	**-1**	**0**	**1**		**Comments**
1. Are the reading passages suitable for Grade 10 students?			///	1.00	
2. Is the level of reading difficulty suitable for Grade 10 students?			///	1.00	
3. Is the length of the passage suitable for Grade 10 students?	//		/	0.33	

Additional comments and suggestions

Additional comment and suggestion

An English reading comprehension test

Dr. Pramarn	Asst. Prof. Dr. Natjiree	Researchers
• Passage I • c. to give an idea how to arrange their closets = to give people an idea of how to arrange their closets • Who will get these clothes? = Who will these clothes go to? • people in the third world countries		• The researcher corrected according to the expert's recommendation
• Passage II • it seems that there were no correct answer • c being afraid • This choice need to be checked • 10. what is not the writer's recommendation for? • c. creating		• The researcher corrected according to the expert's recommendation
• Passage III • 11. a. A little girl gave her ideas to the President about women on dollar bills. = A little girl gave her ideas about women on dollar bills to the President.	•	• The researcher corrected according to the expert's recommendation
• Passage IV rechecks with a native speaker.		• The researcher corrected according to the expert's recommendation

• Additional recommendation: • Longer passage	• Additional recommendation: • Longer passage • Types of questions should have more than 3 items for each type	• The researcher did not provide the longer passage because students in this study were not familiar. They had not practiced or done with the long passages.

APPENDIX V

Results of reliability coefficient (KR 20)

First pilot study

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.560	.536	20

Second pilot study

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.702	.703	20

General guidelines for reliability coefficient value

Levels	Interpretation
.90 up	Excellent
. 80-89	Good
.70-79	Adequate
Below .70	May have limited applicability

APPENDIX VI

English reading comprehension test

เวลาทำข้อสอบ: 30 นาที

Name _____No._____ Classroom _____

Instructions: This is a test of how well you can understand reading passages in English. The test consists of 4 passages. Each passage is followed by 5 multiple-choice or short-answer questions. Circle ◯ the correct answer for multiple-choice questions and write a word, phrase, or short sentence in the space provided for short-answer questions. Each correct answer is worth one point. Write your answer **ONLY** on this test paper.

Please answer all questions.

คำสั่ง แบบทดสอบนี้เป็นแบบทดสอบการอ่านภาษาอังกฤษเพื่อความเข้าใจ แบบทดสอบประกอบด้วยเรื่องที่อ่านจำนวน 4 เรื่อง แต่ละเรื่องที่อ่านประกอบด้วยคำถามจำนวน 5 ข้อ เป็นแบบเลือกตอบหรือเขียนตอบ วงกลม ◯ คำตอบที่ถูกสำหรับคำถามแบบเลือกตอบ และเขียนคำ, วลี, หรือ ประโยคสั้น ๆ ในที่ว่างที่เตรียมไว้ให้สำหรับคำถามแบบเขียนตอบ คำตอบที่ถูกต้องแต่ละข้อจะได้ 1 คะแนน เขียนคำตอบของนักเรียนลงบนแบบทดสอบนี้ **เท่านั้น**

กรุณาตอบคำถามทุกข้อ

Sample answer (คำตอบตัวอย่าง)

1. What is the topic of the passage?
   a. Color
   (b.) The color blue
   c. The color of poison
   d. My favorite color

2. What does the word **"many"** refer to?
   ____*people*_____

Passage I


Not everyone and especially young families can afford to buy new, often expensive clothes, shoes and household things.
CLOTHING COLLECTION
Can you spare your old unwanted clothes?
We would be grateful if you could kindly donate your unwanted
LADIES & GENTS, CHILDREN'S CLOTHING
BLANKETS, SHEETS, CURTAINS
SHOES, BELTS, HANDBAGS
BATH and HAND TOWELS
UNDERWEAR, COSMETICS
TOILETRIES, PERFUMES
Sorry, NO bric-a-brac, books or plastic toys please!
Please put These items in CLEAR view from the road
WITH THIS LEAFLET ATTACHED before 8 am on the day indicated below.
WHATEVER THE WEATHER WE WILL COLLECT BETWEEN 8 AM - 5 PM
Collection day is:
MON
TUE
WED V
THU
FRI
SAT
YOUR DONATIONS ARE SENT TO THE THIRD WORLD COUNTRIES TO HELP CLOTHE THE POOR
Our company provides jobs in the sorting of clothes for distribution. It provides business for the UK export and transport companies. It provides employment for the UK factories grading the clothes and people collecting the bags door to door.
Many Thanks from RUTEX LTD, E-mail: rutex@yahoo.co.uk. Company Reg. No 6894447

1. What is the purpose of this leaflet?
   a. To ask people to donate their used clothes to others
   b. To inform people how to make money from used clothes
   c. To let people know how to correctly arrange their closets
   d. To request people to throw their old clothes away in the right places

2. According to the leaflet, when will the company collect the clothes?
   a. Wednesday before 8 am.
   b. Wednesday from 8 am to 5 pm .
   c. Weekends from 8 am. to 5 pm.
   d. Weekdays from 8 am. to 5 pm.

3. What should you do if you want to join the activity?
   a. Email the company
   b. Stick the leaflet on your door within clear view from the road
   c. Stick the leaflet on the clothing and place it near the footpath
   d. Put the clothes on the road in front of your house

4. Who will get these clothes?

   _____.

5. According to the leaflet, everything can be donated, **except** _____.
   a. bedding sets
   b. skirts and pants
   c. leather shoes and belts
   d. novels and playthings

Passage II

Sometimes going to sleep can seem boring. There's so much more you want to do. But if you've ever had too little sleep, you know that you don't feel very well when you're not rested.

Some kids have trouble falling to sleep, which is called **insomnia**. Let's talk about what to do if that happens to you.

For kids, feeling scared at bedtime is one of the main reasons for having trouble falling asleep. A kid might be afraid of the dark or might not like being alone. If a kid has a good imagination, he or she might hear noises at night and fear the worst when it's just the family cat walking down the hall.

As you get older, these fears usually fade. Until **they** do, make sure your room makes you feel relaxed and peaceful. Look around your room from your bed. Are there things you can see from bed that make you feel good? If not, add some. Display some family photos or other pictures that make you happy. You might even create a mobile sculpture to hang over your bed.

6. What is the topic of the passage?
   a. Why kids fall asleep
   b. When kids don't sleep
   c. How to help kids sleep better
   d. What to do when kids do not feel well

7. What does the word **"insomnia"** mean?

   _____

8. What is a main reason that kids can have a sleep problem?
   a. Living alone
   b. Family pets
   c. Being afraid
   d. Too much noise

9. What does the word **"they"** refer to?

   _____

10. What is **not** one of the writer's suggestions?
    a. Having some family photos in the bedroom
    b. Checking your bedroom before going to bed
    c. Creating relaxing atmosphere in the bedroom
    d. Putting a mobile sculpture in the bedroom

Passage III

Roofs will soon be covered in plants or solar panels to help the environment. The idea of growing a garden on the roof may sound funny. However, these "green roofs" can improve the environment. Plants on the top of a building can absorb rainwater. This can stop flooding after heavy storms. Plants can also help keep heat inside a building in the winter and also can keep it cool in the summer. As a result, less energy is used in the building and costs are lower.

If building owners are not interested in growing plants on their roofs, they can install solar panels instead. These panels **generate** electricity when the sun is shining. This may help lower a building's electricity bills. Solar power is also good for the environment. Solar panels don't release pollution into the air when they make electricity.

These special roofs should eventually save money for building owners. However, they will be more costly to build than traditional **ones**. Green roofs are heavier, so architects have to plan for this when designing a building. Creating a roof that can hold the extra weight usually means higher construction costs. And solar panels can be expensive to buy and install.

11. What is the main idea of the passage?
    a. Gardens or solar panels on roofs can help the environment.
    b. People can save money by growing plants on their roofs.
    c. More gardens and solar panels on roofs will be built in the future.
    d. Much money will be spent on building special roofs.

12. Both gardens and solar panels on roofs can _____.
    a. absorb rainwater
    b. save on electricity bills
    c. solve the water pollution problem
    d. make the building warm in the winter

13. What does the word **"generate"** mean?
    a. cost
    b. save
    c. produce
    d. disconnect

14. What does the word **"ones"** refer to?
    a. solar panels
    b. buildings
    c. gardens
    d. roofs

15. Write **one bad point** of having a garden or solar panels on the roof.

_____

Passage IV

The little girl who asked Obama last year why there are not any women on U.S. bills has finally gotten a letter back from the President — and she's been invited to the annual White House Easter Egg celebration.

President Obama attracted a lot of attention last year when he mentioned he had received a letter from a little girl asking him to put a woman's portrait on U.S. currency, which he called a "pretty good idea." That letter was from Sofia, a Massachusetts girl who was just finishing third grade at the time.

"I was studying Ann Hutchinson, who **stood up for** women's rights," she says. "Almost everyone who chose a boy, on their poster they had pictures of different dollar bills or coins with their person on it. So I noticed, why don't women have coins or dollar bills with their faces on it?"

Sofia, now 9, knew immediately what she had to do. She came home and wrote a letter to the President. For a while, she didn't hear anything back from him. She says she "forgot about it" until her dad showed her the President had mentioned her letter in a speech. "I was really excited about it, because I thought that maybe it would actually happen," she says.

In the months since Sofia wrote to President Obama, a campaign to put a woman on the $20 bill has gone viral. The W20 movement is hosting an online poll so the public can vote on which woman should replace Andrew Jackson. The group plans to petition Obama and the Treasury Secretary to make it happen. Almost 220,000 people have voted in the online poll so far. And Sofia, who is now in fourth grade, is a junior ambassador for the campaign.

16. What is the main idea of the passage?
    a. A girl gave an idea to the President about putting a woman's picture on a U.S. bill.
    b. A girl was invited to meet the President for an Easter Egg celebration.
    c. A girl became a campaign ambassador after writing to the President.
    d. A girl received a letter from the President after waiting for a long time.

17. What does President Obama think about Sofia's suggestion?

    _____.

18. What does the phrase **"stood up for"** mean?
    a. considered
    b. introduced
    c. supported
    d. rejected

19. Whose face is on the 20 dollar bill today?

    _____.

20. What happened after Sofia wrote to President Obama?
    a. The Treasury Secretary approved Sofia's idea.
    b. A campaign was started that supported Sofia's idea.
    c. 220,000 people disagreed with the W20 campaign.
    d. The W20 movement selected a woman to be put on U.S. bills.

****

APPENDIX VII

Strategy questionnaires: perceived and actual use strategies

A perceived strategy questionnaire

This questionnaire is a part of the research topic: **Gender differences in the use of metacognitive and cognitive strategies in an English reading comprehension test**. The questionnaire is aimed at investigating reading and test taking strategies. The questionnaire consists of three parts as follows.

Part 1 Demographic information

Part 2 Metacognitive and cognitive reading strategies

Part 3 Test taking strategies

Part I: Demographic information

Directions: Please answer the questions by checking √ in a box in each item or write your answer in the space provided.

1 Gender

☐ Male
☐ Female

2 Age _____

3 Class M 4/ _____

4 GPA _____

5 GPA of English subject _____

Part II: Metacognitive and cognitive reading strategies

Directions: Read each statement and indicate how you **NORMALLY** think when you read English passages. Choose and tick (√) 0 (never), 1 (rarely), 2 (sometimes), 3(often), 4(usually) or 5 (always) on each statement that best describes how you think.

Reading strategies	**0** never	**1** rarely	**2** some times	**3** often	**4** usually	**5** always
1. I set goals and objectives for reading (i.e. knowing what I want to get out of the passages).						
2. I consider which reading strategies to be used for handling the reading task.						
3. I choose to focus on specific information such as keywords, phrases, or main ideas to help me understand the passage.						
4. I decide in advance to attend to specific aspects of reading passage such as length and text organization.						
5. I read rapidly to determine the main ideas in the passage.						
6. I read rapidly to find specific details of interest.						
7. I reread the passage or a part of it.						
8. I apply my learned English grammar rules to comprehend the passage.						
9. I determine the meaning of unknown words by breaking it down into parts such as using prefixes (e.g. '**un-**' in **un**happy), suffixes (e.g. '**–ness**' in happi**ness**), or roots.						
10. I use the information in the passage to guess the meaning of unknown words.						
11. I use the information in the passage to fill in missing information.						
12. I directly apply knowledge of words or structures from Thai to English in order to understand the passage.						

Reading strategies	**0** never	**1** rarely	**2** some times	**3** often	**4** usually	**5** always
13. While reading, I translate from English into Thai to improve my understanding.						
14. While reading, I make a short note by writing down keywords or important ideas from the passage.						
15. While reading, I highlight, underline, circle, or star keywords or important ideas from the passage.						
16. I create a map or drawing of related ideas to enable me to understand the relationships between words and ideas.						
17. I relate information presented in the passage to my prior knowledge or experience to improve my understanding.						
18. I make a mental or written summary of the passage.						
19. While reading, I check my understanding of the reading passage.						
20. While reading, I check how well reading strategies that I use are working.						
21. While reading, I check how well a plan that I have made earlier is working.						
22. I double-check my understanding of the passage, my reading strategy use, and how the plan is working.						
23. After I finish reading, I judge my reading strategy use.						
24. After I finish reading, I judge how good my reading ability is.						

Are there other reading strategies that you have used when reading the passages?

_____

_____

_____

_____

Part III: Test taking strategies

Directions: Read each statement and indicate how you **NORMALLY** think when you take an English reading comprehension test. Choose and tick (√) 0 (never), 1(rarely), 2 (sometimes), 3 (often), 4 (usually) or 5 (always) on each statement that best describes how you think.

Test taking strategies	**0** never	**1** rarely	**2** some times	**3** often	**4** usually	**5** always
1. I read the instructions for answering the questions.						
2. I read the passage first and then I read the 3. questions.						
4. I read the questions before reading the passage.						
5. I mark the questions that I do not know the answer.						
6. If the question is complex, I restate it in my own words.						
7. I read the questions more than twice for clarification.						
8. Either before or while considering questions, I read the questions to look for clues in the passage.						
9. I use clues from other questions to answer the question under consideration.						
9. I predict or produce my own answer after I read the questions (before returning to the passage).						
10. I reread the passage or part of it to look for the answer frequently for confirmation.						

Test taking strategies	**0** never	**1** rarely	**2** some times	**3** often	**4** usually	**5** always
11. I think about the meaning of each question before answering it.						
12. I look for the answer in chronological order in the passage.						
13. I answer the questions right away without going back to the passage.						
14. I skip a difficult question and return to it later.						
15. I stop reading the other choices when I reach the answer.						
16. I use the process of elimination to respond to multiple-choice questions.						
17. When responding to multiple-choice questions, I consider choices and then check vocabulary from the choices in the passage.						
18. I select the choice because it appears to have a word or phrase from the passage in it- possible a keyword.						
19. I select the choice not because it is thought to be correct, but because the other choices do not seem reasonable, seem similar, or are not understandable.						
20. When I respond to multiple- choice questions, I guess without any particular consideration.						

Test taking strategies	**0** never	**1** rarely	**2** some times	**3** often	**4** usually	**5** always
21. When I respond to short-answer questions, I guess without any particular consideration.						
22. I make careful inferences based on the passage and question.						
23. I organize my answer in my mind before writing it down.						
24. I double-check the answer before I hand in.						
25. I am aware of time limitation and constraints.						

Are there other test taking strategies that you have used when taking the reading tests?

An actual use strategy questionnaire

This questionnaire is a part of the research topic: **Gender differences in the use of metacognitive and cognitive strategies in an English reading comprehension test**. The questionnaire is aimed at investigating your reading and test taking strategies when you are taking a reading comprehension test. The questionnaire consists of three parts as follows.

Part 1 Demographic information

Part 2 Metacognitive and cognitive reading strategies

Part 3 Test taking strategies

Part I: Demographic information

Directions: Please answer the questions by checking √ in a box in each item or write your answer in the space provided.

1. Gender

   ☐ Male

   ☐ Female

2. Age _____

3. Class M 4/ _____

4. GPA _____

5. GPA of English subject _____

Part II: Metacognitive and cognitive reading strategies
Directions: Read each statement and indicate how you **ACTUALLY** thought when you took this English reading comprehension test. Choose and tick (√) 0 (never), 1 (rarely), 2 (sometimes), 3 (often), 4 (usually) or 5 (always) on each statement that best describes how you think.

Reading strategies	**0** never	**1** rarely	**2** sometimes	**3** often	**4** usually	**5** always
1. I set goals and objectives for reading (i.e. knowing what I wanted to get out of the passages).						
2. I considered which reading strategies to be used for handling the reading task.						
3. I chose to focus on specific information such as keywords, phrases, or main ideas to help me understand the passage.						
4. I decided in advance to attend to specific aspects of reading passage such as length and text organization.						
5. I read rapidly to determine the main ideas in the passage.						
6. I read rapidly to find specific details of interest.						
7. I reread the passage or a part of it.						
8. I applied my learned English grammar rules to comprehend the passage.						
9. I determined the meaning of unknown words by breaking it down into parts such as using prefixes (e.g. '**un**-' in **un**happy), suffixes (e.g. '**–ness**' in happi**ness**), or roots.						

Reading strategies	**0** never	**1** rarely	**2** sometimes	**3** often	**4** usually	**5** always
10. I used the information in the passage to guess the meaning of unknown words.						
11. I used the information in the passage to fill in missing information.						
12. I directly applied knowledge of words or structures from Thai to English in order to understand the passage.						
13. While reading, I translated from English into Thai to improve my understanding.						
14. While reading, I made a short note by writing down keywords or important ideas from the passage.						
15. While reading, I highlighted, underlined, circled, or starred keywords from the passage.						
16. I created a map or drawing of related ideas to enable me to understand the relationships between words and ideas.						
17. I related information presented in the passage to my prior knowledge or experience to improve my understanding.						
18. I made a mental or written summary of the passage.						
19. While reading, I checked my understanding of the reading passage.						
20. While reading, I checked how well reading strategies that I used were working.						
21. While reading, I checked how well a plan that I had made earlier was working.						

Reading strategies	**0** never	**1** rarely	**2** sometimes	**3** often	**4** usually	**5** always
22. I double-checked my understanding of the passage, my reading strategy use, and how the plan was working.						
23. After I finished reading, I judged my reading strategy use.						
24. After I finished reading, I judged how good my reading ability was.						

Are there other reading strategies that you used when you took this reading test?

Part III: Test taking strategies

Directions: Read each statement and indicate how you **ACTUALLY** thought when you took this English reading comprehension test. Choose and tick (√) 0 (never), 1 (rarely), 2 (sometimes), 3 (often), 4 (usually) or 5 (always) on each statement that best describes how you think.

Test taking strategies	**0** never	**1** rarely	**2** sometimes	**3** often	**4** usually	**5** always
1. I read the instructions for answering the questions.						
2. I read the passage first and then I read the questions.						
3. I read the questions before reading the passage.						
4. I marked the questions that I did not know the answer.						
5. If the question was complex, I restated it in my own words.						
6. I read the questions more than twice for clarification.						
7. Either before or while considering questions, I read the questions to look for clues in the passage.						
8. I used clues from other questions to answer the question under consideration.						
9. I predicted or produced my own answer after I read the questions (before returning to the passage).						
10. I reread the passage or part of it to look for the answer frequently for confirmation.						

Test taking strategies	**0** never	**1** rarely	**2** sometimes	**3** often	**4** usually	**5** always
11. I thought about the meaning of each question before answering it.						
12. I looked for the answer in chronological order in the passage.						
13. I answered the questions right away without going back to the passage.						
14. I skipped a difficult question and returned to it later.						
15. I stopped reading the other choices when I reached the answer.						
16. I used the process of elimination to respond to multiple-choice questions.						
17. When responding to multiple-choice questions, I considered choices and then checked vocabulary from the choices in the passage.						
18. I selected the choice because it appeared to have a word or phrase from the passage in it- possible a keyword.						
19. I selected the choice not because it was thought to be correct, but because the other choices did not seem reasonable, seemed similar, or were not understandable.						
20. When I responded to multiple- choice questions, I guessed without any particular consideration.						

Test taking strategies	**0** never	**1** rarely	**2** sometimes	**3** often	**4** usually	**5** always
21. When I responded to short-answer questions, I guessed without any particular consideration.						
22. I made careful inferences based on the passage and question.						
23. I organized my answer in my mind before writing it down.						
24. I double-checked the answer before I handed in.						
25. I was aware of time limitation and constraints.						

Are there other test taking strategies that you used when you took this reading test?

APPENDIX VIII

Index of Item Objective Congruence (IOC) for the questionnaires

Reviewer: _____Date: _____

A perceived strategy questionnaire

The objectives of this instrument

The instrument is employed to investigate perceived metacognitive and cognitive reading strategies, and test taking strategies used across contexts.

The definitions of term

Metacognitive strategies, "which involve executive processes in planning for learning, monitoring one's comprehension and production, and evaluating how well one has achieved a learning objective" (O'Malley & Chamot, 1990: p. 197).

In this study, metacognitive strategies are a part of reading strategies which are categorized according to the theories of language learner strategies. The strategies involve executive processes in planning for reading, monitoring students' comprehension and production, and evaluating how well they have achieved a reading objective. Metacognitive reading strategies are categorized into planning, monitoring, and evaluating strategies.

Cognitive strategies, "in which the learner interacts with the material to be learned by manipulating it mentally (as in making mental images, or elaborating on previously acquired concepts or skills) or physically (as in grouping items to be learned in meaningful categories, or taking notes on important information to be remembered)" (O'Malley & Chamot, 1990: p. 197).

In this study, cognitive strategies are a part of reading strategies which are categorized according to the theories of language learner strategies. Students employ the strategies to interact with the material to be read by manipulating it mentally (as in making mental images, or elaborating on previously acquired concepts or skills) or physically (taking notes on important information be remember). Cognitive reading

strategies consist of repeating, skimming and scanning, deduction, inferencing, translation, transfer, taking note, summarization, highlighting, and elaboration.

Test taking strategies are "the processes that test takers make use of in order to produce acceptable answers to questions and tasks, as well as the perceptions that they have about these questions and tasks before, during, and after responding to them" (Cohen, 1998b: p 216). The formats in an English reading comprehension test are comprised of multiple-choice and short-answer formats.

Test taking strategies are categorized into test management and test-wiseness strategies (Cohen, 2006).

1. Test management strategies are "strategies for responding meaningfully to the test items and tasks." (Cohen, 2006: p 308)
2. Test-wiseness strategies are "strategies for using knowledge of test formats and other peripheral information to answer test items without going through the expected linguistic and cognitive processes." (Cohen, 2006: p 308)

The items of strategies in perceived strategy questionnaire will be written using the Present simple tense. The strategies are organized as follows.

Part II: Testing taking strategies

1. Test management strategies

1. Responding to both multiple-choice and short-answer questions
   no. of items 15 items 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 13, 14, 22, 24, 25
2. Responding to multiple-choice questions
   no. of items 3 items 15, 16, 17
3. Responding to short-answer questions
   no. of items 1 items 23

2. Test-wiseness strategies

4. Responding to both multiple-choice and short-answer questions
   no. of items 2 items 8, 12
5. Responding to multiple-choice questions
   no. of items 3 items 18, 19, 20
6. Responding to short-answer questions
   no. of item 1 items 21

Part I: Metacognitive and cognitive reading strategies

Instructions: Please read the language learner strategies and reading strategies on this form and please indicate the degree to which each reading strategy is congruent with the language learner strategies that were written to measure. If you have any comments about the congruence of any of the reading strategies, please record them in the space provided. Please rate the congruence according to the scale shown below:

+1 = high degree of congruence
0 = uncertainty
-1 = no congruence

Please check √ or cross × the number corresponding to your rating beside reading strategies.

Language learner strategies	**Reading strategies**	**-1**	**0**	**1**	**Comments**
<u>Planning</u>: arranging and planning your learning: setting goals and objectives for language learning (Oxford, 1990)	1. I set goals and objectives for reading (i.e. knowing what I want to get out of the passages). ฉันวางเป้าหมายและวัตถุประสงค์ในการอ่าน (ฉันรู้ว่าฉันต้องการอะไรจากเรื่องที่อ่าน)				
<u>Planning</u>: advance organization: proposing strategies for handling an upcoming task (O'Malley & Chamot, 1990)	2. I consider which reading strategies to be used for handling the reading task. ฉันดูว่าจะใช้กลวิธีในการอ่านอะไรมาช่วยในการอ่านเรื่อง				

Language learner strategies	Reading strategies	-1	0	1	Comments
Planning: selective attention: deciding in advance to pay attention to specific aspects of language or situational details that assist in performance of a task (O'Malley & Chamot, 1990)	3. I choose to focus on specific information such as keywords, phrases, or main ideas to help me understand the passage. ฉันเลือกที่จะดูข้อมูลเฉพาะ เช่น คำสำคัญ, วลี, หรือ ใจความสำคัญของเรื่องเพื่อ ช่วยให้ฉันเข้าใจเรื่องที่อ่าน				
Planning: selective attention: deciding in advance to pay attention to specific aspects of language or situational details that assist in performance of a task (O'Malley & Chamot, 1990)	4. I decide in advance to attend to specific aspects of reading passage such as length and text organization. ฉันตัดสินใจไว้ล่วงหน้าว่าจะ ให้ความสนใจลักษณะเฉพาะ ของเรื่องที่อ่าน เช่น ความ ยาวและโครงสร้างของเรื่องที่ อ่าน				
Getting the ideas quickly: using skimming to determine the main ideas or scanning to find specific details of interest (Oxford, 1990)	5. I read rapidly to determine the main ideas in the passage. ฉันอ่านเนื้อเรื่องอย่างเร็วเพื่อ หาใจความสำคัญของเรื่องที่ อ่าน				

Language learner strategies	**Reading strategies**	**-1**	**0**	**1**	**Comments**
Getting the ideas quickly: using skimming to determine the main ideas or scanning to find specific details of interest (Oxford, 1990)	6. I read rapidly to find specific details of interest. ฉันอ่านเนื้อเรื่องอย่างเร็วเพื่อหาข้อมูลที่เฉพาะเจาะจงที่สนใจ				
Repeating: saying or doing something over and over (O'Malley & Chamot, 1990; Oxford, 1990)	7. I reread the passage or a part of it. ฉันอ่านเนื้อเรื่องหรือบางส่วนของเนื้อเรื่องซ้ำอีกครั้ง				
Deduction: use rules and apply them to produce or understand the target language (O'Malley & Chamot, 1990; Oxford, 1990)	6. I apply my learned English grammar rules to comprehend the passage. ฉันใช้กฎไวยากรณ์ภาษาอังกฤษที่เคยเรียน มาใช้ทำความเข้าใจกับเรื่องที่อ่าน				
Deduction: Analyzing expressions: determine the meaning of a new expression by breaking it down into parts (Oxford, 1990)	7. I determine the meaning of unknown words by breaking it down into parts such as using prefixes (e.g. '**un**-' in **un**happy), suffixes (e.g. '**–ness**' in happi**ness**), or roots. ฉันหาความหมายของคำที่ไม่รู้โดยแยกคำออกเป็นส่วน เช่นดูจากการเติมปัจจัยตัวหน้า เช่น 'un-' ใน **un**happy หรือจากการเติมปัจจัยตัวหลัง เช่น '-ness' ใน happi**ness** หรือดูจากรากศัพท์				

Language learner strategies	Reading strategies	-1	0	1	Comments
Inferencing: use the information in text to guess meaning of new linguistic items, predict outcomes, or complete missing parts (O'Malley & Chamot, 1990)	8. I use the information in the passage to guess the meaning of unknown words. ฉันใช้ข้อมูลจากเรื่องที่อ่านเดาความหมายของคำศัพท์ที่ฉันไม่รู้				
Inferencing: use the information in text to guess meaning of new linguistic items, predict outcomes, or complete missing parts (O'Malley & Chamot, 1990)	9. I use the information in the passage to fill in missing information. ฉันใช้ข้อมูลจากเรื่องที่อ่านมาเติมเต็มข้อมูลที่ขาดไป				
Transfer: apply linguistic knowledge from one language to another language to understand the text (O'Malley & Chamot, 1990; Oxford, 1990)	10. I directly apply knowledge of words or structures from Thai to English in order to understand the passage. ฉันใช้ความรู้จากคำหรือโครงสร้างประโยคในภาษาไทยมาใช้ในการอ่านภาษาอังกฤษเพื่อให้เข้าใจเรื่องที่อ่าน				

Language learner strategies	Reading strategies	-1	0	1	Comments
Translation: render a reading passage from a target language to a native language (O'Malley & Chamot, 1990; Oxford, 1990).	11. While reading, I translate from English into Thai to improve my understanding. ขณะอ่านเนื้อเรื่อง ฉันแปลจากภาษาอังกฤษเป็นภาษาไทยเพื่อทำให้เข้าใจขึ้น				
Taking note: writing down main ideas or specific points (O'Malley & Chamot, 1990; Oxford, 1990)	12. During reading, I make a short note by writing down keywords or important ideas from the passage. ขณะอ่านเนื้อเรื่องฉันเขียนคำสำคัญ หรือแนวคิดสำคัญจากเรื่องที่อ่าน				
Highlighting: using variety of emphasis technique (such as underlining, staring, or color-coding) to focus on important information in a passage. (Oxford, 1990)	13. During reading, I highlight, underline, circle, or star keywords from the passage. ขณะอ่านเนื้อเรื่องฉันใช้ปากกาเน้นข้อความ, ขีดเส้นใต้, วงกลม, หรือทำเครื่องหมายดอกจัน ตรงคำสำคัญในเรื่องที่อ่าน				

Language learner strategies	**Reading strategies**	**-1**	**0**	**1**	**Comments**
Create a map or drawing of related ideas to enable me to understand the relationship between words and ideas. (Anderson, 1999)	14. I create a map or drawing of related ideas to enable me to understand the relationships between words and ideas. ฉันเขียนแผนภูมิหรือเขียนความคิดเชื่อมโยงเพื่อช่วยให้ฉันเข้าใจความสัมพันธ์ระหว่างคำและความคิด				
World elaboration: using knowledge gained from experience in the world (O'Malley & Chamot, 1990)	15. I relate information presented in the passage to my prior knowledge or experience. ฉันเชื่อมโยงข้อมูลจากเรื่องที่อ่านกับความรู้เดิมหรือประสบการณ์ของฉัน				
Summarization: making a mental or written summary of language and information presented in a task. (O'Malley & Chamot, 1990; Oxford, 1990)	16. I make a mental summary of the passage. ฉันสรุปเรื่องที่อ่านในใจ				

Language learner strategies	Reading strategies	-1	0	1	Comments
Monitoring: comprehension monitoring: checking, verifying, or correcting one's language understanding (O'Malley & Chamot, 1990)	17. During reading, I check my understanding of the reading passage. ขณะอ่านเนื้อเรื่องฉันตรวจสอบความเข้าใจในการอ่านของฉัน				
Monitoring: strategy monitoring: tracking use of how well a strategy is working (O'Malley & Oxford, 1990)	18. During reading, I check how well reading strategies that I use are working. ขณะอ่านเนื้อเรื่องฉันตรวจสอบกลวิธีในการอ่านที่ใช้ ว่าใช้ได้ดีหรือไม่อย่างไร				
Monitoring: plan monitoring: tracking how well a plan is working (O'Malley & Chamot, 1990)	19. During reading, I check how well a plan that I have made earlier is working. ขณะอ่านเนื้อเรื่องฉันตรวจดูว่าแผนที่วางไว้ก่อนหน้านี้ได้ผลหรือไม่อย่างไร				
Monitoring: double check monitoring: tracking across the task, previously undertaken acts or possibilities considered. (O'Malley & Chamot, 1990)	20. I double-check my understanding of the passage, my reading strategy use, and how the plan is working. ฉันตรวจสอบความเข้าใจในการอ่านเรื่อง, กลวิธีในการอ่านที่ใช้, และแผนที่วางไว้ก่อนหน้านี้ซ้ำอีกครั้ง				

Language learner strategies	Reading strategies	-1	0	1	Comments
Evaluating: strategy evaluation: judging one strategy use when the task is completed (O'Malley & Chamot, 1990).	21. After I finish reading, I judge my reading strategy use. หลังจากอ่านเนื้อเรื่องเสร็จแล้วฉันประเมินการใช้กลวิธีในการอ่านของฉัน				
Evaluating: ability evaluation: judging one's ability to perform the task (O'Malley & Chamot, 1990).	22. After I finish reading, I judge how good my reading ability is. หลังจากที่อ่านเสร็จแล้ว ฉันประเมินความสามารถในการอ่านของฉันว่าเป็นอย่างไร				

Are there other reading strategies that should be included?

Additional comments and suggestions

Part II: Test taking strategies

Instructions: Please read the objectives and test taking strategies on this form and please indicate the degree to which each strategy is congruent with the objective it was written to measure. If you have any comments about the congruence of any of the test taking strategies, please record them in the space provided. Please rate the congruence according to the scale shown below:

+1 = high degree of congruence

0 = uncertainty

-1 = no congruence

Please check √ or cross × the number corresponding to your rating beside the strategies.

Objectives	**Test taking strategies**	**-1**	**0**	**1**	**Comments**
Objective 1: Investigating test management strategies used in multiple-choice and short-answer questions	1. I read the instructions for answering the questions. ฉันอ่านคำสั่งเพื่อใช้ในการตอบคำถามในแบบทดสอบ				
	2. I read the passage first and then I read the questions. ฉันอ่านเนื้อเรื่องก่อนอ่านคำถาม				
	3. I read the questions before reading the passage. ฉันอ่านคำถามก่อนอ่านเนื้อเรื่อง				
	4. I mark the questions that I do not know. ฉันทำสัญลักษณ์ไว้ที่ข้อที่ฉันไม่รู้คำตอบ				

	5. If the question is complex, I restate it in my own words. ถ้าคำถามนั้นซับซ้อน ฉันคิดคำถามนั้นขึ้นมาใหม่เป็นคำพูดของฉันเอง				
	6. I read the questions more than twice for clarification. ฉันอ่านคำถามมากกว่า 2 ครั้ง เพื่อให้เข้าใจมากขึ้น				
	7. Either before or while considering questions, I read the questions to look for clues in the passage. ไม่ว่าจะก่อนหรือขณะที่กำลังตอบคำถามนั้น ฉันอ่านคำถามเพื่อหาตัวชี้แนะในเรื่องที่อ่าน				
Objective 4: investigating test-wiseness strategies used in multiple-choice and short-answer questions	8. I use clues from other questions to answer the question under consideration. ฉันใช้ตัวชี้แนะจากคำถามข้ออื่นมาช่วยในการตอบคำถามข้อที่ฉันทำอยู่				
Objective 1: Investigating test management strategies used in multiple-choice and short-answer questions	9. I predict or produce my own answer after I read the questions (before returning to the passage). ฉันคาดเดาหรือคิดว่าคำตอบคืออะไรหลังจากที่อ่านคำถาม (ก่อนที่ฉันจะกลับไปอ่านเนื้อเรื่อง)				

	10. I reread the passage or part of it to look for the answer frequently for confirmation. ฉันย้อนกลับไปอ่านเนื้อเรื่องหรือบางส่วนของเนื้อเรื่องหลายครั้งเพื่อให้แน่ใจในคำตอบ				
	11. I think about the meaning of each question before answering it. ฉันคิดถึงความหมายของคำถามแต่ละข้อก่อนตอบคำถาม				
Objective 4: investigating test-wiseness strategies used in multiple-choice and short-answer questions	12. I look for the answer in chronological order in the passage. ฉันหาคำตอบโดยเรียงจากลำดับเหตุการณ์ของเรื่องที่อ่าน				
Objective 1: Investigating test management strategies used in multiple-choice and short-answer questions	13. I answer the questions right away without going back to the passage. ฉันตอบคำถามทันทีโดยไม่ย้อนกลับไปอ่านเนื้อเรื่อง				
	14. I skip a question and return to it later. ฉันข้ามคำถามแล้วค่อยย้อนกลับมาทำทีหลัง				

Objective 2: investigating test management strategies used in multiple-choice questions.	15. I stop reading the other choices when I reach the answer. ฉันหยุดอ่านตัวเลือกอื่นเมื่อฉันเจอคำตอบ				
	16. I use the process of elimination to respond to multiple-choice questions. ฉันใช้วิธีการตัดตัวเลือก เวลาทำแบบทดสอบแบบเลือกคำตอบ				
	17. When responding to multiple-choice questions, I consider choices and then check vocabulary from the choices in the passage. เวลาทำแบบทดสอบแบบเลือกคำตอบ ฉันอ่านตัวเลือกและดูว่าคำศัพท์จากตัวเลือกอยู่ตรงไหนในเรื่องที่อ่าน				
Objective 5: investigating test-wiseness strategies used in multiple-choice questions	18. I select the choice because it appears to have a word or phrase from the passage in it-possible a keyword. ฉันเลือกตัวเลือกนี้เพราะว่าตัวเลือกนั้นมีคำหรือวลีที่อาจเป็นคำสำคัญปรากฏในเรื่องที่อ่าน				
	19. I select the choice not because it is thought to be correct, but because the other choices do not seem reasonable, seem				

	similar, or are not understandable. ฉันเลือกตัวเลือกนี้ไม่ใช่เพราะคิดว่าคำตอบนี้เป็นคำตอบที่ถูก แต่เป็นเพราะว่าตัวเลือกอื่นดูไม่สมเหตุสมผล ดูเหมือน ๆ กัน หรือเป็นตัวเลือกที่ฉันไม่เข้าใจ				
	20. When I respond to multiple- choice questions, I guess without any particular consideration. เวลาที่ฉันทำแบบทดสอบแบบเลือกคำตอบ ฉันจะเดาคำตอบทันทีโดยไม่พิจารณาอย่างอื่น				
Objective 6: investigating test-wiseness strategies used in short-answer questions	21. When I respond to short-answer questions, I guess without any particular consideration. เวลาที่ฉันทำแบบทดสอบแบบที่ต้องเขียนคำตอบเอง ฉันจะเดาคำตอบทันทีโดยไม่พิจารณาอย่างอื่น				
Objective 1: investigating test management strategies used in multiple-choice and short-answer questions	22. I make careful inferences based on the passage and question. ฉันสรุปความจากเรื่องที่อ่านและคำถามอย่างระมัดระวัง				

Objective 3: investigating test management strategies used in short-answer questions	23. I organize my answer in my mind before writing it down. ฉันเรียบเรียงคำตอบไว้ในใจก่อนจะลงมือเขียน				
Objective 1: investigating test management strategies used in multiple-choice and short-answer questions	24. I double-check the answer before I hand in. ฉันตรวจสอบคำตอบอีกครั้งก่อนส่ง				
	25. I am aware of time limitation and constraints. ฉันคอยระวังเรื่องระยะเวลาที่ใช้ในการทำแบบทดสอบ				

Are there other test taking strategies that should be included?

Additional comments and suggestions

APPENDIX IX

The recommendation from the three experts

Dr. Pramarn	Asst. Prof. Dr. Nuwee	Asst. Prof. Dr. Natjiree
Part I: reading strategies		
Focusing on translation from English to Thai. The expert suggested as follow: 2. ไม่แน่ใจว่านักเรียน จะเข้าใจคำว่ากลวิธีในการอ่านไหม แนะนำว่าผู้วิจัยควรอยู่กับนักเรียนตอนทำแบบสอบถาม หรือมีการยกตัวอย่าง reading strategies เพิ่มเติม 3. ข้อนี้เป็น strategy แบบหนึ่งหรือไม่ หรือว่าเป็น sub ของข้อ 2 4. decide ตัวนี้น่าจะหมายถึง วางแผนไว้ล่วงหน้าในภาษาไทย "ฉันตัดสินใจไว้ล่วงหน้า..." 6. interest สนใจ = ต้องการ 7. I reread the passage or a part of it. = I reread the passage or a part of it in order to … 11. ไม่เข้า ๖ใจเมื่ออ่าน version ภาษาไทย อาจต้องมีการขยายความหรือยกตัวอย่างในวงเล็บให้ผู้ตอบเข้าใจ	Reading strategies **Additional reading strategies** - I am able to predict what will come next in the texts. (meta) - I am able to recognize the difference between main points and supporting details. (cog)	Focusing on translation from English to Thai. The expert suggested that 2. ฉันดูว่าจะใช้.... เป็น ฉันพิจารณาว่าควรใช้กลวิธีการอ่านใดมาช่วยในการอ่านเรื่อง 20. ขณะอ่านเนื้อเรื่องฉันตรวจสอบกลวิธีในการอ่านที่ใช้ ว่าใช้ได้ดีหรือไม่ ~~อย่างไร~~ 21. ขณะที่อ่านเนื้อเรื่องฉันตรวจดูว่าแผนที่วางไว้ก่อนหน้านี้ได้ผลหรือไม่ ~~อย่างไร~~ (แผนที่วางไว้คืออะไร แผนการอ่าน?) 24. หลังจากที่อ่านเสร็จแล้ว ฉันประเมินความสามารถในการอ่านของฉันว่าเป็นอย่างไร (ดีหรือไม่อย่างไร)
14. During = while 15. During = while เพิ่มคำว่า important ideas เหมือนอย่างข้อ 14. 16. ส่วนที่แปลอาจต้องมีการ rephrase อีกครั้ง 17. ฉันเชื่อมโยงข้อมูลจากเรื่องที่อ่านกับความรู้เดิมหรือประสบการณ์ของฉันเพื่อให้เข้าใจเนื้อเรื่องได้ดียิ่งขึ้น 19. ~~During~~ (while) reading, I check my understanding of the reading passage from time to time. อย่างสม่ำเสมอ 20. ~~During~~ (while) 21. ~~During~~ (while) - อาจต้องอธิบายคำว่า "แผนที่วางไว้" ไม่เช่นนั้นนักเรียนจะเดาไม่ถูก 23. หลังจากอ่านเนื้อเรื่องเสร็จแล้ว ฉันประเมินการใช้กลวิธีในการอ่านของฉันว่ามีประสิทธิภาพหรือมีประโยชน์หรือไม่		

Dr. Pramarn	Asst. Prof. Dr. Nuwee	Asst. Prof. Dr. Natjiree
Part II: test taking strategies		
Test taking strategies 1. I read the instructions for answering the questions. = I read the instructions before doing the test/ before answering the questions. แนะนำว่า นอกจากข้อ 2 และ 3 แล้ว ควรมี - อ่านคำถามแล้วกลับไปอ่านเนื้อเรื่องซ้ำไปซ้ำมาหลาย ๆ ครั้ง 4. I make the questions that I do not know. = I make the question items that I do not know the answers. 5. ถ้าคำถามนั้นซับซ้อน ฉันคิดคำถามนั้นขึ้นมาใหม่เป็นคำพูดของฉันเอง = ถ้าคำถามนั้นซับซ้อน ฉันเรียบเรียงเป็นคำพูดของฉันเอง 9. (กลับมาอ่านอีกที) 11. ไม่เข้าใจว่าหมายความว่าอย่างไร 13. ฉันตอบคำถามทันทีหลังจากอ่านเนื้อเรื่องจบโดยไม่ย้อนกลับไปอ่านเนื้อเรื่อง	Test taking 20. ไม่แน่ใจว่าเป็น test wiseness หรือเปล่าเพราะคิดว่า test taker น่าจะใช้ clues ตัวอื่นมาช่วยตอบ	Test taking 4. ฉันทำสัญลักษณ์ไว้ที่ข้อ (คำถาม) ที่ฉัน(ยัง)ไม่รู้คำตอบ 7. ไม่ว่า~~จะ~~ก่อนหรือขณะที่กำลังตอบคำถามนั้น ฉันอ่านคำถามเพื่อ(ไป)หาตัวชี้แนะในเรื่องที่อ่าน - ฉันมองหาตัวชี้แนะในข้อคำถามเพื่อช่วยในการหาคำถามในเรื่องที่อ่าน 9. ฉันคาดเดา<u>หรือคิดว่าคำตอบคืออะไร</u> (ฉันคาดเดาคำตอบด้วยตัวเอง) หลังจากที่อ่านคำถาม (ก่อนที่ฉันจะกลับไปอ่านเนื้อเรื่อง) 12. ดูแล้วน่าจะเป็น test management มากกว่าในกรณีที่เด็กนักเรียนใช้พวกคำประเภทเช่น first, second, third
14. I skip a difficult question and return to it later. ฉันข้ามคำถามที่ยากไปก่อนแล้วค่อยย้อนกลับมาทำทีหลัง 15. ฉันหยุดอ่านตัวเลือกอื่นเมื่อเจอ~~คำตอบ~~ตัวเลือกที่คิดว่าเป็นคำตอบที่ถูก 18. I select the choice because it appears to have a word or phrase from the passage in it- possible a keyword. = I choose a particular choice because it appears to have a word or phrase from the passage in **it-possible a keyword**. (something missing here). นั้น = นี้ 19. I select the choice not because … = I choose a particular choice … - ฉันเลือกตัวเลือกที่คิดว่าเป็นคำตอบที่ถูกนี้ไม่ใช่เพราะคิดว่าตัวเลือกนี้เป็นตัวเลือกที่ถูก แต่เพราะว่าตัวเลือกอื่นดูไม่สมเหตุสมผล ดูเหมือน ๆ กัน หรือเป็นตัวเลือกที่ฉันไม่เข้าใจ 20., 21., โดยไม่พิจารณาอย่างอื่น หมายถึง?...		

APPENDIX X

A practice task for a verbal report

Instructions

The instructions for the tutorial of the stimulated verbal report procedures are adapted from Cohen and Upton (2006), Green (1997) and Lau (2006). The instructions will be read to and given to the participants in print as follows:

In this study, I am interested in what you are thinking and doing when you work on the task that I am going to give you. To do this, I am going to ask you to do the task first. After you finish the task, I would like you to tell me everything that you can remember about your thinking from the time you started the task until you completed it.

- Please tell me what you can remember about your thinking when you work on the task.
- I would like you to tell me in a sequence from the time you start until you complete it. Please start your report saying "I first thought of …."
- You can talk in Thai.
- To help you remember your thought, you can look at your task.
- When you tell me about your memories, you do not need to work on your task again. You just tell me everything that you can remember thinking about from the time you started the task until you completed it. Besides, you should not plan or try to explain to me why you thought in a certain way.
- If you are silent for a long period of time, I will ask you to continue talking such as "What are you thinking?" or "Please tell me more what are you thinking when you work on the task."
- Your talk will be audio recorded. So please speak loudly.

- In addition, you do not need to be worried about your performance in the task. This is because all the data collected will be confidential and will be used only for this research study.

Do you have any question?

Now let's do some practice tasks.

Practice task 1

Add these numbers. After you finish the task, tell me everything that you can remember about your thinking.

- 72, 56, and 83

Practice task 2

Read the passages. You have 5 minutes to complete each passage. You can write everything on this paper. After you finish the task, tell me everything that you can remember about your thinking.

Passage I

The first bicycle that was made in 1817 by Baron von Drais didn't have any pedals. People walked it along. Then in 1865, pedals were added and people could ride their bicycles. The bicycles were made of wood. The first metal bicycle was called the High-Wheel or Penny Farthing. People had a hard time keeping their balance on this type of bicycle.

Passage II

Did you know the weight of the brain? It weighs lesser than 2 percent of the body weight. Surprisingly, it consumes 30 percent of oxygen we breathe and around 20 percent of blood supplied in our body. Lack of energy reduces your brain function as it reduces oxygen supply to brain. Deep breathing for a couple of minutes improves oxygen and blood supply to brain.

Practice task 3

Read the passage and answer the questions below. You have 5 minutes to complete each passage. You can write everything on this paper. After you finish the task, tell me everything that you can remember about your thinking.

Passage I

Blue is the favorite color of many people. It is nature's color for water and sky. But did you know that there is no natural food available in **this color**? This may be because the blue color in food is closely linked with poisonous food. When the food turns blue, it is believed that the food turned poisonous.

1. What is the topic of the passage?
   a. Color
   b. The blue color
   c. The color of poison
   d. My favorite color

2. What does the word "**this color**" refer to?

_____

Passage II

Anorexia is a disease. People with anorexia do not eat. They are too thin. There are 40,000 people with anorexia in France, and 90% of them are women. Anorexia is a problem. The French government wants to change this situation. The government makes a new law. This law is about fashion models. The models must not be too thin. If they are too thin, they cannot get jobs.

There are websites about anorexia on the Internet. Some websites like anorexia. They say that anorexia is not a problem. These websites are called "pro-ana" websites, and the French government wants to stop **them**.

3. What is the topic of the passage?
   a. French government
   b. The new law in France
   c. Stop anorexia in France
   d. Unhealthy models in France

4. What does the word **"them"** refer to?

   _____

APPENDIX XI

Coding schemes for the verbal reports

The coding schemes for the verbal reports consist of taxonomies which are based on the literature in cognitive and metacognitive strategies by O'Malley and Chamot (1990) and Oxford (1990).

Reading strategies	**Coding schemes**	**Definitions/ Descriptions**
Cognitive strategies		Interact with the material to be read by manipulating it **mentally** (as in making mental images, or elaborating on previously acquired concepts or skills), and **physically** (e.g. taking notes on important information be remember).
- Skimming	C 1	• Read the whole passage or ***the portion of the passage*** rapidly to determine topics or main ideas.
- Scanning	C 2	• Read the whole passage or ***the portion of the passage*** rapidly to find specific details of interest.
- Repeating	C 3	• Reread the passage or a part of it to comprehend the passage.
- Deduction	C 4	• Apply the learned English grammar rules to comprehend the passage.
-	C 5	• Determine the meaning of unknown words by breaking it down into parts such as using prefixed, suffixes, or roots.

Reading strategies	**Coding schemes**	**Definitions/ Descriptions**
- Inferencing	C 6	• Use information in the passage to guess the meaning of unknown words.
-	C 7	• Use context clues to guess the meaning of unknown words.
-	C 8	• Use the information in the passage to fill in missing information.
- Transfer	C 9	• Apply knowledge of words or structures from Thai to English in order to understand the passage.
- Translation	C 10	• Translate from English to Thai to improve their understanding.
- Take note	C 11	• Take note by writing down keywords, or important ideas from the passage while reading.
- Highlighting	C 12	• Highlight, underline, circle, or star keywords while they read.
-	C 13	• Create a map or drawing of related ideas to enable them to understand the relationships between words and ideas.
- Elaboration	C 14	• Relate information in the passage to their prior knowledge or experience.
- Summarization	C 15	• Make mental summary of the passage.

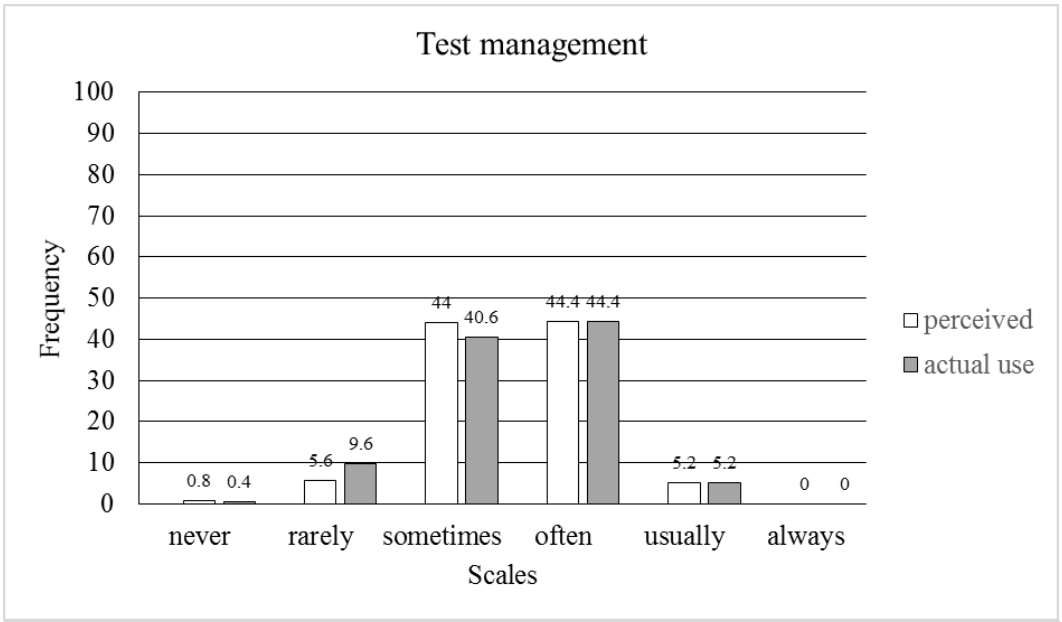
Reading strategies	**Coding schemes**	**Definitions/ Descriptions**
Metacogntive strategies		The strategies are executive processes that students use for planning for reading, monitoring their comprehension and production, and evaluating how well they have achieved a reading objective.
- Planning	M 1	• Set goals and objectives for reading *e.g. Student know what they want to get out of the passages.*
	M 2	• Consider which reading strategies to be used for handling the reading task.
	M 3	• Choose to focus on specific information such as keywords, phrases, or main ideas to help them understand the passage.
	M 4	• Decide in advance to attend to specific aspects of reading passage such as length and text organization.
- Monitoring	M 5	• Check their understanding of the reading passage or words.
	M 6	• Check how well reading strategies that they use are working.
	M 7	• Check how well a plan that students have made earlier is working.
	M 8	• Double-check their understanding of the passage, their reading strategy use, and how the plan is working.

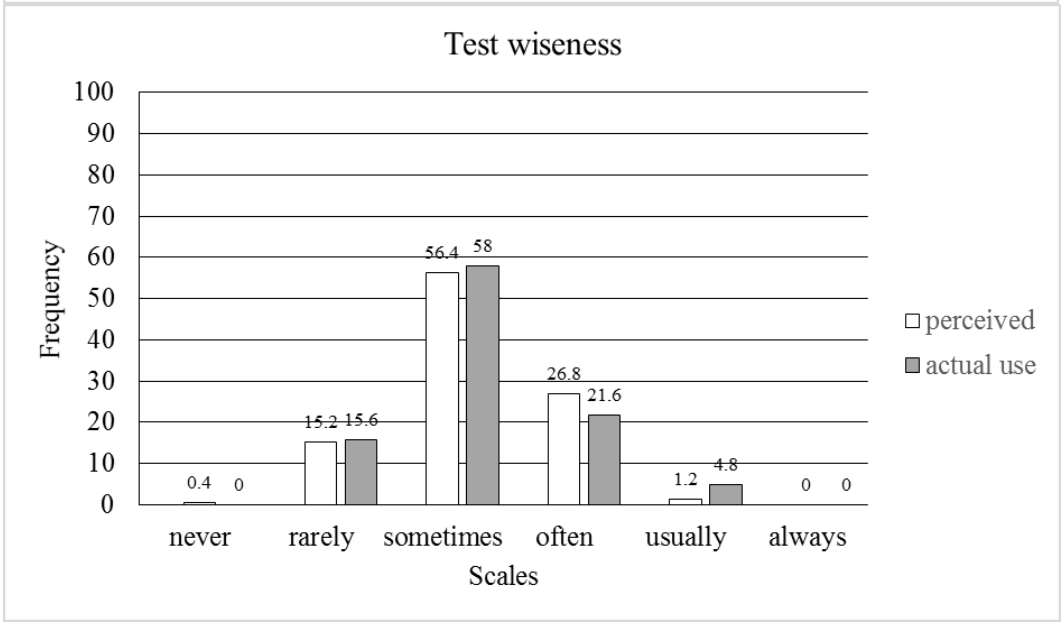
Reading strategies	**Coding schemes**	**Definitions/ Descriptions**
- Evaluating	M 9	• After finish reading, students judge their reading strategy use.
	M 10	• After reading, students judge how good their reading ability is.

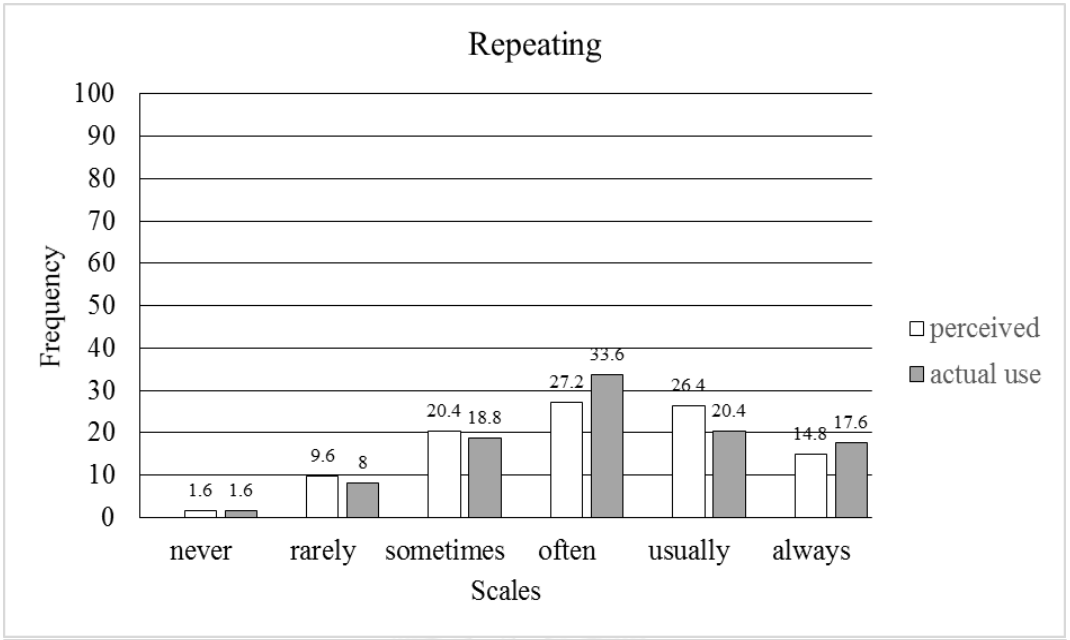
Reading strategies	**Coding schemes**	**Definitions/ Descriptions**
Miscellaneous		
	Mis 1	• *Use the information in choices or questions to fill in missing information or to guess the meaning of unknown words.*
	Mis 2	• *Use typographical aids e.g. bold, italics, font sizes, font types, or punctuation as well as pictures in the passage.*

APPENDIX XII

The bar charts illustrating percentage of grade 10 students perceived and actual use test taking strategies, cognitive and metacognitive strategies



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20.4 18.8
27.2 33.6
26.4 20.4
14.8 17.6
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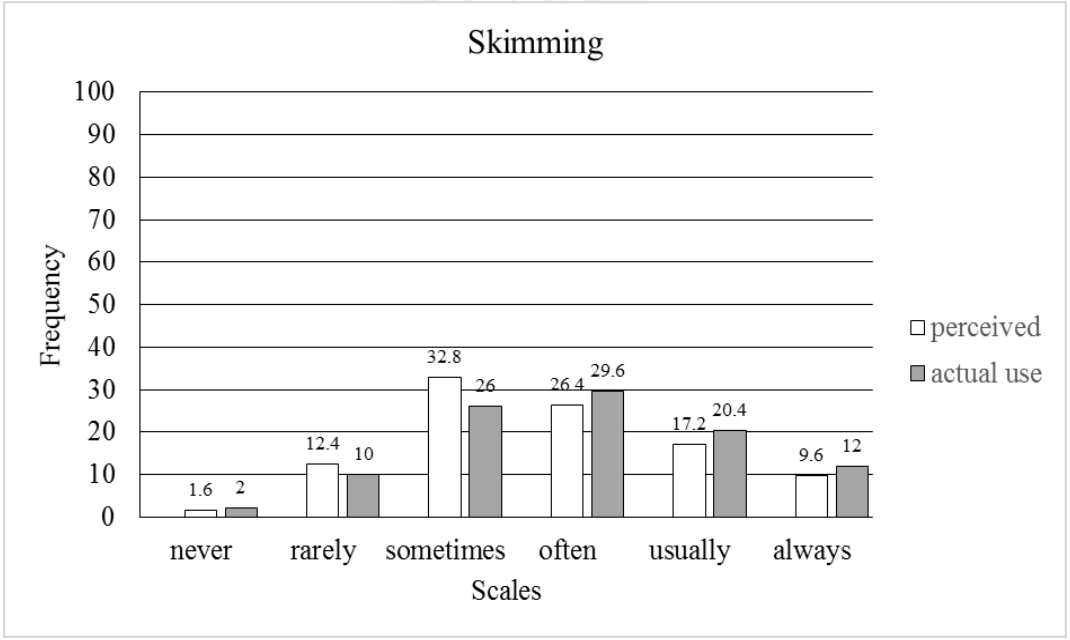
Scales
perceived
actual use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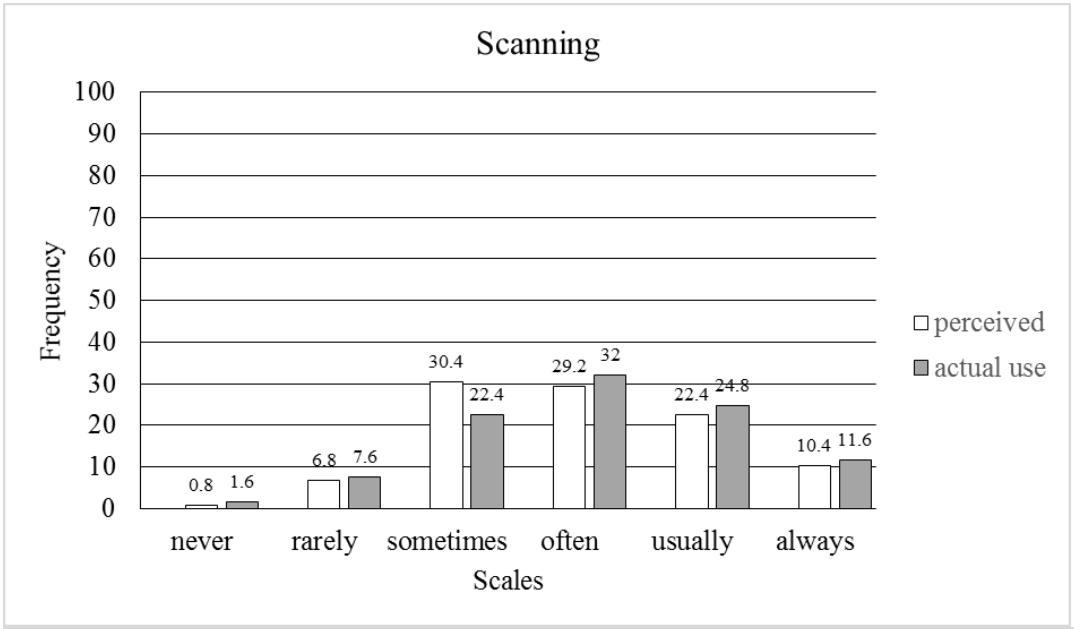
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Scales
perceived
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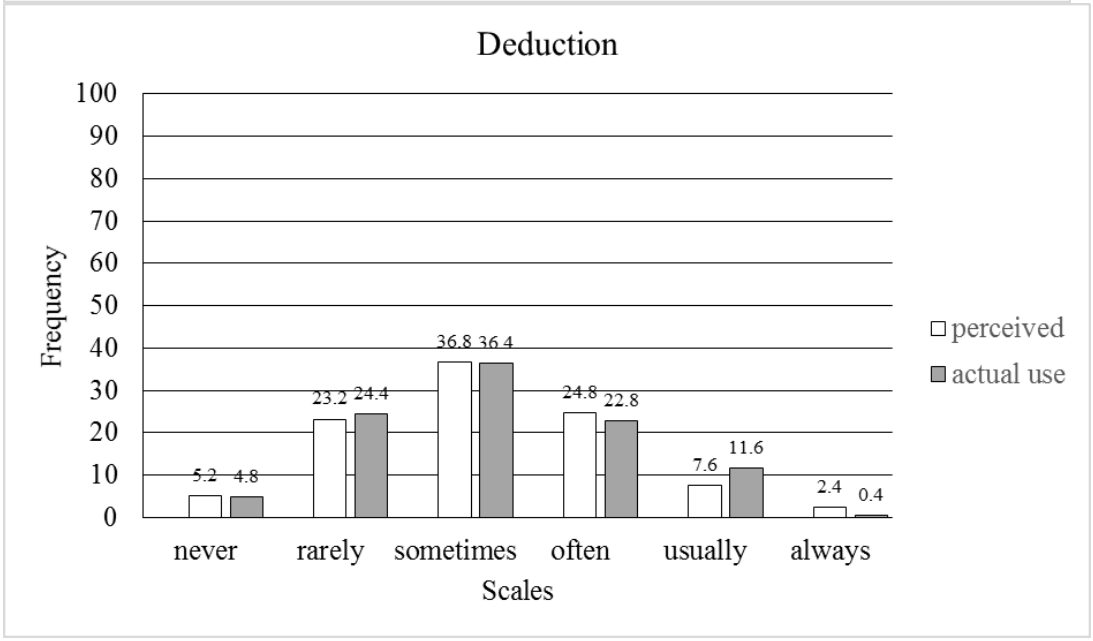
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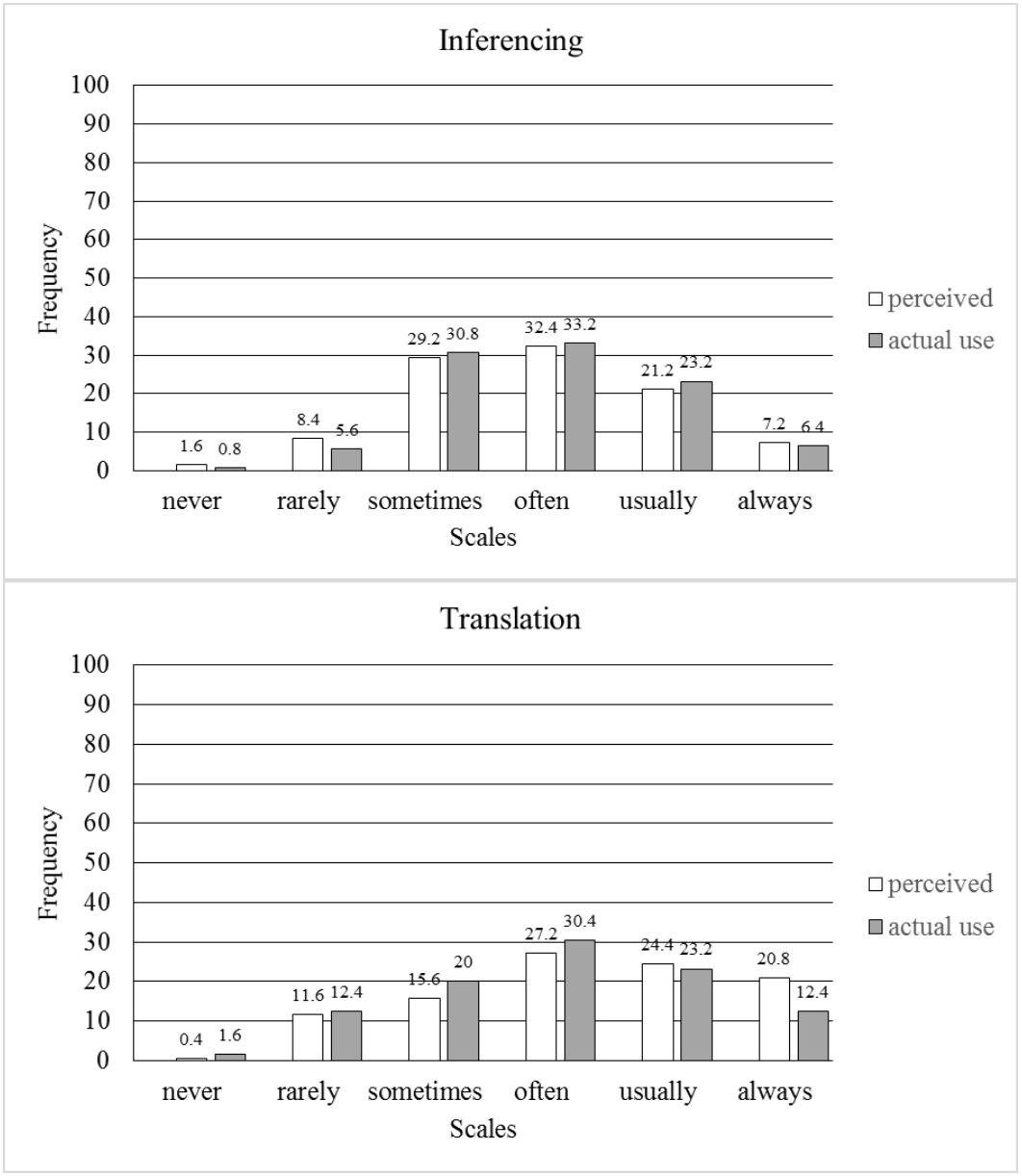
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Scales
perceived
actual use
Translation
Frequency
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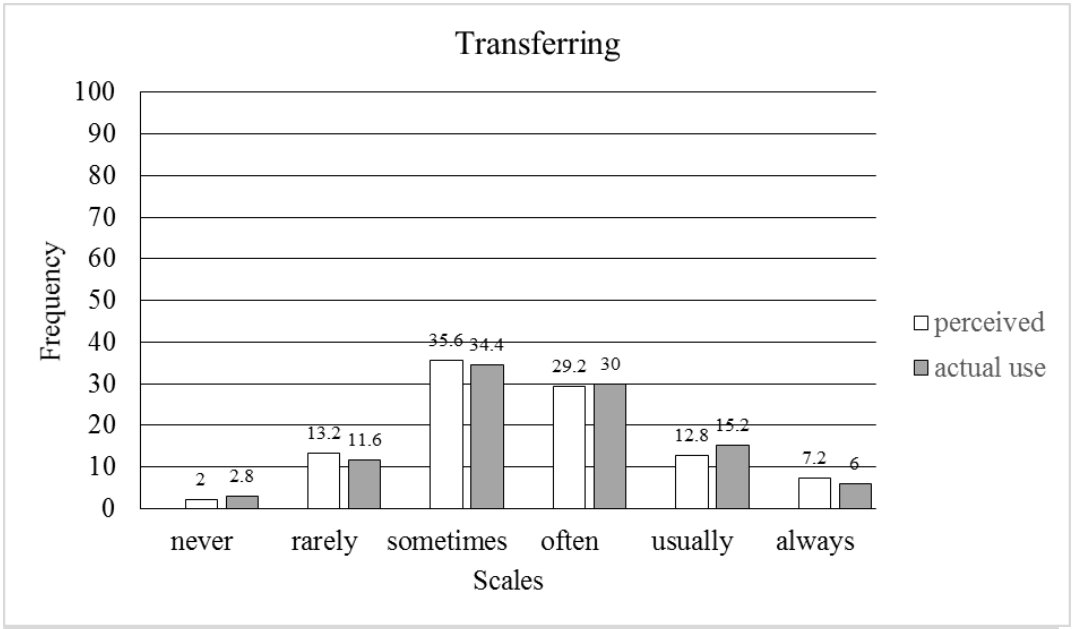
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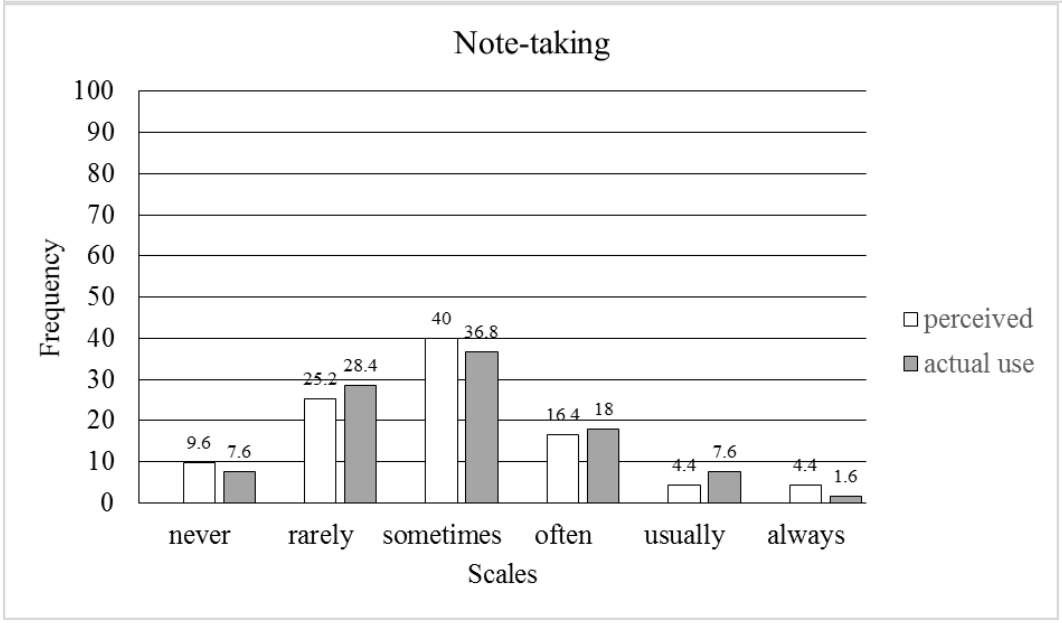
Scales
perceived
actual use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Scales
perceived
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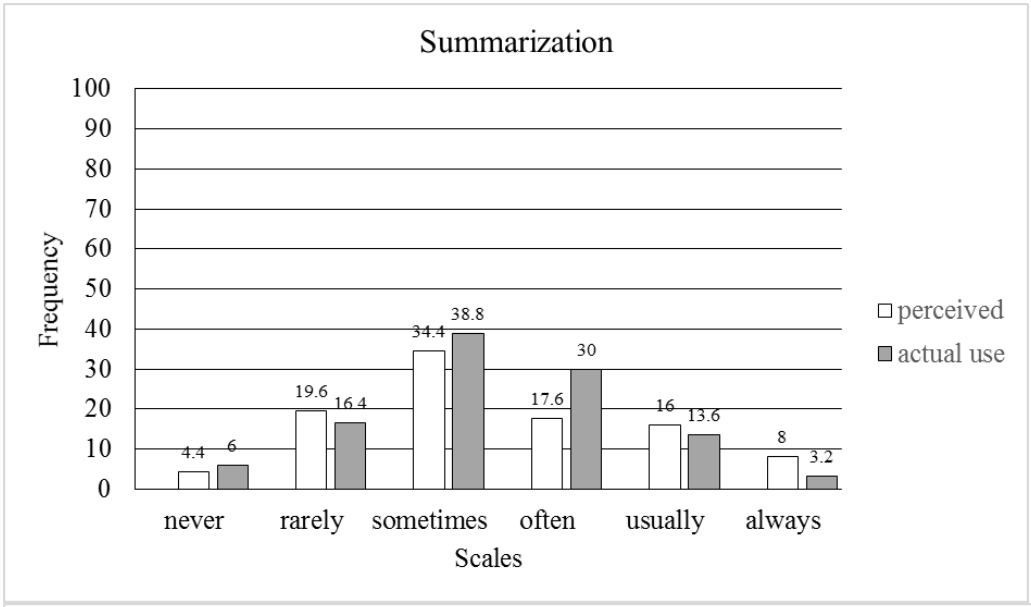
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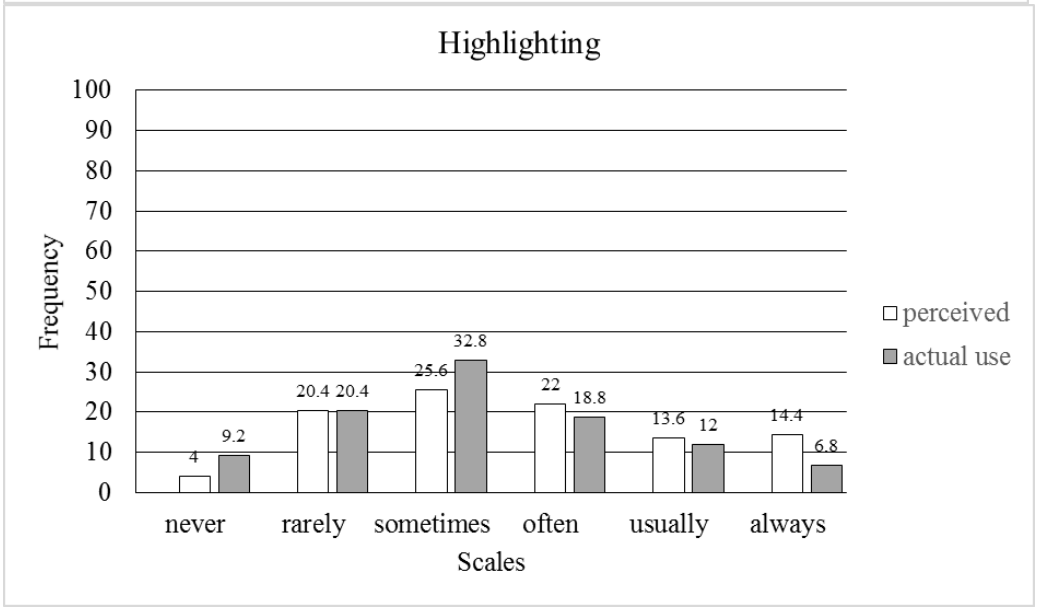
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Scales
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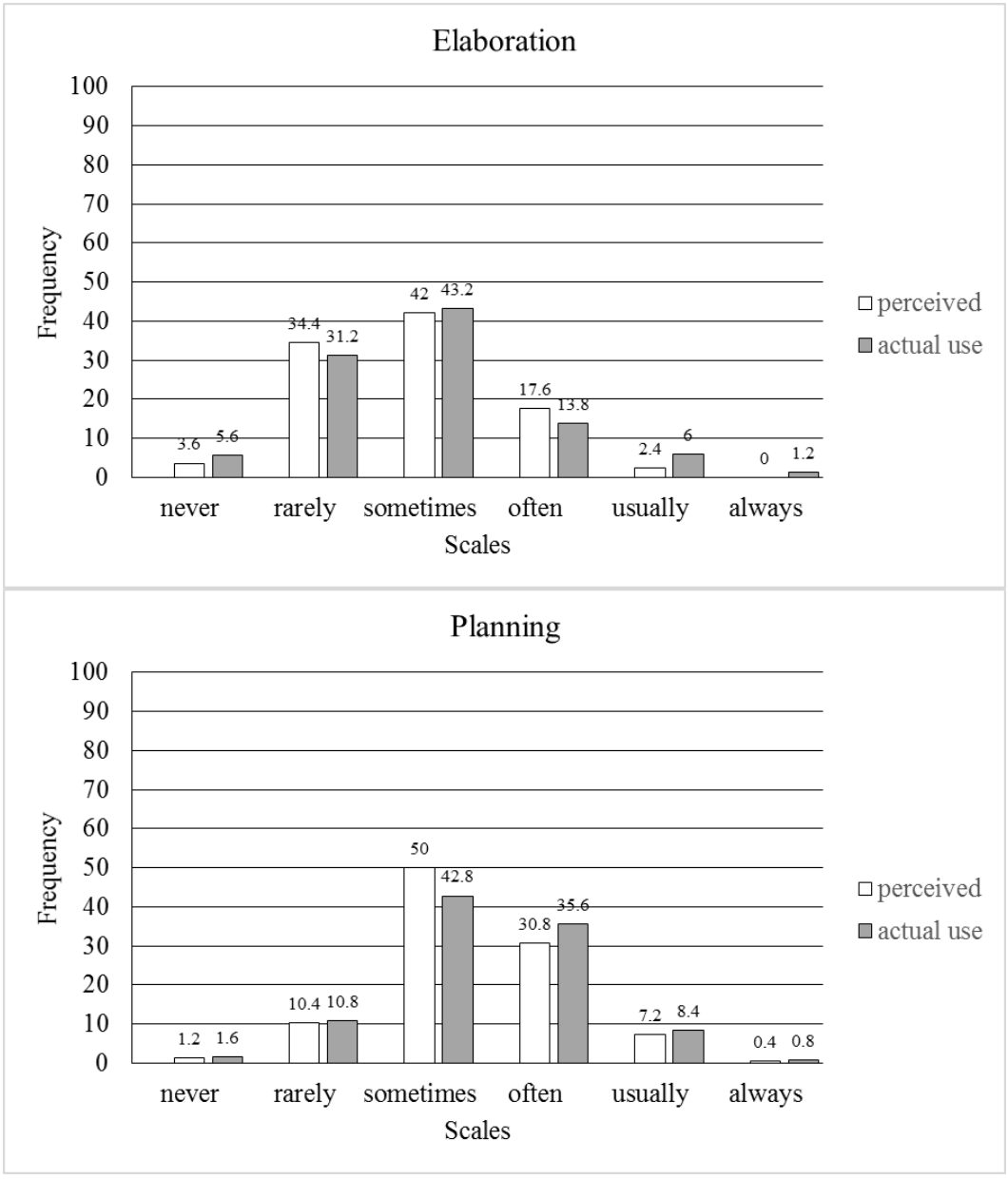
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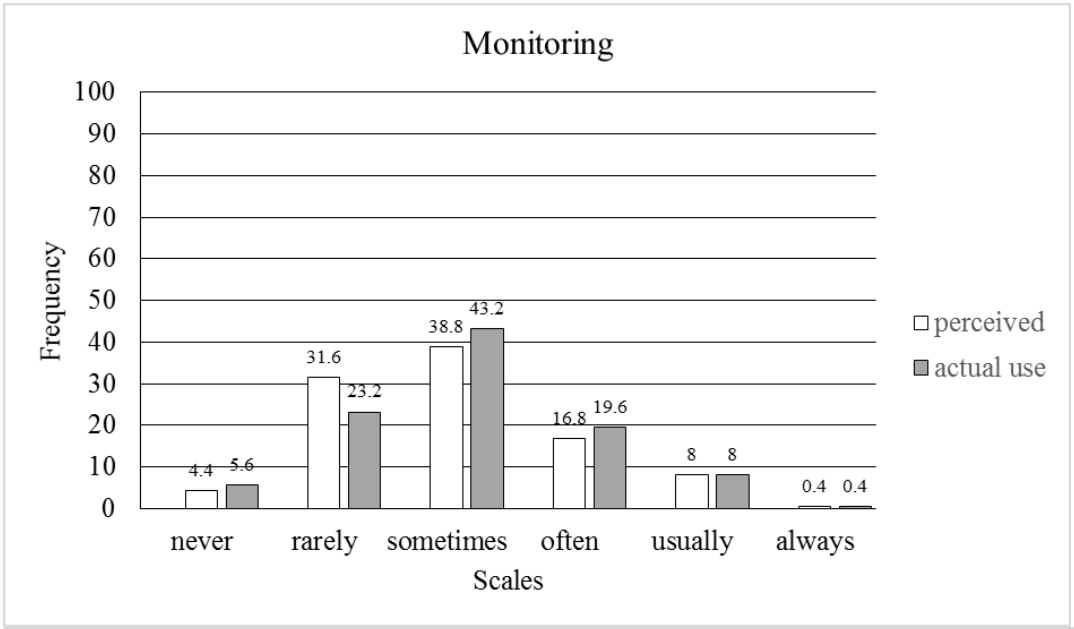
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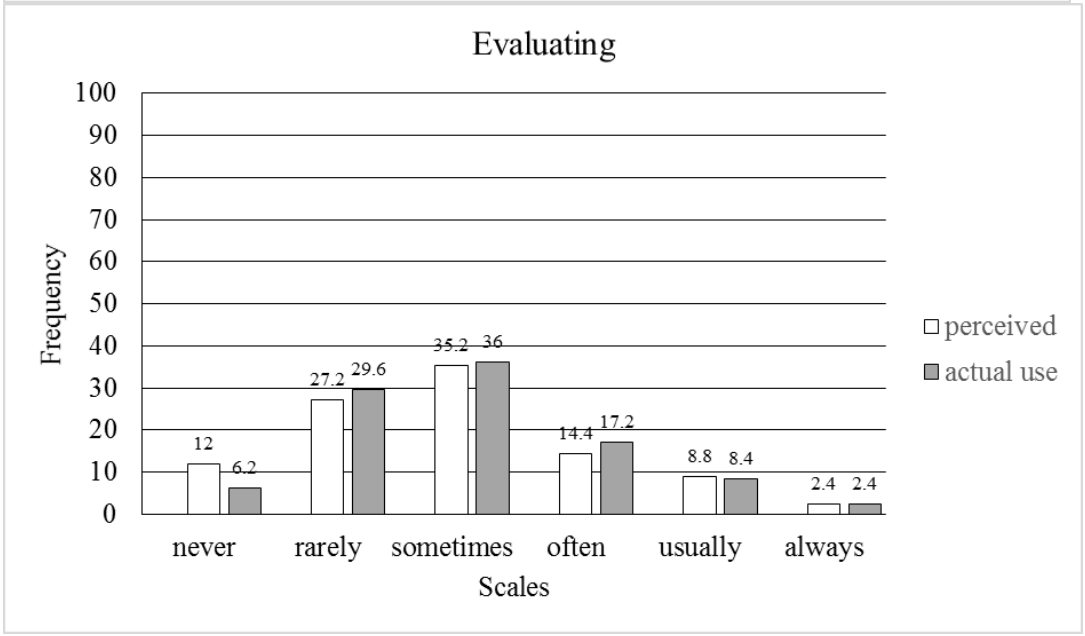
Scales
perceived
actual use


Evaluating
100
90
80
70
60
50
40
30
20
10
0
Frequency
12
6.2
27.2
29.6
35.2
36
14.4
17.2
8.8
8.4
2.4
2.4
never
rarely
sometimes
often
usually
always
Scales
perceived
actual use

APPENDIX XIII

Statistical assumptions for Repeated measures MANOVA in the first research question

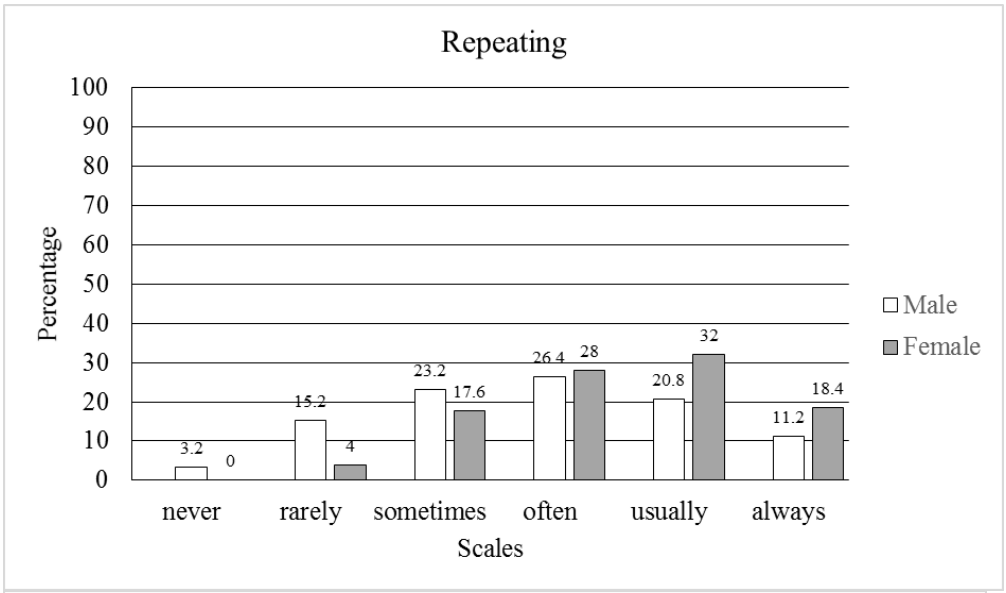
Correlation for RM MANOVA

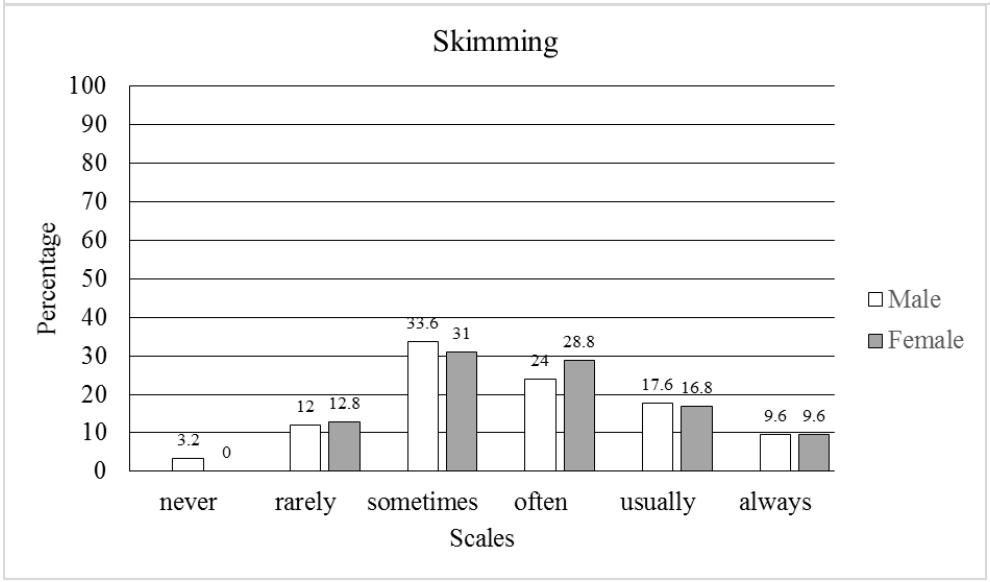
Correlations

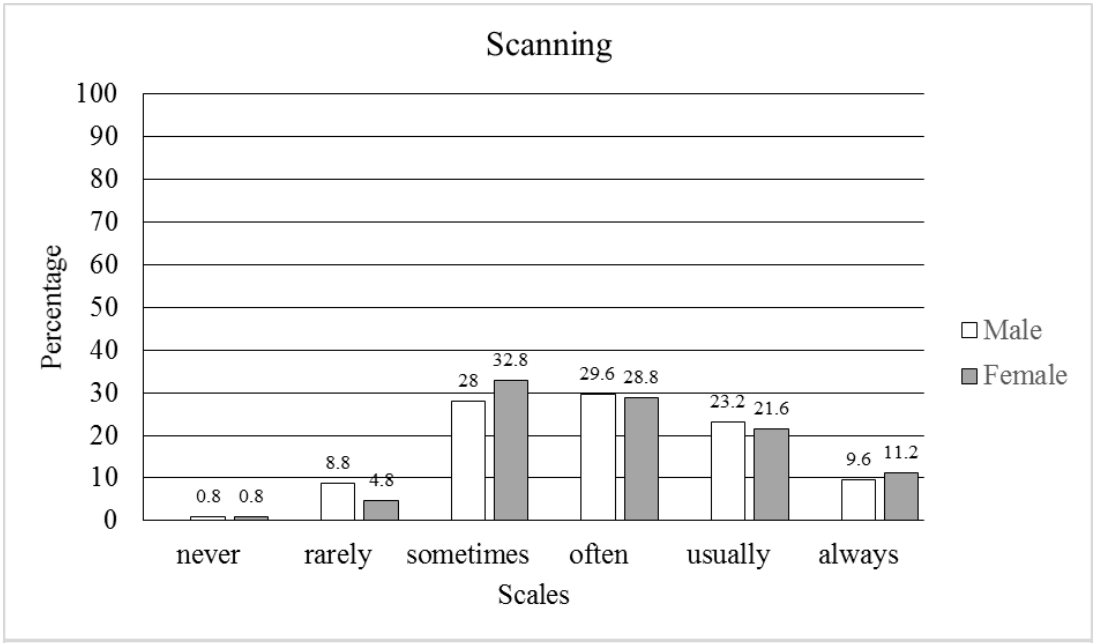
		perceived_cog	actual_cog
perceived_cog	Pearson Correlation	1	.088
	Sig. (2-tailed)		.167
	N	250	250
actual_cog	Pearson Correlation	.088	1
	Sig. (2-tailed)	.167	
	N	250	250

APPENDIX XIV

The bar charts illustrating percentage of males and females perceived use of cognitive and metacognitive strategies






Scanning
100
90
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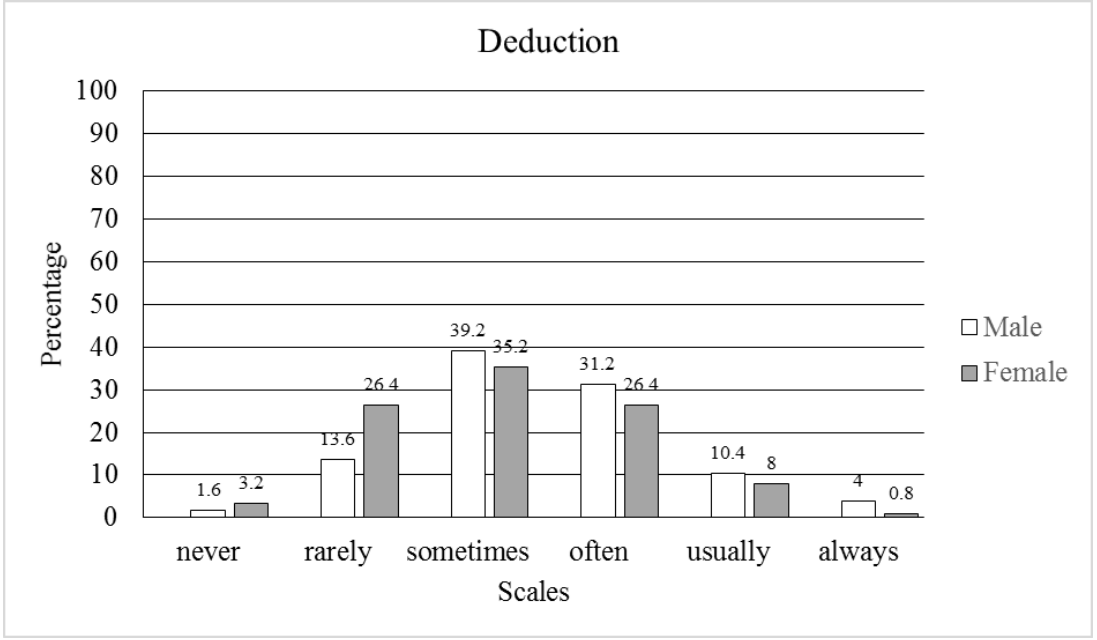
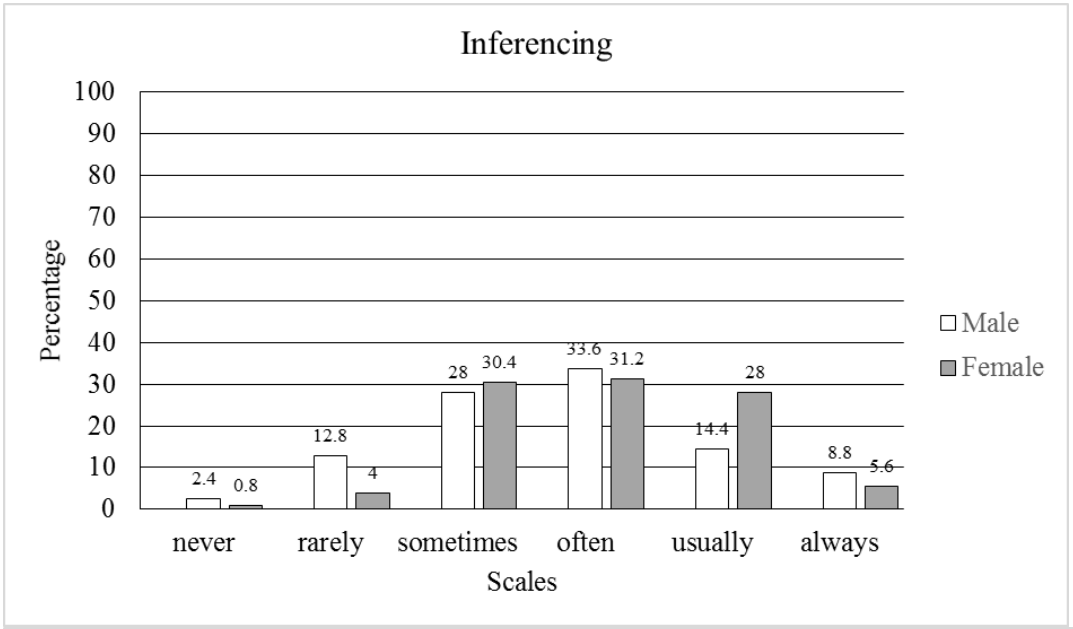
70
60
50
40
30
20
10
0
Percentage
0.8
0.8
8.8
4.8
28
32.8
29.6
28.8
23.2
21.6
9.6
11.2
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Deduction
100
90
80
70
60
50
40
30
20
10
0
Percentage
1.6
3.2
13.6
26.4
39.2
35.2
31.2
26.4
10.4
8
4
0.8
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Inferencing
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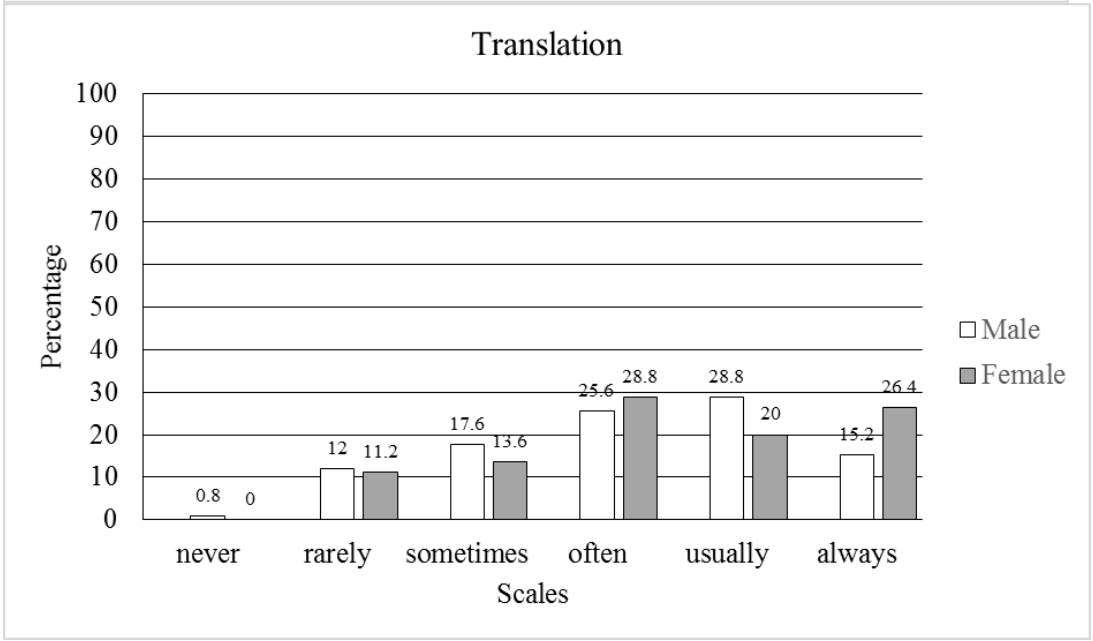
70
60
50
40
30
20
10
0
Percentage
2.4
0.8
12.8
4
28
30.4
33.6
31.2
14.4
28
8.8
5.6
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Translation
100
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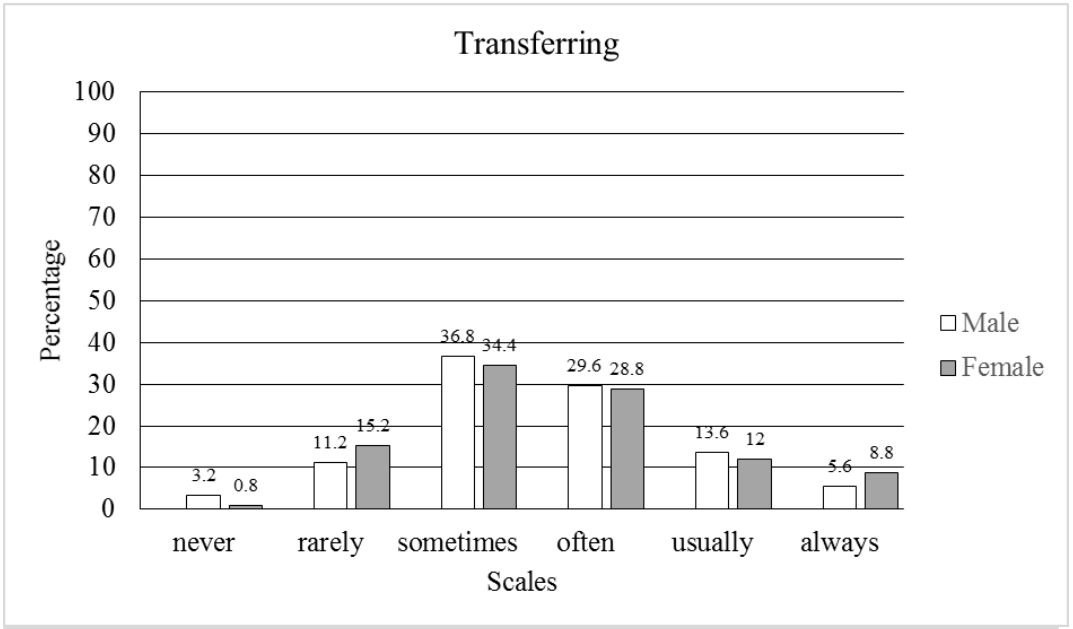
80
70
60
50
40
30
20
10
0
Percentage
0.8
0
12
11.2
17.6
13.6
25.6
28.8
28.8
20
15.2
26.4
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Transferring
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20
10
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Percentage
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0.8
11.2
15.2
36.8
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29.6
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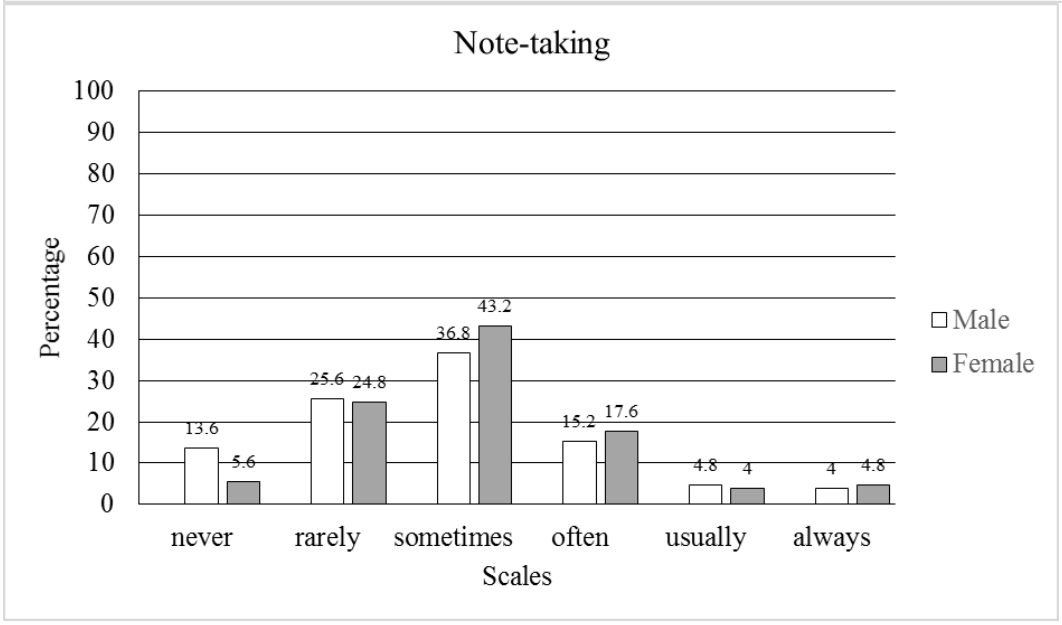
12
5.6
8.8
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Note-taking
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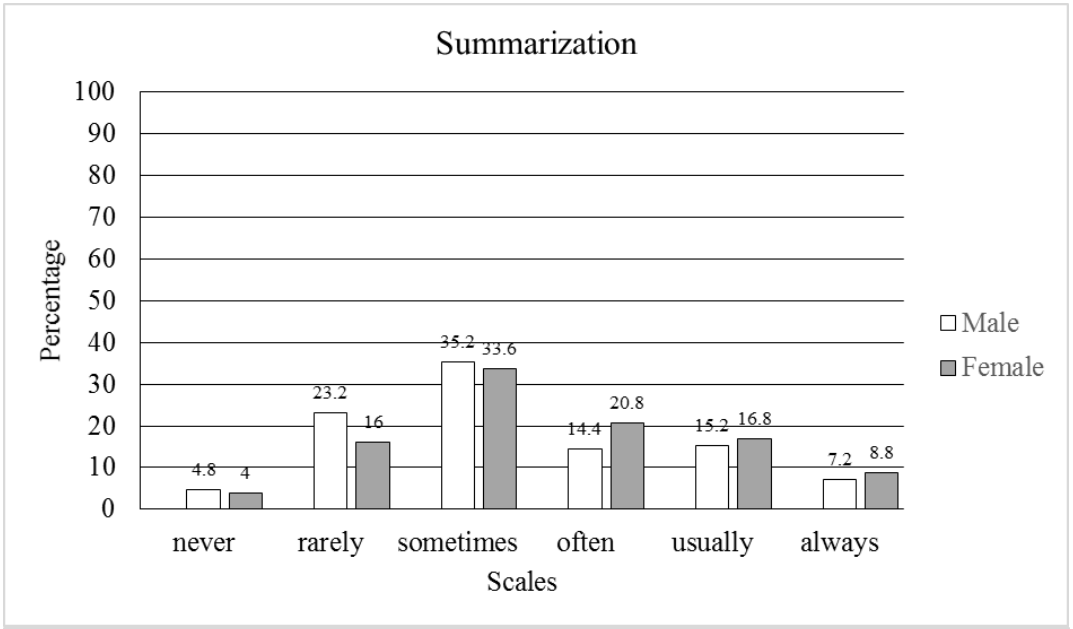
40
30
20
10
0
Percentage
13.6
5.6
25.6
24.8
36.8
43.2
15.2
17.6
4.8
4
4
4.8
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Summarization
100
90
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60
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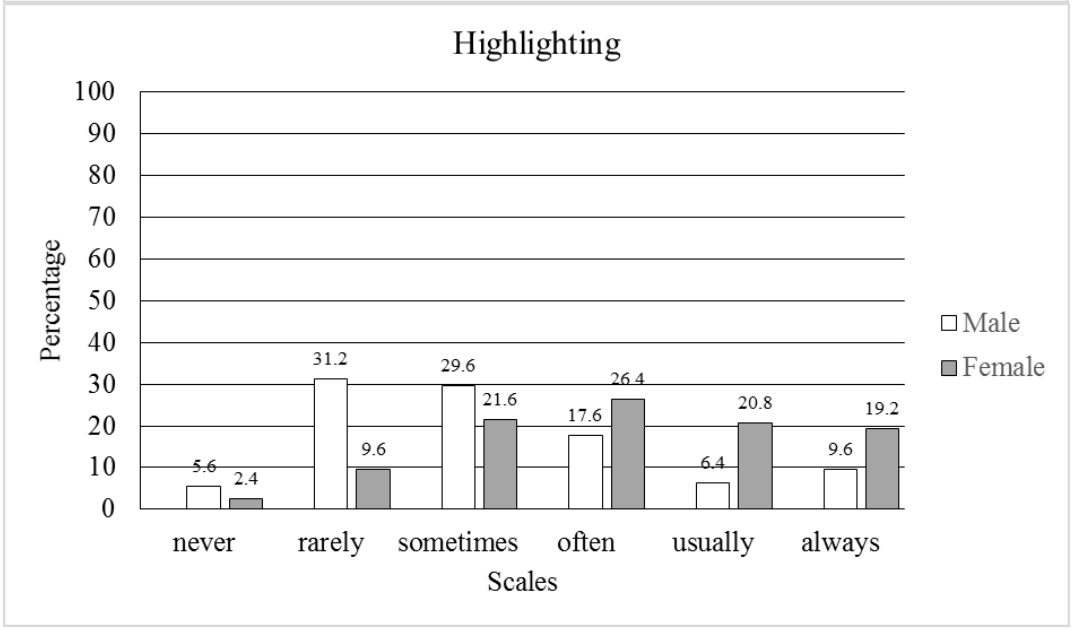
40
30
20
10
0
Percentage
4.8
4
23.2
16
35.2
33.6
14.4
20.8
15.2
16.8
7.2
8.8
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Highlighting
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20
10
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Percentage
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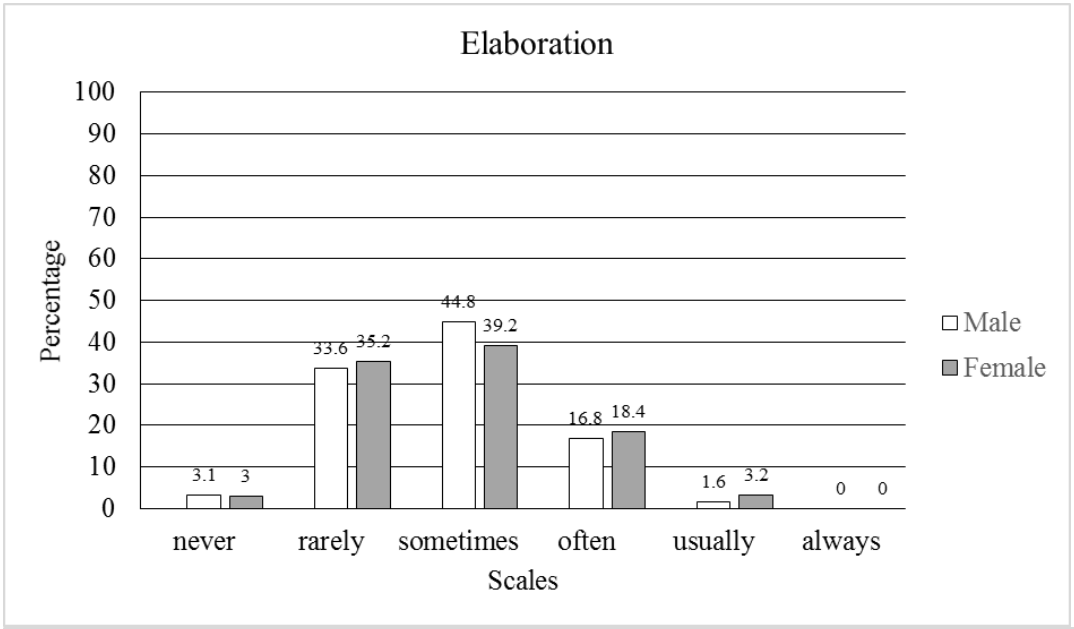
2.4
31.2
9.6
29.6
21.6
17.6
26.4
6.4
20.8
9.6
19.2
never
rarely
sometimes
often
usually
always
Scales
Male
Female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Percentage
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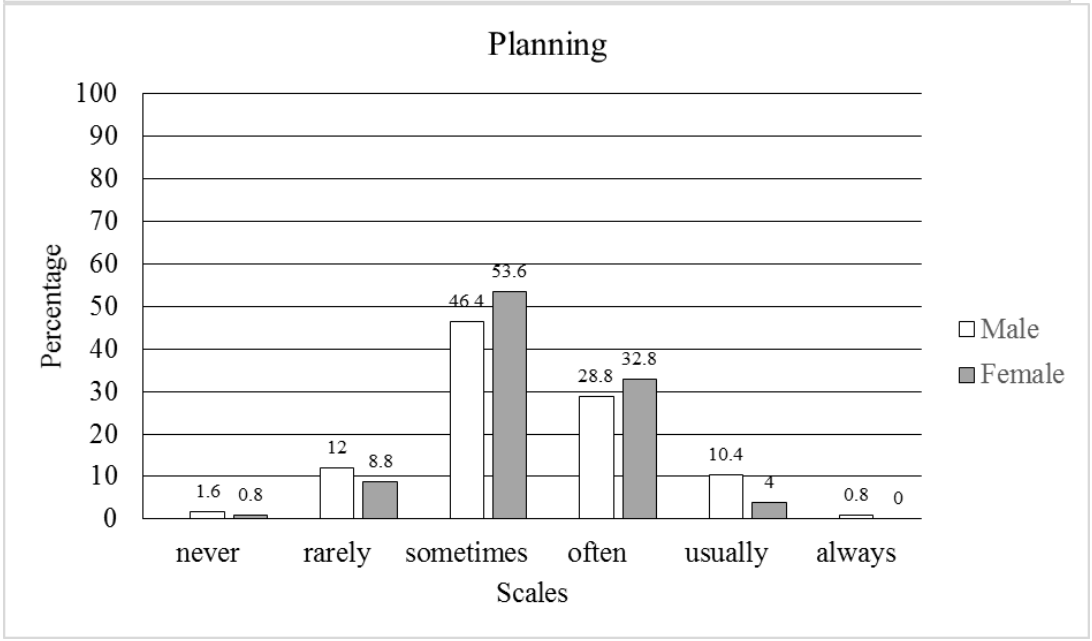
33.6
35.2
44.8
39.2
16.8
18.4
1.6
3.2
0
0
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Planning
100
90
80
70
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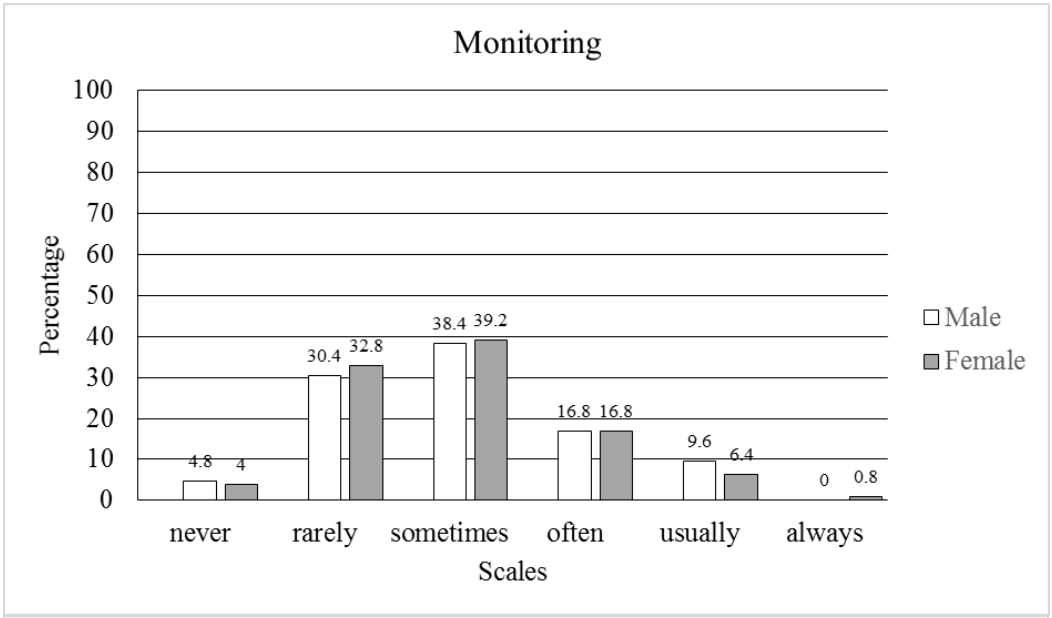
50
40
30
20
10
0
Percentage
1.6
0.8
12
8.8
46.4
53.6
28.8
32.8
10.4
4
0.8
0
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Monitoring
Percentage
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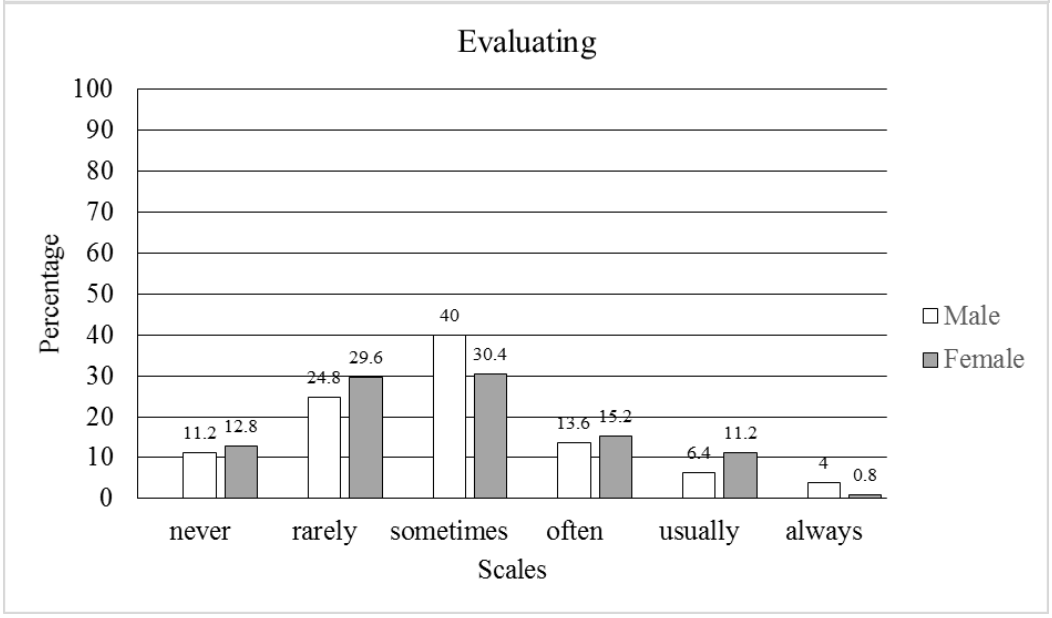
90
80
70
60
50
40
30
20
10
0
4.8
4
30.4
32.8
38.4
39.2
16.8
16.8
9.6
6.4
0
0.8
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Evaluating
Percentage
100
90
80
70
60
50
40
30
20
10
0
11.2
12.8
24.8
29.6
40
30.4
13.6
15.2
6.4
11.2
4
0.8
never
rarely
sometimes
often
usually
always
Scales
Male
Female

APPENDIX XV

Statistical assumptions for one-way MANOVA in the second research question

Correlation for One-way MANOVA

Correlations

		reading_cog	reading_metacog
reading_cog	Pearson Correlation	1	.685**
	Sig. (2-tailed)		.000
	N	250	250
reading_metacog	Pearson Correlation	.685**	1
	Sig. (2-tailed)	.000	
	N	250	250

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

Box's Test of Equality of Covariance Matrices

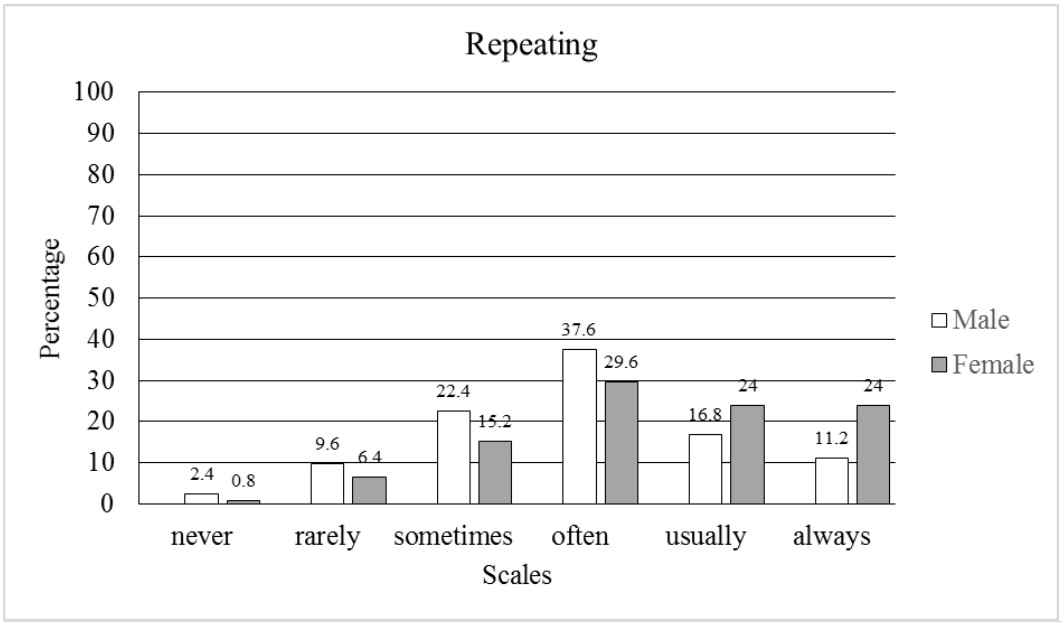
Box's M	1.604
F	.530
df1	3
df2	11070720.000
Sig.	.662

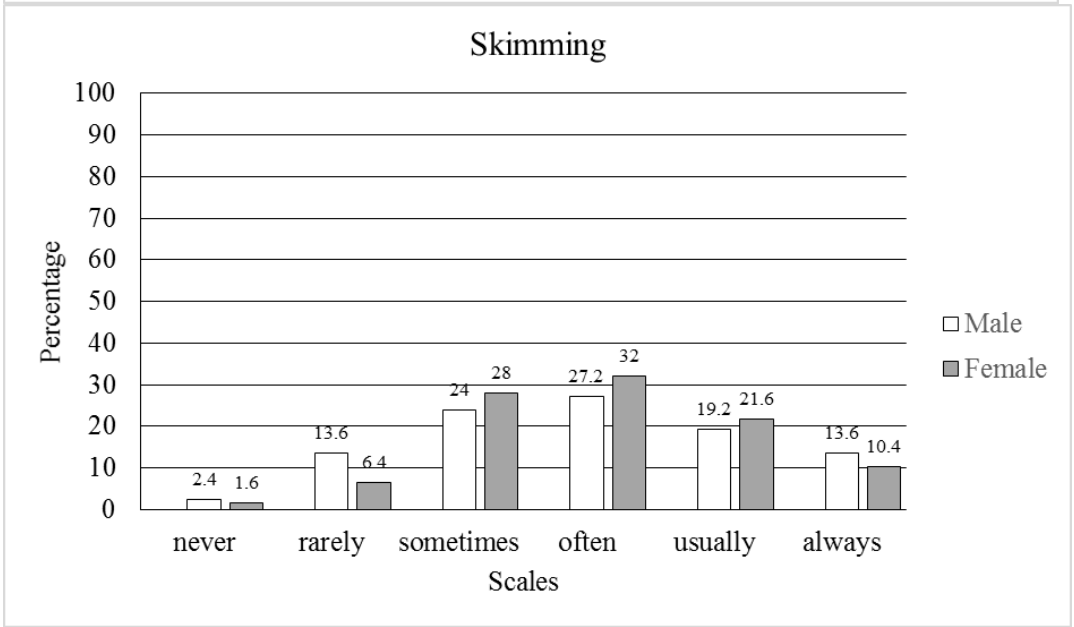
Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

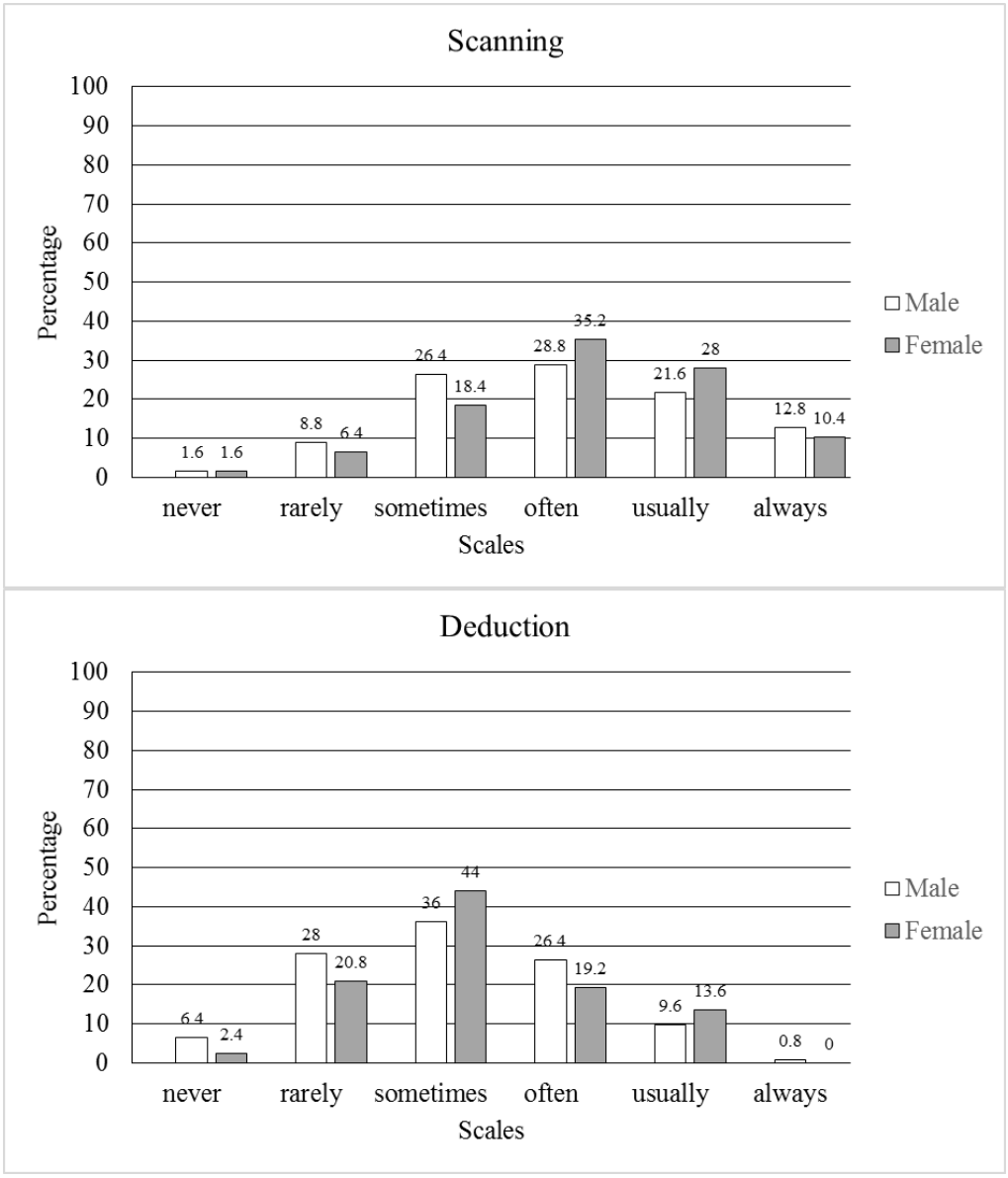
a. Design: Intercept + gender

APPENDIX XVI

The bar charts illustrating percentage of males and females actual use of cognitive and metacognitive strategies






Scanning
Percentage
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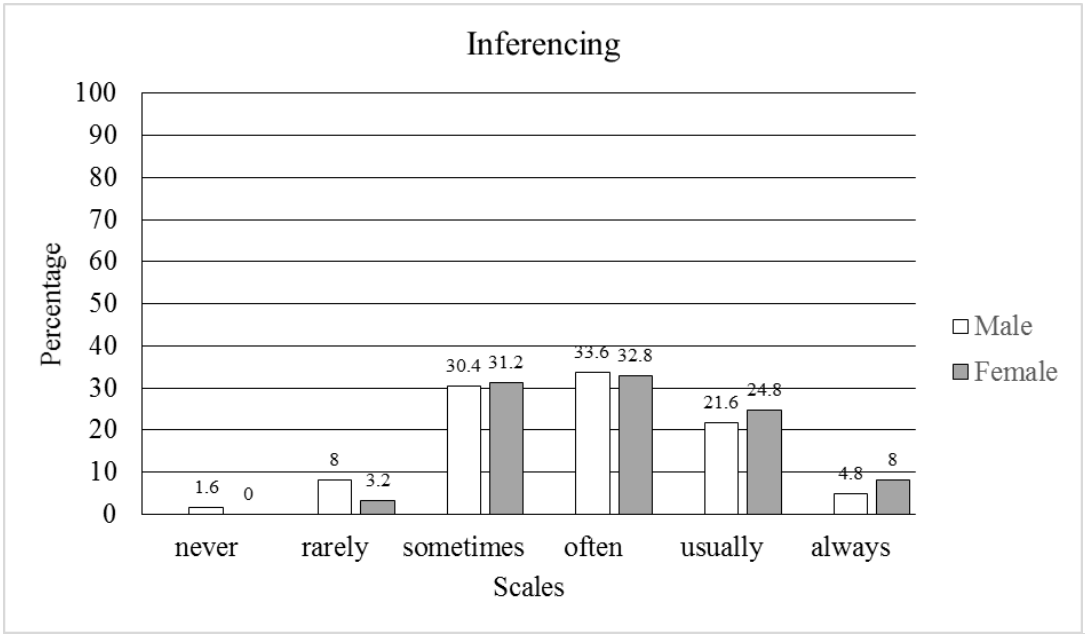
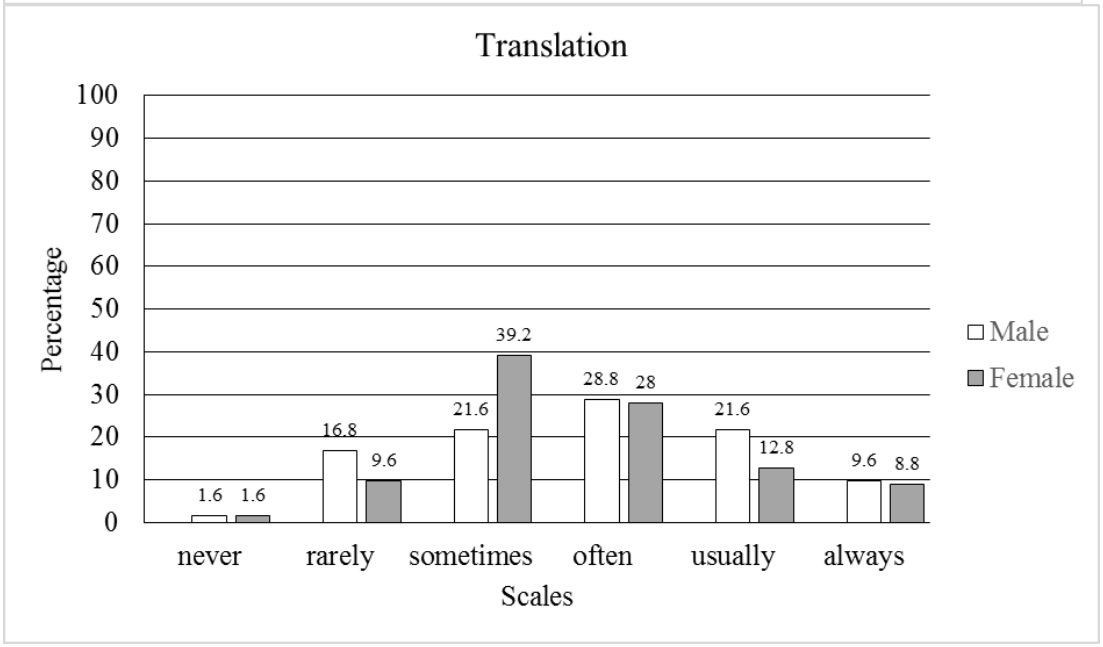
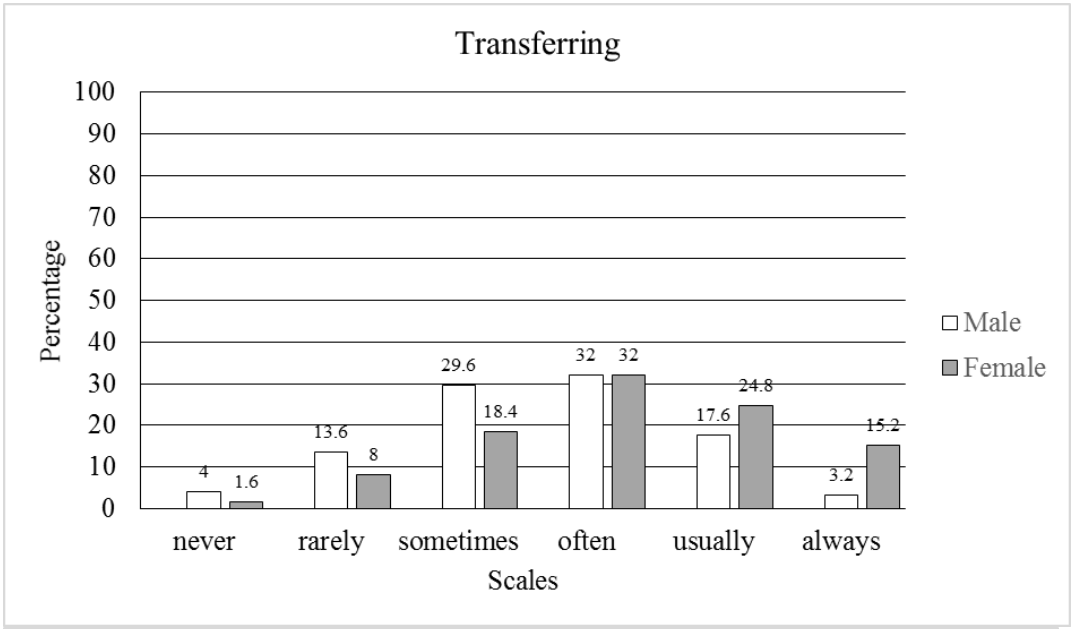
90
80
70
60
50
40
30
20
10
0
1.6 1.6
8.8 6.4
26.4 18.4
28.8 35.2
21.6 28
12.8 10.4
never
rarely
sometimes
often
usually
always
Scales
Male
Female
Deduction
Percentage
100
90
80
70
60
50
40
30
20
10
0
6.4 2.4
28 20.8
36 44
26.4 19.2
9.6 13.6
0.8 0
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Inferencing
100
90
80
70
60
50
40
30
20
10
0
Percentage
1.6
0
8
3.2
30.4
31.2
33.6
32.8
21.6
24.8
4.8
8
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Translation
100
90
80
70
60
50
40
30
20
10
0
Percentage
1.6
1.6
16.8
9.6
21.6
39.2
28.8
28
21.6
12.8
9.6
8.8
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Transferring
100
90
80
70
60
50
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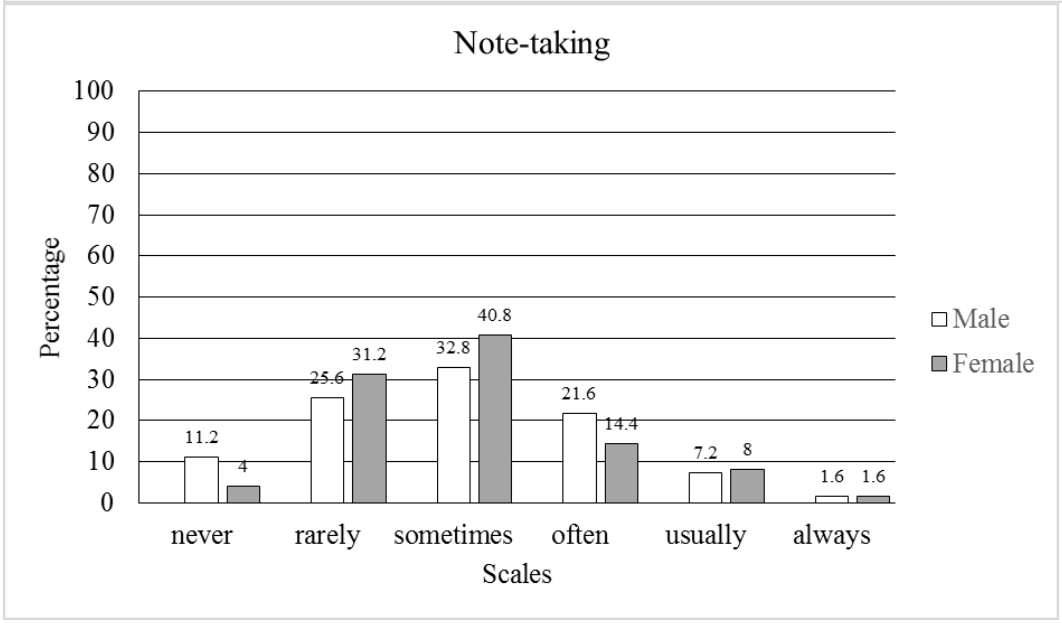
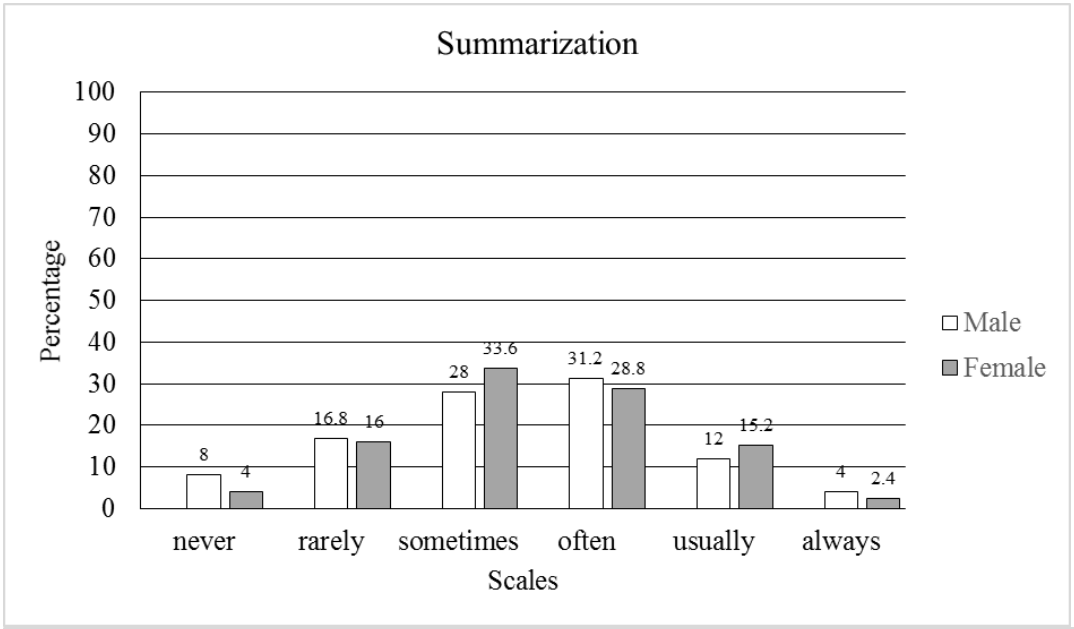
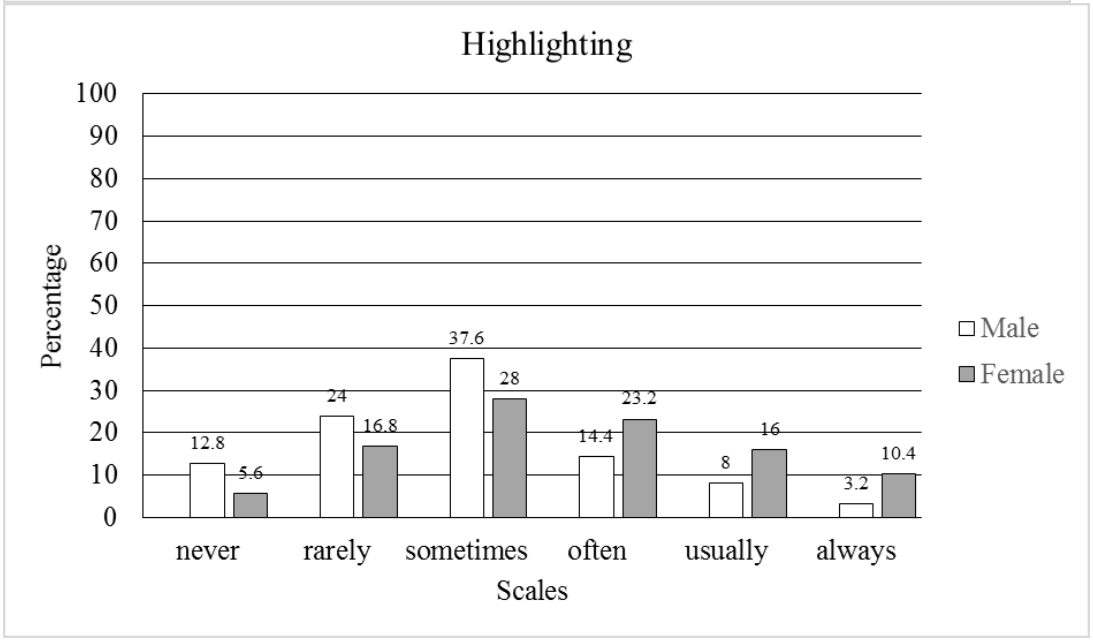
30
20
10
0
Percentage
4
1.6
13.6
8
29.6
18.4
32
32
17.6
24.8
3.2
15.2
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Note-taking
100
90
80
70
60
50
40
30
20
10
0
Percentage
11.2
4
25.6
31.2
32.8
40.8
21.6
14.4
7.2
8
1.6
1.6
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Summarization
100
90
80
70
60
50
40
30
20
10
0
Percentage
8
4
16.8
16
28
33.6
31.2
28.8
12
15.2
4
2.4
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Highlighting
100
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30
20
10
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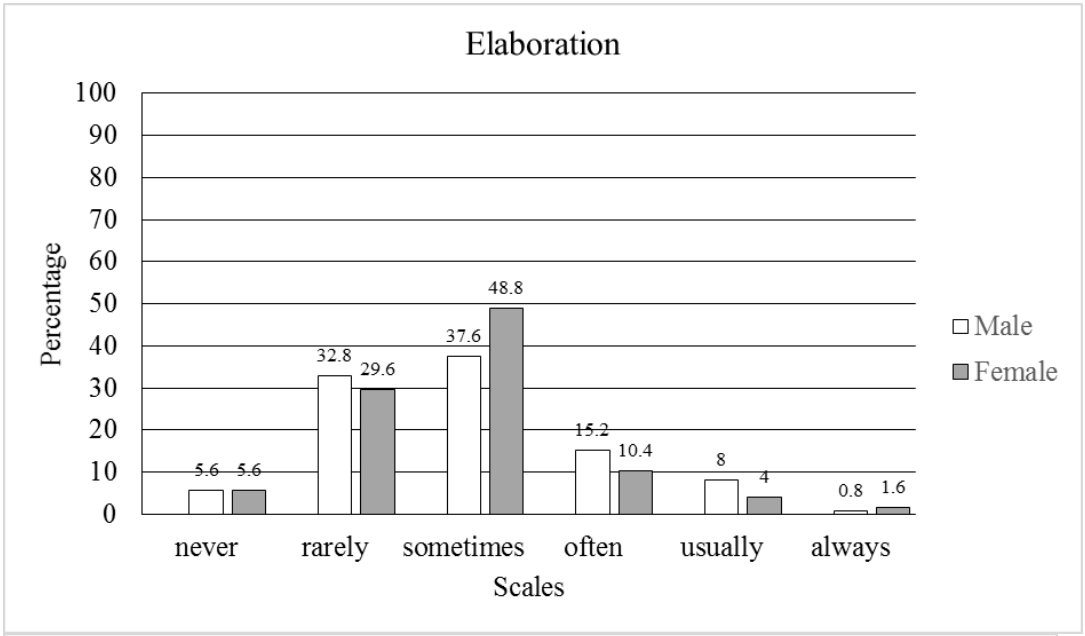
Percentage
12.8
5.6
24
16.8
37.6
28
14.4
23.2
8
16
3.2
10.4
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Elaboration
100
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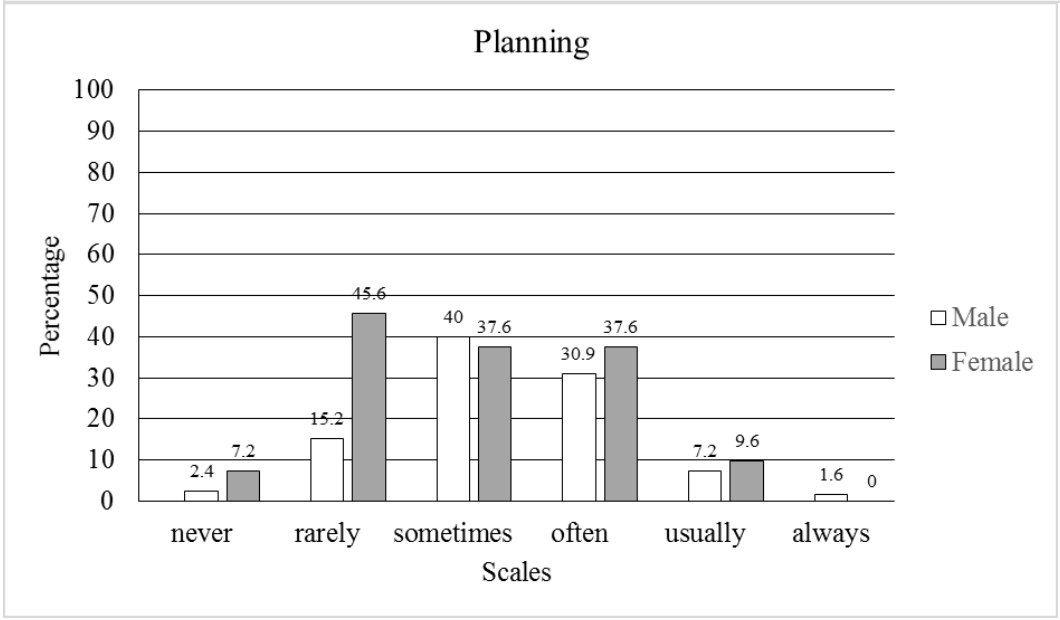
40
30
20
10
0
Percentage
5.6
5.6
32.8
29.6
37.6
48.8
15.2
10.4
8
4
0.8
1.6
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Planning
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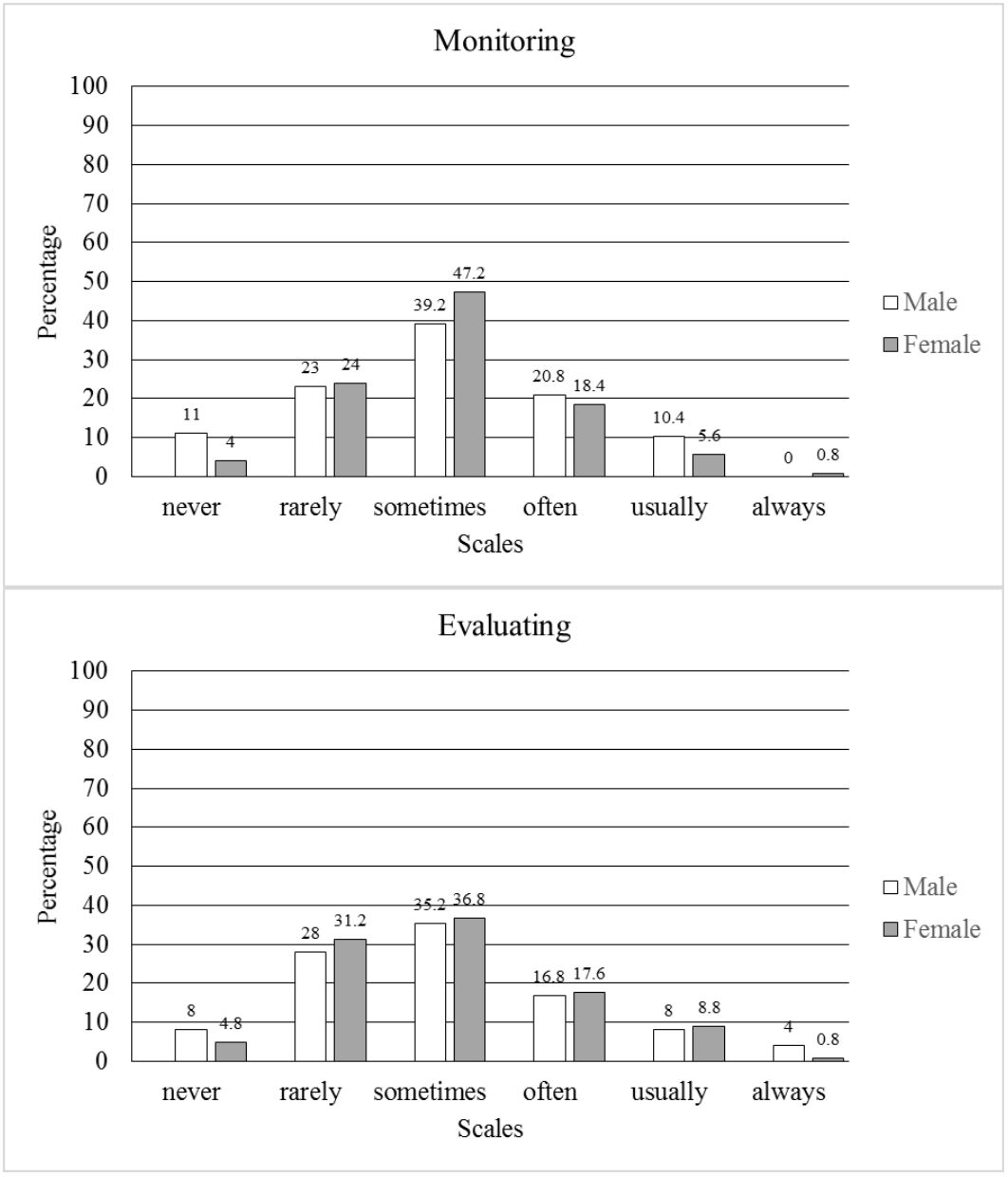
60
50
40
30
20
10
0
Percentage
2.4
7.2
15.2
45.6
40
37.6
30.9
37.6
7.2
9.6
1.6
0
never
rarely
sometimes
often
usually
always
Scales
Male
Female


Monitoring
Percentage
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90
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50
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30
20
10
0
11
4
23
24
39.2
47.2
20.8
18.4
10.4
5.6
0
0.8
never
rarely
sometimes
often
usually
always
Scales
Male
Female
Evaluating
Percentage
100
90
80
70
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50
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30
20
10
0
8
4.8
28
31.2
35.2
36.8
16.8
17.6
8
8.8
4
0.8
never
rarely
sometimes
often
usually
always
Scales
Male
Female

VITA

Ms. Champoon Sam-arng currently works as an English lecturer at Kasem Bundit University. She graduated with a Bachelor's Degree in English from Ramkhamhaeng University and a Master's Degree in Teaching English as a Foreign Language (TEFL) from Srinakharinwirot University. Her areas of interest involve language learner strategies (e.g. cognitive and metacognitive strategies), test taking strategies, and an English reading comprehension test. She can be reached at champoon.s@gmail.com.