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ที่เรียนภาษาอังกฤษในฐานะภาษาต่างประเทศ

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**EFFECTS OF METACOGNITIVE STRATEGY TRAINING  
ON CHINESE EFL STUDENTS' ACADEMIC  
READING COMPREHENSION**

**Lian Zhang**

**A Thesis Submitted in Partial Fulfillment of the Requirements for  
the Degree of Doctor of Philosophy in English Language Studies**

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# **EFFECTS OF METACOGNITIVE STRATEGY TRAINING ON CHINESE EFL STUDENTS' ACADEMIC READING COMPREHENSION**

Suranaree University of Technology has approved this thesis submitted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy.

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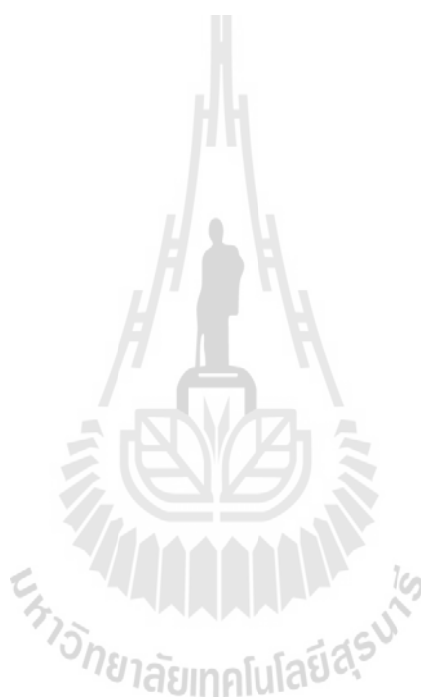
เลียน จาง : ผลของการฝึกกลวิธีอภิปรายที่มีต่อความเข้าใจในการอ่านเชิงวิชาการ  
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การฝึกกลวิธีอภิปรายเป็นปัจจัยที่สำคัญที่มีผลต่อความสำเร็จในการอ่านเอาความ  
ภาษาอังกฤษเชิงวิชาการ การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาผลของการฝึกกลวิธีอภิปรายที่มีต่อ  
การอ่านเอาความของนักศึกษาชาวจีนที่เรียนภาษาอังกฤษในฐานะภาษาต่างประเทศว่า 1) กลวิธีอภิ-  
ปรายที่นักศึกษามีความสามารถสูงและต่ำใช้ในการอ่านเอาความภาษาอังกฤษเชิงวิชาการ 2) ผล  
ของการฝึกกลวิธีอภิปรายที่มีต่อการอ่านเอาความเชิงวิชาการ 3) ความสัมพันธ์ระหว่างกลวิธีอภิ  
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โดยมีกลุ่มตัวอย่างคือนักศึกษาวิชาเอกภาษาอังกฤษปีที่ 3 จำนวน 58 คนที่ลงทะเบียน  
เรียนวิชาการอ่านขั้นสูงที่มหาวิทยาลัย กุ้ยโจว ประเทศสาธารณรัฐประชาชนจีน เป็นเวลา 18  
สัปดาห์ เครื่องมือที่ใช้ในการวิจัยประกอบด้วยแบบสอบถามกลวิธีอภิปราย การทดสอบการอ่าน  
เอาความและการสัมภาษณ์แบบกึ่งโครงสร้าง เพื่อเก็บข้อมูลเชิงปริมาณและใช้แบบสอบถาม การ  
สัมภาษณ์แบบเจาะลึกและการบันทึกเพื่อเก็บข้อมูลเชิงคุณภาพ

ผลของการวิจัยปรากฏดังนี้ การฝึกกลวิธีอภิปรายมีผลต่อความสามารถในการอ่านเอา  
ความของนักศึกษาอย่างมีนัยสำคัญ ก่อนการฝึกทั้งนักศึกษาที่มีความสามารถสูงและต่ำรายงานการ  
ใช้กลวิธีอภิปรายในระดับปานกลางแต่หลังจากการฝึกนักศึกษาทั้งสองกลุ่มรายงานการใช้กลวิธี  
อภิปรายในระดับสูง ผลการวิจัยพบความแตกต่างในการใช้กลวิธีอภิปรายในการอ่านเอาความ  
ของนักศึกษากลุ่มที่มีความสามารถทางภาษาสูงและต่ำและพบว่ากลวิธีอภิปรายที่ใช้มี  
ความสัมพันธ์กับคะแนนการสอบการอ่าน นอกจากนี้ผลการวิจัยยังแสดงด้วยว่ากลวิธีการวางแผน  
การเรียนรู้ (Planning) และกลวิธีตรวจสอบการเรียนรู้ (Monitoring) เป็นตัวบ่งชี้ที่สำคัญด้วย  
ค่าเบต้าเท่ากับ .341 และ .368 ในการทำนายความสามารถทางภาษาของนักศึกษา แต่อย่างไรก็ตาม  
ความสัมพันธ์ระหว่างกลวิธีการเรียนรู้ (Evaluation) และความสำเร็จทางด้านการอ่าน  
ไม่ได้เป็นแบบเหตุและผลเพราะไม่ได้เป็นความสัมพันธ์แบบเส้นตรง นอกจากนี้ข้อมูลจาก  
แบบสอบถามและบันทึกสามารถสรุปได้ว่านักศึกษาส่วนใหญ่มีทัศนคติที่ดีต่อการฝึกกลวิธี

อภิปรายแต่ก็พบทัศนคติเชิงลบและเป็นกลางบ้างเช่นกัน ผลการวิจัยจึงเป็นประโยชน์ต่อการจัดการเรียนการสอน การอ่านเอาความสำหรับนักศึกษาที่เรียนภาษาอังกฤษในฐานะภาษาต่างประเทศเป็นอย่างมาก



LIAN ZHANG : EFFECTS OF METACOGNITIVE STRATEGY  
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METACOGNITIVE STRATEGY TRAINING/ READING ABILITY/  
ACADEMIC READING COMPREHENSION/CHINESE UNIVERSITY  
STUDENTS

Metacognitive strategy is one of the factors that contributes to the success of English academic reading comprehension. This quasi-experimental study investigated the effects of metacognitive strategy training on EFL students' academic reading comprehension: 1) the metacognitive strategies the high and low proficiency students employed in academic reading comprehension; 2) the effects of metacognitive strategy training (MST) had on their academic reading comprehension; 3) the relationship between the students' metacognitive strategy use and their English reading comprehension achievement; and 4) the attitude of the students towards the MST.

58 third-year English major students taking an 18-week Advanced English Course at Guizhou University, China, were selected to participate. Research instruments included metacognitive strategy questionnaires, reading comprehension tests, and semi-structured interviews for collecting quantitative data and questionnaires, in-depth interviews, and journals for qualitative data.

The findings revealed that there were significant effects from the metacognitive strategy training on the students' reading comprehension. Before training, the high and low proficiency students both reported moderate use of metacognitive strategies, while after training, both groups' overall strategy use was at a high level. Differences in metacognitive strategy use between the high and low proficiency students were found and analyzed. The results also disclosed a significant correlation between metacognitive strategy use and reading comprehension test scores. Also, the findings demonstrated that planning and monitoring strategies were powerful predictors with a Beta value of .341 and .368 respectively in predicting students' English proficiency. However, the relationship between evaluating strategy use and reading achievement was not of a causal type, as it was not linearly correlated. Furthermore, the data from the questionnaires and the students' written feedback revealed that the majority of the students had a positive attitude towards MST, while neutral and negative attitudes were also found in a small number. The findings are very useful for reading instruction for EFL learners.

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Student's Signature\_\_\_\_\_

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# **CHAPTER 1**

## **INTRODUCTION**

The present study aims at investigating the effects of metacognitive strategy training on EFL students' academic reading comprehension. This chapter provides an introduction and the background to the study. It starts with the importance of reading in English as a second or foreign language (ESL/EFL) for university students. After that, a statement of the problem, the objectives of the study, the research questions, the significance of the study and the definitions of the operational terms are presented. Finally, the outline of the thesis and a summary are briefly described.

### **1.1 Background of the Study**

In the age of globalization, reading in second or foreign language settings continues to play an increasingly important role. The prompt acquisition of an enormous amount of information appears quite necessary, educated citizens will require even better literacy in an increasingly large number of societal settings. The acquisition of reading skills in a second or foreign language is a priority for millions of learners over the world and is considered one of the most important skills taught in school (Bensel, 2005; Hudson, 2007). Grabe and Stoller (2002) stated that the ability to read in English is what ESL and EFL learners need to acquire. In fact, the ability to read written texts at a reasonable speed and with good comprehension has been recognized to be as important as oral skills, if not more important (Eskey, 1988).

Academic reading comprehension has become the essence of reading. It is essential not only to academic learning in all subject areas but also to professional success and, indeed, to lifelong learning (Adamson, 1992). Academic reading poses significant challenges that the simple concept of “reading” can not achieve (Nuttall, 1996). It is in-depth comprehension, which is often associated with the requirement to perform identifiable cognitive and procedural tasks, such as taking a test, writing a paper or giving a speech (Shih, 1992). Students need reading skills in order to search for information that they need for their academic purposes. For EFL learners, academic reading may function as a major source of comprehensive input and thus be a means as well as the end of acquiring the language. Thus, for the university language learners who are in ESL/EFL contexts, effective academic reading in English is critical. The importance of academic reading has been well-recognized by many researchers (Anderson, 2002; Levine, Ferenz, & Reves, 2000; Monos, 2005).

However, reading proficiency in an L2 does not develop as fully or easily as it apparently does in one’s first language (L1) due to the complexity inherent in the reading process. Grabe and Stoller (2002) stated that reading is one of the most difficult skills to develop to a high level of proficiency for L2 learners. Many learners have difficulties in understanding what they read, in particular, comprehending academic texts (Byrd, Carter, & Waddoups, 2001; Snow, 2002). Also, Dreyer and Nel (2003) pointed out that many students enter higher education underprepared for the reading demands that are placed upon them due to their low reading efficiency. Academic second language readers, even those with considerable knowledge of the language, still suffer from deficiencies at the level of comprehension which interfere,

despite all of their higher-level skill, with their attempts to comprehend the texts they must read (Eskey & Grabe, 1986).

To be more specific about the situation of English learning in China, it is an EFL country with the largest population in the world. Its huge developmental potential as well as communicative needs with other countries in different fields implies that English, particularly English reading is playing a necessary role in this trend. Therefore, to be able to read effectively in English has a particular importance to Chinese university students since many EFL students at Chinese universities rarely speak English in their daily lives. However, they are required to learn reading in the classroom in order to get access to new information for academic purposes. As Eskey (2005) has pointed out, many students of English as a foreign language rarely need to speak the language in their day-to-day lives, but many need to read academic reading materials in order to “access the wealth of information” (p. 563) recorded exclusively in English.

Another reason is that EFL students at Chinese universities are required to take many kinds of tests which are of great importance for students to pursue a better position in their careers after graduation, such as CET 4, CET 6 (College English Test), TEM 4, TEM 8 (Test for English majors), in which academic reading comprehension accounts for a large proportion of the total score. With strengthened reading abilities, they will make greater progress and attain greater development in all the academic areas (Anderson, 2002). As a result, academic reading comprehension has become a major challenge confronting the Chinese learners’ language skills and their reading proficiency needs to be developed.

## 1.2 Statement of the Problem

Once EFL students reach upper-level courses, it is often assumed that they are proficient speakers, readers and writers. However, the fact is that very few students attain this standard of proficiency and many students are unable to understand the assigned texts (Redmann, 2005). Blame is sometimes placed on teachers for their failure to teach grammar and vocabulary well, or on the students for their failure to devote enough time and effort to their reading. Wen (1996) asserts that Chinese learners perceive a lack of grammar and vocabulary knowledge as making academic reading comprehension difficult. As a matter of fact, what the EFL students often lack is proper training in reading which the attainment of a high reading proficiency requires due to the complexity of the reading process (Wen, 2003).

Reading is an active, constructive, meaning-making process. One's awareness and control of these cognitive processes is known as metacognition, which is the critical ingredient to successful reading (Alvermann & Phelps, 2002). Metacognitive processes have been understood to play an essential part in achieving comprehension (Phan, 2006). The use of metacognitive strategies in the reading process has been generally supported as a valuable aid for its cognitive, social, and linguistic benefits. Many studies (Wenden, 1998; Brown, 1980; Garner, 1992; Chamot & O'Malley, 1990) have addressed the positive effects of utilizing metacognitive strategies in the academic reading process. They indicate the positive relationship between metacognitive strategies and reading comprehension. To ensure a significant gain in performance, students need to be actively engaged in the practice of metacognitive strategies (Brunning, Schraw, & Ronning, 1999). As a consequence, one major tool to encourage a higher level of comprehension in the readers is to train them in the use of

reading strategies and encourage them to use these strategies in their reading process since reading strategy researchers agree that reading strategies alone cannot help readers to build up their comprehension (Paris, Wasik, & Turner, 1991; Soleimani, 2008).

However, despite the support in the literature for utilizing metacognitive strategies in the reading process, the researcher of the present study has often noticed that when students are asked whether they have a flexible use of strategies to foster, monitor, regulate, and maintain comprehension, their answers are far from satisfactory. Some do not even know what metacognitive strategies are. Such observations have been reported by Wen (1998) and Yang and Zhang (2001) as well. The problems the Chinese EFL learners' confront in academic reading comprehension are as follows:

First, the students' lack of metacognitive knowledge leads to their inability to utilize metacognitive strategies in the academic reading process (Carrell, 1989; Berkowitz, 2004; Carrell, Pharis, & Liberote, 1989). Students are uncertain of what metacognitive strategies are and how to use them. Poor readers, especially, do not know what methods are efficient for academic reading, nor do they know how to improve their reading ability (Yang & Yoke, 2001). Particularly, in academic reading comprehension, if students lack metacognitive knowledge, they feel puzzled in adopting the appropriate reading methods and reading strategies. As a result, they cannot self-plan, self-monitor, self-regulate and self-evaluate their own reading skills properly.

Second, the traditional teaching of reading methods dominates in EFL classes. Inside the classroom, the 'chalk and talk' approach still prevails in Chinese teaching

of academic reading as well, according to the National English Curriculum for College English Majors of Higher Education in P.R.C (2000). It was found that reading instruction in China focuses on vocabulary and grammar instruction rather than on the processes in which reading takes place (Wen, 1996; Yang & Yoke, 2001). As a result, from the first exposure to English until their graduation from the university, Chinese university learners have spent around ten years learning English, but the learning results are far from satisfactory. English academic reading in particular is time-consuming with low effectiveness and receives considerable criticism. The current educational system of teaching reading has encouraged students to read by rote, with no opportunity for creative reading (Wen, 1998). This teacher-centered model views the teacher as active and students as fundamentally passive. It is likely, as Chen (2006) pointed out, “in an Asian teacher-centered teaching and learning environment as well as cultural behaviors of learning, the learners are doomed to reticence because they have had a long learning experience in such an environment” (p.442). In Chinese classrooms, students still can not read constructively and strategically by consciously using metacognitive strategies (Pan, 2006). Consequently, some Chinese students are unable to predict information from a title, relate potential information to personal experience, generate questions to anticipate/guide reading, recognize comprehension problems, recognize the attitudes and intentions of the writer, and seek outside assistance (Liu, 2004). Given these challenges, it is beneficial for teaching academic reading at Chinese university level to investigate how to overcome these difficulties by using metacognitive strategies as a valuable aid in reading comprehension. Wen (1996) claimed that strategy training can be one way to promote effective academic reading. Moreover, this process

approach to training is believed to enable students to become independent and autonomous readers.

Third, although reading strategy instruction in China has been attached more importance and indeed the progress are still going on in terms of EFL academic teaching and learning, the situation is not so satisfactory especially concerning learners' academic reading ability. These strategies were taught separately, and as a result, the students were not sure when to use them or how to use them in order to become efficient readers (Liu, 2009). English teachers also witness a very salient problem, that is, many of our developmental readers seem unaware of how their academic reading is progressing. Students who admit to comprehension failure often do not know the remediation. If they are unaware, how could they apply strategies to improve? Thus, metacognition becomes a primary focus. Good readers think about their academic reading processes with purposeful intent as they monitor and reflect on their reading experience (Garner, 1987). It is misleading to assume that EFL learners can handle the complex nature of comprehension without any guidance from the teacher. As a result, further reform in strategy instruction is demanded to provide solutions to the current problem and to meet students' needs to increase their academic reading ability.

Last, students' attitudes towards the metacognitive training in academic reading comprehension are neglected. Chinese classroom is basically a teacher-centered classroom, while it is worth knowing the students' attitudes on metacognitive strategy training in order to get the most collaboration from them in the learning process. According to the student-centered approach, students are considered as the central subjects in the teaching/learning process. There should be a high level

of agreement from both the instructor and the students to gain effective results in learning. Pedagogically, when the instructor of the classroom obtains high degree of co-operation from his or her students, he or she will have a better chance of the students' collaboration in the classroom activities; hence, the successful teaching will follow. Consequently, in the research field, there are few studies conducted to explore students' attitudes on the use of metacognitive training in reading comprehension which investigate whether it is favorable to the students (Wen, 2003). This gap in the available literature has led the researcher of this current study to be interested in exploring students' attitudes on metacognitive training in reading comprehension in order to obtain more beneficial and detailed results.

Therefore, how to overcome this lack of information should be a key for Chinese teachers in the teaching of the academic reading process because it will affect the effectiveness of metacognitive training to a great degree. Based on the EFL students' problems in reading comprehension and the effectiveness of the metacognitive training, one way to improve the students' academic reading comprehension might be to introduce metacognitive training into the reading classroom.

### **1.3 Objectives of the Study**

This study mainly aims to examine the effects of metacognitive strategy training on Chinese EFL students' academic reading comprehension. In other words, it is intended:

1. To find out what metacognitive strategies the Chinese university third-year English majors of Guizhou University employed in their academic reading comprehension.

2. To investigate whether or not metacognitive strategy training (MST) had any effects on academic reading comprehension.
3. To investigate whether there is a relationship between the students' metacognitive strategy use and their English reading comprehension achievement.
4. To explore the attitude of Chinese university third-year English majors at Guizhou University towards training in metacognitive reading strategies for the improvement of academic reading comprehension.

#### **1.4 Research Questions**

To achieve the aforementioned purposes, the present study will address the following research questions:

1. What metacognitive strategies do high proficiency and low proficiency third-year English majors at Guizhou University use in their academic reading comprehension?
2. Does MST have any effects on academic reading comprehension? If so, what are they?
3. Does the students' use of metacognitive strategies have any relationship with their English reading comprehension achievement?
4. What are the students' attitudes towards MST in academic reading comprehension?

#### **1.5 Significance of the Study**

The present study is of great importance and will contribute to EFL reading phenomena with regard to its theoretical and practical significance.

Theoretically, this study attempts to create a Metacognitive Strategy Training Model of Academic Reading Comprehension (MSTARC) based on previous studies. This study exceeds the only investigation of metacognitive strategy use or the strategy categorization. The researcher selected the most cited metacognitive strategy model proposed by Chamot and O'Malley (1990) as the basis for this study and further developed it into an appropriate metacognitive strategy model for metacognitive strategy training in a real EFL context. This study is an attempt to move away from common classroom procedures in order to guide and enable students to become strategic, efficient and independent readers by raising their metacognitive reading strategy awareness, extending the range of their reading strategies, and encouraging them to monitor and reflect upon their reading. The findings from this study may be directly beneficial to other researchers who want to develop students' reading abilities as well as reading teachers who want to develop their methods of teaching reading.

Second, the present study may add new knowledge to L2 research on metacognitive theory (Flavell, 1979; Alvermann & Phelps, 2002; Brunning et al., 1999; Block, 1992). Together with cognitive theories, metacognitive theory plays an essential part in achieving comprehension (Phan, 2006). Given the importance of metacognitive dimensions in reading, many researchers (Wenden, 1998; Chamot & O'Malley, 1990; Wenden, 1990) have categorized metacognitive strategies into different aspects depending on the research purposes and the purpose of the language learning or language skills. The research on reading strategy training shows that it helps readers achieve better comprehension (Raymond, 1993 as cited in Phan, 2006; Rusciollelli, 1995; Anderson, 2004). Although previous extensive studies have made many insightful discoveries, there are still some questions which remain unclear and

unsolved. For example, how to combine the metacognitive strategy into the reading comprehension process, how to make it practicable for EFL readers, and what factors should be taken into consideration during actual training. This study not only shows a new angle to the application of metacognitive strategy training in academic reading comprehension, but it is also specifically related to the Chinese university environment.

Third, previous reading strategy studies posit that metacognitive reading strategies can enhance reading comprehension (Jiménez, García, & Pearson, 1996; Kletzien, 1991; Paris et al., 1991; Anderson, 2004; Carrell, 1989, 1991; Mante, 2009; Alvermann & Phelps, 2002; Brunning et al., 1999; McNamara, 2007) show that MST helps to promote and improve academic reading comprehension. However, most of these studies have been conducted outside China, and even some of those in China, with non-English majors. Moreover, little empirical research has been done to investigate readers at advanced levels of reading, and it is particularly at this stage of acquisition that more reading research is needed (Brantmeier, 2003; Young & Yoke, 2001). Therefore, this study aims at investigating the effects of MST on academic reading comprehension of English majors in China in a real EFL context.

Finally, the present study provides some insights into how metacognitive training could be used to promote learning autonomy among Chinese students, which is in line with the goal of the new Chinese education system, shifting from a focus on examinations to quality education, as implemented by the National Education Department since 2000 (Zhu, 2005). Hence, the present study might yield some insights on the teaching of English reading in China, including syllabus design, curriculum development and teaching methodology.

## 1.6 Definitions of the Operational Terms

The following terms are frequently used in the present study:

### **Metacognitive knowledge**

Metacognitive knowledge in the context of this study refers to what learners know about learning (Wenden, 1999) and awareness about oneself, the tasks one faces and the strategies one employs (Baker & Brown in Singhal, 2001). According to Dhieb-Henia (2003), Anderson (2002) and Sheorey and Mokhtari (2001), there are three types of metacognitive knowledge: self-knowledge, task knowledge, and strategic knowledge.

### **Metacognitive strategies**

Metacognitive strategies in the context of this study refer to the actions or behaviors one takes to plan for learning, to monitor one's own comprehension/production, or to evaluate the extent to which a learning goal has been reached (Chamot & O'Malley, 1990; 1994). It includes the skills which are used in planning, monitoring, and evaluating the various stages of academic reading comprehension.

### **Metacognitive strategy training (MST)**

In this research context MST refers to the training process which provides direct and informed training for reading by the selection of appropriate strategies that correspond to the particular text, purpose, and occasion (Paris et. al., 1991). In metacognitive strategy training, the teacher should teach not only how to use strategies, but also when and why strategies are used in certain learning contexts. This involves teaching learners' metacognitive knowledge and skills or conditional

knowledge, that is, the capacity to reflect upon one's own thinking, and thereby to monitor and manage it (Israel, 2007).

### **Academic reading comprehension**

Reading for academic purposes is in-depth comprehension, which is often associated with the requirement to perform identifiable cognitive and procedural tasks such as taking a test, writing a paper or giving a speech (Shih, 1992). Students need reading skills in order to search for the information that they need for their academic purposes; the text type of L2 academic reading is mostly expository (Huang, 2006). In this study, students have to read expository texts which have been selected from the Advanced English Course are *A New English Course*, Books 5 and 6 and do the reading tasks to demonstrate their comprehension.

### **High proficiency and low proficiency students**

High proficiency students in this study refer to GU English majors who have scored A or B in previous reading courses (Basic Reading Comprehension Course and Comprehensive Reading Comprehension Course), while low proficiency students refer to GU English majors with C or D in previous reading courses.

## **1.7 Outline of the Dissertation**

This dissertation is organized into six chapters. Chapter one provides an overview of the study, including the background of the study, the statement of the problem, the objectives of the study and the research questions, the significance of the study and definitions of the operational terms.

To answer the research questions, the researcher has reviewed the related theories and previous research studies in this field. Chapter two presents the literature

on L2 reading, including reading theories, theoretical foundations, and pedagogical foundation. The metacognitive strategy instruction approaches and the metacognitive strategy training model of academic reading comprehension (MSTARC) are presented and discussed.

Chapter three illustrates an overview of the methodological design of the study, including the description of the participants, the data collection instruments, data collection procedures, and data analysis. Also, it reports the results of the pilot study.

Chapter four presents quantitative and qualitative analyses of the data elicited through the metacognitive strategy questionnaire, the reading comprehension pretest and posttest, the students' journals, and the semi-structured interviews.

Chapter five discusses the results of the research findings of the present study.

Chapter six summarizes the main findings of the present study in response to the research questions. The implications, limitations and some recommendations for further research in this field are presented at the end.

## **1.8 Summary**

In this chapter, the researcher gives a description of the theoretical background and the context of the investigation as well as the rationale of the research. The statement of the problem, the research objectives and the research questions, the significance of the study and the key operational terms are briefly presented. In the next chapter, a review of the theories and research on L2 reading and a metacognitive strategy training model will be elaborated.

## **CHAPTER 2**

### **REVIEW OF THE RELATED LITERATURE**

This chapter offers a critical review of the literature related to the study. First, reading comprehension views and reading models are presented. Second, the theoretical foundation of the present study, metacognition and the pedagogical foundation and the metacognitive strategy training is dealt with. Then metacognitive strategy training approaches are discussed. Finally, the metacognitive strategy training model for academic reading comprehension (MSTARC) is illustrated.

#### **2.1 Reading Theories: Reading Comprehension Views**

In order to fully appreciate how metacognitive strategy training might influence students' perceptions during the reading process, it is necessary to first understand how views of reading comprehension behaviors have evolved over time. Therefore, an account of various views on reading comprehension might be an appropriate place to begin.

##### **2.1.1 A Behavioral-based View**

In the 1950s, instructional psychology took a behavioral route with the rise of B. F. Skinner's influence, and the prevailing English reading comprehension curriculum in the West was founded on theories deriving from behaviourism. Reading

comprehension refers to the understanding of the meaning of written words, phrases, sentences, and whole texts. Reading is viewed as a skill that is composed of a set of sub-skills. These sub-skills can be acquired by novice readers to develop comprehension ability. Once the skills are mastered, readers are viewed as experts who can comprehend what they read (Dole, Duffy, Roehler, & Pearson, 1991). According to this view, readers are passive recipients who have mastered a large number of sub-skills and have routinely applied them to all texts in order to get information. Their reading is based upon "habit formation, brought about by the repeated association of a stimulus with a response" (Omaggio, 1993, p. 45). Readers never think about the process of reading but only focus on the product, they are not active in manipulating their reading process.

### **2.1.2 A Cognitive-based View**

A cognitive-based view of reading comprehension emphasizes the interactive and constructive nature of reading. According to Philip and Kim Hua (2006), all readers use existing knowledge or prior knowledge and a range of cues from the text to build or construct meaning from the text. Knowledge includes specific knowledge about the topic of the text, general world knowledge about social relationships and causal structures, and knowledge about the organization of the text. In addition to knowledge, expert readers possess a set of flexible, adaptable reading strategies that they can use to comprehend text and to monitor their understanding.

Cognitive psychologists emphasize reading as a process rather than a product.

During the comprehension process, cognitive factors are involved, so different readers get different comprehension results. Comprehension is an active process of identifying meaning, and it is also a complex thinking process (Rumelhart, 1977). This active process is affected by complex interaction between the content of the text itself, the reader's prior knowledge and goals, and various cognitive processes. In this view, readers are active learners who construct meaning through the integration of existing knowledge and new knowledge together with flexible use of strategies to foster and maintain comprehension (Rumelhart, 1977).

### **2.1.3 A Metacognitive-based View**

Baker (2008), Baker and Brown (1984) proposed that reading should involve metacognition as well as cognition, and skilled readers do not just decode the reading materials and use reading strategies, but also are aware of their strategies and have the ability to control and regulate these strategies. This control, which is called metacognition, involves thinking about what one is doing while reading (Block, 1992).

According to El-Kaomy (2004), reading is interactive in terms of the exchange among several components, including the reader, the strategies the reader employs, the material that is being read, and the context in which reading is taking place. They maintain that the reader first gets input information from printed material, and then the decoding stage follows, which includes both superficial and deep processes. At the first two stages, more cognitive activities are involved, such as

information input, checking, storing, processing, and internalization. At the same time, in order to implement the whole reading process, the reader takes some active measures to monitor and supervise his cognitive activities in order to guarantee the whole procedure; these monitoring activities are metacognitive activities. Mokhtari and Reichard (2002) stated that strategic readers take part in both cognitive and metacognitive activities synchronically during the reading process.

#### **2.1.4 Reading Theories and the Present Study**

Under the influence of the behavioral-based view of reading comprehension, curriculum designers, instructional theorists and teachers rely on a drill-and-practice model of training, and they believe that through repeatedly exposing students to tasks, such as answering comprehension questions and exercises in filling blanks, students can finally master reading skills. In this kind of comprehension training, the teacher acts as a director and manager of practice. However, reading is a far more complex process than that envisioned by early reading researchers, and reading is not simply a set of discrete skills to be mastered (Yamashita, 2008).

In the present study, both cognitive and metacognitive based views on reading comprehension are adopted, with an emphasis on the latter. From the cognitive point of view, the teacher helps students construct understandings about the content of the text, teaches students to use strategies in interpreting the text, and helps students understand the nature of the reading process itself. In addition, reading comprehension training emphasizes the teaching of a set of metacognitive strategies

that students can use to better comprehend texts. The goal of training is to develop a sense of conscious control, metacognitive awareness to monitor, regulate and evaluate a set of cognitive strategies that students can adapt to any text they read.

## **2.2 Reading Models**

A number of reading models have been formulated over the years to provide theoretical frameworks for the teaching of reading. Most of the models fall under one of the following categories: bottom-up models, top-down models or interactive models.

### **2.2.1 Bottom-up Model**

Bottom-up models are associated with behaviorism that was pervasive in the 1940s and 1950s, and they include a series of models that reading research used in the 1960s and the early 1970s (Pan, 2006). As its name suggests, a bottom-up view of the reading process believes that the reader begins reading by constructing meaning from the print of the written text, i.e. from the bottom. The reader begins with letters, and then goes on to words, phrases, sentences, paragraphs, and so on. The main feature of this model is its focus on the recognition and recall of lexical and grammatical forms with an emphasis on the perceptual and decoding dimension.

In Gough's (1972) bottom-up model, the whole progression of the reader processing the text is described in detail, from the first moment of looking at the printed words until the time when meaning is derived from the words. Gough believed

that a good reader is one who can decode words at a rapid pace. LaBerge and Samuels' (1974) bottom-up model emphasizes the role of attention in processing information. Skilled readers can allocate their attention to the important information in the comprehension process by detecting the main ideas and by skipping irrelevant details, whereas beginning readers are unable to decide which information is essential and what is not important.

According to bottom-up models, reading training begins with letter-by-letter teaching and then progresses to words. Grammar-translation method is based on this model. In class, the teacher teaches students to read new words, explains the new words by providing equivalents, and asks students to memorize the new words. After this first stage, the teacher turns to the text. The teacher spends most of the time in explaining the text sentence by sentence, analyzing long sentence structures, and paraphrasing difficult sentences or giving the translation. After finishing the text, the teacher requires the students to finish the exercises from the textbook, which focuses on vocabulary, grammar and structure and, finally, the teacher checks the students' answers.

Following this method of reading training, students spend most of their time in recognizing new words and by the time they reach the end of a sentence, they may forget the meaning of the first part of the sentence, let alone the organization of the whole text. Students form a bad habit of having to find out the meaning of every unfamiliar word in order to understand a sentence, and they are ignorant of reading

skills. They do not know that different materials and different reading purposes require different reading speeds and comprehension methods. Moreover, most of the interaction in the classroom is from the teacher to students; there is little student initiation and little student-student interaction. The reading training method based on bottom-up models increases student dependency on teachers and dictionaries.

As a result of these deficiencies, this model of the reading process began to attract criticism and gradually, with the advent of a top-down view of reading as a psycholinguistic process, the bottom-up view of reading fell into disfavor.

### **2.2.2 Top-down Model**

An alternative model, known as a top-down model, came into being at the end of the 1960s. This model is based on the cognitive theory and stresses the importance of the reader's background knowledge and contribution to the comprehension reading process. In contrast to bottom-up models of reading, top-down models of reading comprehension start from the higher-level in the hierarchy of the mental stages, down to the text itself, with the reading process being driven by the reader's mind. Reading, in this sense, is "a dialogue between the reader and the text" (Grabe, 1988, p.56).

Kenneth S. Goodman and Frank Smith are major proponents of the top-down models. Goodman (1967) described reading as "a psycholinguistic guessing game" (Goodman, 1967, p. 108). During reading processes, thought and language interact, and readers maximize their knowledge to reduce their dependence on textual

information. The act of reconstruction of meaning is viewed as an ongoing, cyclical process of sampling, predicting, confirming or revising those predictions, and then sampling further (Goodman, 1967). Like Goodman, Smith (1971) emphasized the role of meaning and highlights readers' personal experience in constructing meaning from text and describes reading as a purposeful, selective and predictive process. There are four distinctive and fundamental characteristics of reading cited by Smith (1971): reading is purposeful, reading is selective, reading is based on certain prior knowledge to comprehend, and reading is anticipatory. The influence of Goodman and Smith's work led to a new era in English reading theory and English reading pedagogy. Many pedagogical models advocate developing the reader's anticipatory strategies. Previewing, predicting, guessing and going for gist activities are frequently suggested as necessary to activate the learner's predicting skills and expectations.

Top-down models are used by more skillful, fluent readers, for whom attitudes and decoding become automatic, but for less proficient, developing readers, like most ESL/EFL readers, the models do not provide a true picture of the problems that these readers have to surmount. It is seen as an active cognitive process in which the reader's background knowledge plays a key role in the creation of meaning (Brantmeier, 2005b). Reading is not a passive mechanical activity but "purposeful and rational, dependent on the prior knowledge and expectations of the reader (or learner). But ESL/EFL readers often lack the background knowledge and can not comprehend texts successfully without paying enough attention to the words, phrases and

sentences. So top-down models are difficult to put into teaching practice in the ESL/EFL classroom. Teachers are puzzled at teaching methods that should provide or activate the background knowledge of students who are not properly equipped for such a process. Teachers feel that the teaching of reading is not based on anything tangible.

### **2.2.3 Interactive Model**

As bottom-up models and top-down models gradually lost their vogue due to the fact that the reading process is not a linear action of either purely bottom-up or top-down processes, interactive models came into existence to deal with these deficiencies. Interactive models combine the data-driven bottom-up models and the knowledge-driven top-down models and suggest that the two are both crucial for the process of reading comprehension. According to interactive models, reading is not just an active process, but an interactive process. The word "interactive" in this model refers not only to the interaction between the reader and the text (as in schema theory) but also to the interaction between bottom-up and top-down processing skills. For Eskey (1988), the interactive model takes into account the continuous interaction between bottom-up and top-down processing in the construction of the meaning of a text.

One of the most influential interactive models is given by Rumelhart (1977), who first argues against linear processing in reading presumed by bottom-up models. Rumelhart (1977) maintained that reading is a “perceptual” and “cognitive process”

(p.573). Reading involves more than the print itself, and it involves the perceptual and cognitive processes used by readers in obtaining meaning from the print. And the meaning produced also depends on the knowledge that the reader possesses about the topic being read (Rumelhart, 1977).

Stanovich's (1980) "compensatory model" adds a new feature to Rumelhart's interactive model, and he suggests that strength at one processing stage should compensate for weakness in another. Stanovich's model can illuminate the research result that good readers sometimes show greater sensitivity to contextual constraints than poor readers do, and poor readers may use strong syntactic or semantic knowledge because they lack lexical knowledge. Evidently, in terms of ESL/EFL reading, according to Stanovich's model, knowledge of efficient ESL/EFL readers may use first language reading strategies to compensate for linguistic weaknesses.

Interactive models deal with the shortcomings of the bottom-up models that assume that background knowledge can not be activated before lower-level decoding; interactive models also overcome the misconception of the top-down model that do not allow lower-level processes to influence or direct higher level ones. Generally speaking, interactive models provide a more accurate conceptualization of the reading performance than strictly top-down or bottom-up models do (Stanovich, 1980).

The merits of interactive models were quickly recognized and put into practice in the field of English language teaching, especially ESL/EFL teaching of reading comprehension. ESL/EFL readers have much to compensate for in the reading

process due to their inadequacy in language competence and background knowledge. In light of the interactive models of reading, readers are encouraged not only to resort to various sources of lexical, syntactic, semantic, general and world knowledge, but also to use various reading strategies to cater to different tasks which embody various reading materials and reading purposes. An emphasis on using reading strategies to glean meaning from text becomes central to ESL/EFL reading theory and pedagogy.

#### **2.2.4 Reading Models and the Present Study**

The way the reading process is conceptualized changes as knowledge about how our minds work increases. Reading models constantly develop from the ones that are linear in nature, such as bottom-up and top-down models, to interactive models. All the models contribute much to our understanding of reading comprehension and to our design of reading comprehension training. Due to their text-driven nature, bottom-up models are significant in explaining less proficient ESL/EFL readers' approaches to text comprehension, and they offer some insights into the reading behaviors of these students.

Top-down models are meaningful for ESL/EFL reading because the majority of adult ESL/EFL readers are more or less proficient readers in their native languages, and their ability to make predictions about a text and their relatively large range of knowledge can play an important role in their reading comprehension. Both Goodman's predicting idea and Smith's anticipating idea seem to be a fitting model for the intelligent and cognitively skilled ESL/EFL readers. As the participants of this

study are graduate EFL students, top-down reading models are comparatively appropriate and useful in the present study. However, as Eskey (1988) indicated, the negligence of learners' weak linguistic procession skills leads to "a strongly top-down bias" (p. 95) in L2 reading pedagogy. Actually, "the structure of the language of the text contributes much more to the readers' reconstruction of meaning than strictly top-down theorists would have us believe" (p.98).

Eskey (1988) further explained that L2 readers are fundamentally different from L1 readers in that L2 readers need to master essential "knowledge of the language of the text" (p. 96) before they can successfully process the L2 reading schema. Some researchers (Baker & Boonkit, 2004; Koda, 2005; Paran 1996) argued that strictly top-down models cannot fully account for the results of much empirical research and, therefore, they proposed that reading is an interactive, top-down and bottom-up, process. Efficient and effective reading entails both top-down and bottom-up processes interacting simultaneously.

The interactive model is valid in explaining the reading processes and reading strategies of ESL/EFL readers, and it serves as one theoretical framework for the instructional metacognitive reading strategies in this study. Reading comprehension should always be seen as a kind of process, an active searching process; a process of an application of different kinds of knowledge; a strategic process; and an interactive process (Almasi, 2003; Philip, 2005). For Eskey (1988), the interactive model takes into account the continuous interaction between bottom-up

and top-down processing in the construction of the meaning of a text. The process needs planning, monitoring, evaluating to ensure improved reading performance. The three strategic processes of metacognitive strategies are not linear, but recursive. Students might use the strategies when it is necessary depending on the needs or demands of the task and the interaction between the task and the learner (Chamot & O'Malley, 1996).

The view of reading as an active process establishes that readers have the ability to monitor, regulate and direct their mental processes, and it is hoped that all these can be achieved through explicit metacognitive strategy training.

### **2.3 Theoretical Foundation: Metacognition**

The concept of metacognition has its roots in two relatively distinct research traditions, the area of cognitive development and the context of information processing studies. Flavell (1976) first introduced the term “metacognition” to literature in education and psychology, and his research initially investigated children’s awareness of their own learning processes in the area of cognitive development; the second root came from information-processing theories, and research emphasized executive control or the ability to regulate cognitive resources, such as memory or attention, to meet specific goals.

The research about metacognition continues in the area of reading comprehension. According to Blair and Rupley (1998), metacognition in reading

refers to readers' awareness and control of how to employ strategies in order to construct meaning. In this dissertation, metacognition serves as a theoretical foundation.

### **2.3.1 Definitions and Classifications of Metacognition**

Although Wellman (1985) considered metacognition as a “fuzzy” concept, a great body of literature is dedicated to describing and refining this concept (cited in Liu, 1998). Flavell (1976) defined metacognition as “knowledge concerning one’s own cognitive process and products”, and it involved “active monitoring and consequent regulation and orchestration of these processes”. Zimmerman (2008) defined metacognition as the ability to adjust behavioral and environmental functioning in response to changing academic demands. Jacobs and Paris (1987) believed that metacognition includes “any knowledge about cognitive states or processes” that can be “shared between individuals” (p. 258). Garner (1987) regarded metacognition as a theory that examines thinking about thinking.

Despite different definitions, researchers generally agree that metacognition is “thinking about thinking.” (Anderson, 2002, p.1) It can “be loosely defined as conscious awareness and control of one’s own cognitive processes”, which involves knowing when one understands or when one does not understand what one is reading, and “knowing how to go about achieving a cognitive goal” (Zhang, 2008, p.91). To put it simply, the definition of metacognition can be generalized as the individual’s knowledge, awareness, and conscious attempts to regulate their cognitive activities (McCormick, 2003).

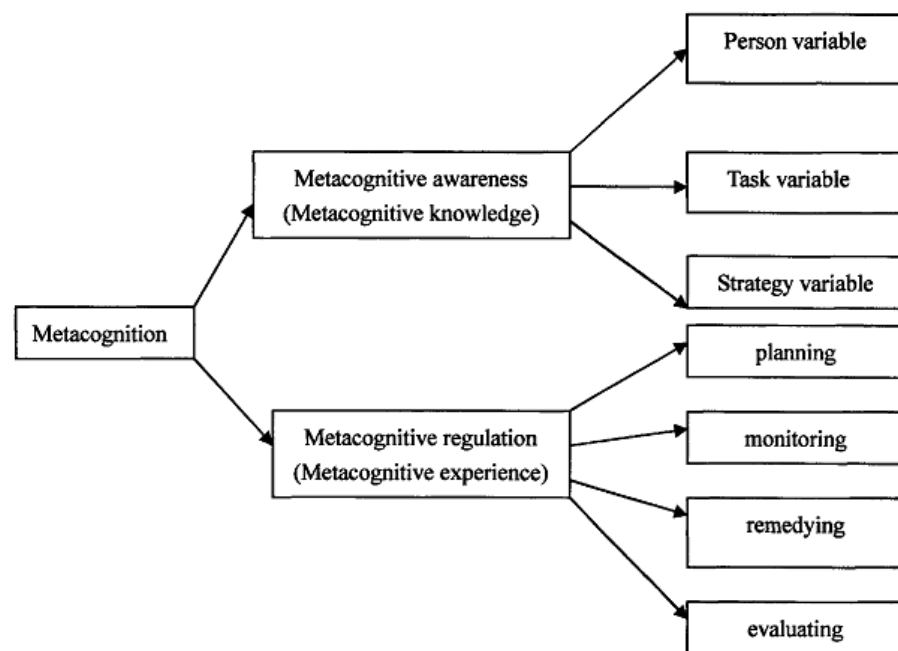
In the area of reading, metacognition is defined as the readers' awareness of their own levels or degrees of understanding and their abilities to regulate the process of comprehension as they proceed through text (Martinez, 2006). It is also referred to as knowledge of the factors that affect reading comprehension, as well as the control of these factors. Metacognition enables students to increase their awareness of themselves as learners and to place them in control of their own reading (Lawrence, 2007; Foster, Sawiki, Schaeffer, & Zelinski, 2002).

There are different classifications of metacognition. Flavell (1979), proposed two categories of metacognition: metacognitive knowledge and metacognitive experience. Brown (1987) conceptualized metacognition at two levels, the awareness and knowledge about the cognitive system and the control and regulation of cognition. Jacobs and Paris (1987) divided metacognition into self-appraisal of cognition and self-management of thinking.

Pintrich, Wolters and Baxter (2000) pointed out three major elements of metacognition: active control over learning-related behaviors; self-regulation of motivation and affect; and control over various cognitive strategies for learning. Anderson (2002) proposed five main components for metacognition: preparing and planning for learning; selecting and using learning strategies; monitoring strategy use; orchestrating various strategies; and evaluating strategy use and learning.

In the area of reading research, metacognition is classified similarly. Baker and Brown (1984) described three components of metacognition: the individual's

knowledge about cognition, the individual's regulation of cognition, and the individual's deployment of strategies within a cognitive act. Billingsley and Wildman (1990) believed that metacognition contained two components that are essential to reading comprehension: knowledge about cognition and the regulation of cognition. Garner (1992) categorized three types of metacognitive activities: metacognitive knowledge, metacognitive experience and strategy use. To clarify the framework of metacognition, Figure 2.1 is presented:



**Figure 2.1 Framework of Metacognition**

(Flavell, 1979, p.909)

As presented in Figure 2.1, it can be seen that metacognitive knowledge (metacognitive awareness) and metacognitive regulation (metacognitive experience or strategy) are two basic elements in the definition. Metacognitive awareness is

knowledge about people's cognitive states and processes and regulation is the ability to control or modify these states. To be specific, metacognitive awareness includes person variable, task variable and strategy variable. Person variable refers to the knowledge of the person and others cognition and characteristics, for example, a person realizes that he can grasp more information through skimming and scanning. Task variable refers to the knowledge about the learning tasks and information involved, for instance, when finishing an article, people realize that the multiple choices are easier than gap-filling. Strategy variable, of course, means the knowledge of various strategies involved in the cognitive process, i.e. the awareness of what strategies should be employed in different tasks. Metacognitive regulation is to monitor, control and regulate one's cognition actively and consciously. It mainly includes planning the organization of either written or spoken discourse, selective attention for special aspects of a learning task, monitoring or reviewing attention, comprehension or production of tasks and evaluation of comprehension after the activity. Metacognitive knowledge and metacognitive regulation are closely related and interact with each other. In other words, it is difficult to separate metacognitive knowledge from metacognitive regulation during our cognitive activities. Thus, if a reader is aware of what is needed to perform effectively in L2 reading, it is possible to take steps to meet the demands of a reading situation more effectively. If, however, the reader is not aware of his or her own limitations as a reader or of the complexity of the task at hand, the reader can hardly be expected to take actions to solve their reading problems.

The present study mainly adheres to the above-mentioned researchers' relevant work about metacognition and reading comprehension, and considers metacognition as a construct consisting of knowledge about cognition, regulation of cognition, and the individual's deployment of strategies within a cognitive act. The following sections will present these three components of metacognition respectively, and these three are closely related to reading comprehension and they are not necessarily independent of one another.

### **2.3.2 Metacognitive Knowledge and Reading Comprehension**

Metacognitive knowledge is “the individual's beliefs about oneself and others as learners and of the requirement involved in completing a cognitive task” (Cava, 1999, p.7). It is “the part of long-term memory that contains what learners know about learning” (Wenden, 2001, p.45). Metacognitive knowledge is divided into three categories: knowledge of person, knowledge of task and knowledge of strategy by Flavell and other researchers (cited in Herrmann, 1996). The three categories are highly interactive and interdependent on each other: personal knowledge, or knowledge of oneself, includes cognitive and affective factors that facilitate learning; task knowledge refers to task purpose or significance, the nature of language and communication, and the need for deliberate effort and task demands; and strategic knowledge is effective strategies for particular tasks, or general principles to determine strategy choices (Baker & Brown, 1984; Schneider, 2008).

In the area of reading, Brown (1985) defined metacognitive knowledge as the

knowledge readers have “about their cognitive resources and the compatibility between themselves as readers and the demands of a variety of reading situations” (p. 501). This has to do with one’s ability to reflect on one’s own cognitive processes, to be aware of one’s own activities while reading. It is the knowledge or awareness of the reader’s strategies which is necessary to perform thinking processes and reading tasks. Metacognitive knowledge requires readers to be alert to what they are reading, to know what they want to achieve from reading, as well as evaluating their understanding of a text. Readers should be able to diagnose the problems and take effective remedial action to repair comprehension failures or overcome difficulties.

Four components of metacognitive knowledge related to reading comprehension are identified: reader, task, strategy and text (Baker & Brown, 1984; Garner, 1994). Reading refers to the reader’s awareness of his or her own cognitive resources; task refers to the reader’s awareness of the purpose and demands of the reading task; strategy refers to the reader’s awareness of and control over effective reading comprehension strategies and text refers to the reader’s familiarity with text content. In addition, text organization, discourse structures, clarity of presentation of content, topic familiarity, topic interest and vocabulary are all essential components of knowledge because they have a direct impact on reading comprehension (Brown, 1987).

Metacognitive knowledge is considered to involve three sub-processes: declarative knowledge, procedural knowledge and conditional knowledge (Jacob & Paris, 1987; Billingsley & Wildman, 1990). Declarative knowledge refers to the

conscious awareness of the fact that you know something, and having a declarative knowledge in reading means readers know that a particular strategy is useful and the readers are able to talk about it. Procedural knowledge refers to knowing how to do something, and procedural knowledge in reading means readers know how to use comprehension strategies effectively. Conditional knowledge refers to awareness of the conditions that influence learning, and in reading. It is the kind of knowledge that readers need to know about when a strategy is needed and they also need to know why it is useful.

### **2.3.3 Metacognitive Regulation and Reading Comprehension**

Metacognitive regulation, or regulation of cognition, is considered as cognitive monitoring, and it is an awareness and regulation of the strategies used to complete the task successfully. In other words, metacognitive regulation refers to the metacognitive activities individuals actually execute and regulate while they are engaged in a task (Baker & Brown, 1984; Pressley, 2002; Pressley & Gaskins, 2006). As an executive management of cognition, regulation of cognition consists of the online activities used to regulate and oversee learning. These processes include planning activities prior to undertaking a problem, monitoring activities during learning, and checking or evaluating outcomes after learning. These processes keep track of a current activity within a cognitive system and allow active consideration of task-relevant properties of a problem. They are assumed to be relatively unstable, and task and situation dependent (Brown, 1980).

The ability to regulate cognition is found to play a critical role in the comprehension of both spoken and written language (Macaro, 2006). In the area of reading comprehension, metacognitive regulation is defined as the reader's control over strategies and actions, and it is used to identify and overcome difficulties with text in order to monitor one's comprehension (Brown, 1987). Metacognitive regulation is the reader's ability to use self-regulatory strategies to complete thinking processes and reading tasks. Self-regulation strategies in reading help readers change their cognition or behavior to make them more consistent with personal goals or reading task demands (Pintrich et al., 2000). Students without metacognitive regulation are essentially readers without direction or opportunity to review their progress, accomplishment, and future directions (Chamot, 2004).

Metacognitive regulation activities have to do with self-regulatory mechanisms used by an active reader during an ongoing attempt to solve reading problems that occur before, during, and after reading processes (Zimmerman, 2008). These activities include planning one's next move; monitoring the effectiveness of one's reading; and testing, revising, checking the outcome of any attempt to solve a reading problem and evaluating one's strategies for reading. In planning, individuals select or coordinate a set of cognitive means to a cognitive goal such as predicting outcomes and scheduling strategies and forms of trial and error. For example, good readers adapt their rate of reading according to the demands of the reading passage (Eisenberg, 2010). In monitoring, readers keep track of their progress of reading by

testing, revising and rescheduling plans and strategies depending on how well they are reading. In evaluating, readers evaluate their thinking by revising and validating the outcome of any strategic actions against the criteria of efficiency and effectiveness.

#### **2.3.4 Metacognitive Strategies and Reading Comprehension**

Chamot & O'Malley (1990) viewed metacognitive strategies as "higher order executive skills." Oxford (1990) defined metacognitive strategies as "actions which go beyond purely cognitive devices, and which provide "a way for learners to coordinate their own learning process" (p.136). Ellis (1994) regarded metacognitive strategies as making use of knowledge about cognitive processes and constituting an attempt to regulate language learning by means of planning, monitoring, and evaluating. For A. Cohen (2005), metacognitive strategies are actions that "deal with pre-assessment and pre-planning, on-line planning and evaluation, and post-evaluation of language learning activities and of language use events" (p. 7).

In reading, metacognitive strategies are self-monitoring and self-regulating activities, focusing on both the process and the product of reading. They include the readers' awareness of whether or not they can comprehend what they read; their ability to judge the cognitive demands of a reading task; and their knowledge of when and how to employ a specific cognitive reading strategy according to text difficulty, situational constraints, and the reader's own cognitive abilities (Baker & Brown, 1984; Gourgey, 2001; Hamdan, Ghafar, Sihes, & Atan, 2010). To put it simply, metacognitive strategies in reading, are those strategies that are designed to increase readers' knowledge of

awareness and control, and to improve their reading comprehension, and to evaluate whether their attempt at comprehension has been achieved.

Different classifications of metacognitive strategy are given. Chamot & O'Malley (1990) classified metacognitive strategies into three main categories: planning, monitoring, and evaluation. In Oxford's (1990) system, metacognitive strategies are broadly classified into three groups: centering one's learning; arranging and planning one's learning; evaluating one's learning. The classifications of metacognitive strategies provided by Chamot & O'Malley (1990) and Oxford (1990) can be applied to all language skill areas, including reading. Other means of classifying metacognitive reading strategies exist. Baker and Brown (1984) identified six metacognitive reading strategies: clarifying the purposes of reading; identifying the important aspects of a message; focusing attention on the major content rather than trivia; monitoring ongoing activities to determine whether comprehension is occurring; engaging in self-questioning to determine whether goals are being achieved; and taking corrective action when failures in comprehension are detected (p. 354). Keene and Zimmermann (1997) developed a list of seven metacognitive reading strategies: activating prior knowledge; making connections to text; determining the most important ideas and themes in the text; asking questions of self, the author and the text; creating visual and other sensory images from text during and after reading; drawing inferences from text and synthesizing information; and utilizing fix-up strategies to repair comprehension confusion.

Although researchers express their preference for particular metacognitive reading strategies, commonality exists. Pressley (1997) enumerated several features metacognitive strategies share: metacognitive strategies facilitate understanding of texts for meaning and learning and require a reader to think before, during and after reading; they allow a reader to be proactive when attempting to comprehend a text successfully; they help a reader recognize when application of a strategy is necessary and beneficial during reading; employed in combination, metacognitive strategies are used to evaluate comprehension after reading; metacognitive strategies can provide a reader with a self-regulation procedure to address the cognitive process of reading; and metacognitive strategies can cultivate a strategic reader. As O'Malley stated in the most frequent quote in the metacognitive research, "Students without metacognitive approaches are essentially learners without direction, or opportunity to review their progress, accomplishment, and future directions" (p.561). Since Chamot & O'Malley's taxonomies are the most quoted, the researcher chooses their categorization for this study and further develops it into the metacognitive strategy training model.

### **2.3.5 Relevance to the Present study**

The theory of metacognition has received a great deal of attention and serious consideration from reading researchers since its development in the late 1970s, and the literature review above shows that metacognition plays a significant role in comprehending a reading text. Although metacognition has been explored from

different perspectives, researchers essentially agree on knowledge of cognitive processes, regulation of cognitive processes and the purposeful use of strategies as necessary components of metacognitive ability. This study adheres to these three classifications of metacognition.

Metacognitive knowledge, metacognitive regulation and metacognitive strategies are related to each other in reading comprehension (Wang, Spencer, & Xing, 2009). Metacognitive knowledge provides a basis for metacognitive regulation that in turn prompts readers for a purposeful use of metacognitive strategies. Metacognition in reading is a sequence that begins with the reader's metacognitive knowledge and ends with the use of strategic reading behavior.

Because academic reading involves using strategies for learning from text and the monitoring of the use of these strategies, metacognition plays an increasingly vital role in reading research. If readers are not aware of when comprehension is breaking down and what they can do about it, then strategies introduced by the teacher will fail (Wosley, 2010). Metacognitive strategies help students know about the cognitive strategies, control them, and monitor their execution.

Different means of classifications of metacognitive reading strategies are adopted for the design of this metacognitive reading strategy training. In this study, metacognitive reading strategies are broadly included in planning, monitoring and evaluating. When the reader determines his or her objectives for undertaking the reading task, he or she is employing planning strategies. Monitoring strategies entail

the reader focusing attention on the most important ideas and themes in the text, engaging in self-questioning, drawing inferences from text and synthesizing information, becoming aware of difficulties or errors, monitoring ongoing comprehending activities, and utilizing fix-up strategies to repair comprehension confusion. Evaluating strategies are exhibited when the reader assesses the outcome of reading or evaluates the effects of the usage of reading strategies.

In brief, strategic readers use cognitive strategies to achieve a particular reading goal and metacognitive strategies to ensure that the cognitive reading goal has been met (Livingston, 1997). In this context, efficient readers may shift between cognitive and metacognitive activities while performing the reading tasks. Hence, readers who have clearer metacognitive awareness of the nature of the reading task and of their own strategies for text processing will differ from those who do not. Teachers therefore should help students develop metacognitive strategies to become efficient readers.

## **2.4 Pedagogical Foundation: Metacognitive Strategy Training**

Metacognitive strategy training not only enhances L2 learners reading comprehension but helps them realize their reading objectives. Metacognitive strategy training aims to explore the most effective ways of reading, strengthen reading abilities and ensure students are independent, efficient and autonomous readers. It has been found that less competent readers may improve their skills through training for

strategies evidenced by more successful readers (Carrell, 1989). Owing to the relationship between reading and metacognition, many researchers have begun to conduct training studies in this field.

#### **2.4.1 Studies on Metacognitive Strategies Training in Reading in Other Countries**

Only having metacognitive knowledge is not sufficient if learners are not taught how to put this knowledge into active use in EFL reading (Lehtonen, 2000). The success of studies about explicit metacognitive reading strategy instruction in L1 reading suggests the feasibility of the training among ESL/EFL readers. Casanave (1988) argues that providing ESL readers training in how to monitor their comprehension is a “neglected essential” in ESL reading instruction, and students must receive training in how to handle those “reading problem situations” so that they can “evaluate what the problem is, make decisions and then check the results” (p.290). For educators to assist students’ learning, it is important to ascertain whether metacognitive strategy instruction can indeed facilitate students’ reading and contribute to their success in academic performance. Several studies prove the effectiveness of ESL/EFL metacognitive strategy training in foreign contexts (Carrell, Pharis, & Liberote (1989); A. Cohen, 2005; Chamot & O’Malley, 1990; Wenden, 1999). There are many empirical research studies on metacognitive strategy training.

Dhieb-Henia (2003) investigated how metacognitive strategy training influenced a group of readers’ declarative and procedural knowledge, and their choice

and use of strategies while reading research articles. Two groups of undergraduate Biology students (62 in all) from two science institutions took pre- and post-course reading tests, and 12 participated in retrospection. All the subjects were Tunisian and spoke Arabic (Tunisian Arabic and Modern Standard Arabic) as a first language, French as a second, and English as a third or Foreign language. The tests and protocols provided quantitative and qualitative evidence of the effectiveness of metacognitive strategy training in improving the subjects' familiarity with and proficiency in reading research articles, and also of the effectiveness of retrospection as a method for evaluating the subjects' reading behaviour.

The study found that metacognitive strategy training could be an effective teaching tool for ESP/EFL teachers in science institutions, and particularly those teaching advanced undergraduate or post-graduate students. The traditional approach to reading comprehension, at least as shown by this study, failed to equip students with the skills required to read highly specialized texts in their academic field. It is clear that in the specific context it was used, metacognitive strategy training had a positive effect on students' processing of research articles, and could be presented as a supplemental teaching tool.

Muñiz-Swicegood (1994) explored the effects of metacognitive reading strategy training on bilingual Spanish students. Studies conducted over the last decade provide evidence that linguistically diverse children continue to lag behind monolingual English-speaking children in reading performance (Office of Bilingual

Education and Minority Language Affairs, 1989-90). The bilingual Spanish dominant students in this experimental study were taught to use metacognitive reading strategies while reading in Spanish. Primary findings indicated that, following training in metacognitive Spanish reading strategies, Spanish dominant bilingual children improved in the area of reading performance on the La Prueba Spanish reading test and the Iowa Test of Basic English Skills reading test. Post interview results of the Burke Reading Interview, translated into Spanish, showed increases in the frequency of Spanish reading strategies following metacognitive intervention. A directionality was also found in the area of transferal of metacognitive strategies across languages (from Spanish to English).

The study found that significant improvements in the types and frequency of metacognitive strategies that the children were using during their Spanish reading investigation were documented. The positive directionality of this investigation offers promise for future studies in the area of the development of metacognitive reading strategies with bilingual/bicultural children.

Salataci and Akyel (2002) investigated the reading strategies of Turkish EFL students in Turkish and English and the possible effects of reading instruction on reading in Turkish and English. The study addressed the following questions: a) Does strategy instruction in EFL reading affect EFL reading strategies and reading comprehension in English? b) Does strategy instruction in EFL reading affect reading strategies in Turkish? The participants consisted of 8 Turkish students enrolled in a

pre-intermediate level class of a one-year intensive English course offered at a Turkish-medium technical university. The data came from think-aloud protocols, observation, a background questionnaire, a semi-structured interview and the reading component of the PET (the Preliminary English Test). The results indicated that strategy instruction had a positive effect on both Turkish and English reading strategies and reading comprehension in English.

Carrell et al. (1989) conducted a study in the L2 context to examine the combined effects of cognitive and metacognitive strategy instruction on reading comprehension. High-intermediate level adult ESL students of varied native language backgrounds participated in the study. The students were trained either in semantic mapping or the experience-text-relationship (ETR) method to activate background knowledge. Each group of students also received training in metacognitive awareness and regulation of the two strategies. Results showed that the combined effects of metacognitive and cognitive strategy instruction were effective in enhancing reading comprehension.

In an earlier study, Carrell (1985) found that overt teaching of the rhetorical organization of texts facilitated reading comprehension of English. She conducted a training study with 25 ESL high-intermediate proficiency students. Carrell divided the students into an experimental and a control group. The experimental group received five successive one-hour training sessions. The training covered the four major expository discourse types (comparison, causation, problem/solution, and description).

At the end of the training, the students receiving instruction on text organization recalled more idea units (a single clause consisting of main, subordinate, adverbial, and relative clauses) than the control group. Modeling her study on Carrell's study, Nelson (2003) also conducted a strategy instruction in the ESL context on text structure and obtained positive results on the comprehension post-test.

Another study that examined the possible effects of metacognitive strategy instruction on reading processes and reading comprehension was conducted by Cotterall (1990). Cotterall analyzed the effects of metacognitive strategy instruction on four Japanese and Iranian ESL learners. The findings indicated that the learners benefited from the strategy instruction. Song's (1998) study in an EFL context and found that strategy training enhanced the reading ability of Korean EFL college learners.

Auerbach and Paxton (1997) also brought metacognitive awareness training into their L2 reading classes through pre- and post-course reading interviews, reading comprehension questionnaires, strategy awareness questionnaires, reading inventories, and think-aloud protocols. The results indicated that the students' metacognitive awareness increased at the end of this one-semester awareness-raising program.

The above research studies show that metacognitive training is effective in improving students' metacognitive awareness and better reading comprehension. However, there is counter evidence against the role of metacognitive training in L2 reading. For example, Wenden (2001) has carried out metacognitive training with

advanced students in Columbia University. In her experiment, she distributes handouts to students which are related to problem-solving reading strategies, and learning language attitudes. After 7 weeks of training, from the results in the questionnaire, most of the subjects thought the training was useless. Wenden explained that the pure metacognitive training has no ideal effectiveness, the subjects thought of it as extra thing in reading; they could not purposefully and actively apply the metacognitive strategies to their reading comprehension.

Serran (2002) conducted a training study to equip a group of urban eighth graders with metacognitive strategies that would improve their reading comprehension. The results indicated that although the combined use of all of the reading strategies significantly improved comprehension, there were no statistical differences in test scores between the effectiveness of the three strategies.

#### **2.4.2 Studies on Metacognitive Strategies Training in Reading in China**

In China, there are few research studies available in the field of metacognitive training. Nunan (1996) conducted the strategy training with students in Hong Kong University by using the same questionnaire to collect the data. The results showed that trained students are better than untrained ones in motivation, strategy knowledge and strategy functions. The differences are significant. There is no difference in “self-reflection” and “self-evaluation” between trained and untrained students. The reason may lie in that the two strategies are not the focus of the training and do not cause the students’ attention.

Ji (2002) reported a metacognitive strategy training program of 62 first year students in Qinghua University. The training consists of four metacognitive strategies, i.e., becoming aware of learning processes, self-evaluation, and establishment of objectives and planning. It is a case study by collecting the data through open questionnaire, interview, students' written feedback and structured questionnaire. The findings show that most students' metacognitive awareness and ability to use these strategies had been enhanced. The students' attitudes tend to be positive to the metacognitive strategy training.

Meng (2004) reported a study of reading strategy training in an ongoing English classroom and investigated the effects of the training on students' reading ability by means of analyzing test results and the questionnaire. Results showed that strategy training was effective in enhancing EFL college students' overall reading proficiency and reading rate. The intervention had significant effect on the improvement of students' abilities to grasp main ideas and to make global and lexical inferences from both given passages and knowledge of the world ; however , it had no obvious effect on the improvement of their ability to extract detailed information from the texts. Finally, post-training questionnaire revealed that the students took positive attitudes toward the training and the four strategies, indicating that such training activities are relatively safe to use in Chinese EFL college reading classroom.

Ren (2005) conducted reading strategy training with Chinese EFL students in reading classes at a vocational education institute for sixteen weeks, which revealed

that (1) only a few subjects consciously employed learning strategies, quite a few used cognitive strategies, and only a small group used metacognitive strategies such as self-evaluating and self-adjusting; (2) this learning strategy training was effective and feasible; (3) the combination of metacognitive and cognitive strategies can improve students' reading ability. It is believed that the teachers can play an important role in training students to use strategies crucial for learning and help them to improve their reading efficiency.

Pan (2006) put forward a theoretical and practical model of ESL metacognitive reading strategy training by integrating the strengths of Pearson and Dole's learning strategy training models. 140 non-English major students took the metacognitive reading strategy training. Data was collected by Metacognitive Awareness of Reading Strategy Inventory, reading comprehension test, The theoretical and practical ESL metacognitive reading strategy training model is raised through integrating the strengths of Pearson and Dole's learning strategy training models. The teachability of this model is testified by the experiment with 140 non-English major students as subjects. Here are the findings: 1) the model is feasible in the reading course for Chinese learners; 2) this training model will improve students' metacognitive reading strategy awareness; 3) direct and explicit explanation of reading strategy must be integrated with sufficient proper exercises.

Liu (2009) reported an empirical study on a ten-week metacognitive reading strategy training for less efficient non-English major sophomores. Data was collected

by metacognitive reading strategy questionnaire, reading comprehension test, reading report and interview. The major findings are as follows: 1) relatively poor university students in reading performances have limited knowledge of reading strategy; 2) metacognitive strategies are usually not employed while cognitive ones are sometimes used; 3) short-term strategy training is effective in their use of strategies, especially metacognitive ones; however, it does not prove to be as significantly effective in reading performances as in strategy use. These findings provide some pedagogical implications for EFL teaching and learning in Chinese universities.

#### **2.4.3 Implications for the Present Study**

The above discoveries shed new light on an understanding of the effects of metacognitive strategy training on improving L2 reading teaching and learning in general. Based on the studies on the L2 metacognitive training on academic reading process, several insights are provided into how to implement the metacognitive training of academic reading in the present study, which helps researchers construct an effective and practical model---the Metacognitive Strategy Training Model of Academic Reading Comprehension (MSTARC) that stimulates autonomous learning. However, research in this area is still limited. An overview of the above studies suggests the following considerations for research in the field.

First of all, an obvious defect in most of the previous empirical studies on MST is that training in metacognitive strategies was not carried out in a comprehensive manner. Palincsar and Brown (1984) taught poor readers to monitor

their comprehension by summarizing, questioning, clarifying and predicting. Carrell et al. (1989) focused on training in two strategies, semantic mapping and the Experience-Text-Relationship method, which involved activating background knowledge, reading texts against the activated background knowledge, and checking comprehension. Muñiz-Swicegood (1994) trained bilingual students to use the strategy for self-questioning. Liu (2004) trained students in strategies for planning, selective attention, monitoring and evaluating, but she adopted Pearson Dole's five-step method, which targets isolated strategies, that is, the students were trained to use strategies one by one. Therefore, the MST model is needed to ensure that the metacognitive strategies are effective in academic reading comprehension. Once students master these metacognitive strategies, they can improve their reading efficiency with lifelong benefits.

Second, how metacognitive strategy affects reading comprehension has been investigated by many researchers using mainly quantitative methods (Sheorey & Mokhtari, 2001; Nebila, 2003; Rasekh & Ranjbary, 2003; Muñiz-Swicegood, 1994; Schoonen, Hulstijn, & Bossers, 1998). Although Li and Munby (1996) presented a qualitative study of metacognitive strategies in second language academic reading, it was conducted in an ESL context. Since metacognition belongs to the field of psycholinguistics, the data can be elicited from qualitative instruments and analyzed qualitatively. The answer to this question may provide a better knowledge of the nature of metacognitive strategies in EFL academic reading comprehension.

Third, it is important to mention that nearly all of these studies are conducted in a real ESL context. While in an EFL context, qualitative analysis for metacognitive strategy training for academic reading comprehension is seldom discussed, especially in China, where studies hitherto have been inadequate and unsystematic (Wen, 1996) ; most of the research is still restricted to the review of studies in other countries. Moreover, little empirical research has been done to investigate readers at advanced levels of teaching reading, and it is at this stage of acquisition in particular where more reading research is needed (Brantmeier, 2003; Young & Yoke, 2001). Therefore, whether the literature is available and whether it is appropriate to EFL contexts is a matter that needs to be further explored. Chinese is the largest group of EFL learners in the world; it is meaningful to conduct the research to obtain more insightful discoveries since there are still unsolved questions pertaining to the specific effects of metacognitive training for academic reading in this particular context.

## **2.5 Metacognitive Strategy Training Approaches**

Since the 1980s a great deal of research has focused on how to teach reading strategies directly. In metacognitive strategies instruction in reading, a number of approaches are employed, and among them, The Reciprocal Teaching Approach, The Transactional Strategy Instruction and The Cognitive Academic Language Learning Approach are considered to be effective.

### **2.5.1 The Reciprocal Teaching Approach**

As an instructional model, The Reciprocal Teaching Approach (RTA) has been developed by Palincsar and Brown (1984). Initially it was developed for teaching metacognitive strategies to students who encounter difficulty in learning to read in the classroom. Subsequent studies proved that it could be applied to L1 readers of different ages and different proficiency levels, and it has proved to be effective within a short period of time (Galloway, 2003).

RTA employs direct instruction and its goal is to increase comprehension of what has been read and to develop monitoring of the comprehension process. This model incorporates four comprehension strategies used by skilled readers: questioning, summarizing, clarifying, and predicting. A teacher at first guides, models, and prompts students as they work to understand a text. The teacher does not simply give students the answers; students have to do some of the work by themselves. And by repeatedly doing such work, students become increasingly competent with the four strategies. The classroom teacher only models and prompts when it is necessary. As students become more familiar with the strategies, they take turns assuming the role of the teacher. The classroom teacher gradually releases responsibility to students, and ultimately, the students assume primary responsibility for employing the strategies as they read.

As one of “the most widely replicated instructional” approaches “for promoting independent metacognitive strategy use” (Galloway, 2003, p. 71), and “an increasingly prominent approach to metacognitive strategy instruction” (Galloway,

2003, p.15), RTA has been employed and studied by many researchers. Rosenshine and Meister (1994) conducted an investigation to examine the results of studies that have employed Palincsar and Brown's Reciprocal Teaching Approach on reading comprehension. This investigation includes published and unpublished between-group studies conducted between 1982 and 1992, and an impressive effect on the scale of 0.88 is reported on teacher-generated outcome measures. Galloway (2003) provides a quantitative synthesis of published empirical studies that employ Palincsar and Brown's Reciprocal Teaching Approach to improve reading comprehension. 22 dissertations and 31 journal articles are examined, and an overall effect of 0.74 is found for interventions employing the reciprocal training procedure to improve reading comprehension.

### **2.5.2 The Transactional Strategy Instruction**

The Transactional Strategy Instruction (TSI), another model of strategy instruction, is designed by Pressley, El-Dinary, Gaskins, Schuder, Bergman, Almasi, and Brown (1992). TSI is suitable for use during a long period of time with the introduction of a few new strategies at a time, and it can be applied to L1 teaching and learning, especially in the teaching of reading (Brown, 1985). TSI is considered transactional in three senses: readers link the text to prior knowledge; meaning construction reflects the group's ideas and differs from personal interpretations and the responses are dynamic for they include both the students' and the teacher's perceptions (Stahl, 2004).

In TSI, a teacher models the use of strategies by verbally explaining the thinking processes. During the modeling process, a teacher explicitly explains to students the value of the strategies being learned, including why they aid comprehension and when they can be used. The teacher provides feedback about students' progress during the practice and application of strategies, more detailed explanations when required directed at individual difficulties. The teacher cues students to transfer the strategies being learned to other situations, providing hints about when to transfer as well as feedbacks when opportunities for transfer are missed. The teacher also encourages habitual reflection and planning before responding (Pressley et al., 1992).

The advantages of TSI lie in its multiple processes and the flexibility of discussion. Pressley et al. (1992) point out that the goal of TSI is to produce good readers, and sometimes it is necessary to teach strategies in isolation so that students can use them while reading and can verbalize different processes that help to create a complete understanding of the text. Good strategy instruction encourages using multiple processes in the understanding of authentic texts. In addition, teachers discuss with individual students their strategy problems in the same dialogue format that is used in peer groups in order to help the students to construct an understanding of the strategies and know how to use them.

The following strategies are included in TSI: setting purposes, activating and using prior knowledge, getting the gist, using text structure, making and verifying

predictions, generating and answering questions, creating mental images and graphic representations, composing summaries, using think-aloud techniques, and using fix-up strategies (Schuder, 1993). TSI also tries to look at how comprehension strategies are linked to other subject areas, how students exhibit various cognitive and metacognitive competencies, how they show their knowledge that text can mean different things to different people, and how students react to these strategies. Pressley (Pressley et al., 1992) judges TSI to be one step beyond the RTA because it not only includes more strategies, but gives more freedom to both students and the teacher as well.

### **2.5.3 The Cognitive Academic Language Learning Approach**

The Cognitive Academic Language Learning Approach (CALLA) has been developed by Chamot and O'Malley (1987), and its development is based on a broad set of investigations in the field of language learning strategies of ESL/EFL learners in academic settings (Chamot, 1993, 2005b; Chamot & O'Malley, 1990). CALLA can be used in all four language skills: speaking, listening, reading and writing. In CALLA, learning strategies are “taught explicitly by naming the strategy, telling students what the strategy does to assist learning, and then providing ample instructional supports while students practice and apply the strategy” (Chamot & O'Malley, 1994, p.11).

CALLA is usually conducted in a five-stage instructional sequence: preparation stage, presentation stage, practice stage, evaluation stage, and expansion stage. These stages are not always followed in a strict order, and they can be viewed

as a spiral, with a shifting emphasis depending on the needs of the students. The preparation stage is used to help students become aware of their prior knowledge of the strategies that they might already be using; the presentation stage focuses on conveying new information using meaningful content with lots of visuals and demonstrations; at the practice stage, students use the new information in many ways, applying strategies in classroom activities, and working collaboratively with classmates; the evaluation stage allows the students to develop metacognitive awareness of their accomplishments and learning processes as they assess their worth; and the expansion stage allows the students to take what they have learned and to apply it to other learning or reading situations (Chamot & O'Malley, 1996).

#### **2.5.4 Implications for the Present Study**

The above-mentioned three approaches, RTA, TSI, and CALLA, have several instructional perspectives in common. They all view learning strategies as basic to text comprehension. They all emphasize students' awareness of both cognitive and metacognitive strategies for learning; they all recognize the social aspects of learning and use cooperative learning as a part of strategy instruction; they all use direct modeling and explicit instruction.

Pressley (1997) feels that RTA is too rigid and prescribed, and the number of strategies is also restricted, therefore, he expands on it to develop TSI. TSI places fewer restrictions on strategies and group discussion procedures. Chamot and O'Malley take strategy instruction one step further with the CALLA. While the RTA

and TSI are developed for reading only, the CALLA encompasses all language skills including listening, speaking, reading and writing. The RTA and TSI are used primarily for L1 readers, although many of their principles can apply to L2 learning; in contrast, the CALLA focuses on the needs of L2 learners.

The RTA, TSI, and CALLA provide the basis of the metacognitive strategy training methods in reading comprehension, in which the CALLA is the preferred choice because of its suitability and adaptability for this present study which is conducted in EFL settings. Based on the CALLA, an applicable metacognitive strategy training model of academic reading comprehension has been created for this present study to further investigate the effects of metacognitive strategy training on Chinese EFL students' academic reading comprehension.

## **2.6 A Metacognitive Strategy Training Model of Academic Reading Comprehension (MSTARC)**

Successful comprehension does not occur automatically, and rather, it depends on directed cognitive effort, or metacognitive processing, which consists of knowledge about and regulation of cognitive processing to comprehend the meaning of a text (Baker & Brown, 1984). During reading, metacognitive processing is expressed through strategies, which are “procedural, purposeful, effortful, willful, essential, and facilitative in nature” (Alexander & Jetton, 2000, p. 295). In order to regulate and enhance comprehension from text, readers must “purposefully or

intentionally or willfully invoke these strategies” (Alexander & Jetton, 2000, p. 295), therefore, explicit training is crucial (Van Keer, 2004). Research has established the effectiveness of an explicit training model for teaching metacognitive strategies (Baumann, 1988; Dhieb-Henia, 2006; Winograd & Hare, 1988).

The explicit training model is an instructional procedure which strongly emphasizes explicit and careful explanation by teachers (Winograd & Hare, 1988). Baumann (1988) stated that an explicit training model is implemented “when teachers are actively, intensively and systematically involved with training in reading comprehension” (p. 74). It refers to the purposive activities of a teacher to make students fully aware of the importance of comprehension-fostering and monitoring activities in strategy selection, usage, and evaluation. The explicit training model emphasizes the value of modeling, guided practice, and the transfer of responsibilities for task completion from teachers to students. The model utilizes four steps or phases for instructing students in comprehension strategies. The first step is the teacher’s modeling and explanation of a strategy, which is followed by guided practice where students gradually gain more responsibility for the task. Then students have opportunities for independent practice accompanied by feedback. The final phase involves the application of the strategy in real reading situations. (Winograd & Hare, 1988).

Insights from the research mentioned above point out the need to incorporate metacognitive strategies into reading practice because they allow readers to

reflect on their problems and look for appropriate strategies to accomplish their reading goal. The present study combined explicit ways of encouraging basic metacognitive components: planning, monitoring, and evaluating with individual reading strategies based on the previous studies (Chamot & O'Malley, 1990, 1996; Wenden, 1999). In addition, in academic reading comprehension, students receive explicit metacognitive strategy training to accomplish their tasks. For example, they are asked to read to obtain main points of the materials, read globally for the better understanding of the content and ideas, read for logical development and for the connected ideas in each part and the whole. Table 2.1 illustrates how metacognitive strategies are integrated into the academic reading comprehension process. The first column and the second column are modified from the taxonomies of metacognitive strategies with sub-categories, definition, and description as proposed by Chamot & O'Malley (1990). The third column---metacognitive strategies in the academic reading comprehension process is added and described by the researcher which accounts for the future metacognitive strategy training model of academic reading comprehension (MSTARC).

**Table 2.1 Metacognitive Strategies Integrated into the Academic Reading Comprehension Process**

Metacognitive process & its sub-processes/ categories	Definition of each sub category	Metacognitive strategies in the academic reading comprehension process
<b>Planning</b> (Before reading) -Advance organizer -Organizational planning -Selective attention -Self-management	<b><i>Advance organizer</i></b> <ul style="list-style-type: none"> <li>• Understand the reading task.</li> <li>• Develop personal goals.</li> <li>• Identify the purpose of reading task.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Determine the nature of the reading task.</li> <li>➤ Set one's reading goals.</li> <li>➤ Plan the objectives of reading sub-tasks.</li> </ul>
	<b><i>Organizational planning</i></b> <ul style="list-style-type: none"> <li>• Plan the content sequence of task.</li> <li>• Plan how to accomplish the task.</li> <li>• Activate the background knowledge.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Review the content of each task, the parts of specific reading tasks.</li> <li>➤ Think of the strategies for completing the tasks.</li> <li>➤ Elaborate the prior knowledge connected with the reading tasks.</li> </ul>
	<b><i>Selective attention</i></b> <ul style="list-style-type: none"> <li>• Focus on specific aspects of the reading tasks.</li> <li>• Select the appropriate reading strategies for the specific tasks.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Focus on a specific task by sequencing/prioritizing the strategies to complete the tasks.</li> <li>➤ Select the appropriate reading strategies for the specific tasks.</li> </ul>
	<b><i>Self-management</i></b> <ul style="list-style-type: none"> <li>• Arrange for conditions that help finish reading tasks.</li> <li>• Tailor the reading strategies selected according to time and energy constraints.</li> </ul>	<p>For example, in order to detect the main idea of the text , students might:</p> <ul style="list-style-type: none"> <li>-Examine the headings and sub-headings.</li> <li>-Help elucidate the main ideas</li> <li>-Infer connections between parts of the text.</li> <li>-Analyze the basic text structure.</li> <li>-Scan for specific words or information which might help.</li> <li>-Use cohesion markers for connecting information</li> <li>-Seek outside assistance.</li> </ul> <ul style="list-style-type: none"> <li>➤ Apply one or more specific reading strategies relevant to the specific task.</li> <li>➤ Adjust the reading strategy use for achieving reading goals.</li> </ul> <p>For example, in order to comprehend effectively, students might:</p> <ul style="list-style-type: none"> <li>-Re-read parts of the text to detect the implied meaning of the text.</li> <li>-Use mnemonic devices.</li> <li>-Make notes.</li> <li>-Translate the text into the native language.</li> </ul>

Metacognitive process & its sub-processes/ categories	Definition of each sub category	Metacognitive strategies in the academic reading comprehension process
<b>Monitoring</b> (During reading) -Comprehension monitoring -Production monitoring	<b>Comprehension monitoring</b> <ul style="list-style-type: none"> <li>Check one's comprehension or the accuracy and appropriateness of the reading task.</li> <li>Monitor the effectiveness of the selected reading strategies.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Check one's understanding, accuracy and appropriateness of the overall reading task/process.</li> <li>➤ Check one's own abilities and difficulties in each reading task.</li> </ul>
	<b>Production monitoring</b> <ul style="list-style-type: none"> <li>Think about how the information ones are receiving or producing fits in the prior knowledge (schema).</li> <li>Make sure that ones are processing the information effectively.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Monitor the main aspects of the reading comprehension, such as vocabulary or sentences.</li> <li>➤ Monitor the effectiveness of the reading strategy use.</li> </ul> <p>For example, whether or not the reading strategies learned from class can solve the problems.</p>
<b>Evaluating</b> (After reading) -Self assessment -Self-evaluating -Self-reflection	<b>Self-assessment</b> <ul style="list-style-type: none"> <li>Make judgment whether ones have met the requirements of the reading task.</li> <li>Check whether the personal goal or expectations were met while carrying out the task.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Make an assessment of whether one succeeds in /achieves the reading goal.</li> <li>-Do I understand the problem clearly?</li> <li>-Do my comprehension is contradictory to the context or personal experience?</li> <li>-Do I detect all the topic sentence correctly?</li> <li>-Do I match the reading comprehension tasks to the contents?</li> <li>-Do I still have any confusing information?</li> </ul>
	<b>Self-evaluation</b> <ul style="list-style-type: none"> <li>Evaluate oneself by checking how well one learned the task/materials or did the tasks.</li> <li>Evaluate one's own strategies and effectiveness of strategies.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Evaluate how well one learned to read.</li> <li>➤ Evaluate the reading strategy use.</li> </ul>
	<b>Self-reflection</b> <ul style="list-style-type: none"> <li>Reflect on one's own problems whether there is a need to go back through the tasks.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Reflect on one's own problems whether there is a need to go back through the reading process for a better understanding.</li> </ul>

(Adapted from Chamot & O'Malley, 1990, p.198)

As shown in Table 2.1, planning is a critical first step toward becoming a metacognitively aware reader. Planning strategies help the reader develop and use forethought. They encourage thinking so that the reader reflects on their thoughts before beginning a task. Regarding the use of planning in the reading process, students can use an advance organizer to think about the requirements of the reading task, understand it and then generate questions to guide reading. Organizational planning involves planning how they can accomplish each reading task and they can connect the reading strategies they already know to help them to accomplish the task. For example, students might ask themselves (using self-questioning strategies) about their own reading problems, what part of the text needs to be re-examined, or whether to re-read. The students could also use Selective Attention to focus their attention on the specific aspects of the text that will help them perform the reading task. For example, he can decide to focus on the key words or sentence patterns to make it easier to clarify the content and ideas in order to meet the writer's expectations and purposes. Self-management involves seeking or arranging the condition that helps students repair miscomprehension and to recognize loss of concentration. For example, students might re-examine their comprehension in order to check if they might have come to some misunderstanding about some details of the text.

As for the use of monitoring strategies, students can use monitoring to measure the effectiveness of the reading strategies while dealing with the task. First, they use monitoring comprehension to check how they are reading and then use

monitoring production to make judgments about whether they are completing the reading task as necessary. For example, while students are reading the text, they will relate potential information to their own personal experience. In the monitoring process, students should think about where their focus of concentration needs to be at any given time and then consciously focus their attention on the specifics of the task (Chamot & O'Malley, 1996; Pierce, 2003). Students monitor their comprehension and production by thinking about whether they are making sense when they accomplishing the task. Students also think about how their tasks fit the requirements of the reading tasks (knowledge of the world or schema based on their experience). They rely on their knowledge of the reading strategies and essentials of academic reading to make decisions about what to scan, skim, skip or analyze in their reading. When they feel frustrated, they help themselves by thinking about their learning tools, that is, strategies. For example, when students check their understanding they might ask themselves questions like: Have I clearly understood the text? Does this answer to the question make good sense?/ Is this related to my own reading experience or not? and so on.

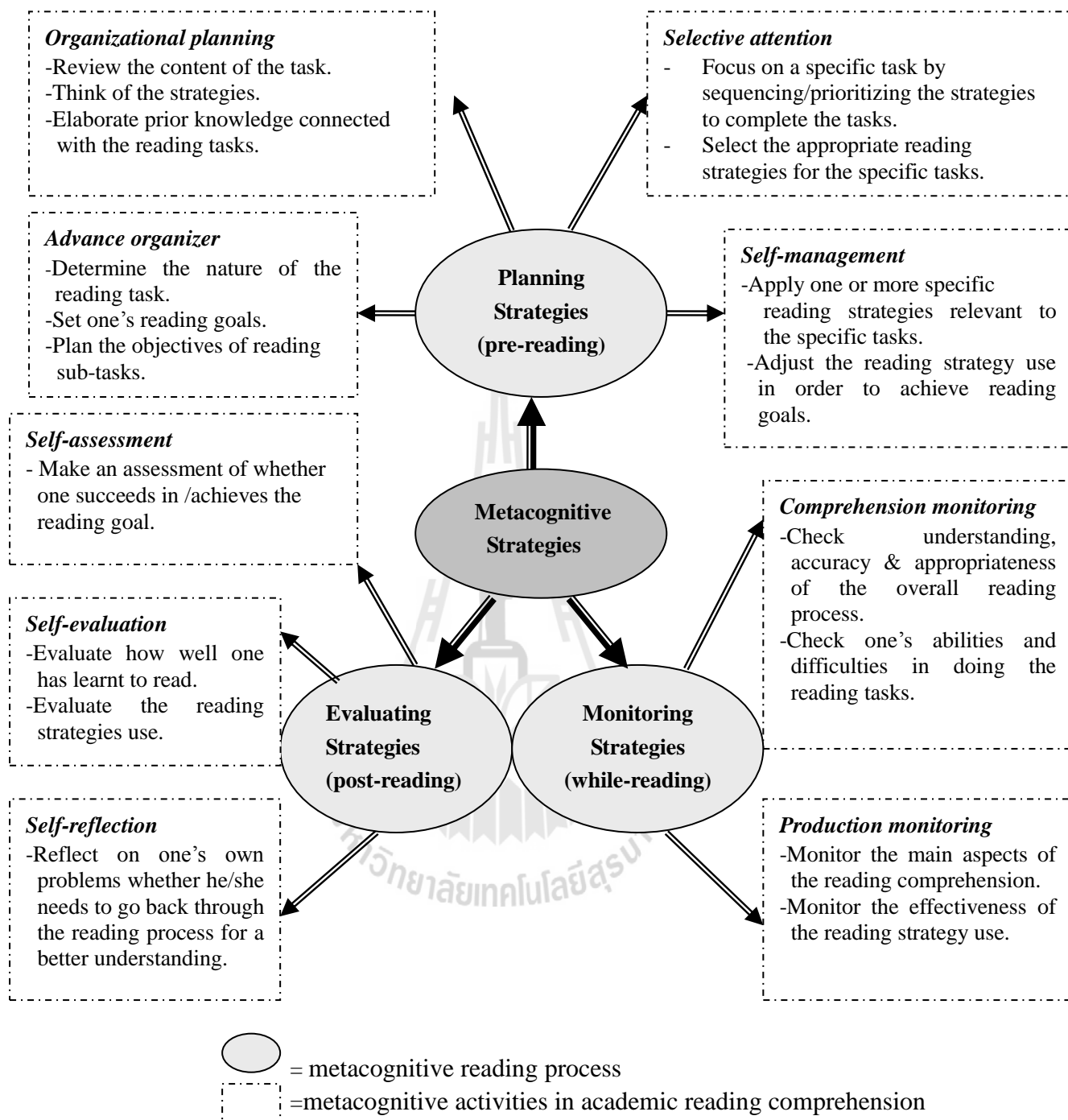
After completing part or the entire reading task, students can use evaluating strategies to assess the outcome, goals, strategies and their strengths and weaknesses. First, students can make judgments about whether they have fulfilled the requirements of the reading task, and then they can make an assessment of whether they have achieved their reading goals. This process allows them to see if they have carried out

their reading plans satisfactorily. If they did not achieve their goals, then they should consider why they didn't meet these goals and what they can do differently next time. Second, students can also evaluate their strategies by judging how well they apply the strategies to reading tasks, judging how effective and appropriate their strategies were for a specific reading task, identifying why a strategy was helpful or not helpful for the task, comparing the usefulness of various strategies on the same reading task, and thinking about better strategies they could have used. Self evaluation helps students decide when certain strategies work best so they can choose appropriate strategies in the future. Finally, students can reflect on their own strengths and weaknesses, so they can do the job better next time. For example, they can ask themselves questions or use a self-evaluation checklist after they complete each reading sub-task: "Do the answers and the contents match? Do I understand the implications of the text?"

The above analysis clearly shows the process of the metacognitive strategy training in academic reading comprehension. There are three stages, including pre-reading (planning strategies), while-reading (monitoring strategies) and post-reading (evaluating strategies) involved in this study with their specific strategies for each step of the training. Based on the above literature review of metacognitive strategy training approaches and the academic reading process, an applicable metacognitive strategy training model of academic reading comprehension is developed. Figure 2.2 illustrates the Metacognitive Strategy Training Model of Academic Reading Comprehension (MSTARC) which shows each of the steps

applied in metacognitive strategy training to academic reading comprehension in detail.

The strengths of MSTARC lie in: 1) Systematic training involves larger number of the strategies and embedded them into the academic reading teaching practice. RTA is too rigid and prescribed, and the number of strategies is also restricted. 2) There are fewer restrictions on strategies and implementation procedures. TSI places fewer restrictions on strategies and group discussion procedures, while in MSTARC, the three strategic processes of metacognitive strategy are not linear, but recursive. The students might use the strategies when it is necessary depending on the needs or demands of the task and the interaction between the task and the learner (Brantmeier, 2005a). 3) Focus is put on EFL readers' needs. CALLA encompasses all language skills including listening, speaking, reading and writing, and focuses on the needs of L2 learners. MSTARC is a model for metacognitive strategy training of academic reading comprehension for EFL learners. 4) It is more practical to develop a lesson plan to link the MSTARC to the training. Each items and steps are clearly illustrated in detail for designing a metacognitive strategy training package of academic reading comprehension.



(Adapted from Chamot & O'Malley, 1990, p.198)

**Figure 2.2 Metacognitive Strategy Training Model of Academic Reading**

**Comprehension (MSTARC)**

## 2.7 Summary

This chapter has provided a literature review in support of this study. It started with views on reading comprehension, followed by reading models. After that, the theoretical foundation was explained: metacognition including the definition and classification of metacognition, metacognitive knowledge and reading comprehension, metacognitive regulation and reading comprehension, and metacognitive reading strategies and reading comprehension were discussed in detail. Then, the pedagogical foundation was described and the metacognitive strategy training was presented. Furthermore, metacognitive strategy training approaches were also described. Lastly, The Metacognitive Strategy Training Model of Academic Reading Comprehension (MSTARC) was proposed. Chapter 3 will explain the methodology used in this research study, report the results of the pilot study, and describe the main study.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

This chapter describes the methodology employed in this study. It starts with the reasons why a mixed method of research is employed; then the participants, the research instruments, data collection procedures and the data analysis methods for this study are described. The pilot study is also presented in detail at the end of this chapter.

#### **3.1 Rationale for the Research Methodology**

This part discusses the reasons why a mixed method of research design was employed in the present study. The main purpose of the present study is to investigate the effects of metacognitive strategy training (MST) on EFL students' academic reading comprehension. When conducting research, the method is critical. Robson (1993) noted, "The general principle is that the research strategy or strategies, and the methods or techniques employed must be appropriate for the questions you want to answer" (p.38). Thomas (2003) argued convincingly for the validity of mixed method research, emphasizing its benefits in many diverse research settings. They asserted that mixed methods are often more efficient in answering research questions than either the quantitative or qualitative approaches alone because mixed methods allow cross-method comparison and provide grounds for triangulating data in which the weaknesses of one method may be offset by the strengths of another, since "each

method has philosophical foundations, characteristics and techniques that make it ideally suitable for some research questions and inadequate for the investigation of others” (Borg & Gall, 1996, p.380).

The research design of this study is a two-phase, sequential mixed design combining quantitative and qualitative methods. Mixed methods in this study refer to an experiment and surveys. The first three research questions (see Section 1.4) involved quantitative design and the last question emphasizes the qualitative method in order to provide new directions for further quantitative inquiry. Wiersma and Jurs (2005) assert that intervention designed to improve students’ achievement might take on the form of an experimental treatment, therefore, the first phase of this study was experimental and quantitative in nature. Hence, to enrich the quantitative results, the second phase of the current study also features a qualitative component. In order to better understand the intervention, the second phase of the research was directed towards students’ attitudes with regard to the intervention. Thus, this present study included both quantitative and qualitative phases. The quantitative phase of the study looked at the statistical relationships between metacognitive strategy training and students’ reading scores. The qualitative phase of the study aimed to better understand the results from the quantitative phase as well as the students’ attitudes. Both quantitative and qualitative data are needed to fit the requirements of the above research purposes.

In line with the above design, the variables in the study were described as follows. The independent variable was metacognitive strategy use in reading comprehension and the dependent variable was the test scores of students’ reading comprehension tests.

### 3.2 Participants

A total of 58 third-year undergraduate English major students at Guizhou University, China, participated in this study. The students were from two intact classes. They were randomly designated as one experimental group (N=33) and one control group (N=25). The name of the course was the “Advanced English Course”. All the students were high school graduates and were currently pursuing a university degree. Until the research study they had studied English for eight to nine years. These students could be classified as advanced EFL learners for two reasons. First, according to the National Curriculum for College English Majors of Higher Education in the People’s Republic of China (2000), third-year undergraduate students are at an advanced level. Second, the participants in the present study were at an advanced level since they had already finished the Basic Reading Course and the Comprehensive Reading Course and successfully passed the exam. In principle, according to Bamford and Richard (2004), advanced language learners are those who “already have a basic knowledge of, and are literate in, the foreign language.”

To classify the participants into two different groups, their grades from previous courses were employed. For the experimental group, high proficiency students were identified as those who received A or B in their previous reading courses and the low proficiency students were those with C or D in their previous reading courses. The researcher was officially allowed to report the students’ grades for this research project. Table 3.1 demonstrates the grouping details of the high proficiency students in the experimental group. The abbreviation HP was used instead of the participants’ names. In this study, it should be mentioned that participants’ real names were replaced with codes assigned by the researcher.

**Table 3.1 Profiles of the High Proficiency Students**

No	Name	Basic reading course grade	Comprehensive reading course grade
1	High proficiency Student 1 (HP1)	A	A
2	High proficiency Student 2 (HP2)	A	B+
3	High proficiency Student 3 (HP3)	B+	A
4	High proficiency Student 4 (HP4)	A	B+
5	High proficiency Student 5 (HP5)	B+	B+
6	High proficiency Student 6 (HP6)	A	A
7	High proficiency Student 7 (HP7)	B+	B+
8	High proficiency Student 8 (HP8)	B	B+
9	High proficiency Student 9 (HP9)	A	B+
10	High proficiency Student 10 (HP10)	A	B

Table 3.2 illustrates the grouping detail of the low proficiency students. The abbreviation LP was used instead of the participants' names.

**Table 3.2 Profiles of the Low Proficiency Students**

No	Name	Basic reading course grade	Comprehensive reading course grade
1	Low proficiency Student 1 (LP1)	C	D
2	Low proficiency Student 2 (LP2)	C	D
3	Low proficiency Student 3 (LP3)	C	C
4	Low proficiency Student 4 (LP4)	D	C
5	Low proficiency Student 5 (LP5)	C	D
6	Low proficiency Student 6 (LP6)	C	D
7	Low proficiency Student 7 (LP7)	C	D
8	Low proficiency Student 8 (LP8)	D	C
9	Low proficiency Student 9 (LP9)	C	D
10	Low proficiency Student 10 (LP10)	C	D

For the experimental group, the researcher divided students confidentially according to their level of proficiency for the study, all of the students completed the Metacognitive Strategy Questionnaire (MSQ), took the Reading Comprehension Test (RCT), wrote a feedback, which consisted of three entries written at the beginning, the middle, and the end of the experiment. Equal numbers of students from the high and low proficiency groups were selected for individual

face-to-face semi-structured interviews. For the control group, the normal teaching was given by the researcher without any metacognitive training. They only took the pre and post reading comprehension tests to compare their results with the training results of the experimental group.

### **3.3 Research Instruments**

The instruments used in the study were the background information questionnaire, the MSQ, the RCT, the students' journals, the questionnaire and the semi-structured oral interview. In order to address the first question, which concerns metacognitive strategy use, the MSQ was employed. To address the second, third and fourth research questions, which concern the effects of MST on reading comprehension, the students' reading performance was assessed on the RCT. To address the last research question, which concerns the students' attitudes towards the MST, the students' journals and the semi-structured oral interviews were employed.

#### **3.3.1 Background Information Questionnaire**

This questionnaire was addressed to all the participants in the experimental group before the pedagogical intervention. The purpose of the questionnaire was to elicit the students' personal data and English learning background (see Appendix D for English and Chinese Versions). This questionnaire consisted of two parts: Part 1 asked for personal information, such as name, age, and gender. Part 2 asked information about the students' language learning background. Question 1 was about the students' general language learning experience. Question 2 was to obtain the students' grades in the last two years' coursework in reading. Question 3 was to find out students' self-assessed proficiency in reading. Question 4 was to find out how much the students

knew about metacognitive reading strategies in reading. Question 5 was to find out whether the students had ever had any experience of taking part in a training course about metacognitive reading strategies. These questions enabled the researcher to learn more about the students' competency in applying strategies in reading and to allow the researcher to strengthen and enhance their awareness of metacognitive strategies to meet the requirements of the training.

### **3.3.2 Metacognitive Strategies Questionnaire (MSQ)**

#### **3.3.2.1 The Format and Description of MSQ**

Questionnaires, one of self-reporting instruments, concerned with facts, opinions, attitudes or preferences of the respondents were used in this study to reveal the participants' awareness of metacognitive strategy and use of metacognitive strategy in reading. Questionnaires were used as one of the main instruments in this study because they have several advantages. Firstly, questionnaires are considered as a time-saving means of gathering data from a large number of people, and they are easy to be administrated and can be scored quickly. Compared with interviews and observation, written questionnaires can be used conveniently when a large number of respondents must be reached, requiring less time and less expense (Dörnyei, 2003). Secondly, questionnaires can avoid some of the pitfalls of verbal reports such as interviews (Garner, 1987). According to Garner (1987), questionnaires are more objective than interviews because interviews may involve interpretations of open-ended responses, experimenter bias, or fabricated responses. Thirdly, questionnaires can not place shy or inarticulate students at a disadvantage.

In this study, MSQ was composed of two main parts in the study: The Pre MSQ and the Post MSQ. The Pre and Post MSQ were initially divided into three

sections asking about the metacognitive strategies students used to plan, monitor, and evaluate their reading processes. The Pre MSQ was developed to find out how students perceived the use of metacognitive strategies before attending formal metacognitive strategy training in reading comprehension, and the Post MSQ was used to find out what metacognitive strategies they actually used in reading comprehension. The categories with detailed descriptions for both questionnaires were adapted from Chamot & O'Malley (1990).

In detail, the MSQ in this study measured three main categories of metacognitive strategies, namely planning, monitoring and evaluating and nine sub-categories the students employed in carrying out four reading tasks. The categories in the first section were constructed with regard to planning, such as advanced organizer, organizational planning, selective attention and self-management. In the second section, the questionnaire was designed to obtain information about metacognitive strategy use in monitoring during reading which consisted of monitoring comprehension and monitoring production. After reading the questionnaire items in the third section, the students were required to evaluate their reading comprehension using self-assessment, self-evaluation and self-reflection. A brief description of each category of metacognitive strategies is presented in Table 3.3. Also, the Pre and Post MSQ can be seen in Appendix E.

**Table 3.3 Description of Metacognitive Strategies in Reading Comprehension****Process and the Number of Items Used in the MSQ**

Metacognitive process & its sub-processes/categories	Metacognitive strategies in the academic reading comprehension process	Number of items in the MSQ
<b>Planning</b> (Pre reading) Advance organizer Organizational planning Selective attention Self-management	<i><b>Advance Organizer</b></i> ➤ Determine the nature of the reading task ➤ Set one's reading goals ➤ Plan the objectives of reading sub-tasks	Item 1-4
	<i><b>Organizational Planning</b></i> ➤ Plan the content of each task, the parts of specific reading tasks ➤ Plan the strategies for completing the tasks ➤ Elaborate prior knowledge connected with the reading tasks	Item 5-8
	<i><b>Selective Attention</b></i> ➤ Focus on a specific task by sequencing/prioritizing the strategies to complete the tasks ➤ Select the appropriate reading strategies for the specific tasks	Item 9-10
	<i><b>Self-Management</b></i> ➤ Apply one or more specific reading strategies relevant to the specific task. ➤ Adjust reading strategies for achieving goals	Item 11-12
	<i><b>Comprehension Monitoring</b></i> ➤ Check one's understanding, accuracy and appropriateness of the overall reading task/process ➤ Check one's own abilities and difficulties in each reading task	Item 13-24
<b>Monitoring</b> (While reading) Comprehension monitoring Production monitoring	<i><b>Production Monitoring</b></i> ➤ Check whether the reading strategies learned from class can solve the comprehension problems ➤ Trace the selected reading strategies and adopt alternatives when it is not working	Item 25-30
	<i><b>Self-Assessment</b></i> ➤ Make an assessment of whether one succeeds in /achieves the reading goals	Item 31-34
<b>Evaluating</b> (Post reading) Self assessment Self-evaluation Self-reflection	<i><b>Self-Evaluation</b></i> ➤ Evaluate how well one has learned to read. ➤ Evaluate the use of reading strategies.	Item 35-37
	<i><b>Self-Reflection</b></i> ➤ Reflect on one's own problems whether one needs to go back through the reading process for a better understanding.	Item 38-40

### **3.3.2.2 The Construction of the MSQ**

The construction of the MSQ was in the form of written statements, which presented assertions about the use of metacognitive strategies in planning monitoring, and evaluating the reading comprehension. The format of the MSQ was taken from Oxford, Burry and Judith (1995). His SILL (Strategy Inventory for Language Learning) uses the five-point Likert-scale ranging from 1 = never true, 2 = usually not true, 3 = somewhat true, 4 = usually true, and 5 = always true. The last draft of Pre MSQ and Post MSQ items consists of 40 items. The items were sequenced following the metacognitive strategy components of the reading process so as to provide a clear frame of reference for the respondents. The MSQs were compiled in English, and not the students' native language, as the participants were all English majors who were capable of clearly understanding the English used in the MSQs.

### **Establishing the Validity and Reliability of the MSQ**

The validity and reliability of the data collection instruments are very important for their overall measurement qualities. Since the questionnaire depends on the readability of the statements and the actual wording used in the items, piloting the questionnaire is a very important step in the construction of the questionnaire (Dörnyei, 2003) which is designed to obtain information about the reliability and the validity of the instrument. This means that the questionnaire requires the judgment of professionals in this field. The researcher then combined more than one method of validation and a reliability check for the MSQ, which was the main instrument for collecting data.

For reliability, the Cronbach alpha reliability coefficient, which is a measure of internal consistency was chosen for the main reliability check. The researcher trialed the pilot study in the following stages.

### **The Validity Check for the Pre MSQ**

To check whether the MSQ measured what it had been designed for, the draft of the MSQ (51 items), the description of metacognitive strategies in reading with a metacognitive strategies scheme (Chamot & O'Malley, 1990), the task analysis blueprint and the evaluation form for a content validity check were given to three experts, both native and non-native speakers of English. Two of them are teachers who hold master's degree in applied linguistics in the College of Foreign Languages, Guizhou University; another is an American teacher who holds a master's degree in education. He has been involved in education since 1982, and used to teach English at Yunnan Normal University, Kun Ming, China.

The experts looked at the relevance of each item to the purposes of the questionnaire and the appropriateness of the content areas, and they also checked if everything was clear. The clarity of each item was arranged by using a 3 point scale (1 = clear and appropriate for the respondents, 0 = relatively ambiguous in meaning or difficult for the respondents, so it was then revised; -1 = ambiguous in meaning or difficult for the respondents, so then it was omitted). Each item had to be accepted by at least two of the experts. If any of the items was rejected (ranged as -1) by two or three experts, it was eliminated from the study before being administered to the students to check the reliability. Also, if greater clarity was needed, the researcher would revise and check the problematic items again with the experts until it was agreed the items were satisfactory.

The Pre MSQ was checked by the three experts twice. The first time, the experts rated the scores for each items, then the researcher checked the rating scores of each item, compared with the other scores given by the experts. Some items were rated two “+1” and one “0”, some one “+1” and two “0”. Few were rated one “-1” but two “+1”. All the three experts kindly helped the researcher with revising the questions. The researcher made some changes to terminology, such as rhetorical situation, assessment, and task analysis by using easier words and explanations. Also, some complicated and unclear items were revised while any irrelevant content was deleted. The revised items of the MSQ could then be used to measure what they were supposed to elicit. Afterwards, the revised questionnaire was returned to each expert for discussion in order to reach agreement on all of the items in the Pre MSQ.

#### **The Reliability Check for Pre MSQ**

After being validated by the three experts, the selected items of the Pre MSQ were pre-piloted with 10 students who shared the same characteristics as the participants of the study, but they were not the actual participants of the main study, and they were asked to use a think-aloud technique of response (Petri & Czarl, 2003) to check for reliability. However, as this Pre MSQ was only used for gathering information about the students, it did not need to be analyzed by using the Alpha test.

#### **The Validity Check for the Post MSQ**

As for the Pre MSQ, three experts were asked to check the questions in the Post MSQ for clarity to avoid any ambiguity or difficulties for the respondents. One expert, who is a specialist in statistics, helped the researcher in dealing with the numbers involved. The other 2 experts are keen in L2 reading, especially in learning strategies. The clarity of each item was tested by using a 3 point scale (1 =

clear and appropriate for the respondents, 0 = relatively ambiguous in meaning or difficult for the respondents, so then it was revised; -1 = ambiguous in meaning or difficult for the respondents, so then it was omitted). Each item had to be accepted by at least two experts. The item which was rated “0” also needed to be revised and then discusses with the experts who rated to reach the agreement. The item which were rated at least two “-1” would be omitted without any revision. The items which were rated two “0” and a “+1” would be revised if the researcher really needed them for the purpose of the study.

### **The Reliability Check for the Post MSQ**

In order to obtain interval consistency, the selected items of the Post-MSQ were also pre-piloted with 10 students who shared the same characteristics as the participants of the study who were participating in the piloted version of the study as Walliman (2001) stated that a questionnaire should be pre-tested on a smaller number of people. It is best to test it on people of a type similar to that of the intended sample, so as to anticipate any problems of comprehension or other sources of confusion. The students in the pre-pilot study received the same treatment so that they could provide consistent responses to the post questionnaire. Then the scores of the respondents were analyzed by the SPSS software of Correlate-Bivariate to find out the items which were most closely correlated. After that the researcher checked the reliability using the Alpha score.

### **3.3.3 Reading Comprehension Test**

#### **3.3.3.1 Reading Comprehension Test Construction**

The RCT (See Appendix G) constructed by the researcher was employed as a pretest and posttest for the two groups of participants. This section describes the test

construction of the RCT. The primary purpose of the RCT was to measure the reading ability development of the Chinese university EFL students who were the participants in the present study. The theoretical foundations on which the RCT was based were those of Alderson (2000) as well as other researchers. There were three basic requirements which the researcher applied as a guide in the construction of the test.

1. The test should include easy and more difficult items and is expected to be intrinsically and successfully motivating as well as on an appropriate cognitive level for the participants.
2. The reading comprehension test should contain enough items to allow students to demonstrate their English proficiency within a limited time and it must be reliable (Alderson, 2000).
3. Both reliability and validity should be taken into consideration. Aside from the reliability and validity of the test, the level of difficulty and the power of discrimination of the test must be taken into consideration as the basis of the test items selected (Alderson, 2000).

The test type is multiple-choice tests. As an assessment tool, the multiple-choice test is popular for many university courses, particularly for entry level classes where the number of students is large. In the present study, multiple-choice questions are chosen to measure participants' reading ability because of several advantages: they are designed to be objective as there is only one right answer or best answer; they are easy to score; they are easy to grade and efficient in time; they are easy to achieve high rater reliability; they can minimize guesswork by having multiple distracters; results can be returned to students very quickly and are quantifiable (Carneson, Delpierre, & Masters, 2003). Nevertheless, as every coin has two sides, so

multiple-choice tests have some disadvantages. First, distracters may try to trick students deliberately, which result in a false measure. Second, test-takers may "...not necessarily link the stem and the answers in the same way..." that the tester assumes (J. Cohen, 2005, p.113). To choose a text for multiple-choice questions, the researcher followed the criteria proposed by previous researchers: (1) all items are passage dependent (Wolf, 1991); (2) some of the items require the reader to make inferences (Wolf, 1991); (3) all distracters are plausible in order to prevent participants from immediately discarding responses (Alderson, 2000); and (4) the test-takers are not able to determine correct responses by looking at the questions on the page (Razi, 2005). In other words, the passages with multiple-choice questions were chosen so that they could be answered correctly only if the participant has read and understood the relevant passages.

The purpose of using the same RCT as both the pretest and posttest was to compare the participants' scores on the two tests and to see their development after the intervention. The danger that the participants' posttest may be influenced by their pretest was small because the researcher took three measures to avoid the possibility. First, the researcher did not make the answers known to the participants. Second, the pretest papers were returned to the researcher immediately after the test. In addition, the 18-week intervention period was long enough for minimal recall of the passages in the pretest, thus practice effect could be avoided. The data obtained from the pretest and posttest was submitted for quantitative analysis.

Six reading comprehension passages selected from the China Public English Test System (PETS, level 5) were used for the Reading Comprehension Test. The Public English Test System (PETS) is a standardized test conducted by the Chinese

Ministry of Education. It is a communication and co-operation project between China and Britain for testing English learners' capabilities in reading, writing, listening and speaking. There are five levels in PETS, of which level 5 is the highest. The reason why the researcher adopted the reading passages from PETS 5 is that it is agreed to be similar to the level of English majors when they finish their two-year intensive studies at university (Zhang, 2003). In choosing reading comprehension passages, all are closely similar in length and level of difficulty. The six passages chosen were all expository. Each passage was accompanied by 5 multiple-choice questions and there was a total number of 30 question items for the Reading Comprehension Test. The suggested time taken for the six passages was 60 minutes. Table 3.4 shows the six passages according to their text type and topics.

**Table 3.4 Overview of the Six Passages**

Passages	Text Type	Main Idea
1	Expository	Sleep and body temperature
2	Expository	Money cannot buy love
3	Expository	Colonial expansion
4	Expository	Blood type and vegetarian
5	Expository	Money
6	Expository	Impressive results of breast-feeding

### **3.3.3.2 Test Validity and Reliability of the Reading Comprehension Test**

The tests were marked by the researcher and approved by three EFL teachers who have been teaching at the university for at least 5 years. In marking the test items, the correct answer was given "1" and the incorrect or unanswered item was given "0". This criterion worked well with multiple-choice question items. Besides, test validity and reliability must be taken into consideration so that the scores of the test takers are sufficiently reliable for the researcher to determine their levels of

proficiency. What follows is how the validity and reliability of the tests for the present study were carried out.

### **Test Validity**

In order to validate the contents of the reading comprehension test, the 6 passages in the reading comprehension test were given to 11 EFL teachers and experts, who are all university EFL teachers before the pilot study was conducted in October, 2007. Of the 11 EFL teachers and experts, 9 were Chinese and 2 were native speakers of English who have been teaching EFL at Guizhou University, China. All of the 9 Chinese EFL teachers have been teaching in the university for at least 5 years, while the foreign teachers have been EFL teachers at university level for at least 1 year. They were asked whether or not they thought the texts used in the test were appropriate for Chinese university EFL students.

In addition, to validate the test, 10 students who shared the same characteristics as the participants of the study also took part in the piloted study. They were also asked to complete questionnaires giving feedback about the test. To elicit what the students thought about the difficulty of the test, three answers ranging from 1 (easy) to 3 (difficult) were given for the students to choose from.

### **Test Reliability**

Wiersma and Jurs (2005) define test reliability as the consistency of the instrument in measuring whatever it measures. Of the five procedures commonly used to estimate the reliability of a test, namely parallel forms; test-retest; split-half; Kuder-Richards on procedure; and Cronbach alpha, the Cronbach alpha is the most commonly used. For the pilot study, the Cronbach alpha coefficient was employed to estimate the internal consistency of the test. The method was appropriate because

the test was administered to the students only once. The Cronbach alpha was found by using the SPSS program. The reliability of this test was .73, which was considered acceptable according to the criterion of .70 as suggested in Fliess. (1981, c.f. Robson, 1993).

### **Item Analysis**

The students' test scores obtained through the piloting stage were used for item analysis in order to check the quality of each item, and whether it could be changed or improved. All of the 36 items were analyzed by using the Item Analysis System (IAS) as developed by Khaimook (2004). IAS is a program that is designed for analyzing the level of difficulty and discrimination power of standardized tests. In IAS, the items can be analyzed according to the Classical Test Theory and Item Response Theory. In this study, item difficulty was decided by using the following format from the Classical Test Theory (CTT):

$$p = (P_H + P_L) / 2 \text{ (Stanley \& Hopkins, 1972, as cited in Khaimook, 2004)}$$

In the formula,  $P_H$  refers to the proportion of correct responses in a high ability group and  $P_L$  refers to the proportion of correct responses in a low ability group. The difficulty index of an item is the proportion of correct responses in the high ability group and the low ability group divided by two. From the formula, it can be seen that the high difficulty index stands for low difficulty level, and that the difficulty level of an item decreases as the difficulty value increases. In IAS, the difficulty value of an item between 0.30 and 0.70 ( $0.30 < p < 0.70$ ) is considered to be appropriate.

Item discrimination of the reading comprehension test is again submitted for CTT of IAS (Khaimook, 2004). In this system,

$$r = P_H - P_L$$

where  $r$  indicates the power of discrimination.  $P_H$  refers to the proportion of correct responses in the high group and  $P_L$  refers to the proportion of correct responses in the low group. The criterion of  $r > 0.20$  is adopted in IAS, which means discrimination of the test items must be over 0.20 in order to be appropriate.

### 3.3.4 Students' Journals

Reflective journals are used as another instrument in the present study to get the students' written feedback. A journal is a place wherein learners can explore ideas, record their thinking processes, feelings, and reflections. Journal writing is considered a vital means of developing metacognition through reflective processes because the use of journals allows students to discover how they learn, and it offers a way to think things through, to plan, and to question (Hubbs & Brand, 2005). In the process of reading, students need to be presented with opportunities to ask and answer real questions of their own reading, and journal writing provides such opportunities. Writing reflective journals can also encourage students in strategy use because they need to describe, demonstrate, predict and explore the meaningful constructive processes used for reading comprehension (Marlow, 2001).

In this study, students were required to write journals regularly in the training. The entries of learning journals provided students opportunities to reflect on their learning experience and to express their thought (Rodriguez, 2003). Three entries of journals on the MST in reading comprehension would be written at the beginning, the middle, and the end of the training to elicit information about how they felt about the tasks and how their attitudes changed. These reflective journals cover a span of time, involve students' metacognitive processes, and summarize

students' overall metacognitive awareness of reading strategies. Since the purpose of this instrument was to elicit more information about students' attitudes towards the MST, but not to test the students' English proficiency, they were allowed to express their opinions in Chinese if they did not feel comfortable writing in English. Then the Chinese written journals were translated into English for data analysis. Although the entries were not evaluated, the submission was accounted for their credits as part of the assignments.

The researcher in this study obtained one teacher's help to be the "peer debriefer" to do the investigator triangulation. She went through the data and confirmed what the researcher had done to enhance the internal credibility of the research. The criteria of classifying the students' attitudes into positive, neutral, and negative was set by the researcher beforehand. The students who felt they had improved in their reading comprehension fell into the positive group, the students who did not show a clear attitude towards their improvement in reading comprehension fell into the neutral group, and the students who felt no improvement in their reading comprehension fell into the negative group.

### **3.3.5 Questionnaire**

In order to collect more data about the students' attitudes towards the MST, a self-reporting questionnaire was used. A questionnaire is one of the most widely used techniques for collecting either quantitative or qualitative data. It is used to elicit learner responses to a set of questions or statements, and it is also used as a technique for data collection in which each person is asked to respond to the same set of questions in a predetermined order (DeVaus, 2002). The questions frequently asked are concerned with facts, opinions, attitudes or preferences of the respondents.

In addition, questionnaire data are more amendable to qualification than data through journals. In this study, the self-reporting questionnaire was regarded as appropriate because it could draw the information directly from the students to identify the patterns of their attitudes. Five close-ended Likert-scale questions were given to all the 33 participants in order to obtain a complete picture of their attitudes.

### **3.3.6 Semi-structured Interview**

An interview is a conversation “initiated by the interviewer for the specific purpose of obtaining research-relevant information and focused by the interviewer on content specified by research objectives of systematic description, prediction or explanation” (Robson, 1993, p.229). In a semi-structured interview, the interviewer directs the interview more closely. Some questions are predetermined and there is sufficient flexibility to allow the interviewee an opportunity to shape the flow of information. Semi-structured interviews may be the most popular among different types of interviews (Warren, 2002). The reason lies in the flexibility that the semi-structured interviews provide. Furthermore, they give the interviewee a degree of power and control over the interview.

In this research, two semi-structured interviews including the pre and post interviews (see Appendix F) were conducted with 10 students (5 from high and 5 from the low proficiency group) regarding their use of metacognitive strategies in reading before and after the MST (see Appendix K for a sample interview script), and another interview was conducted with the same 10 students to obtain in-depth attitudes towards the MST (see Appendix J). The latter took place after finishing the Post MSQ interview.

The interviews were conducted in Chinese in order for the interviewers to feel at ease in responding to whatever came up about the application of metacognitive

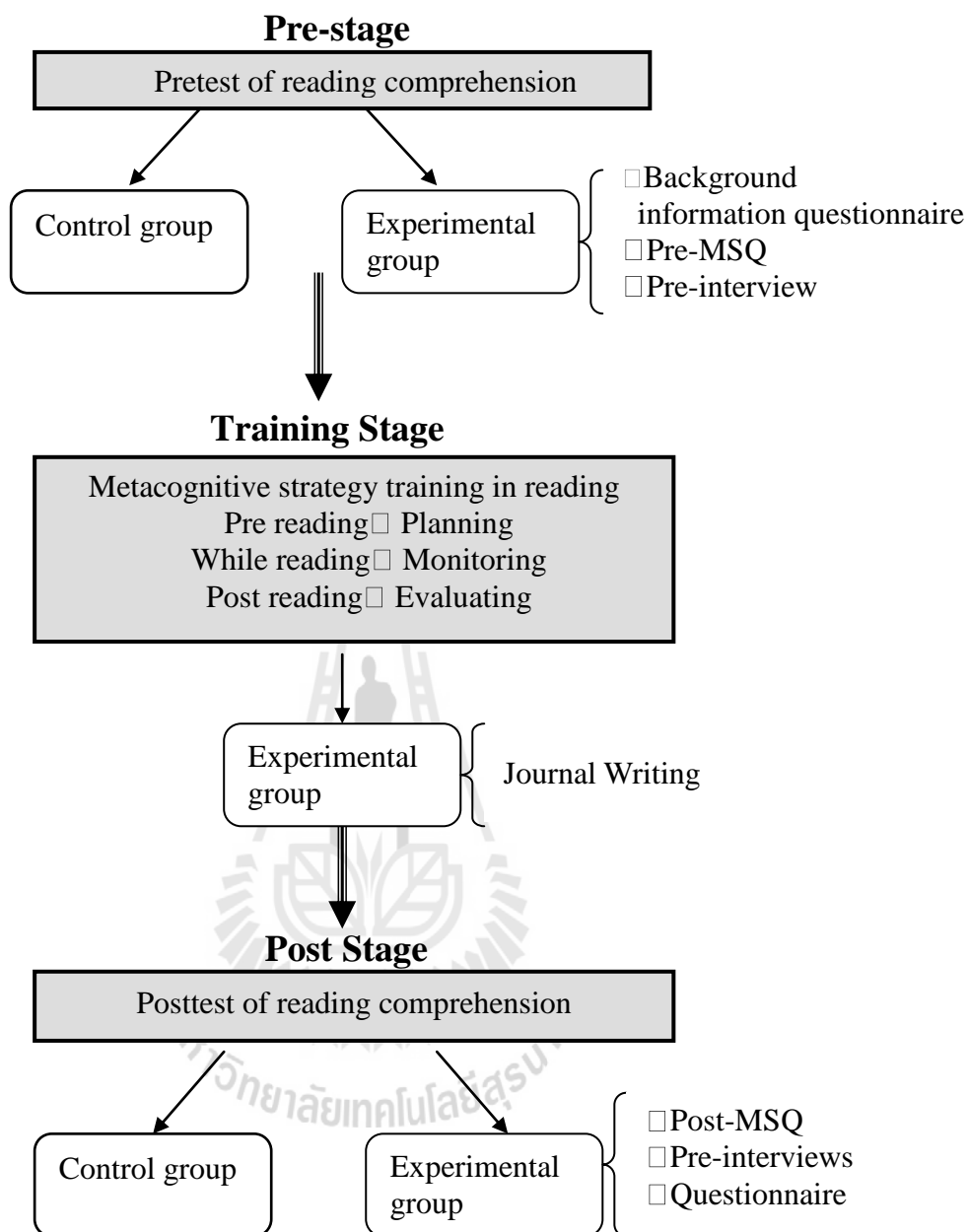
reading strategies in their reading and their attitudes towards MST. The interviewer used general questions as guidelines rather than specific questions for each participant. Each interview lasted approximately 20 minutes. All the interviews were audio taped with the students' permission and transcribed verbatim very shortly after the interview. It is essential for the interviews to be recorded on tapes. In this way, the information can be analyzed in detail afterwards.

In sum, taking into account the advantages and disadvantages of data collection methods, Garner and Alexander (1989) suggested that using multiple methods that do not share the same errors is imperative if we are to measure "knowing about knowing" with accuracy (p.147). The present study used a triangulation method to collect data about students' attitudes towards the metacognitive strategy training used in their reading comprehension. As a result, it was possible to combine the different collection methods for a full and complete understanding of the metacognitive strategies use by Chinese English majors.

### **3.4 Data Collection Procedures**

#### **3.4.1 The Overall Experimental Procedures**

This research was conducted in a normal English learning setting, where two intact groups of students enrolled in the Advanced English Course for a period of 18 weeks. Figure 3.1 provides an overall picture of the data collection procedures.



**Figure 3.1 Overview of the Data Collection Procedures**

The focus of the study was to determine whether MSQ had significant effects on L2 reading comprehension. As discussed earlier, two groups of students enrolled in the Advanced English Course were the participants of the quasi-experiment during regular class time in an 18-week period.

According to the National Curriculum for College English Majors of Higher Education in P. R. C. (2002), the Advanced English Course aims to enhance the third-year English majors' reading skills in accuracy, fluency and grammar, based on their previous two-year intensive learning at university. It is compulsory for all third-year undergraduate English majors and it lasts for one year. The students attend Advanced English Course twice a week for 2 hours each time. The textbooks applied for the Advanced English Course are *A New English Course*, Books 5 and 6 (Li, 2004, p. vi), which are particularly designed in China.

In the 6<sup>th</sup> semester, each of the 11 units of *A New English Course*, Book 6 which consists of two texts, were used. Text I is the main article designed for intensive reading. *Pre-reading Questions*, *Dictionary Work*, *Library Work*, *Comprehension Questions*, *Organization and Development*, *Analysis*, *Language work*, *Paraphrase*, and *Language Work* are the activities for Text I. Text II is designed for extensive reading. It is similar to the first text in theme, except that it is longer. *Questions for Discussion* is the main activity for Text II.

The specific procedures in this research were as follows:

On the first day of the first week, a background information questionnaire was given to the students in the form of a paper to obtain information before the MST (See Appendix D). Then two groups of participants were randomly assigned to an experimental group or a control group and pretested by RCT to decide if there were significant differences among them before the intervention. The participants were required to finish the pretest within 60 minutes. Before implementing the MST, the students were also asked to complete the Pre MSQ. A pre-interview about students' metacognitive strategy use in reading was also conducted.

Next, the researcher applied the MSQ treatments to the experimental group while the control group received normal reading instruction. Specifically, at the beginning of the experiment, the participants in the experimental group were told that they would be assigned to write reading journals after training. Together with the MST, students kept their journals three times during the 18-week pedagogical intervention. The first journal was conducted after the students had finished reading Text I of Unit Two – *The Fine Art of Putting Things Off*, and had completed their reading tasks. The second entry of the journal was written after Unit Six – *Dull Work*, and the third entry of feedback was conducted after Unit Eleven–*On Consigning Manuscripts to Floppy Discs and Archives to Oblivion*, (see Appendix L for students' sample journal entries).

At the end of the 18-week period, both groups of students were retested using the same reading passages as used in the pretest. Then the experimental group was required to complete the Post MSQ. Following that, a post-interview about their metacognitive strategy use in reading was conducted. Next, a self-report questionnaire was administered to collect more data about the students' attitudes towards the MST. To ascertain whether any additional variables played a role in reading comprehension, follow-up semi-structured interviews were conducted one week after the RCT. The interview consisted of five guided questions aiming at investigating the students' attitudes after the MST. Chinese was also used for better understanding and convenience. The interviews were tape-recorded, transcribed and translated into English for qualitative data analysis.

### **3.4.2 The Metacognitive Reading Strategy Training Model**

The instructional model for MSTRC was integrated into the regular English

teaching instruction, emphasizing the use of metacognitive strategies to enhance academic reading comprehension. The researcher integrated metacognitive strategies in planning, monitoring and evaluating the process of reading comprehension. The procedures for the construction of the MSTARC model of this study were as follows:

1. The researcher constructed the instructional model based on the teaching scheme, the main components of the metacognitive strategies, and reading stages and allocating time for 18 weeks' training for these reading tasks.
2. The instructional plan consists of 11 units of the lessons for developing awareness of metacognitive strategies to be used in the reading comprehension. Each lesson was designed and organized according to the lesson plan (see Appendix C).
3. The training fell into two phases. In the first phase, the strategies were explicitly taught while in the second phase they were practiced on a variety of reading tasks.

#### ■ Phase One (the first three weeks)

Teaching was conducted in a co-operative context to generate collaborative problem solving between the teacher and the students in the process of strategy learning. The researcher explained the metacognitive reading strategies and demonstrated how to use them in pre-reading, while-reading, and post-reading, as proposed by Yiğiter, Sarıçoban, and Gürses (2005), by reading a text and thinking about the mental processes. The researcher also analyzed the steps (or activities) involved in employing the strategies and made sure that the students knew when and where to use it. Then the students tried out the strategies by following the teacher's instructions closely on how to carry out each step. Meanwhile, the researcher consistently monitored students' responses, providing positive recognition for correct responses and necessary corrections if errors occurred. The researcher also offered

corresponding guidance according to the students' needs until they knew how to use them.

■ Phase Two (the remaining fifteen weeks)

The students practiced using the strategies by participating in activities in each stage of reading. At the same time, the researcher made the students aware of the strategies that they were employing in order to facilitate the transfer of the strategies to new reading tasks. The following describes the specific activities involved in each stage and the metacognitive strategies which were practiced.

**Planning (Pre-reading Stage)**

Planning is the first crucial strategy toward becoming a metacognitively aware learner. The planning process of the reading task is similar to how students plan and organize when reading begins. Planning always starts at the beginning of the reading task; however, this process can be applied throughout the task. The powerful planning strategies are then revisited at the different reading stages.

The students were taught to incorporate the sub-skills for planning strategies when reading which involves advance organizer, organizational planning, selective attention and self-management skills.

First, in training advance organizer skills, the students at first obtained a general idea of the content, the text type and estimated the degree of difficulty by skimming the first and last paragraphs, the topic sentence of each paragraph and the key words in it. After skimming, the students would answer these questions: "What is the text mainly about?" "Is the text a narration, an exposition, or an argumentation and "Is it difficult for me to understand it?" "What am I supposed to know after reading?" "What sort of question am I likely to have to answer?" With such mental

processing, students gained an insight into the nature of the reading task. An example from the lesson plan is as follows:

### **Step 1: Advance Organizer and Making Predictions**

To help the students learn to determine the nature of the reading task and set his reading goal.

#### **• Discuss the pre-reading questions on page 16 of the Students' Book:**

1. "Procrastination is the thief of the time" is a very well-known proverb that reminds us that we should "Never put off till tomorrow what we may be done today", which is yet another proverb. Have you been taught to do thing promptly? Do you personally believe in these two proverbs and act accordingly?
2. Why do you suppose the author calls "putting things off " a fine art? Do you think he is serious, or is he just being ironical?

From this example, the link with the metacognitive strategy training model and the practical lesson plan can be seen clearly. The following metacognitive strategies and the training details can be seen in the lesson plan (see Appendix C).

Second, in planning how to accomplish each reading task, the students were trained to apply organizational planning skills as they needed to review their prior knowledge about the topic by asking themselves relevant questions. For instance, if the text was about a famous person, they might ask "What do I know about him?" If the text is about a social problem, they might ask question such as: "How do people often react to this problem?" Then the students identify what are the requests of each specific reading task, check their own linguistic and non-linguistic resources, and plan additional knowledge and strategies necessary for completing the tasks. For instance, if one found the topic was not familiar and needed some knowledge to assist their

comprehension of the text, he could discuss the topic with his classmates to fill the gap concerning prior knowledge. If the text was easy, he might choose to read quickly to identify the main points and the supporting details. Anyway, the nature of the reading task determined the means of fulfilling the task.

Third, in the process of training selective attention skills, students decided what should be attended to during task execution by prioritizing the strategies with reference to the nature of the task. For example, if it was a narrative essay, he might need to pay special attention to the events, but if it is an argumentative essay, he might need to attend to the author's viewpoints or attitudes, evidence, and how the points were supported by the evidence.

Last, to train self-management skills, the researcher taught the students to focus on what they learn helped students understand the conditions which in turn helped them perform to the best of their abilities in reading comprehension. Research has shown that readers have to employ a wide range of strategies in order to read efficiently (Cohen & Weaver, 2006; Afflerbach, Pearson, & Paris, 2008). When one strategy does not working, readers must turn to alternative strategies. For example, if the text does not contain topic sentences, to compensate, he can shift his attention to section headings.

### **Monitoring (While-reading Stage)**

After students were prepared to read by planning strategies, they were trained to use monitoring strategies to measure their reading effectiveness while working on the reading task.

First, in being trained to use monitoring reading comprehension skills/strategies, the students were encouraged to stop to check their comprehension

when they were reading the important or/ and difficult parts by asking themselves questions like “Do I understand this?” “Why did the author say that?” “Is my understanding appropriate and accurate?” They were further encouraged to track the sources of the crucial breakdowns and adopt fix-up strategies. For instance, a student could slow down in reading and review the difficult sections, or conversely, continue to read ahead with the hope that the writer would fill in gaps by adding more information or clarifying points later in the text. On the other hand, the students were encouraged to ignore small problems and keep on reading.

Second, in being trained to use monitoring production skills/strategies, the students were reminded about recognizing whether the reading strategy used can solve their comprehension problems. If the students were uncertain about one task, they were asked to try to find another solution by applying different strategies. Gradually, the researcher reduced the prompts to encourage students’ autonomous use of monitoring production.

### **Evaluating (Post-reading Stage)**

After completing the former training, students were trained on evaluating strategies to evaluate how well the reading process had been performed. Students also evaluated the outcome of the reading tasks. First, in the training for self-assessment skills, the students were asked to make an assessment of whether they succeeded in /achieved the reading goal by asking themselves these questions: “To what degree have I understood this text?” and “Have I attained my reading goal?”

Second, in the training for self-evaluation skills, the students reviewed the strategies they used, wrote them down, and evaluated which were used effectively, which were used inappropriately, and which should be practiced more in the reading

comprehension. The students also evaluated whether their reading strategies had improved and in which part of the passage.

Third, in the training for self-reflection skills, the students were asked to reflect on their own problems in the reading process to see how they performed and how they could perform better next time.

Students can become better language learners when they engage in deliberate thought about what they are learning and how they are learning it. In the metacognitive strategy training, students learn to step back from the learning process to think about their reading and their progress as language learners, which encourages students to become independent learners and which can also increase their reading motivation.

### **3.5 Data Analysis**

This part describes the methods of data analyses employed in the present study. Data obtained from the MSQ and RCT were submitted for statistical analysis by using the Statistical Package for the Social Sciences (SPSS) software (version 15.0). Data obtained from the students' journals and interviews were submitted for qualitative analysis.

#### **3.5.1 Descriptive Statistics**

Descriptive statistics such as frequency and percentage was employed for an overall picture of the students' performance on the RCT and their attitudes towards the MST.

### **3.5.2 Independent-sample *t*-tests**

Independent-samples *t*-tests were performed to find out whether the experimental group and control group showed any significant differences in metacognitive strategy use before and after MST. The independent-sample *t*-tests were used to see the overall effects of the MST on reading comprehension.

### **3.5.3 Paired-sample *t*-tests**

Paired-sample *t*-tests were calculated to compare the students' mean scores on the pretest and posttest to see whether the experimental group showed any significant gain in their scores between the students' pretests and posttests. The results of differences between the Pre MSQ and the Post MSQ in high proficiency and low proficiency groups were also obtained through a matched paired-sample *t*-test, which illustrates the students' development in their reading comprehension.

### **3.5.4 Pearson Correlation Analyses**

Pearson correlation analyses were conducted to examine the relationship between the experimental group participants' post-treatment metacognitive strategy use and English achievement.

### **3.5.5 Regression Analyses**

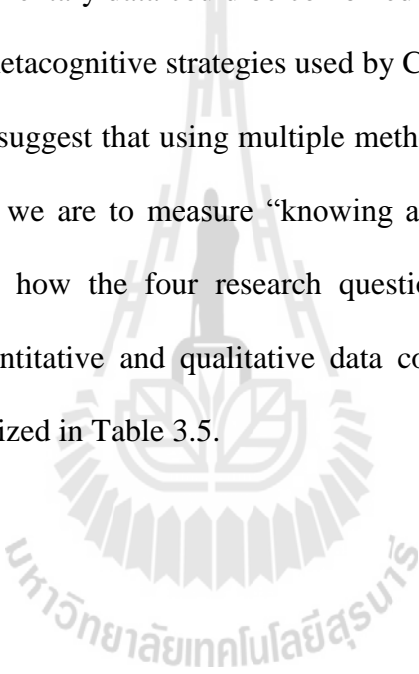
Regression analyses were conducted to find out whether a causal relationship existed between the experimental group participants' post-treatment metacognitive strategy use and their English language achievement.

### **3.5.6 Qualitative Analysis**

Data collected from students' journals and the semi-structured oral interviews were analyzed qualitatively to seek patterns in the students' attitudes towards the MST. The specific procedures were as follows. First, all answers from the students were

typed up in a list under each research question. Then, students' responses were grouped into categories of similar answers. Third, the most salient patterns of the students' attitudes were identified.

In sum, taking into account the advantages and disadvantages of data collection methods, the present study will use a triangulation method to collect data about students' attitudes and perceptions of the MST in reading comprehension. Therefore, the complementary data could be combined to provide a full and complete understanding of the metacognitive strategies used by Chinese English majors. Garner and Alexander (1989) suggest that using multiple methods that do not share the same errors is imperative if we are to measure "knowing about knowing" with accuracy (p.147). To conclude, how the four research questions in the present study are answered through quantitative and qualitative data collection and data analyses is illustrated and summarized in Table 3.5.



**Table 3.5 Summary of Data Collection and Data Analyses**

<b>R.Q.</b>	<b>Research questions</b>	<b>Data collection instruments</b>	<b>Methods of data analyses</b>	<b>Statistical tests</b>
1	What metacognitive strategies and how do high proficiency and low proficiency third-year English majors of Guizhou University use in academic reading comprehension?	<ul style="list-style-type: none"> <li>• MSQ</li> <li>• Interview</li> </ul>	Quantitative  Qualitative	<ul style="list-style-type: none"> <li>• Matched paired-t test</li> <li>• Descriptive statistics</li> </ul>
2	Does metacognitive strategy training (MST) have any effects on the academic reading comprehension? If so, what are the effects?	<ul style="list-style-type: none"> <li>• RCT</li> <li>• Interview</li> </ul>	Quantitative  Qualitative	<ul style="list-style-type: none"> <li>• Matched paired-t test</li> <li>• Independent t-test</li> <li>• Descriptive statistics</li> </ul>
3	Does the students' metacognitive strategy use have any relationship with their English reading comprehension achievement?	<ul style="list-style-type: none"> <li>• MSQ</li> <li>• RCT</li> </ul>	Quantitative	<ul style="list-style-type: none"> <li>• Pearson correlation analyses</li> <li>• Regression analyses</li> </ul>
4	What are the students' attitudes towards the MST in academic reading comprehension?	<ul style="list-style-type: none"> <li>• Questionnaire</li> <li>• Interview</li> <li>• Journal</li> </ul>	Qualitative	<ul style="list-style-type: none"> <li>• Descriptive statistics</li> </ul>

### 3.6 The Pilot Study

A pilot study is necessary before conducting the main experiment. It can help the researcher to find weaknesses in the main study and then make modifications according to the students' feedback. Charles and Mertler (2004) points out three necessities for a pilot study:

“ In the first place, it gives a chance to practice administering the tests or making the observations. In this way,

facility is gained, and the chance of making a mistake which would spoil the whole investigation is decreased. Secondly, it may bring to light any weakness in the procedure of administration. Instructions to the subjects can be amended if they are found any weakness in the procedure of administration. Instructions to the subjects can be amended if they are found to be ambiguous or incomprehensible. The time needed for the experiment can be checked. Unsatisfactory methods of recording information can be improved, and generally, the process of testing can be made as simple and foolproof as possible. Thirdly, the statistical procedures can be tried out to make sure they can be applied to the material gathered. Working out the results of the pilot experiment will show whether all the necessary information has been gathered, and they will give some indication of the result to be expected from the main investigation” (p92).

The pilot study was carried out at Guizhou University, Guizhou Province, China from December 3<sup>rd</sup> to 28<sup>th</sup>, 2007. The instruments employed in this study were, namely, the MSQ, the RCT, students’ journals and semi-structured interviews. The purpose was to try out the design of the study and check whether there was any weakness in each procedure of the methodology and whether the instruments were suitable for the main study or not.

The following section discusses how the pilot study was conducted and its implications for the main study.

### **3.6.1 Participants**

A similar sample of university students as that in the main study participated in the pilot study. Walliman (2001) asserted that it is best to test the instrument on people of a type similar to that of the intended sample, so as to anticipate any problems of comprehension or other sources of confusion. The participants were selected on the basis of convenience and availability. A total of 55 third-year English major undergraduate students at Guizhou University who were taking the Advanced

English Course as a compulsory class in the first term of academic year 2007-2008 were the participants of the pilot study. The 55 students from two intact groups were randomly assigned to one control group (N = 25) or one experimental group (N = 30), among which 5 high proficiency students and 5 low proficiency students were chosen in the experimental group. Their ages ranged from 20 to 24.

### 3.6.2 Data Collection Procedures

The pilot study lasted for four weeks. The researcher taught all of the two groups of students. She met the students in eight 2-hour class sessions for a total of sixteen hours. During the pilot study period, the participants studied two units from *New English Course*, Book 5: Unit Four: *The Invisible Poor* and Unit Eight: *Why nothing Works*. These two units were chosen because they were both expository in nature.

Before implementing the MST, the students were asked to complete the Pre MSQ and pre-interview about their strategy use. Then each lesson that was designed and organized according to the lesson plan (see Appendix C) for developing awareness of metacognitive strategies to be used in the reading comprehension. It began with a description for each lesson, the focus of metacognitive strategies, objectives of each lesson and the rationale for each sub-category of the metacognitive strategies. At the end of the 4-week period, all of the high proficiency and low proficiency groups of students were retested using the same reading passages as used in the pretest. Then the experimental group was required to complete the Post MSQ.

Together with the MST, the students' journals were written regularly at the beginning, the middle, and the end of the experiment. That means each student was required to write three entries of feedback in the pilot study.

After the students had finished studying these two units, the researcher carried out the RCT. Immediately after the RCT, the 30 students answered the questionnaire to gain the students' attitudes towards MST (see Appendix I). The students were also asked to comment on the test time and test format. Then they completed the Post MSQ and the post-interview about the strategy use.

The following week, after all the groups took the RCT, 6 students (3 from the high and 3 from the low proficiency group) were randomly selected for the interviews to know their attitudes towards MST (see Appendix J). The face-to-face semi-structured interviews took place in early January 2008. Chinese was used to elicit more information about the students' attitudes towards MST. Each interview lasted from 15 to 20 minutes.

### **3.6.3 Data Analysis**

This part reports the results of the pilot study. It starts with the results of the MSQ, the RCT, followed by the results of the qualitative analyses of the students' journals and the interviews.

#### **3.6.3.1 Metacognitive Strategies Questionnaire (MSQ)**

After the initial piloting, the revised 40 items of MSQ were tried out with 30 students, third-year English majors who participated in the four-week training. The Pre MSQ was administered the week before the MST (before Week 1 of the training), and the Post MSQ was administered after Week 4 of training. Then, the value of the individual items of the Pre MSQ and Post MSQ were used for a reliability check. To determine the internal consistency of the 40 items of the Pre MSQ and Post MSQ, Cronbach's coefficient  $\alpha$ , the most appropriate reliability index was calculated, yielding a reliability estimate of .83 for the Pre MSQ and .92 for the Post MSQ. In

addition, a series of  $\alpha$  coefficients for the Pre MSQ and Post MSQ were computed with one item being deleted. The entire resulting coefficient for the Pre MSQ centered around .82 and .91 for the Post MSQ, indicating that no improvement in the overall  $\alpha$  could be obtained by deleting any item from the Pre MSQ and Post MSQ. The results showed that the MSQs as a whole were a reliable instrument of high internal consistency and respectable temporal stability.

In summary, the data from MSQ clearly showed the whole picture of metacognitive strategies of high and low proficiency third-year English majors of GU used in academic reading comprehension. And it also indicated that MST had affected the academic reading comprehension. The nature of these effects and how reading comprehension was affected would be discussed according to the data obtained from the reading comprehension test.

### 3.6.3.2 Reading Comprehension Test

Based on the data from the language teacher and the experts, all of the six reading passages used in the test were found to be suitable for the Chinese university EFL students. The results revealed that the texts used for the test items were the sort of texts Chinese EFL students had to read in their academic reading. The data obtained from the 11 teachers and experts are presented in Table 3.6 as follows:

**Table 3.6 Text Appropriateness According to Teachers (N=11)**

Reading Passage	Appropriate No./ (Percent %)	Not Appropriate No./ (Percent %)
Reading Passage 1	8/73	3/27
Reading Passage 2	9/82	2/18
Reading Passage 3	7/55	4/45
Reading Passage 4	10/91	1/9
Reading Passage 5	8/73	3/27
Reading Passage 6	9/82	2/18

The results revealed that all of the six reading passages used in the test were appropriate for Chinese university EFL students because the majority of the experts regarded the six passages as appropriate (average 64%). Of all the six reading passages, the most appropriate passage was judged to be Passage 4, followed by the Passage 2, 6, 1, and 5, the last one was Passage 3.

The results obtained from the questionnaire revealed that from the six passages, Passage 3 was reported to be the most difficult and Passage 1 the least difficult. The other passages were reported to be moderately difficult (See Table 3.7).

**Table 3.7 Text Difficulty According to Students (N=30)**

Reading Passage	Easy (%)	Moderate (%)	Difficult (%)
Passage 1	20 (67.2)	6 (20.6)	4 (12 )
Passage 2	9 (27.58)	17 (55.2 )	4 (17.2)
Passage 3	3 (8.6)	7 (22.4)	20 (69)
Passage 4	8 (24.1)	16 (53.4)	6 (22.4)
Passage 5	9 (29.3)	16 (51.7)	5 (18.9)
Passage 6	8 (25.8)	16 (53.6)	6 (20.6)

In conclusion, all of the six reading texts were considered valid as instruments to determine students' reading ability for the present study and the feedback demonstrated that all the students were familiar with multiple-choice tests.

Furthermore, the results from IAS showed that among all the 30 items, 19 items were appropriate, 11 items were either too difficult or too easy and needed to be improved. The 21 items that fitted the model of CTT are as follows with their respective  $p$  and  $r$  values:

**Table 3.8 Items Fitting CTT Model**

Item No.	<i>p</i>	<i>r</i>
1	0.432	0.267
2	0.450	0.292
3	0.637	0.282
6	0.686	0.298
9	0.310	0.443
10	0.490	0.287
11	0.440	0.284
13	0.614	0.261
14	0.590	0.200
16	0.390	0.320
17	0.447	0.212
18	0.530	0.252
19	0.461	0.401
21	0.550	0.275
22	0.471	0.227
25	0.382	0.260
27	0.569	0.286
29	0.520	0.240
30	0.380	0.402

From Table 3.8, it can be seen that among the 30 items, 19 items fitted the CTT model because they met the criteria of difficulty values between 0.3 and 0.7, and discrimination values over 0.2. The KR20 value of these appropriate items was 0.90, which was high as expected.

**Table 3.9 Too Difficult Items According to CTT**

Item No.	<i>p</i>	<i>r</i>
5	0.330	0.120
8	0.152	0.148
12	0.265	0.277
15	0.240	0.280
20	0.198	0.342
24	0.244	0.183
26	0.330	0.164

It can be seen from Table 3.9 that 7 of the 30 items were too difficult, because either these items' difficulty levels (*p*) were lower than 0.3 or their

discrimination values were below 0.2. These difficult items (5, 8, 12, 15, 20, 24 and 26) were improved and made easier and more suitable for the participants in the main study.

**Table 3.10 Too Easy Items According to CTT**

Item No.	<i>p</i>	<i>r</i>
4	0.873	0.160
7	0.764	0.422
23	0.880	0.211
28	0.750	0.141

Table 3.10 shows that 4 items were too easy for the testees either because their difficulty indexes were higher than 0.7 or their discrimination indexes were lower than 0.20. These four inappropriate items (No. 4, 7, 23, and 28) were improved or rewritten to be more suitable for the participants of the main study.

In conclusion, all of the six reading texts were considered valid as instruments to determine students' reading ability for the main study since they had been validated by both the language teachers and test takers. Meanwhile, the results obtained from the pilot study of the RCT provided the researcher with insights into how to improve the test for the main study.

### **3.6.3.3 Students' Journals**

The results of the students' journal entries about Unit 4 showed 63% (19 out of 29, one absent) and Unit 8 showed that 87.8% (26 out of 30) students had positive attitudes towards the metacognitive strategy training.

Probably due to the students' unfamiliarity with journal writing, only 63% students commented that journal writing helped them rethink about the text structure, difficult vocabulary, sentences, and their own problems before, while, and

after reading. The percentage of students who had positive attitudes towards journal writing increased to 87.8% (26 out of 30) for Unit Eight. The students also commented that they were at a loss about what to write in a journal, especially when they first did it for Unit Six even though some guided questions were provided.

About 66.7% students thought that they had limited metacognitive knowledge which made them unable to determine whether they were making progress towards the goals of the reading task. Additionally, students did not have clearly defined goals for the English language reading tasks that they were assigned to do. It seemed that the ESL students expected that it was the teacher's responsibility to clarify the reading goals for them and to monitor their reading progress.

Thus, 78% students wanted to have direct training and develop their metacognitive abilities or awareness to take control of their own reading process. Integrating the metacognitive mechanism within the students through the steps of planning and setting goals, monitoring or regulating and evaluating could enable the students to apply metacognitive strategies to their reading task performance, and metacognitive strategies can empower readers with a highly individual metacognitive ability.

The results from the journal showed that the high proficiency students regulated their own reading processes more often and used more reading strategies than the low proficiency students. The high proficiency readers could consciously and automatically do the planning (predicting information from a title, relating potential information to personal experience, generating questions to anticipate/guide reading), monitoring (considering tasks, looking at post-reading exercises, recognizing comprehension problems, recognizing the attitudes and the intentions of the writer),

and evaluating (rereading prior text, re-examining the task, writing down confusing information, and seeking outside assistance).

In contrast, for the inexperienced low proficiency reader, this working memory component of the reading process may be beneficial through metacognitive development. The most serious problem for the low proficiency students was that they did not really lack of reading strategies, but rather a lack of the awareness of knowing how and when to apply them in their reading process. Teachers, therefore, should help students develop metacognitive strategies to become efficient readers since it is vital that the learners know how to control and regulate their cognitive reading comprehension process.

#### **3.6.3.4 Semi-structured Interview**

##### **The Interview for the Metacognitive Strategy Use**

Qualitative analysis of 2 high and 2 low proficiency students' retrospective interviews before and after MST revealed both similarities and differences in the three main categories of metacognitive strategies use: 1) Planning strategies, 2) Monitoring strategies, and 3) Evaluating strategies. It is evident that before the training, students knew less about strategy use and did not attend to the key aspects of reading, such as what are the specific aspects of the reading tasks and how to select the appropriate reading strategies for the specific tasks, even though they knew their own problems, they failed to know how to solve them. Some of the students' responses were as follows:

*HP3: "Yes, sometimes I think about prior knowledge to promote better understanding, but I do know how to do the planning effectively."*

*HP2: "Actually I monitor my reading process, but I have no clear idea about how it can improve my reading comprehension."*

*LP7: “Honestly, I’ve never evaluated after reading, because I think that is the teacher’s job.”*

After training, both the high proficiency students appeared to see their own problems, strengths and weaknesses more clearly. It was found that the high proficiency students revealed a better understanding of how to read efficiently by reflecting on their reading problems. This showed that they have tried to reflect on their cognitive processes while performing the reading task. For example, the high proficiency students consistently demonstrated how they used evaluating strategies they learned in class for enhancing their reading comprehension.

*HP4: “Before the training, I do not know how to evaluate, but now I really like writing the journals after reading, it can make me clear about what are my weak points in reading comprehension and I will try to improve them. It’s very helpful.”*

It was noted that the low proficiency students’ reports also illustrated that they could apply the reading strategies and the knowledge learned from the class to connect with the tasks they were going to do. Due to their low language proficiency, their metacognitive strategy use might not be so effective compared with that of the high proficiency students.

*LP1: “After MST, I know more about the reading process, I can try to use what I learned from the class, the strategies and skills to solve the problems even sometimes I still can not solve them because my poor reading ability, but I feel more confident in the reading since I can control my own reading process.”*

Therefore, the MST in the reading comprehension made the students aware of their own reading process and how they might approach the reading task in a way that

might help to improve their reading more effectively. Their changing perceptions of the reading process suggested that encouraging the students to participate in metacognitive strategies might contribute to the development of their positive feelings as EFL readers.

### **The Interview for Attitudes towards the MST**

The results from the oral interviews conducted with the 4 interviewees (2 from the high and 2 from the low proficiency group) showed that all of them had positive attitudes towards the MST on reading comprehension. The questions for the interviews were trialed by 3 students who shared the same characteristics with the participants of the study to see if there any more questions should be added or whether any of them should be modified or deleted.

In the pilot study, the researcher conducted the interview in Chinese. An analysis of the students' responses to the interview suggested that they had varied attitudes towards the reading training. The fact that more than half of the students were satisfied indicated that the course had a positive effect on learners' attitudes, which is in essence the ultimate objective of this study. Their comments were: *"My general understanding of the text has been improved."* and *"By applying the reading strategies learnt from the class, I think my reading ability has been improved, especially my ability to generalize the main idea from the topic sentences."*

The positive comments mentioned above showed the students' appreciation of the degree to which MST facilitated their reading comprehension. Nevertheless, some students had negative attitudes towards the training. For example, *"I think it is difficult for me to use so many strategies compared with doing the comprehension exercises."* and *"I found no improvement in my reading after the training, because I*

*am not interested in it.*” Furthermore, some students had neutral attitudes toward the MST. For example: *“I think MST may be well worth (worthwhile), but I am not sure, I am still expecting to see the effects in my reading comprehension.”* and *“I am not sure whether I improved or not...”* In addition, suggestions for the MST were also offered, for example, *“The MST should begin in our first reading course, if I know MST earlier, my reading comprehension can be better improved.”*

In summary, the interviews for the metacognitive strategy use and the students’ attitudes for the MST provided in-depth explanations for the effects of the MST on the students’ metacognitive strategy use and their attitudes towards training. Some useful insights were gained for the main study.

#### **3.6.4 Implications for the Main Study**

The pilot study, on the whole, has proved that the research methodology provided in Chapter 3 is feasible. The results from the pilot study provided the researcher with some implications for the main study as follows:

##### **1. The time for MST should be longer.**

Many students involved in the pilot study felt that the time for MST was not long enough for them to thoroughly understand and apply the metacognitive strategies in reading comprehension. The training time for each reading strategy, planning, monitoring and evaluating was only 4 weeks for in the pilot study, which was not long enough for the students to become fully aware of the effectiveness of the metacognitive strategies in the reading process. So, as a result, it was decided that the main study should last for 18 weeks, including 11 units for the MST.

##### **2. Some items of the RCT needed to be improved.**

Some items (Nos.4,5,7,8,12,15,20,23,24,26,28) were found not to be

appropriate because they were either too easy or too difficult for the students. They were either rewritten or improved to be more appropriate for the main study.

### **3. More time was needed for the RCT.**

About the time allotted for the test, about 58% students (n=19) commented that 60 minutes were not enough for them. Thus, more time (70 minutes) would be given to the participants in the main stage for reading the 6 passages and answering the 30 questions, which means that they needed about 11 minutes for reading each passage and also for answering the questions.

### **4. A suggested format for the journals**

Some students in the low proficiency group felt at a loss in writing the journal and they did not know what to write. The feedback given by the students was very useful in helping the researcher to take this aspect into consideration. They suggested that a brief training should be given concerning how to write a journal before the assigning the task. Therefore, in order to ensure that the students know how to write a journal, a brief training course will be given them.

To help the students have a better understanding of what to write in a journal, the researcher adopted Redmann's (2005) format (See Appendix H) as a guide for the participants in the main study. The students did not have to follow the format, however, as long as they included crucial information, such as their understanding of the text, their strategy use, comments, questions and feelings, and their difficulties, if any, with the reading.

### **5. The same passages should be used in the pre and post test.**

As suggested by the proposal defense committee, the same passage should be used in the pre and post test, thus the students' performance on the RCT would not be

the result of any differences in the reading passage. The same validity and reliability of the reading comprehension passages selected from the same test (PETS, level 5) could guarantee the same validity and reliability of the RCT. As suggested by the proposal defense committee, the questions after the texts should follow the same format, thus the students' performance on the RCT would not be the result of any differences in the format of the questions.

#### **6. Some guided questions in the interview needed to be improved.**

The results of the pilot study indicated that some of the guided questions in the interview needed to be improved for the main study. Since a written questionnaire was to be conducted before the interview, question number 1 about the test time should be asked in the questionnaire instead. The reason was that the questionnaire was conducted with all the participants and a more reasonable picture could be drawn about the test time.

#### **7. A questionnaire was needed before the interviews.**

The self-report questionnaire was regarded as appropriate for this study because it could elicit information directly from the students to identify the patterns of their attitudes. In the main study, five close-ended Likert-scale questions would be conducted with all the 33 students (See Appendix I for a sample of the questionnaire). Before the main study, the researcher conducted the questionnaire with the participants of the pilot study and made some adjustments according to the students' responses. Even though it was done after the pilot study was over, the researcher regarded it as necessary for the purpose of validity.

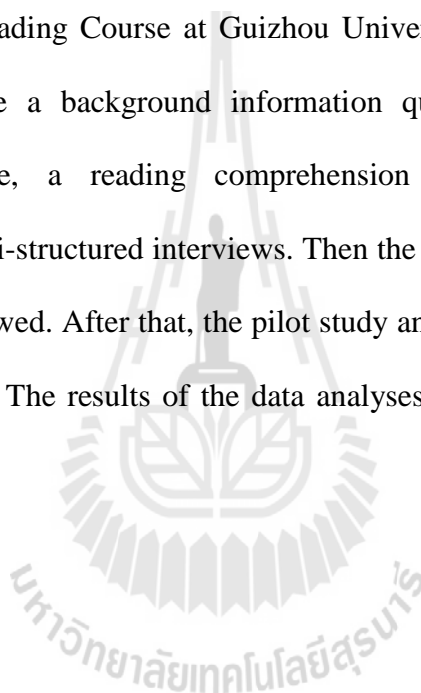
#### **8. A more specific qualitative data analysis**

The qualitative data needed some examples to illustrate the students'

improvement, non-improvement to show the variation of the results in a more specific way. These would be added in the main study.

### **3.7 Summary**

This chapter described the research methodology employed for the present study. This study was conducted with 58 third-year English majors taking the Advanced English Reading Course at Guizhou University. The instruments used to collect the data were a background information questionnaire, a metacognitive strategy questionnaire, a reading comprehension test, students' journals, a questionnaire and semi-structured interviews. Then the data collection procedures and the data analysis followed. After that, the pilot study and its implications for the main study were described. The results of the data analyses will be presented in the next chapter.



## CHAPTER 4

### RESULTS

The main purpose of this chapter is to present the findings of the current study in response to the four research questions postulated in Chapter One. This chapter is organized into two sections. The first section deals with the quantitative analysis of the participants' performance on the Pre and Post MSQ, pretest and posttest of the RCT and semi-structured interview. The second section reports the results of the data gathered through the questionnaire, journal, and the semi-structured interview from both quantitative and qualitative perspectives.

#### 4.1 Answer to Research Question 1:

*What metacognitive strategies do high proficiency and low proficiency third-year English majors of Guizhou University use in their academic reading comprehension?*

##### 4.1.1 Data from MSQ

An analysis of high and low proficiency students' responses to the two sets of MSQ was carried out. The Pre MSQ was conducted before MST and Post MSQ was conducted after MST. They examined three main strategies: planning, monitoring, and evaluating as well as nine sub-strategies identified as metacognitive strategy variables. The nine sub-strategies included the Advance Organizer, Organizational Planning, Selective Attention, Self-Management, Comprehension Monitoring, Production Monitoring, Self-Assessment, Self-Evaluation, and Self-Reflection. In

addition, the researcher examined the individual strategies of metacognitive strategy use in the reading comprehension, so that the data reported by the students from the Pre MSQ revealed the self-perceived use or actual use of strategies before MST while the strategies reported in the Post MSQ indicated the changes and development of metacognitive strategy use after MST.

#### **4.1.1.1 High Proficiency Students' Metacognitive Strategy Use**

The results obtained for Research Question 1 are presented in Table 4.1. The high proficiency students' metacognitive strategy use in the reading comprehension before and after training was demonstrated in terms of the mean scores of the students' self ratings for nine sub-categories of the metacognitive strategies by using descriptive statistics. The average of metacognitive strategy use was based on the most widely employed strategy scale, the ESL/EFL version of the *Strategy Inventory for Language Learning* (SILL). Reliability of the SILL is high across many cultural groups. Validity of the SILL rests on its predictive and correlative link with language performance (course grades, standardized test scores, ratings of proficiency), as well as its confirmed relationship to sensory preferences. The SILL scale value by Oxford (1990) mentioned below was applied to indicate the level of usage for the nine sub-categories. The Pre and Post MSQ classified the frequency of use for individual items based on SILL (Oxford, 1990) according to the scale value and its interpretation as follows:

Very high metacognitive strategy use mean score is between 4.50-5.00

High metacognitive strategy use mean score is between 3.50-4.49

Medium metacognitive strategy use mean score is between 2.50-3.49

Low metacognitive strategy use mean score is between 1.50-2.49

Very low metacognitive strategy use mean score is between 1.00-1.49

Then, the mean scores of the high proficiency students' metacognitive strategy use before and after training were also compared by using the Paired *t*-test. Mean scores, standard deviation, and the level of use are presented in Table 4.1. More specific analyses focused on each aspect of the nine sub-categories of metacognitive strategies which are described in more detail below.

**Table 4.1 Metacognitive Strategies Employed by the High Proficiency Students in Reading Before and After Training**

Metacognitive Strategies and Sub-categories	High Proficiency Students N=10						t-value 2-tailed	p
	Before Training			After Training				
	Mean	SD	Level	Mean	SD	Level		
Advance Organizer	3.43	.43	M	3.87	.38	H	-2.818	.014*
Organizational Planning	3.30	.51	M	4.08	.48	H	-3.094	.013*
Selective Attention	3.10	.41	M	4.21	.38	H	-5.143	.001*
Self-Management	3.05	.43	M	4.06	.27	H	-2.666	.024*
Comprehension Monitoring	3.28	.20	M	4.01	.26	H	-4.865	.001*
Production Monitoring	3.26	.21	M	3.99	.23	H	-7.378	.000*
Self-Assessment	3.50	.48	H	4.12	.23	H	-3.377	.006*
Self-Evaluation	2.98	.91	M	4.05	.55	H	-3.151	.002*
Self-Reflection	3.51	.72	H	3.93	.50	H	-1.370	.017*
$\bar{X}$	3.27	.31	M	4.04	.28	H	-5.368	.000*

The metacognitive strategy use marked \* is significantly different between the use of strategies before and after training at 0.05 level. ( $p < 0.05$ )

Table 4.1 shows the mean scores of nine metacognitive strategies used by the high proficiency students. Before training, the high proficiency students' averages for metacognitive strategy use in the reading comprehension revealed that most of them were at a moderate level of strategy use; only two were at high level of strategy use. To be specific, before training, the high proficiency students exhibited a high

level of metacognitive strategy use in reading for Self-Assessment and Self-Reflection (the mean scores were 3.50 and 3.51). The remaining strategies: Advance Organizer, Organizational Planning, Selective Attention, Self-Management, Comprehension Monitoring, Production Monitoring, and Self-Evaluation were of medium use.

After training, all strategies were at a high level of strategy usage. The highest level of all the metacognitive strategies used in the reading comprehension for the high proficiency students after training was Selective Attention (Mean = 4.21). Significance differences at the 0.05 level ( $p < 0.05$ ) were found within the high proficiency students' metacognitive strategy use before and after training for Organizational Planning, Selective Attention, Self-Management, Comprehension Monitoring, Production Monitoring, Self-Evaluation and Self-Assessment. The results showed no significant differences within this group in the metacognitive strategy use for Advance Organizer, and Self-Reflection.

With regard to the individual strategy items (40 items), before training, the mean scores of the individual strategies ranged from a high of 3.51 to a low of 2.98 for the high proficiency students (overall mean = 3.27), indicating a medium overall use of seven sub-strategies and a high overall use of two metacognitive strategies in reading before training according to the established strategy usage criteria described above. After training, the mean scores of individual strategies ranged from a high of 4.21 to a low of 3.87 for the high proficiency students (overall mean = 4.04), indicating a high use of all nine strategies. The observed difference in the overall means of metacognitive strategy use by the high proficiency students before and after training was statistically significant ( $t = -5.368$ ;  $p < 0.05$ ).

#### 4.1.1.2 Low Proficiency Students' Metacognitive Strategy Use

Table 4.2 illustrates the details of mean, standard deviation, and the level of use and the p value of nine metacognitive strategies employed by the low proficiency students before and after MST.

**Table 4.2 Metacognitive Strategies Employed by the Low Proficiency Students in Reading Before and After Training**

Metacognitive Strategies and Sub-categories	Low Proficiency Students N=10						t-value 2-tailed	p
	Before Training			After Training				
	Mean	SD	Level	Mean	SD	Level		
Advance Organizer	3.25	.38	M	3.50	.40	H	-1.871	.014*
Organizational Planning	3.28	.40	M	4.08	.42	H	-6.000	.000*
Selective Attention	3.00	.37	M	4.12	.53	H	-1.510	.000*
Self-Management	3.35	.36	M	3.62	.30	H	-2.290	.047*
Comprehension Monitoring	2.96	.26	M	3.87	.21	H	-7.154	.000*
Production Monitoring	3.21	.38	M	3.82	.32	H	-9.690	.000*
Self-Assessment	3.37	.36	M	3.65	.45	H	-1.540	.002*
Self-Evaluation	3.38	.47	M	3.59	.67	H	-1.998	.011*
Self-Reflection	3.36	.40	M	3.96	.45	H	-3.986	.000*
$\bar{X}$	3.24	.34	M	3.80	.32	H	-6.417	.000*

The metacognitive strategy use marked \* is significantly different between the use of strategies before and after training at 0.05 level. ( $p < 0.05$ )

Further analysis of results regarding the nine sub-categories of metacognitive strategies for the low proficiency students is shown in Table 4.3. Before training, it shows the averages for the medium level strategy usage for all the nine metacognitive strategies (the means were between 2.96 to 3.38). After training, the averages for the nine categories of the metacognitive strategies revealed a high strategy usage; the highest level of usage was Selective Attention (mean = 4.12). Significant differences

at the 0.05 level ( $p < 0.05$ ) were found within the low proficiency students' metacognitive strategy use before and after training.

Regarding the individual strategy items for the low proficiency students before MST, the mean scores of the individual strategies ranged from a high of 3.38 to a low of 2.96 (overall mean = 3.24), indicating a moderate use of the nine strategies. After training, the mean scores of individual strategies for the low proficiency students ranged from a high of 4.12 to a low of 3.50 (overall mean = 3.80), indicating a high use of all nine strategies. The observed difference in the overall means of metacognitive strategy use by the low proficiency students before and after training was statistically significant ( $t = -6.417$ ;  $p < 0.05$ ).

#### **4.1.1.3 A Comparison in the Order of Metacognitive Strategy Use of the High and Low Proficiency Students Before MST**

The researcher further compared the difference in the order of metacognitive strategy use in the reading comprehension of the high and low proficiency students before MST. The order of metacognitive strategies used from the most to the least by the high and low proficiency students before training is summarized in Table 4.3.

**Table 4.3 Comparison in the Order of Metacognitive Strategy Use of the High and Low Proficiency Students Before MST**

Order	High Proficiency Students	M	SD	Low Proficiency Students	M	SD
1	Self-Reflection	3.51	.72	Self-Evaluation	3.38	.47
2	Self-Assessment	3.50	.48	Self-Assessment	3.37	.36
3	Advance Organizer	3.43	.43	Self-Reflection	3.36	.40
4	Organizational Planning	3.30	.51	Self-Management	3.35	.36
5	Comprehension Monitoring	3.28	.20	Organizational Planning	3.28	.40
6	Production Monitoring	3.26	.21	Advance Organizer	3.25	.38
7	Selective Attention	3.10	.41	Production Monitoring	3.21	.38
8	Self-Management	3.05	.43	Selective Attention	3.00	.37
9	Self-Evaluation	2.98	.91	Comprehension Monitoring	2.96	.26

As shown in Table 4.3, it was found that before training, the high proficiency students showed a clear preference for Self-Reflection, followed by Self-Assessment, Advance Organizer, Organizational Planning, Comprehension Monitoring, Production Monitoring, Selective Attention, Self-Management, Self-Evaluation was reported the least strategy use by the high proficiency students.

For the low proficiency students, before training, they demonstrated the highest use for Self-Evaluation, followed by Self-Assessment, Self-Reflection, Self-Management, Organizational Planning, Advance Organizer, Production Monitoring, and Selective Attention. Comprehension Monitoring was reported to be least used by the low proficiency students.

#### 4.1.1.4 A Comparison in the Order of Metacognitive Strategy Use of the High and Low proficiency Students After Training

The difference in the order of metacognitive strategy use in the reading comprehension by the high and low proficiency students after metacognitive strategy training was also compared. The order of metacognitive strategies used the most to the least by the high and low proficiency students after training is summarized in Table 4.4.

**Table 4.4 Comparison in the Order of Metacognitive Strategy Use of the High and Low Proficiency Students After MST**

Order	High Proficiency Students	M	SD	Low Proficiency Students	M	SD
1	Selective Attention	4.21	.38	Selective Attention	4.12	.53
2	Self-Assessment	4.12	.23	Organizational Planning	4.08	.42
3	Organizational Planning	4.08	.48	Self-Reflection	3.96	.45
4	Self-Management	4.06	.27	Comprehension Monitoring	3.87	.21
5	Self-Evaluation	4.05	.55	Production Monitoring	3.82	.32
6	Comprehension Monitoring	4.01	.26	Self-Assessment	3.65	.45
7	Production Monitoring	3.99	.23	Self-Management	3.62	.30
8	Self-Reflection	3.93	.50	Self-Evaluation	3.59	.67
9	Advance Organizer	3.87	.38	Advance Organizer	3.50	.40

In Table 4.4, the order of reported metacognitive strategy use is different from that reported before training (Table 4.3). Interestingly, both the high and low proficiency students reported the use of Selective Attention as the most used. In summary, the data from MSQ clearly show the whole picture of metacognitive strategies used by high and low proficiency third-year English majors of Gui Zhou

University for academic reading comprehension. It also indicates that MST had some effects on the academic reading comprehension of the participants, and what were the effects and how reading comprehension was affected will be discussed from the data obtained by the reading comprehension test.

#### **4.1.2 Data from Semi-structured Interview**

Data from the semi-structured interview was analyzed both quantitatively and qualitatively. In order to understand their usage better, the items of the individual strategies of the three metacognitive strategies listed in the pre and post interview are listed below.

For Planning:

##### *1. Advance Organizer (AO)*

- 1) Determine the nature of the reading. (AO1)
- 2) Set one's reading goals. (AO2)
- 3) Plan the objectives of reading sub-tasks. (AO3)

##### *2. Organizational Planning (OP)*

- 1) Plan the strategies for completing the tasks. (OP1)
- 2) Elaborate prior knowledge connected with the reading tasks. (OP2).
- 3) Plan the content of each task and the parts of specific reading tasks. (OP3)

##### *3. Selective Attention (SA)*

- 1) Focus on a specific aspect of the task. (SA1)
- 2) Select the appropriate reading strategies for the specific tasks. (SA2)

##### *4. Self-Management (SM)*

- 1) Apply one or more specific reading strategies relevant to the specific task. (SM1)
- 2) Adjust reading strategies for achieving goals. (SM2)

Total: 10 metacognitive strategies in planning

For Monitoring:

1. *Comprehension Monitoring (MC)*

1) Check one's understanding, accuracy and appropriateness of the overall reading task/process. (*MC1*)

2) Check one's own abilities and difficulties in each reading task. (*MC2*)

2. *Production Monitoring (MP)*

1) Check whether specific comprehension problems, such as vocabulary, sentences etc. are solved or not. (*MP1*)

2) Check whether the selected reading strategies can work or not. (*MP2*)

Total: 4 metacognitive strategies in monitoring

For Evaluating:

1. *Self-Assessment (SA)*

Assess whether one succeeds in /achieves the reading goal.

2. *Self-Evaluation (SE)*

1) Evaluate the efficiency of the reading comprehension. (*SE1*)

2) Evaluate the reading strategies. (*SE2*)

3. *Self-Reflection (SR)*

Reflect on one's own problems. (*SR*)

Total: 4 metacognitive strategies in evaluating

The quantitative analysis of the data from the semi-structured interview is as follows:

#### 4.1.2.1 Frequency of Metacognitive Strategy Use of the High Proficiency Students

To categorize the frequencies of metacognitive strategy use, criteria for determining the levels of use were established (Oxford, 1990). The range of use below 50% was considered to be low, the range of moderate use fell between 51%-70%, and the level of above 70% was considered to be high. Table 4.5 shows the frequencies, percentage, and the differences in metacognitive strategy use identified in the high proficiency students' retrospective interview data.

**Table 4.5 Frequencies, Percentages, and Differences of Metacognitive Strategy Use of the High Proficiency Students (N=10)**

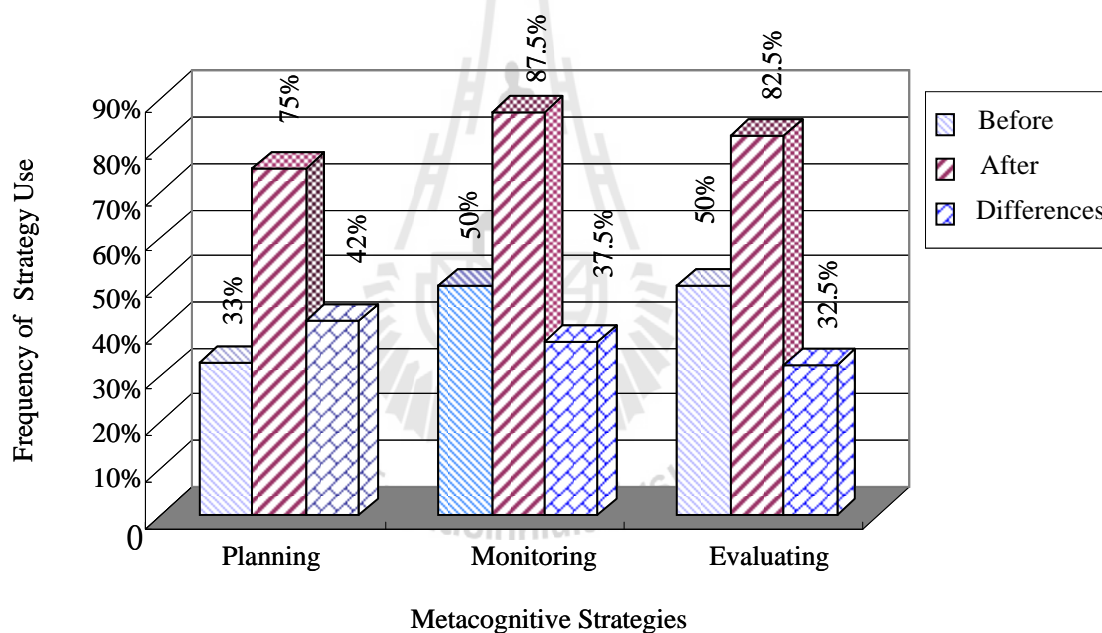
Metacognitive Strategies	Total Strategies	Before Training		After Training		Differences	
		Frequency of Strategy Use	%	Frequency of Strategy Use	%	Frequency of Strategy Use	%
<b>Planning Strategies</b>	10	33	33.00	75	75.00	43	42.00
<b>Monitoring Strategies</b>	4	20	50.00	35	87.50	15	37.50
<b>Evaluating Strategies</b>	4	20	50.00	33	82.50	14	32.50

Analysis of the interview data revealed that before training, a total of 33 individual strategies of Planning Strategies were identified within the high proficiency students group indicating a low percentage of use (33%); whereas, a total of 76 individual strategies were identified after training indicating a higher percentage of use (75%) , which was 43% higher than that used before training.

As for the Monitoring strategies, before training, a total of 20 individual strategies were identified indicating a low percentage of use (50%) while 46 individual strategies were identified indicating a high percentage of use (87.50%), which was 37.50% higher than that used before training.

For the Evaluating strategies, before training, a total of 20 individual strategies were identified indicating a low use (50%), but after training, 34 individual strategies were identified indicating a high percentage use (82.50%), which was 32.50% higher than that used before training.

Figure 4.1 also shows the differences between the metacognitive strategies used by the high proficiency students before and after metacognitive strategy training in the reading comprehension according to the frequencies and percentages of strategy use presented in Table 4.5.



**Figure 4.1 Differences in Metacognitive Strategy Use of the High Proficiency Students**

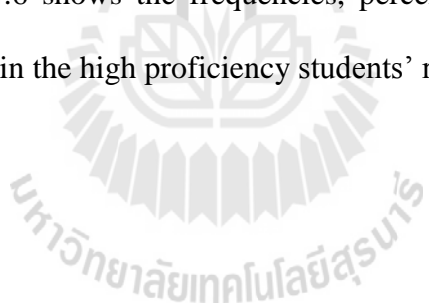
Figure 4.1 shows that before training, the high proficiency students possessed a high number of Monitoring and Evaluating strategies while the amount of Planning strategy use was low. After training, the number of metacognitive strategy used increased dramatically, specifically the Planning Strategies in which the students reported a low use before training which increased the most. This increase in

metacognitive strategy use could signify that metacognitive strategy training impacted on the abilities of the high proficiency students leading to an increase in metacognitive strategy use in the reading comprehension.

#### **4.1.2.2 Differences in Frequency of Individual Strategy Use of the High Proficiency Students**

The frequencies of metacognitive strategy use by the high proficiency students and the differences between the use before and after training regarding the nine sub-strategies: Advance Organizer, Organizational Planning, Selective Attention, Self-Management, Comprehension Monitoring, Production Monitoring, Self-Assessment, Self-Evaluation, and Self-Reflection as well as individual strategies were also compared.

Table 4.6 shows the frequencies, percentage, and the differences of strategy use identified in the high proficiency students' retrospective interview data.



**Table 4.6 Frequencies of Individual Strategy Use of the High Proficiency Students**  
(N=10)

Metacognitive Strategies	Sub-strategies	No of Individual Strategies	Before Training		After Training		Difference	
			Frequency	%	Frequency	%	Frequency	%
<b>Planning</b>	Advance Organizer	3	8	26.67	22	73.33	14	46.66
	Organizational Planning	3	7	23.33	24	80.00	17	56.67
	Selective Attention	2	8	40.00	14	70.00	6	30.00
	Self-Management	2	10	50.00	15	75.00	5	25.00
<b>Monitoring</b>	Comprehension Monitoring	2	9	45.00	18	90.00	9	45.00
	Production Monitoring	2	11	55.00	17	85.00	6	30.00
<b>Evaluating</b>	Self-Assessment	1	5	50.00	8	80.00	3	30.00
	Self-Evaluation	2	9	45.00	16	80.00	7	35.00
	Self-Reflection	1	6	60.00	9	90.00	3	30.00
<b>Total</b>		18	73	43.88	143	80.37	70	36.48

The results displayed a large difference in all nine sub-strategies of metacognitive strategy use before and after training. In fact, the high proficiency students increased in the use of all four sub-strategies of planning strategies: Advance Organizer, Organizational Planning, Selective Attention, and Self-Management. The overall strategy use before training was at a low percentage of use (43.88%), while after training, the overall use was at a high percentage of use (80.37%), which was 36.48% higher than that used before training.

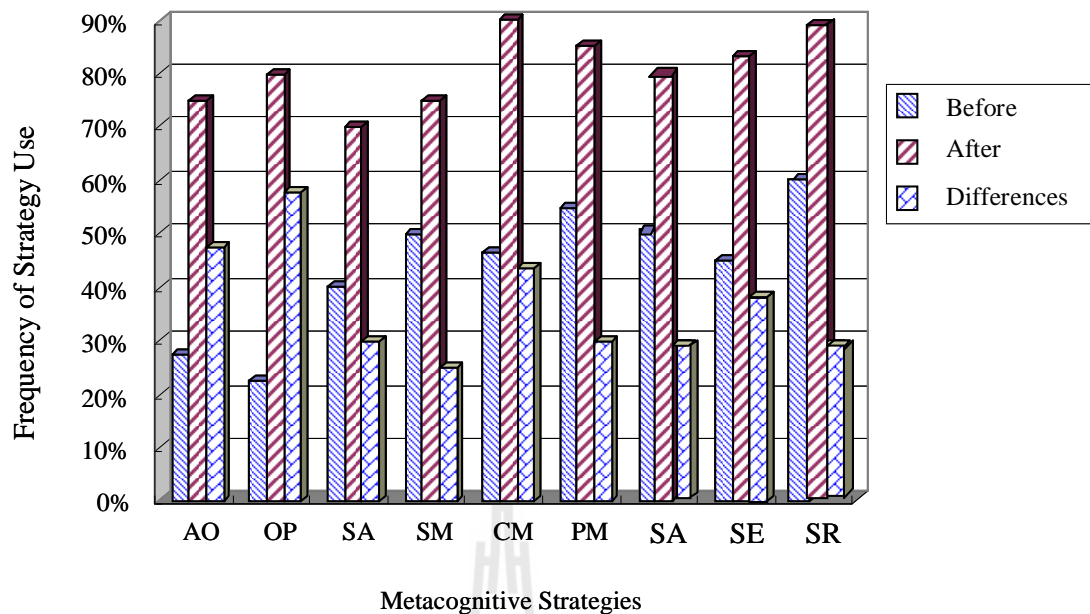
After training, the high proficiency students used four sub-strategies of planning strategies more frequently. The high proficiency students used 22 individual strategies of Advance Organizer with a 46.66% difference from their previous use, 24

individual strategies of Organizational Planning with a high percentage of use (56.67%), 14 individual strategies of Selective Attention and 15 Self-Management with a high percentage of use with a 30% and 25% difference from their previous use.

Regarding monitoring strategy use, before training, the high proficiency students' used 9 individual strategies of Comprehension Monitoring with a 45% percentage of use and 11 individual strategies of Production Monitoring with a moderate use of 55%. After training, the high proficiency students used a total of 18 individual strategies of Comprehension Monitoring with a high percentage of use (90%), which was 45% higher than that used before training, and 17 individual strategies of Production Monitoring with a high percentage of use (85%) , which was 30% higher than that used before training.

For evaluating strategies, before training, the high proficiency students used 5 individual strategies of Self-Assessment with a moderate use (50%), 9 individual strategies of Self-Evaluation with a low percentage of use (45%), 6 strategies of Self-Reflection with 60% of use. After training, the students used 8, 16, and 9 individual strategies of Self Assessment, Self-Evaluation, and Self-Reflection respectively indicating high percentages of use (80%, 80%, and 90%).

Figure 4.2 also presents the differences in the use of the nine sub-strategies of metacognitive strategy by the high proficiency students before and after training based on the frequencies and percentages of use presented in Table 4.6.



**Figure 4.2 Differences in the Individual Strategy Use of the High Proficiency Students Before and After Training**

Table 4.6 and Figure 4.2 suggests that after training, the high proficiency students used metacognitive strategies more frequently, and that they used nine strategies of metacognitive strategies with a high percentage.

#### **4.1.2.3 Frequency of Metacognitive Strategy Use of the Low Proficiency Students**

Analysis of the semi-structured interview also illustrated the differences between the amount of metacognitive strategy used by the low proficiency students before and after training. Table 4.7 shows the frequencies, percentage, and the differences in metacognitive strategy use identified in the low proficiency students' retrospective interview data.

**Table 4.7 Frequencies, Percentages, and Differences of Metacognitive Strategy Use of the Low Proficiency Students (N=10)**

Metacognitive Strategies	Total Strategies	Before Training		After Training		Differences	
		Frequency	%	Frequency	%	Frequency	%
<b>Planning strategies</b>	10	27	27.00	84	84.00	57	57.00
<b>Monitoring strategies</b>	4	17	42.50	34	85.00	17	42.50
<b>Evaluating strategies</b>	4	15	37.50	33	81.42	18	43.92

As shown in Table 4.7, before training, a total of 27 individual strategies of planning strategies were identified in the low proficiency students' retrospective reports indicating a low percentage of use (27%) while after training, 85 individual strategies were identified indicating a high percentage of use (84.00%), which was 57% higher than that used before training.

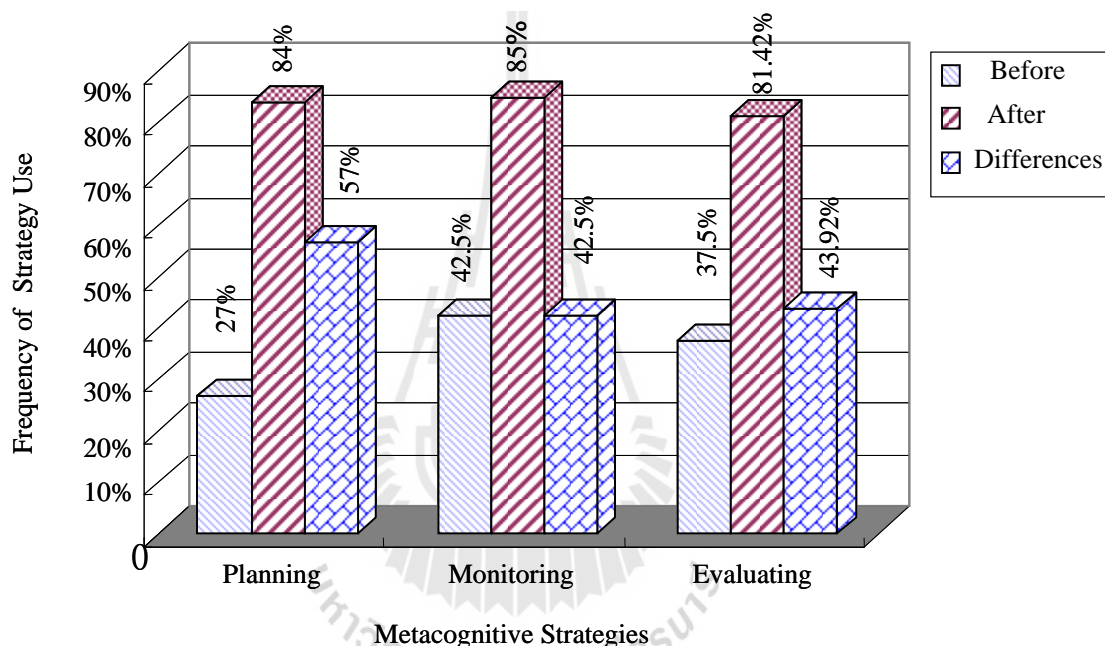
As for the monitoring strategies, before training 17 strategies were identified indicating a low percentage of use (42.50%), but after training, 43 strategies were identified indicating a very high percentage of use (85.00%), which was 42.50% higher than that used before training.

For evaluating strategies, before training, 15 strategies were identified indicating the average percentage of use as 37.50%, while after training, 33 strategies were identified indicating a high percentage of use (81.42%), which was 43.92% higher than that used before training.

The above report reveals that before training, the low proficiency students seemed to use Planning strategies and Monitoring strategies at a low level, but after training, they tended to use these two strategies more frequently with very high percentages. In fact, it was found that after training, the students used three strategies,

Planning, Monitoring, and Evaluating with a high percentage of use. The increase in the metacognitive strategy use in the reading comprehension might be affected by the metacognitive strategy training.

Figure 4.3 also shows the differences between the metacognitive strategies used by the low proficiency students according to the frequencies of use revealed in the interview data presented in Table 4.7.



**Figure 4.3 Differences in the Metacognitive Strategy Use of the Low Proficiency Students**

#### **4.1.2.4 Differences in Frequency of Individual Strategy Use of the Low Proficiency Students**

The frequencies of metacognitive strategy use regarding the nine sub-strategies and the individual strategy use by the low proficiency students were also compared. Table 4.8 shows the frequencies, percentages, and differences of strategy use identified in the low proficiency students before and after training.

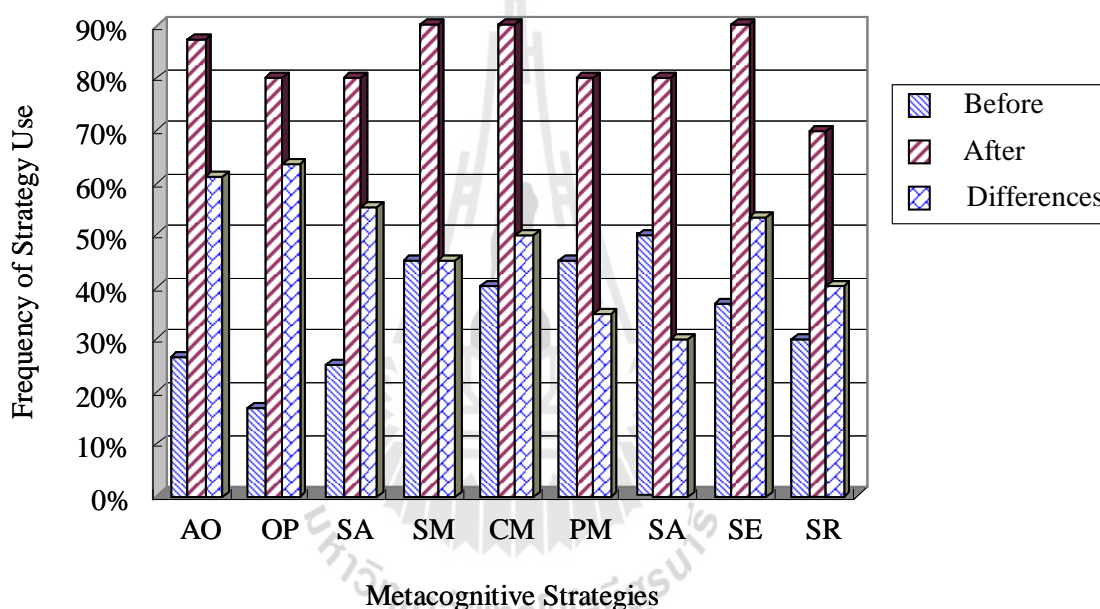
**Table 4.8 Frequencies of Individual Strategy Use of the Low Proficiency Students**  
(N=10)

Metacognitive Strategies	Sub-strategies	No of Individual Strategies	Before Training		After Training		Difference	
			Frequency	%	Frequency	%	Frequency	%
<b>Planning</b>	Advance Organizer	3	8	26.67	26	86.67	18	60.00
	Organizational Planning	3	5	16.67	24	80.00	19	63.33
	Selective Attention	2	5	25.00	16	80.00	11	55.00
	Self-Management	2	9	45.00	18	90.00	9	45.00
<b>Monitoring</b>	Comprehension Monitoring	2	8	40.00	18	90.00	10	50.00
	Monitoring Production	2	9	45.00	16	80.00	7	35.00
<b>Evaluating</b>	Self-Assessment	1	5	50.00	8	80.00	3	30.00
	Self-Evaluation	2	7	35.00	18	90.00	11	55.00
	Self-Reflection	1	3	30.00	7	70.00	4	40.00
<b>Total</b>		18	59	34.81	151	82.96	92	48.15

The results reveal the differences in the use of all nine sub-strategies by the low proficiency students before and after training. The overall strategy use before training was at a low percentage of use (34.81%) while after training; the 151 overall use was at a high percentage of use (82.96) which was 48.15% higher than that used before training. Also, the low proficiency students increased in the use of all nine strategies after training, specifically Organizational Planning which was 63.33% higher than that used before training. Evidently, before training, they reported a low level of use for all the strategies (from 16.67% to 50% of use). After training, they reported the use of all the nine strategies: Advance Organizer, Organizational

Planning, Selective Attention, Self-Management, Comprehension Monitoring, Production Monitoring, Self-Assessment, Self-Evaluation, and Self-Reflection were also used at a high level and high percentages with totals of 26, 24, 16, 18, 18, 16, 8, 18 and 7 strategies and high percentages (from 70% to 90% of use).

Figure 4.4 also presents the differences in the use of the nine sub-strategies of metacognitive strategy use by the low proficiency students before and after training based on the frequencies and percentages of use presented in Table 4.8.



**Figure 4.4 Differences in the Individual Strategy Use of the Low Proficiency Students Before and After Training**

## 4.2 Answer to Research Question 2

*Does metacognitive strategy training (MST) have any effects on academic reading comprehension? If so, what are the effects?*

### 4.2.1 Data from the Reading Comprehension Test

#### 4.2.1.1 Pretest Results

The RCT was employed to evaluate the participants' reading

comprehension ability before and after the MST. The findings of the pretest were used to set the baseline for comparison and to help interpret the findings, particularly if any improvement or differences occurred at the end of the experiment.

Descriptive analysis of data was employed to get an overview of the participants' performance on the pretest. Table 4.9 below shows the average scores of the 58 participants on the pretest. Both groups were at the same level of reading proficiency.

**Table 4.9 Participants' Performance on the Pretest**

<b>Group(n=58)</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Control Group (N=25)</b>	18.26	3.104
<b>Experimental Group (N=33)</b>	18.62	3.057

#### **4.2.1.2 Posttest Results**

The posttest served to measure the effects of the pedagogical intervention on the students' reading ability. It was administered when the pedagogical intervention was completed. The same RCT was used for the posttest. Scoring of the assessment also conformed to the same criteria employed for the pretest. The participants' performances on the pretest and posttest were compared in order to verify if there were any improvements in the students' reading comprehension in order to determine the effects of the pedagogical intervention. Descriptive statistics was used as a tool to get an overall picture of the students' performance. Meanwhile the mean, standard deviation (SD), t value was calculated in order to show the level of significance. As shown in Table 4.10 below, before the training, there was no significant difference between the control group (Mean = 18.26) and the experimental group (Mean = 18.62). But after the MST, the experimental

group improved greatly from 18.62 to 23.58 by 4.96 points and the control group improved only by 1.6 points (from 18.26 to 19.86).

**Table 4.10 Results of the Pretest and Posttest of Reading Comprehension**

Group(N=58)	Tests	Mean	Std. Deviation
<b>Control Group</b> (N=25)	Pretest	18.26	3.104
	Posttest	19.86	3.132
<b>Experimental Group</b> (N=33)	Pretest	18.62	3.057
	Posttest	23.58	3.526

To find the effectiveness of explicit metacognitive strategy training on the MST of the experimental group and to compare the improvement with their counterparts in the control group, both groups took part in the same test after the training. The results of the test in the two groups were compared using the independent samples *t*-test statistical procedure. The results show that the mean scores of the experimental group ( $\bar{X} = 23.58$ ,  $SD = 3.526$ ) was significantly ( $p < 0.05$ ) different from the control group ( $\bar{X} = 19.86$ ,  $SD = 3.132$ ). In other words, while there was not any significant difference between the control and the experimental group in terms of reading skills at the beginning of the study, the experimental group had surpassed the control group by the end of the experiment. The result of the *t*-test of both groups is summarized in Table 4.11.

**Table 4.11 Independent-Samples *t* Test in Reading Comprehension**

Group	N	Mean	SD	t	p
Control Group	25	19.86	3.132	-4.208	0.001*
Experimental Group	33	23.58	3.526		

\*Significant at 0.01 level ( $p < 0.01$ )

With regard to the improvement of the experimental group, a paired *t*-test was used to perform the comparison of the pretest and the posttest to verify the effects of MST on the EFL learners. Table 4.12 illustrates the results of the paired sample *t*-test in reading comprehension of the experimental group before and after the MST. The mean score before and after training revealed a significant difference (before Mean=18.62; after Mean=23.58). This shows that the MST had significant effects on the experimental group itself.

**Table 4.12 Paired-Samples *t* Test in Reading Comprehension of Experimental Group**

Group	N	Mean	SD	t	p
Experimental Group					
Before training	33	18.62	9.336	-3.760	0.001*
After training	33	23.58	8.373		

\*Significant at 0.01 level ( $p < 0.01$ )

Furthermore, since both the experimental group and the control group improved in their reading comprehension after teaching, the means of the pretest and posttest performance of the two groups were significantly different, which suggests that the reading performance of the participants in all the groups improved after the 18-week course. Therefore, effect size was recommended to measure the magnitude of

a treatment effect, that is, to what extent the course had the effects on the students' performance. It indicates the degree of the between one variable and another variable in a standardized way (Howitt & Cramer, 2000). Effect sizes are generally defined as small ( $d = .2$ ), medium ( $d = .5$ ), and large ( $d = .8$ ). According to the effect size calculator designed by Cepeda (2008), the values of mean, SD and correlation were needed so as to obtain the value of Cohen's  $d$  within a group. Based on the  $t$ -value, mean score and standard deviation, the value of Cohen's  $d$  was calculated through Cepeda's (2008) effect size calculator as follows:

**Table 4.13 Effect Size of the Pretest and the Posttest within EG and CG**

Group	Test	Mean	SD	n	t	d
<b>Experimental Group</b>	Pretest	18.62	3.057	33	-3.760	-0.675
	Posttest	23.58	3.526			
<b>Control Group</b>	Pretest	18.26	3.104	25	-6.784	-0.243
	Posttest	19.86	3.132			

Table 4.13 shows the size of the effect of RCT from the pretest and the posttest within both the experimental group and the control group. The table indicates that the size of the effect in the experimental group was -0.675 which is larger than the value of a medium size  $d=.5$  according to J. Cohen (2005), whereas the size of the effect in the control group was -0.243, which was a little bit larger the values of the minimum ( $d=.2$ ). Thus, the size of the effect of the scores in the posttest of the experimental group was larger than in the control group.

All the quantitative data of this study point towards the fact that the students who received MST in reading did benefit from it. Data from the interview provided an

in-depth explanation of how MST affected the students' academic reading comprehension.

#### **4.2.2 Data from the Semi-structured Interview**

This section describes the qualitative results showing the students' use of metacognitive strategies as identified in their interview responses according to the methodological triangulation to promote a more comprehensive metacognitive strategy use. Qualitative analysis of the high and low proficiency students' retrospective interviews before and after MST revealed the effects of the MST on the planning, monitoring and evaluating strategies and their reading comprehension. The collected data were analyzed through open coding, i.e. a process of breaking down, examining, comparing, conceptualizing, and categorizing data (Strauss & Corbin, 1990, p.61). Data from the interview showed that students actively invoked a variety of strategies in order to understand academic materials. They mentioned paraphrasing, repetition, using contextual clues to predict, looking for purposes and important information, visualizing, self-questioning, using background knowledge, paying attention to connectives, skimming, scanning, paying attention to topic sentences, using comparison and contrast, and picking out key words etc. Of these, the predominant strategies reported by the participants were thinking about prior knowledge, rereading and rethinking, inferring, self-questioning, using prediction and contextual clues, and paying attention to topic sentences and subtitles. From which, the effects of MST on the students' metacognitive strategy use and reading comprehension could be illustrated.

##### **4.2.2.1 The Use of Planning Strategies**

One salient point about the students' strategy use was that both the

high and low proficiency students reported Selective Attention more than the other strategies. After MST, Selective Attention ranked at the top for both groups. They were reading selectively in order to find answers to comprehension questions. For example, HP3 stated that *“The selective attention is the most useful strategy for me especially after MST, before I start reading, I spend a few minutes reading the Comprehension Questions. After that, I read the whole text and keep the questions in my mind in order to answer the questions correctly and to save time; I read selectively to get the information related to the questions asked.”* In addition, selective attention appeared to be a strategy that the low proficiency students preferred too. LP5 was one of the students who perceived her reading ability as low. She reported having benefits from paying attention to topic sentences: *“Before MST, I do not know how to get the “gist” of the paragraph, but after MST I can search for the topic sentences and subtitles which are effective to solve the problems in the reading tasks, I got correct answers more easily than before.”*

Another notable point was the difference in students' use of Organizational Planning: thinking about prior knowledge. HP5 mentioned, *“When I look at the title of the passage, if I am familiar with it, I feel relaxed since I know I can use my prior knowledge from the newspapers, magazines, etc. to deal with the difficulties, and normally I can get high scores from the passages for contents which I am familiar with.”* This showed that she knew how to use her prior knowledge connected with the text being read and the lack of relevant background knowledge impeded reading comprehension. The low proficiency students also knew the importance of using prior knowledge after the MST, but they still appeared to be incapable of using this strategy due to their lack of background knowledge. LP6 represented this type of student, *“I*

*still remember when I read an article about Indians in America, I know a little about that and I try to recall what I know about Indians, but that does not make sense. Sometimes I get frustrated with myself not having some kind of knowledge since I lose scores for that. After the MST, I feel it is urgent for me to read more to enhance my reading comprehension.*” This indicated that the low proficiency students believed that background knowledge of the content was extremely important for reading and they need to improve their background knowledge with additional reading.

In summary, MST had effects on both high and low proficiency groups’ reading comprehension by using the planning strategies, although the ways and degree of use were different for each group.

#### **4.2.2.2 The Use of Monitoring Strategies**

Some notable points emerged about the monitoring strategy use. First, the students from the both groups demonstrated sensitivity to specific aspects of text by using the strategies of comprehension monitoring frequently, such as predicting. An example is HP4 who stated, *“After the MST, I am sure that it is useful to reread the part that I didn’t quite understand and guessed the words meaning from the contextual clues, and sometimes I skip the unknown words.”* Most of the students from the high proficiency group reported using predicting to successfully understand the texts and get the correct answers. Furthermore, some of the high proficiency students said that after prediction, they would look up the words in the dictionary to make sure their guessing was accurate. They would have a sense of satisfaction if the predictions were proved right. These findings were supported by Brown (2002), who has noted that at university level, predicting is one of the most effective study aids to comprehension of texts. However, although some low proficiency students reported

being able to predict, they could not provide strong reasons for its value, perhaps because, their monitoring was not so effective. As LP8 commented, *“I try to apply what I learn from the MST, read and guess what will happen next, but I’m not sure if this helps my understanding or not because I feel my reading speed slows down, because I need to know every word to understand the passage.”*

Second, of all the 10 interviewees, only 2 from the high proficiency group reported using inferring to make the text more comprehensible, despite their high scores on the posttest. HP9 stated, *“Even after the MST, the most difficult thing for me is the inferring question, I have no confidence in that kind of tasks in my reading comprehension, it is demanding.”* The low proficiency students reported a focus on text elements only. As LP10 said, *“I am always terrified by the inferential questions, I can not infer from the texts and usually get 0 for that kind of question.”* A general underutilization of the inferring strategies reflect the lack of emphasis on inferential comprehension. Yamada (2002) noted, students’ lack of inference ability may mean they are not ready to meet the demands of expository materials, where inferring strategies are necessary. These findings revealed to the researcher that the students might have achieved better reading comprehension if they had used the inferring strategies more frequently, so more tasks in this regard were needed to help them practice more (Alptekin, 2006).

In addition, it was found that although the low proficiency students could monitor and identify problem areas, they did not often resolve the comprehension problems. An example is student LP2, *“I become upset when I notice that I have many problems in reading comprehension but I can not do anything to solve them because my reading ability is poor.”*

In summary, after the MST, the high proficiency students appeared to have a developed EFL reading schema, which incorporated declarative knowledge about the reading process and procedural knowledge for implementing monitoring strategies when reading in English. They reported more flexibility by adjusting their reading speed to match the difficulty of the text and slowing down when encountering more dense or difficult text. The low proficiency students appeared to be more concerned with finishing the task itself, their quality of monitoring in reading comprehension may not be as high as that of the high proficiency students.

#### **4.2.2.3 The Use of Evaluating Strategies**

Some important points also emerged about evaluating strategy use. First, there was an obvious difference between the high and low proficiency students in using evaluating strategies. When students were asked whether they evaluated their reading comprehension, nearly all the high proficiency students' answer was "Yes". HP9 indicated: *"I enjoy evaluating my success and failure in the reading comprehension which gives me an opportunity to reflect on my weak points to avoid the same problems in my future reading comprehension. By writing the journals, my reading comprehension improves a lot. MST is helpful."* It was found that the high proficiency students revealed better understanding of how to read efficiently by reflecting on the reading problems. But most of the low proficiency students were unaware of the benefits of the evaluating strategies. LP4 illustrates this point: *"I never evaluate after reading, when finishing the reading tasks, my reading ends whether the score is high or low."* While after the MST, the same student made the following comments about their reading comprehension: *"I learn a lot from the MST which is an effective way for reading comprehension, now I bear the goal and plan in*

*my mind and read with questions from the reading tasks, I feel interested in reading especially when I reflect on my own success and weak points after finishing the reading tasks in my journal, it is a great help to improve comprehension.” (LP4).* It can be seen that the low proficiency students also appear to see their own problems, strengths and weaknesses more clearly after MST, and they try to reflect on their cognitive processes and to improve them.

Second, after the MST, the application of evaluating strategies helped considerably, but the low proficiency students’ efficiency of using the evaluating strategies was still not satisfactory due to their low language proficiency. A majority of the low proficiency students in this research expressed their low self-esteem and self-evaluation through their fear of reading and not being able to complete the task. As one of the low proficiency student (LP5) said, *“After the MST, I feel more confident in reading comprehension,, but when the passage has a lot difficult words, I feel it is beyond my ability, if I know more vocabulary, my reading score will be higher.”*

In summary, it was found that students seemed to improve as the MST progressed. They became aware that these strategies could make them strategic and successful readers through MST. The findings about the students’ strategy use suggested that MST appeared to affect not only students’ use of metacognitive strategy use but also their reading comprehension.

### **4.3 Answer to Research Question 3:**

*Does the students’ metacognitive strategy use have any relationship with their English reading comprehension achievement?*

To further prove if English reading comprehension can be developed by improving metacognitive strategy use, the role of metacognitive strategies in the reading process was examined from a quantitative perspective. It is hoped that some numeric evidence would be found. Accordingly, a correlation analysis and a regression analysis were conducted to gain insights into the relationship between the experimental group's posttest scores on metacognitive strategy use and their English reading comprehension achievement. Correlation analysis is a statistical technique used to test the degree of correlation between two variables and the direction in which they are varied. Regression analysis is to understand the statistical dependence of one variable on another variable (or variables). By providing a regression equation, it enables one variable to be predicted from one or more independent variables.

#### **4.3.1 Correlation between Metacognitive Strategy Use and English Reading Comprehension Achievement**

Pearson correlation analysis was first run to examine whether the experiment group's overall use of planning strategies, monitoring strategies and evaluating strategies was correlated with their English reading comprehension scores, respectively. As was demonstrated in Table 4.14, metacognitive strategy use and the reading comprehension achievement were significantly and positively correlated ( $r=.374^{**}$ ,  $p=.005$ ). It means that the students who used more metacognitive strategies tended to score higher on the reading comprehension test, whereas the students who used fewer metacognitive strategies were likely to get low score.

**Table 4.14 Correlation between Metacognitive Strategy Use and Reading Comprehension Achievement**

		<b>Reading Comprehension Achievement</b>
<b>Planning Strategy</b>	Pearson Correlation	.341**
	Sig. (2-tailed)	.008
<b>Monitoring Strategy</b>	Pearson Correlation	.368**
	Sig. (2-tailed)	.006
<b>Evaluating Strategy</b>	Pearson Correlation	.335*
	Sig. (2-tailed)	.012
<b>Overall Metacognitive Strategy</b>	Pearson Correlation	.374**
	Sig. (2-tailed)	.005

\*\* Correlation is significant at the .01 level (2-tailed).

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

Each of the three sub-metacognitive strategies was also positively correlated with reading achievement. Among them, monitoring strategy held the highest correlation with reading achievement at a significant level of .006 ( $r = .368$ ), and the planning strategy ranked the second ( $r = .341$ ,  $p = .008$ ) and evaluating was the last ( $r = .335$ ,  $p = .012$ ). A significant positive correlation was found between the overall metacognitive strategy use and the reading achievement which was 0.374 ( $p < .01$ ) indicating that metacognitive strategies played a very important role in students' reading comprehension. The more the students used metacognitive strategies, the higher the scores they were able to obtain on the reading comprehension test and vice versa.

### 4.3.2 Causal Effects of Metacognitive Strategy Use on English Reading Comprehension Achievement

Although the results produced by a Pearson analysis demonstrated that metacognitive strategies: planning, monitoring and evaluating strategy had a positive correlation with reading achievement, it was not certain whether the four variables could be used to predict reading achievement. To seek the answer, both simple and multiple regression analyses were performed.

Simple regression was first run to test whether metacognitive strategy use was a predictor and how much it contributed to predicting reading achievement if it was. The results obtained are presented in Table 4.15 and 4.16. From Table 4.15, it can be seen that metacognitive strategy accounts for 14% of the variance in reading achievement. F was 8.632, which is highly significant with a probability level of .005. This means that the regression model had significance.

Table 4.15 shows that metacognitive strategies have an absolute Beta value of .374 at the significant level of .005. The t values, 3.361 and 2.938, were greater than 2, indicating that the two parameters in the regression model were statistically significant. Therefore, the regression equation was expressed as  $Y = 15.074 + .374X$  where X stands for metacognitive strategy and Y stands for reading comprehension achievement. It can be concluded from these results that the metacognitive strategies had significant predictive power with regard to reading achievement.

**Table 4.15 Simple Regression: Model Summary**

Model	R	R Square	Adjusted R Square	F	Sig.
1	.374*	.140	.124	8.632	.005 <sup>a</sup>

a. Predictors: (Constant), metacognitive strategy

**Table 4.16 Simple Regression: Coefficients**

Model	B	Beta	t	Sig.
1 (Constant)	15.074		3.361	.001
Metacognitive Strategy	3.639	.374	2.938	.005

Tables 4.17, 4.18, 4.19, 4.20, 4.21 present the results obtained from the multiple regression analysis which was intended to test whether planning, monitoring and evaluating strategies were predictive variables, and how powerful each of them might be. As is shown in Tables 4.17, 4.18, 4.19 and 4.20, the planning and monitoring strategies entered the regression model by the stepwise method, accounting for 11.6% and 13.5% variance respectively in reading achievement, with the F value being 8.021 at a significant level of .008 and 8.304 at a significant level of .006 respectively. The model, therefore, had statistical significance since the probability level of the F value was much smaller than .01.

Results in Table 4.18 and 4.20 demonstrate that planning and monitoring strategies are a powerful predictor with a Beta value of .341 and .368 respectively. The parameters of the model were also significant because the two t values were greater than 2 because planning strategy was 3.978 and 2.365, while monitoring strategy was 5.334 and 2.882.

**Table 4.17 Multiple Regression: Model Summary**

Model	R	R Square	Adjusted R Square	R Square Change	F	Sig.
1	.341*	.116	.112	.116	8.021	.008 <sup>a</sup>

a. Predictors: (Constant), Planning Strategy

**Table 4.18 Multiple Regression: Coefficients**

Model	B	Beta	t	Sig.
1 (Constant)	16.347		3.978	.000
Planning Strategy	3.284	.341	2.365	.008

**Table 4.19 Multiple Regression: Model Summary**

Model	R	R Square	Adjusted R Square	R Square Change	F	Sig.
1	.368*	.135	.119	.135	8.304	.006 <sup>a</sup>

a. Predictors: (Constant), Monitoring Strategy

**Table 4.20 Multiple Regression: Coefficients**

Model	B	Beta	t	Sig.
1 (Constant)	18.362		5.334	.000
Monitoring Strategy	2.562	.368	2.882	.006

As shown in Table 4.21, the variable of evaluating strategy was excluded from the model because the t value of its Beta value was 1.635, lower than 2. Both the values were close to 1. This illustrates that the evaluating strategy is not linearly correlated, and that the estimated contribution of the independent variable to the dependent variable is reliable. Evaluating strategy did not enter the regression model despite its correlation with reading comprehension achievement. This meant that the relationship between evaluating strategy use and reading achievement was not of a causal type. The reason for the exclusion of the evaluating strategy remains unknown.

**Table 4.21 Multiple Regression: Excluded Variable**

Model	Beta In	t	Collinearity Statistics	
			Tolerance	VIF
1 Evaluating Strategy	.224	1.635	.842	1.187

#### 4.4 Answer to Research Question 4

*What are the students' attitudes towards the MST in academic reading comprehension?*

The research question addresses the students' attitudes toward the MST in academic reading comprehension. Data collected from the questionnaires, the students' journals, and the semi-structured interviews were submitted for qualitative analysis to find out the students' attitudes.

##### 4.4.1 Data from the Questionnaire

The questionnaire was distributed to every subject when s/he finished the posttest. The 33 questionnaires were all returned. The first part of the question consisted of 5-point Likert-scale questions that ranged from "strongly agree" to "strongly disagree" to make a distinction between the students who agreed or disagreed with the statement. The students' responses were coded and calculated by SPSS 15.0 for analysis. In scoring the students' responses, the five point items were coded into a five point scale as follows: Strongly Agree = 5; Agree = 4; Undecided = 3; Disagree = 2 and Strongly Disagree = 1. It is noteworthy that the students' scores on the questionnaire did not represent their reading comprehension ability but only their attitudes toward the tasks. That is, a greater number of points meant the students had more positive attitudes toward the MST. The frequency and the percentage of the students' responses are illustrated in Table 4.22 below.

**Table 4.22 Students' Responses to the Questionnaire (N = 33)**

Content	Frequency/Percentage of the Respondents					
	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Average
1. I am satisfied with the MST in reading.	3/9.1%	20/60.6%	6/18.2%	3/9.1%	1/3.0%	3.64
2. The MST in reading improves my reading comprehension.	8/24.2%	14/42.4%	5/15.2%	4/12.1%	2/6.1%	3.67
3. I can use more metacognitive reading strategies before, while and after reading.	6/18.2%	17/51.5%	4/12.1%	3/9.1%	3/9.1%	3.60
4. I know clearly when, how and why to use metacognitive strategies in my reading comprehension.	7/21.2%	13/39.4%	4/11.8%	7/20.6%	2/6.1%	3.48
5. I will participate in such training in the future if I have chance.	4/12.1%	20/60.6%	5/15.1%	3/9.1%	1/3.0%	3.70

The quantitative analysis of the data elicited through the questionnaire revealed that more than half of the students were satisfied with the MST in reading. Of the five questions, the greatest proportion of respondents (72.7%) would like to join the MST in the future and also, 69.7% students felt they could use more reading strategies than before. Meanwhile, 66.6% students showed a tendency towards the positive agreeing with statement number 2 that the MST in reading improves their reading comprehension. Equally important, 15.2% chose “undecided” and 12.1% “disagree” and 6.1% “strongly disagree” as their response to this question. The least proportion of respondents (60.6%) thought they knew clearly when, how, and why to use metacognitive strategies in their reading comprehension.

It was found that the students had the highest average score on item 5 ( $\bar{X} = 3.70$ ) and followed by 2 ( $\bar{X} = 3.67$ ), which means that many students thought that the

MST could improve their reading comprehension and that they would participate in such training in the future. While the students with the lowest average score was on item 4 ( $\bar{X} = 3.48$ ) which is the most important and difficult part of the MST.

Descriptive analysis was conducted to examine the attitude of the high proficiency and low proficiency students. Table 4.23 shows the mean score of the students' attitudes. The high proficiency students received a higher score (Mean = 4.04) than the low proficiency students (Mean = 3.38). This means that the higher the proficiency of the students, the more positive the attitudes they tended to have. Close examination of the data revealed that the students from both groups also had the lowest average score on item 4, which was in line with the overall average score of the experiment group. This showed that how to use metacognitive strategies flexibly was still a serious obstacle to their reading comprehension.

**Table 4.23 Means of the High and Low Proficiency Students' Attitudes**

Group	Item 1	Item 2	Item 3	Item 4	Item 5	$\bar{X}$
High Proficiency	4.61	4.81	3.75	2.98	4.05	4.04
Low Proficiency	3.52	3.50	3.09	2.81	3.97	3.38

#### 4.4.2 Data from the Journal

The purpose of the students' journal was to obtain information about the potential changes of the students' attitudes during the pedagogical intervention. 60 pieces of the students' journal were collected for qualitative analysis. The students were allowed to write either in Chinese or English so long as they felt comfortable. It turned out that most of the journal entries ( $N = 60$ ) were written in Chinese, which the researcher translated into English. Table 4.24 shows a summary of students' attitudes as shown in the three entries of the journal.

**Table 4.24 Frequency of the Students' Attitude during the Treatment (N= 60)**

Group	Feedback	Positive	Neutral	Negative	Total
<b>High Proficiency</b>	Entry 1	6	2	2	10
	Entry 2	7	2	1	10
	Entry 3	8	1	1	10
<b>Low Proficiency</b>	Entry 1	4	3	3	10
	Entry 2	5	2	3	10
	Entry 3	7	2	1	10

From the reflective journals, it can be seen that the number of students who held positive attitudes increases, and students who held neutral or negative attitudes decreased, while some of them changed their attitudes from neutral or negative to positive. More details can be seen from their journal entries.

#### **The First Journal Entry**

The first journal entry was conducted when the students finished studying Text I of Unit Two, The Fine Art of Putting Things Off. As shown in Table 4.24, 20 journal entries were used for qualitative analysis. 6 students from the high proficiency group and 4 from the low proficiency group had positive attitudes. They reported that MST helped them improve their reading comprehension. One student (HP5) stated, *"I think the MST is helpful because it made me know how to read the text efficiently and how to solve the problems"* (Translated).

Meanwhile, since the MST had just began, some students held negative attitudes and they doubted whether it could work for them by improving their reading comprehension. It was found that 5 students showed negative attitudes, 2 from the high proficiency group and 3 from the low proficiency group. Student HP2 stated *"It is because I could not concentrate on reading if I think about the strategies."* Similarly, student LP10 stated: *"I'm sorry I have to say the MST is not useful for my reading comprehension, time is limited I have to pay attention to reading itself"* (Translated).

Equally important, 2 high proficiency students held neutral attitudes as they were very cautious in expressing their attitude towards the MST. These students believed MST might be useful but some doubts still existed. A typical comment was: *“I think MST may be well worthwhile, but I am not sure, I am still learning to use the strategies in my reading comprehension.”*(HP7)

### **The Second Journal Entry**

When the training had gone half way through, 20 journal entries were submitted for qualitative analysis. First, the results revealed that one student (HP6) had changed her attitude from negative in the first entry to positive in the second journal entry. She stated, *“I gradually got used to use the reading strategies in my reading comprehension, it makes me read more purposefully and effectively, after MST, I became more confident in my reading”* (Translated). It clearly showed that after the students tried using metacognitive strategies several times and experienced positive results such as better comprehension and obtained more correct answers, they felt more confident with their reading.

Second, one student (LP4) changed her attitude from neutral to positive in the second entry and stated, *“ MST changed my way of reading, and I found the way I read before is not effective, I learn a lot of reading skills and strategies which are very useful for me. Before I only focus on vocabulary, in fact, both are needed for better comprehension”* (Translated). This indicated that MST provided a new angle for the students to reflect on the effectiveness of their reading comprehension and they benefited from it, which increased their reading motivation.

Third, 3 students in the low proficiency group continued to have negative attitudes towards the training. In the second feedback, LP10 claimed, *“MST might be*

*effective for reading, but I feel difficult to use them in my reading process, maybe my reading doesn't improve.*" This is in line with Anderson (1991), who suggests that low proficiency readers might know strategies are useful but they do not have enough linguistic knowledge to build on. The low proficiency students need more time and effort to become strategic readers.

### **The Third Journal Entry**

20 journal entries were qualitatively analyzed after the students had finished the reading course. Firstly, the results revealed that 2 students from the low proficiency group changed their attitude to positive from negative. As one of them said, *"I take a long time to change my way of reading and gradually get used to the metacognitive strategies, I can not deny that MST can help me"*(Translated). It showed that students' metacognitive strategies need time and effort to be cultivated and involved many factors especially for the low proficiency students. Their change of attitude is evidence that MST is effective in promoting students' reading comprehension if conducted properly. Students were becoming more positive in strategy use as the MST went along since they were aware that these strategies can make them strategic and successful readers.

Secondly, for the high proficiency students, there was no change from the negative to positive, but 1 student (HP8) changed her attitude from neutral to positive. Her statement is interesting, *"I am a person who is reluctant to make quick decision even for anything, I found that MST is useful but I need wait until last minute to show my opinion, so I always keep neutral"* (Translated).

Thirdly, still 2 students, 1 from the high proficiency group and 1 from the low proficiency group, finally had negative attitudes towards the MST. One who

came from the low proficiency group said, *“I don’t like the training, I spent a lot of time on that, but nothing improved, it is time wasting for me.”* It showed that MST might help most of the students but nothing can solve all the problems, the same as MST.

In short, the data from the questionnaire and the students’ written feedback were analyzed to find the students’ attitudes towards the MST. It was found that the majority of the students had positive attitudes, while neutral and negative attitudes also existed in a small number.

#### **4.4.3 Data from the Semi-structured Interview**

An analysis of the students’ responses to the interview suggested that they had varied attitudes towards the MST. More than half of the students were satisfied with the MST which indicated that it had a positive effect on learners’ attitudes, which is in essence the ultimate objective of this study. Based on the guided questions in the interview, the interviewees illustrated their attitudes towards the MST.

Students’ responses to question number 1 “What do you like/dislike most about the MST? Why / why not?” and number 2 “How do you think the MST will help/not help you improve your reading comprehension?” provided more insights in understanding why MST did or did not have effects on reading comprehension. The responses are summarized in Table 4.25.

**Table 4.25 Likes and Dislikes towards MST**

Likes	Reasons	Dislikes	Reasons
Systematic training	Learn the strategies systematically	Task type	Only multiple choice, boring
Explicit teaching	Easy to understand and learn	Text type	Only expository, not comprehensive
Reflective journals	Help find the problems		
Vocabulary instruction	Help to acquire the strategies		
MSQ	Help make things clearer about one's strategy use		

The Likes towards the MST mentioned above showed the students' appreciation of how MST facilitated their reading comprehension. It is not surprising that students felt benefits from the MST so they acquired positive attitudes towards it. One student (HP3) showed her appreciation of the MST, *"I love the MST, it gives me a lot, my reading ability has been improved."* Another (LP5) was fond of journal writing, *"Before MST, I never evaluate my reading comprehension, but now I find a good way to improve my reading that is writing journals after reading, it's valuable and helpful to do it."* It was found that if the students enjoyed the MST, they felt optimistic about it being able to help improve their reading comprehension in some aspects. All the items of the Likes should be considered and items of Dislikes should be avoided when conducting a MST to enhance the effectiveness of the training.

The informants' responses to question number 5 "In the future, will you apply metacognitive strategies in reading? Why?" were consistent to their responses to question numbers 1 and 2. It was found that all the students intended to apply metacognitive strategies in their future reading. Student HP10 said: *"I am sure that I will use metacognitive strategy in my reading in the future, why not? It helps me a lot."*

*I think any strategic reader should use it...*” Once students acquired the metacognitive strategy use, it benefited their academic reading comprehension.

The answers to the question number 3 “Do you have any problems applying the metacognitive strategies in reading? If any, what are they?” were various. The problems mentioned concerned the application of each strategy in their planning or monitoring or evaluation process. The following problems ranked the first five:

- a. Inadequate vocabulary
- b. Difficulties in using some strategies, such as inferring, predicting etc.
- c. Lack of time and practice
- d. Inability in evaluating
- e. Lack of motivation

It was evident that vocabulary was regarded as a major problem that the students had in their strategy use and reading comprehension. LP2 said: *“Reading strategies are useful, but for me, enlarging my vocabulary is also very important since I usually get confused by the difficult words which sometimes can not be solved by strategies”* (Translated). This clearly shows that the combination of strategy training and vocabulary instruction is the right way for MST, and neglecting either aspect would lead to ineffectiveness in training since language problems and reading problems are closely related and both are important in the improvement of reading comprehension. In short, the students reported their problems concerning their application of the metacognitive strategy use in reading, which the researchers could take into consideration when proposing a teaching model of metacognitive strategy training in reading classrooms.

In their responses to question number 4 “Do you have suggestions about the MST? If any, what are they?” students made some suggestions about the MST in reading. Cited below are some representative examples of students’ suggestions.

- a. More task types should be applied.
- b. A variety of text types should be used.
- c. MST should begin earlier.

The results were in line with students’ responses to question number 1. They made suggestions for changes to those aspects of the MST that they did not like.. HP5 stated: “...*The reading materials should be more varied and there should be more argumentative texts thus to trigger our thinking.*” Suggestions were also given to the task type. LP3: “*More tasks should be involved to suit our reading ability and interest. And more importantly, we should practice the reading strategies for various tasks in order to use it effectively*” (Translated). Equally important, some students suggested that the MST should begin in their first reading course in the university too.

In summary, data derived from the questionnaire, the journal and semi-structured interview were analyzed to obtain a full picture of students’ attitudes towards the MST. Table 4.26 is a summary of the categories of the students’ attitudes towards MST. The analysis of the students’ responses suggested that they had varied attitudes towards the reading tasks. That more than half of students were satisfied with the MST indicated that it had a positive effect on learners’ attitudes, which is in essence the ultimate objective of this study.

**Table 4.26 Summary of Categories of Students' Attitudes from the Questionnaires, Journals, and Interviews**

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**Positive attitudes:**

- HP3: "The training is systematic and improves my reading skills."  
 LP5: "I like MST, it is a useful way for reading comprehension."  
 HP10: "My understanding of the text has been improved by using more strategies."  
 LP7: "By applying the reading strategies learnt from the class, I think my reading ability has been improved, I think journal writing is very helpful."  
 LP3: "My flexibility and skills of using metacognitive strategies are enhanced through the MST, I feel happy about it."  
 HP5: "The explicit teaching of the strategies is clear enough for me to understand, the MST also provides a lot of chances to practice the strategy using, it is effective in improving my reading ability."

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**Neutral attitudes:**

- HP7: "I think MST may be well worth, but I am not sure, I am still learning to use the strategies in my reading comprehension, let's wait and see."  
 LP4: "I am not sure whether I improved or not. I need time to see the effects."  
 LP9: "I think it may be well worth, but who knows? It is new to me."  
 HP8: "Writing journals may enlarge my vocabulary size, but I am not sure about its effects towards the reading comprehension. I think the most important thing in reading is to understand the meaning of the sentences then the meaning of the whole text."

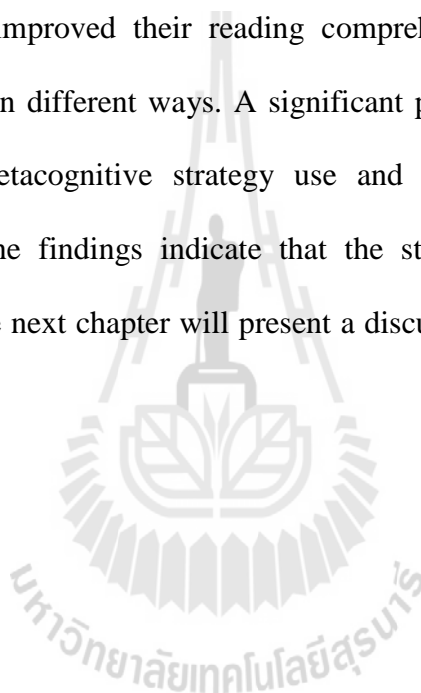
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**Negative attitudes:**

- LP10: "I think it is difficult for me to use so many strategies compared with only doing the comprehension exercises. I can not spare time for that."  
 LP2: "I found no improvement in my reading after the training, because I am not interested in it. It's an extra burden for me."  
 HP6: "To tell the truth, I do not like MST, because I can not concentrate on reading if think about the strategies while reading and I do not feel the improvement in my reading comprehension."  
 LP6: "I'm sorry I have to say the MST is not useful for my reading comprehension. To me, reading comprehension focus on reading speed, I have pay attention to reading itself."  
 HP2: "Time is limited for me, I use the strategies learnt from the class, but there is no progress for me, it is redundant to me."
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## 4.5 Summary

In summary, this chapter shows the results of the present study. The findings present an overview of the high and low proficiency students' strategy use before and after MST. The findings of the statistical analyses reveal that the experimental group improved greatly after the MST in reading comprehension compared with the control group. In the experimental group, both high and the low proficiency students improved their reading comprehension after MST, but they benefited from MST in different ways. A significant positive correlation was found between students' metacognitive strategy use and their reading comprehension achievement. Also, the findings indicate that the students had positive attitudes towards the MST. The next chapter will present a discussion of the research findings of this study.



## **CHAPTER 5**

### **DISCUSSION**

This chapter discusses the findings reported in Chapter Four. The discussion is based on the research questions presented in Chapter One. First, we consider the effects of the metacognitive strategy training on the reading comprehension, which includes the EFL students' metacognitive strategy use in reading comprehension and the difference in metacognitive strategy use between the high proficiency and the low proficiency students. Second, the students' attitudes towards the tasks are further discussed.

#### **5.1 Effects of the Metacognitive Strategy Training on Reading Comprehension**

##### **5.1.1 The EFL Students' Metacognitive Strategy Use**

###### **5.1.1.1 The Overall Metacognitive Strategy Use**

The quantitative results from the MSQ and semi-structured interview data analysis further illustrate both high and low proficiency students' strategy use before and after training.

Before training, the high and low proficiency students both reported moderate use of all three strategies: Planning, Monitoring, and Evaluating strategies.

The possible reason for the finding that the overall strategy use was at a moderate level is that these students might not have been systematically trained before entering college. Since in high school English teaching and learning is exam-oriented, and more attention is focused on the product of reading, e.g., the score on a reading comprehension test rather than on the process of reading. Though most of the students know about some of the strategies, they may, to some extent, lack full awareness of how to use strategies in reading comprehension (Trench, 2006). This suggests that, although they were classified as advanced readers, they should be regarded as “non-strategic readers”. Therefore, it is necessary to provide explicit metacognitive reading strategy training for them.

However, after training, it was found that the metacognitive strategies used by the high and the low proficiency students increased dramatically. Both groups’ overall strategy use fell into the high level. It appeared that the differences between the use of metacognitive strategy before and after training for both groups of students were significantly high. From these results, it was concluded that the MST enhanced both high and low proficiency students’ metacognitive strategy awareness, so they were able to use metacognitive strategies more systematically. This research finding accords with the research results of others (Muñiz-Swicegood, 1994; Nebila, 2003; Barnett, 1988; Paris, Wasik, & Turner, 1991; Zhang, 2008; Pan, 2006). The findings of these studies found increases in the frequency of reading strategies use after metacognitive intervention.

In summary, an analysis of metacognitive strategy use between the high proficiency and the low proficiency students showed that after training both groups reported using strategies more frequently than before the MST. Additionally, the overall means and the means of the nine metacognitive strategy categories for both groups after training were higher than the means before the MST, with statistically significant differences. Additionally, in terms of the three dimensions of metacognitive strategy use: planning, monitoring and evaluating strategies, some strategies were frequently used while the others were less used. The findings from the quantitative analysis mentioned above merit further discussion.

#### **5.1.1.2 Metacognitive Strategies Frequently Used by the Students**

An examination of metacognitive strategy use in the reading comprehension of both high and low proficiency students before and after training revealed a wider and increased use of metacognitive strategies. In terms of the three dimensions of metacognitive strategy use: planning, monitoring and evaluating, after training, the highest and second highest mean of high and low proficiency students fell in Selective Attention (Mean = 4.21 and Mean = 4.12 for HP and LP group respectively) and Organizational Planning (Mean = 4.12 and Mean = 4.08 for HP and LP group respectively). Interestingly, before training both groups reported a moderate use of Selective Attention; this strategy was placed in the seventh in order out of nine for the high proficiency students and eighth out of nine for the low proficiency

students. It appears that the use of Selective Attention substantially increased for both groups.

Firstly, the explanation for the high use of Selective Attention and Organizational Planning, sub-categories of Planning Strategies, after training was to do with the nature of the metacognitive strategy. The three strategic processes of metacognitive strategy are not linear, but recursive. The students might use the strategies when it is necessary depending on the needs or demands of the task and the interaction between the task and the learner (Brantmeier, 2005a). Selective Attention, as defined earlier, refers to the strategies used when readers work directly with texts and comprehension problems occur (Mokhtari & Reichard, 2003). Selective Attention was closely related to the proficiency management of the task, therefore, after the MST, the students reported that they chose to focus on specific aspects of the reading comprehension when they planned to get the main ideas and the specific details from the text. Selective Attention was specifically useful for these students because it helped them understand the complexities of the approaching reading task before reading, pinpointing the problem, and expanding the learning task (Chamot, Barnhardt, El-Dinary, & Robbins, 1999; Young & Yoke, 2001).

The second reason could be that in reading in English, the students often encountered unfamiliar language and cultural references; therefore, they consciously pay attention to the visual features of the text, such as typographical features and notes to help them enhance their comprehension of the text. Attention to the topic

sentences and subtitles as an instance of selective attention to the text “signals” in reading has been reported extensively by Mayer and Wittrock (1996). “Signals” can provide a conceptual framework for readers to facilitate the comprehension process. Chamot et al. (1999) stated “choosing to focus on specific aspects of language or situational details that will help perform the task” (p.21).

Another reported dimension of Planning strategies, namely Organizational Planning (Mean = 4.12 and Mean = 4.08 for HP and LP group respectively), also increased, particularly for the low proficiency students. It was evident that, before training, the high proficiency students did plan sometimes while the low proficiency students did not take time to prepare for the reading comprehension or to plan for what they needed to accomplish. Planning, according to Chamot and O’Malley (1994), includes setting the goals and objectives and connecting to prior knowledge before reading. This was compatible with the research results of Li and Munby (1996), Block (1986), and Adamson (1992) who argue that successful L2 readers are capable of using their prior personal and general knowledge to understand the text being read, and that it is a necessary component of academic competence.

However, after training the low proficiency students’ reported strategy use revealed that they were able to plan their approach to reading comprehension more efficiently by setting their personal goals and purpose, determining the tasks they needed to accomplish, and connecting the reading strategies learned with their own problems in the reading comprehension. This suggested that the explicit

metacognitive strategy training directly affected students' use of metacognitive strategies.

The findings supported the main hypothesis of the study and previous research (Anderson, 2002; Chamot et al., 1999), which demonstrates that students can be trained to use metacognitive strategies and to utilize planning in carrying out academic tasks, and that the high proficiency students utilized the planning strategies more effectively than the low proficiency students. The high proficiency students seemed to understand the reading task more profoundly since they could list the reading tasks sequentially. This might be because the high proficiency students have more background knowledge related to the reading than the low proficiency students and they had thought about how to connect this knowledge with the new task (Anderson, 2002).

In summary, the most frequent use of the strategies for both the high and low proficiency students is Selective Attention, which reflects that the students might have a relatively higher degree of awareness in dealing with their comprehension problems by using Selective Attention. The second was Organizational Planning, which meant that the students intentionally plan and apply the strategies in order to monitor or manage their reading. In addition, the findings of the present study were in agreement with the assumption of the study that students could be trained to use metacognitive strategy in performing reading tasks.

### 5.1.1.3 Metacognitive Strategies Least Used by the Students

Interestingly, after training, the highest mean of the high and the low proficiency students both fell in Advance Organizer (Mean = 3.87 and Mean = 3.50 for HP and LP groups respectively). The finding showed that students did not often determine the nature of the reading task, set their reading goal and plan the objectives of the reading tasks. One explanation for this is that the students would rather avoid the use of time-consuming strategies. They might realize that they did not have much time to stop and think while doing the test within the time of the class period. They knew these strategies but preferred using them when there was no time pressure. However, during exams, when time was limited for them to find the correct answers, they might choose not to use them. During the examination, students' attention might be focused on how to find correct answers to the reading comprehension questions. Therefore, they hardly employed the Advance Organizer.

A second possible explanation has to do with the familiarity of the strategies. Data from the students' interviews showed that they were not familiar with the Advance Organizer since they rarely used it before reading. This was compatible with the research results of Ahmad and Asraf (2004), Aebersold and Field (2006), and Kletzien (1991) who stated that readers had a tendency to rely on familiar strategies. The other two least used strategies were Self-Reflection (for the HP students, Mean = 3.93) and Self-Evaluation (for the LP students, Mean = 3.59), both of which are categories of Self-Evaluating. One reason may be seen from the data from the

interview. This reveals that students did not know how to reflect on or evaluate their reading process in their journal writing without the teacher's guidance, since both strategies need the readers' ability to recognize weaknesses in their work, to reflect whether they need to go back through the task, to decide whether they meet the goal, and to evaluate the effectiveness of the strategies used (Myers, 2001; Anderson, 2002). This strategy was considered new to both high and low proficiency students, especially for the low proficiency students who lacked the ability to understand their own problems and to solve them by self-reflection and self-evaluation during the reading comprehension. This accords with the study of McCombs and Whistler (1989). It was possible that insufficient linguistic knowledge, which resulted in a decrease of strategy use on the part of the low proficiency students, was related to a drop in their comprehension scores. These findings were in line with those of Anderson's (2002) study which found that the poor students did not evaluate the success or failure of their strategy use, even they evaluate, the low proficiency students evaluated themselves as unsuccessful readers and expressed their low expectation in achieving the reading task. Their motivation for reading would also be reduced.

The other possible reason may be on account of cultural differences in China. Normally students submit their work for their teachers' evaluation and so self-evaluation is unfamiliar and rarely used. The students become used to the teacher evaluating their reading tasks. Consequently, they perceived self-reflection and

self-evaluation as extra tasks. This finding agrees with the study results of Pan (2006) for Chinese non-English-major EFL undergraduates. These findings illustrate that evaluation strategies were least used among Chinese high school and non-English-majors because they thought that it was the teachers' duty to evaluate their work.

#### **5.1.1.4 Differences in the Metacognitive Strategy use between the High and Low Proficiency Students**

Qualitative analysis from the retrospective interviews revealed more insights into students' self-perceived and actual use of metacognitive strategy before and after training. These need further discussion. Possible explanations of the differences in the students' ability to use the strategies are presented. These factors are classified into five categories as follows.

##### **Metacognitive Awareness**

The findings reveal that the high proficiency students possessed metacognitive awareness and had used some of the metacognitive comprehension strategies before training. They knew when they should use a particular strategy and when they should change to another to facilitate their reading comprehension. After training, they demonstrated automaticity and efficiency in executing strategies with a sense of conscious control over the strategies that can be adopted for reading in any context. This accords with the study of Shokrpour and Fotovatian (2009). In addition, high proficiency students also applied more metacognitive strategies to

reading comprehension than those used by the low proficiency students. Thus, their metacognitive strategy awareness was closely related to their reading ability. These research findings are consistent with the research results of others (Baker & Brown, 1984; Barnett, 1988; Paris et al., 1991; Zhang, 2008; Pan, 2006; Shokrpour & Fotovatian, 2009).

As a consequence, effective strategy instruction should be conducted to help low proficiency students to promote their metacognitive strategy awareness and enlarge their strategy repertoire and practice using the strategies in various contexts so that they develop efficiency and automaticity in executing the strategies (Garner, 1992). Empowering metacognitive awareness and knowledge of strategies could greatly increase the positive outcomes of training (Carrell, 1989; Cordero-Ponce, 2000; Harvey & Goudvis, 2000).

### **Commitment to Achieving Good Results in Reading**

Another factor that explains differences in metacognitive strategy use is the students' degree of commitment to achieving good results in their reading achievement (Crawford, 1997). In other words, the degree of a student's commitment and determination can affect their success. Nearly all the high proficiency students explicitly expressed their sense of responsibility regarding their reading tasks, which can be seen from their interviews. None of the high proficiency students stated that they were afraid to complete the reading tasks. For instance, one high proficiency student (HP3) said, *"Okay, I'll try to read it and try to complete the tasks"*. Another

one said, *“I’ll do my best in finishing the reading tasks, and I think I can”*. All of them were willing to read and complete the tasks. These findings were in line with research of Kletzien (1991) which showed that high proficiency students were more likely to have control over what happened to them in an academic situation and to make an effort to use strategies to compensate for difficulties they encountered.

Conversely, the low proficiency students obviously showed less responsibility as demonstrated by their negative self-evaluation and lower outcome expectancy. For instance, one low proficiency student (LP6) said, *“I know the weaknesses in my reading comprehension; it’s a lot, where to change? It’s difficult to try to be better”*. Another one said, *“The reading tasks seem difficult for me, I am not sure my answer is correct or not, it’s not an easy thing for me”*. This was similar to the research of McCombs and Whistler (1989) and Wirotanan (2002) which suggested that the readers evaluated the task requirements and their competence and formulated expectancies their success or failure on that basis. The results of evaluation, if positive, lead to positive effects and high motivation and persistence in accomplishing the task. Clearly, the low proficiency students evaluated themselves as unsuccessful readers and expressed their low confidence in achieving the reading task; they therefore made less effort than the high proficiency students in using strategies to compensate for their reading difficulties.

### **Cognitive Monitoring**

In this study, the low proficiency students' poor cognitive knowledge was revealed in their interviews. They told the researcher that they had to reread to remember and understand the passage. Some of the low proficiency students informed the researcher that they would concentrate more on the reading comprehension if they were doing the test. Evidently, the low proficiency students in this study had comparatively limited memory resources and might not have paid enough attention to the reading task. Garner (1992), Lau (2006), Lau and Chan (2006), McCombs and Whistler (1989), Ghonsooly and Eghtesadee (2006) stated that differences in strategy use between high and low proficiency students come from the fact that the low proficiency students have poor cognitive monitoring skills. The students' poor cognitive monitoring occurs when: (a) students have limited memory resources, (b) students view the task as unimportant, and (c) students do not pay careful attention to the task (Susan & Son, 2007).

### **Linguistic Knowledge**

Another factor which contributed to the differences in metacognitive strategy use between high and low proficiency students was that the low proficiency students had a poor linguistic knowledge base. These research findings were consistent with Garner (1992) and Gascoigne (2005). Anderson (1991) asserted that low proficiency students might know what strategy to use, but they do not have sufficient linguistic knowledge to build their strategies on. The interviews show that while reading, the

low proficiency students tended to use fewer strategies which required linguistic knowledge when the students needed to invoke relevant prior knowledge, apply appropriate grammar rules, make inferences and use rhetorical markers. It is possible that insufficient linguistic knowledge, which resulted in lower use of strategies on the part of the low proficiency students, was related to a drop in their comprehension scores. In sum, it is necessary that low proficiency students obtain a command of language and reading strategy instruction (Kim, 1995; Steinagel, 2005; Bernhardt & Kamil, 1995). If the low proficiency students were equipped with sufficient linguistic knowledge, they certainly would have had a wider range of strategies to choose from.

### **Self-esteem**

The research findings in this study found that self-esteem was one of the factors related to the differences between the high and low proficiency students' metacognitive strategy use. These were compatible with the research conducted by Kletzien (1991) and McCombs and Whistler (1989) which clarified that if the students did not believe themselves to be capable of performing the task, they were unlikely to use strategies. As presented previously, a majority of the low proficiency students in this research expressed their low self-esteem and self-evaluation through their fear of being unable to read and complete the task. If the students thought that they were unlikely to succeed in a particular task or believed that success in such a task came with ability rather than effort, they would not engage in using strategies and therefore

might have given up trying while reading (Oxford, 2004). Like LP10 said, *“I do know why we need strategies, I think my problem is my reading ability is poor, strategies can not help me.”* Garner (1992) stated that the students’ beliefs about their ability to perform the task were more important than their skills in determining their willingness to perform the task. According to Kletzien (1991), the low proficiency students’ inability to use strategies arises from affective factors and cognitive problems. As a consequence, teachers should be very supportive and encourage students to build up their reading motivation and positive self-evaluation.

In summary, the results showed that both the high and low proficiency students used metacognitive strategy when working with a foreign language, but that differences existed. From the results of this study, researchers and reading teachers could gain more understanding and knowledge in terms of differences in strategy use between high and low proficiency readers. It could form a foundation for developing and integrating more effective metacognitive strategy training in ESL/EFL classes.

### **5.1.2 The Effects of Metacognitive Strategy Training on the Reading Comprehension**

In this study, the second research question aimed to explore whether MST had any effects on the academic reading comprehension or not, and if it had, what those effects were. The results from the students’ RCT and semi-structured interview revealed the following major findings:

Metacognitive strategy training in reading appeared to account for greater

reading improvement of the students' reading comprehension. Descriptive statistics was used as a tool to get an overall picture of the students' performance. As for specific groups, both high and low groups improved significantly in the posttest.

To see whether it is the result of MST, the results of the experimental and control groups were compared using an independent samples *t*-test statistical procedure. The results showed that the mean scores of the experimental group ( $\bar{X} = 23.55$ ,  $SD = 3.526$ ) were significantly ( $p < 0.05$ ) higher than those of the control group ( $\bar{X} = 19.86$ ,  $SD = 3.132$ ). In other words, while there was not any significant difference between the control and the experimental group in terms of reading skills at the beginning of the study, the experimental group had surpassed the control group by the end of the experiment. With regard to the improvement of the experimental group, a paired *t*-test was used to perform a comparison of the pretest and posttest to verify the effects of the pedagogical intervention on the EFL learners. Table 4.12 illustrates the results of the paired *t*-test in the reading comprehension of the experimental group before and after the MST. The mean scores before and after training are significantly different (before Mean=18.62; after Mean=23.58). This shows that the MST had significant effects on the experimental group.

The above analysis reveals significant improvement in reading comprehension after the MST. In other words, both the high and low proficiency students' reading comprehension improved; the scores of the posttest were better than the pretest. In particular, these improvements in the results of the reading comprehension among the

low proficiency students implies that the metacognitive strategy training in reading was effective and could lead to a higher proficiency in reading, which in turn, may result in better results for the students' reading comprehension. These results were in line with the findings in the second investigation which supports the work involving cognitive and metacognitive strategy instruction cited in the literature (Brown, 1980; Carrell, 1989; Carrell, Pharis, & Liberote, 1989; Garner & Alexander, 1989; Chamot & O'Malley, 1990; Nebila, 2003; Carrell, 1995; Muñiz-Swicegood, 1994; Salataci & Akyel, 2002; Auerbach & Paxton, 1997; Steinagel, 2005; Livingston, 1997; Yesim & Muharrem, 2006). These studies revealed the effectiveness of explicit strategy instruction in task-specific strategies in improving the reading performance of students and the positive effect of instruction in metacognitive strategy in helping students read more effectively leading to a better understanding of the text. The use of metacognitive strategy in the reading process has been generally supported as a valuable aid for its cognitive, social, linguistic benefits.

Similarly, significant positive effects of metacognitive reading strategy instruction on reading comprehension achievements are proved by Huo's (2005) study of Chinese high school EFL students and Pan's (2006) study of Chinese non-English-major EFL undergraduates.

The improvement in reading comprehension in this present study may be due to any of these factors. First of all, the systematic metacognitive strategy teaching of the planning, monitoring and evaluating strategies was proved to be effective. An

obvious defect in most of the previous empirical studies on MST is that metacognitive strategy training was not conducted in a comprehensive manner (Palincsar & Brown, 1984; Liu, 2004; Carrell et al, 1989; Muñiz-Swicegood, 1994). In this study, students were explicitly informed of the value of applying the strategies and demonstrated how to use them step by step, and then consciously and actively invoke a repertoire of metacognitive strategies in their reading process. More importantly, the strategies were embedded into reading activities so that they could be reinforced and avoid laying an extra burden on the students which might lead to boredom with the MST. As one student (HP3) commented in the interview: *“I like the way we learn the strategies, we learn and practice them when the reading class goes on, finally we can use them to solve our reading problems and get higher scores in the reading comprehension.”* Such specific teaching methods as collaborative instruction, teaching method, strategic modeling, and increasingly independent practice by students (Beers, 2003; Collins, 2005; Yang & Wilson, 2006) should be effective to raise students’ awareness of metacognitive strategies. Effective use of strategy appeared to lead to more effective reading comprehension.

Second, the students’ written feedback in journals proved to be successful in promoting the effectiveness of MST. Padgett (2000) suggested that engaging students in journal writing could be a way to increase the students’ interest and arouse their motivation which has been commonly considered as one of the most important factors affecting L2 learning (e.g. Shih, 1992). In the present study, journal writing revealed

issues that matter to students in the process of reading. The students reported in their interview that they appreciated writing journals since they experienced more self-control of their reading process and were more confident in completing the reading tasks which would finally lead them to become independent autonomous readers. As one student (HP10) said: *“Writing journals supports me in attending to the details, asking questions, and reflects my problems. It helps me feel a sense of ownership in my reading comprehension.”* One more thing that should be emphasized is the teacher’s feedback to the students’ written feedback. Teacher’s feedback is a necessary and valuable step in MST which should not be ignored in training. This is especially true for the comparatively low proficiency students, for whom the teacher’s help was needed to solve individual student’s problems reported in the feedback. As a consequence, teachers should be more supportive and encourage students to build up their motivation.

Third, the lesson plan which emphasized linguistic knowledge practice proved to be effective in MST. In each lesson plan, more attention was paid to the students’ reading process step by step during every stage of the training. Different ways, such as orally introducing the words in the pre-reading stage, building the vocabulary in the group discussion (Murphy, Wilkinson, Soler, Hennessey, & Alexander, 2009) in the while reading stage and reflecting on their performance in their journals in the after reading stage. The findings showed that the students who struggled with both word and sentence difficulty benefited a lot from this training design. LP5 stated: *“In order*

*to have a successful discussion with my classmates, I do a lot of preparation before class, such as consulting the dictionary and checking pronunciation etc. When I am writing my journals, I think about what problems I have and try to improve them next time. My reading comprehension improves a lot by using this method.*” This was in line with Alderson (2000) and Nagy (2006), who state that vocabulary knowledge has been shown to have a positive effect on reading comprehension and to be the single best indicator of text comprehension. Garner (1992) documented that readers need to be sufficiently provided with linguistic knowledge so that they have some resources to build their strategy upon. In sum, since reading comprehension involves both language problems and reading problems, it is necessary that the readers, especially the low proficiency readers, obtain a command of both language and reading strategy instruction and benefit from them (Kim, 1995).

Fourth, both the length of time and the reading tasks designed in this study proved suitable for conducting the MST. According to the students’ interviews, their reading skills developed over time. 18 weeks for the MST in the present study was long enough to exert an effect on the MST. This echoes the study by Chamot (2005a), which found that in relation to MST in reading, teachers should be concerned that the training is conducted in conjunction with a regular course of instruction over an extended period of time. The results of this study seem consistent with a number of studies on metacognitive strategy which have suggested that metacognitive ability increases over time (Hacker, 1998), and that through metacognitive strategy

instruction, particularly explicit instruction, the independent use of metacognitive strategy is developed gradually (Hacker, 1998; Livingston, 1997; Paris & Winograd, 1990). Also, when teachers teach strategies, they should emphasize that executing strategies takes time and effort (Garner, 1992). For students who do not develop strategic routines for reading, teachers must structure tasks so they are difficult enough to demand strategic reading and easy enough for the students to ensure they will be able to accomplish the tasks with some effort (Garner, 1992; Veenman & Beishuizen, 2004).

Finally, the MST activated the students' schema which promoted their reading comprehension. Specifically, the training in the Planning and Monitoring strategies such as Organizational Planning Comprehension, Monitoring which is needed to activate the readers' schema to solve their reading problems. As Jiménez, García, and Pearsonet (1996) suggest, the ability to utilize schema greatly influences students' ability to infer and hypothesize about the text. In this study, the treatments have improved, to some degree, the students' schema in their reading, resulting in their greater reading comprehension. To put it another way, students' activated schemata relevant to the text might have reduced the difficulty in reading, which, as a result, led to higher scores on the posttest.

In summary, data from the RCT and semi-structured interviews indicate that students who received reading instruction that incorporated the explicit metacognitive reading strategies made significantly greater gains in metacognitive strategy

awareness than those students who did not receive such instruction. Metacognitive acquisition must go through different stages, from control to partial automaticity to full automaticity. It is really hard to achieve automatic usage within a short period of time with only a limited amount of practice. It takes a long time for L1 learners to acquire and apply metacognitive reading strategies, so inevitably it will take a lot more time for EFL/ESL learners. Students need time to internalize this component of metacognitive strategy explicitly provided by the training; therefore, it was convenient for them to monitor and direct their own reading process (Alvermann & Phelps, 2002). This, in turn, resulted in an improvement in their reading comprehension.

### **5.1.3 Correlation between Metacognitive Strategy Use and English Reading Comprehension Achievement**

A Pearson correlation analysis was run to examine whether the experimental group's overall use of metacognitive strategy, planning strategy, monitoring strategy and evaluating strategy were correlated to their English reading comprehension scores, respectively. The results are similar to those obtained by Liu (2004), Ji (2002), Phakiti (2003, 2006) and Kong and Li (2008), in which the subjects' global use of metacognitive strategy and their reading achievement were positively correlated. The result was however incongruent with Liu's study (2004) in one aspect. According to Liu, only the Evaluating Strategy was significantly correlated with reading achievement, and the other two sub-metacognitive strategies bore no significant

relationship with it. A possible explanation for such incongruence concerns the instrument for data collection. Although the questionnaire on metacognitive strategy use adopted in Liu's study was mainly based on O'Malley and Chamot's classification framework as it was in the present study, different items were included in the scale and subscales. In addition, the validity of Liu's scale remains unknown. Therefore, the results are unreliable. Actually, a lack of standard questionnaires with high reliability and validity is a big problem for empirical research on language learning strategies. Since there is no standard questionnaire, researchers can only design their instruments with reference to the acknowledged classification frameworks. As a consequence, the results from one study must be used with care in other studies.

The significant correlation between metacognitive strategy and reading comprehension test scores confirmed that metacognitive strategy plays a significant role in effective reading, and further verified the feasibility of enhancing reading comprehension by improving these strategies. As was illustrated in the literature review, metacognitive strategy, which was also referred to as self-regulation strategies by Zimmerman (2008), enables readers to manage and direct their own reading. Readers with metacognitive strategy should have definite reading goals and know how to accomplish them. They should insist on implementing their plans for reading activities and make appropriate adjustments when necessary. They should be given timely feedback on their reading performance through self-assessment on their own

initiative, and take remedial actions accordingly. So, readers with metacognitive strategy are able to read effectively and metacognitive strategy constitutes an important factor in their reading efficiency.

#### **5.1.4 Causal Effect of Metacognitive Strategy Use on English Reading Comprehension Achievement**

As shown in 4.15, 4.17 and 4.19, three independent variables, metacognitive strategy, planning strategy and monitoring strategy, explained a moderate amount of the variance in reading comprehension respectively. The remaining amounts of variance might account for the variables, such as beliefs about language learning, anxiety, aptitude, learning style and motivation (Shao & Zhang, 2008). Empirical research indicates that these variables contribute to predicting learners' English proficiency. For instance, a survey carried out on the learning beliefs of vocational students showed that self-efficacy beliefs and motivational beliefs had positive predictive power in reading achievement, and explained 7.8% and 9.9% variances respectively (Chang, 2008). Qiu and Liao (2007) examined the effect of foreign language anxiety on second-year non-English major students' English proficiency. The findings revealed that foreign language reading anxiety predicted 12.3% variance in the subjects' scores on CET-4. Another study on non-English majors' foreign language anxiety revealed that it explained 10.1% variance in scores on CET-4 (Shao & Zhang, 2008). These empirical studies illustrate that English learning is a complex process in which a variety of factors make contributions or interfere and interact with

each other, and that metacognitive strategy use forms only one of these factors. The same is true of L2 academic reading process.

Besides the above findings, we also find from the regression analyses that metacognitive strategies play a more important role than English proficiency in English reading achievement in this study. However, only one test could not provide a complete picture of students' language proficiency and thus inevitably affect the results of the results of the study, further research is needed on this issue.

In summary, the finding that students' metacognitive strategy usage is closely related to the students' reading performance shows that the explicit MST could not only improve students' metacognitive awareness, but also led to increased use of metacognitive strategy, which in turn, resulted in enhanced reading ability (Shokrpour & Fotovatian, 2009).

## **5.2 Students' Attitudes towards the Metacognitive Strategy Training for Reading Comprehension**

In order to answer the last research question: "What are the students' attitudes towards the MST in academic reading comprehension?" the present study triangulated the qualitative data collection methods on students' attitudes towards the metacognitive strategy training, including student questionnaires, the journal and the semi-structured interviews. Students' responses were grouped into three categories: positive, neutral and negative attitudes which were referred to in the discussion and of

which examples illustrating each of the significant patterns were quoted from the data and explained.

### **5.2.1 Positive Attitudes**

Table 4.22 shows that the majority of the students expressed positive opinions towards the implementation of MST because, 69.7% of the students reported positive opinions in the students' questionnaires, 70% of the students held positive opinions in the students' written feedback, and 60% of the students showed their positive attitudes of the utilization of MST in their interviews. The percentages of positive opinions were much higher than that of the neutral and negative attitudes. Reasons for positive attitudes can be summarized and discussed as follows:

Firstly, the MST helped the students change their roles and responsibilities in the reading comprehension. The traditional classroom interaction pattern of teacher's questioning, students' responding, and teachers evaluating seemed insufficient for the development of a deeper understanding of the texts (Chang, 2008). The traditional role of a teacher as the interpretive authority might cause students to become passive learners and readers. Differently from the traditional viewpoint, MST in this study involved interactive dialogue that occurred between the students and the teacher. Teachers took on new roles as monitors, coaches and facilitators: they observed students' behavior, checked in with groups, monitored students' progress and interaction, and provided feedback.

In order for students to become strategic and self-regulated readers and

learners, an active student role and full responsibility were needed in the process of metacognitive reading strategy learning. For example, when the teacher was modeling the strategies, students were not passive listeners; besides listening attentively, they should participate actively in pairs or in small groups to discuss the strategies used by the teacher. In addition, discussions between peers provided opportunities for metacognitive exchanges and modeling (Palincsar & Brown, 1984). In this way, students' knowledge about reading and reading strategies, as well as their ability to monitor and evaluate relevant strategies increased. The process of evaluation was imperative: students were encouraged to reflect on what had been read, and to integrate their reading into their own experiences. When the students became more knowledgeable and experienced, they could take the major or full responsibility for their own metacognitive reading strategy usage and the teacher provided a supportive environment by giving encouragement and feedback.

As a result, the MST positively affected students' insights into English reading; they shifted from a passive decoder into an active communicator. Their confidence and reading motivation was developed, they recognized that they should and were capable of responsibility for their reading. Thus, in the questionnaire, 69.7% of the students expressed positive attitudes towards the MST in reading comprehension and the majority of the students (72.7%) said they would like to join such kind of training in the future if they had the opportunity. The students' attitude was one of the criteria used to evaluate the effectiveness of the strategy training. This was in line with Dole

Duffy, Roehler, and Pearson (1991) whose results presented the criteria for the effectiveness of strategy training.

Secondly, the MST catered for the Chinese university students' needs in English learning which led to their positive attitudes. After entering university, Chinese students are different from the foreign students and students from Hong Kong in terms of their motivation in learning English. They have strong motivation, and they are concerned about their lack of good learning strategies (Nunan, 1996). The present MST model combined the metacognitive strategy training with the teaching of reading provides a new method for reading comprehension. It is consistent with the cognitive view of the students' reading process and thus appropriate and teachable. The MST made the metacognitive strategy instruction interactive by not only providing the strategy training, but also opportunities for students to practice using the strategies in various reading contexts so that they develop efficiency and automaticity in executing the strategies (Garner, 1992). After the students experienced success in their reading comprehension, their positive attitudes were reinforced. The MST provided ownership and intrinsic motivation in their reading. This was the reason why most of the students reported that they had learned much from the MST and were satisfied with it, and 60.6% of the students reported they knew clearly when, how and why to use metacognitive strategy in their reading comprehension and 69.7% of the students mentioned that they used metacognitive reading strategies more for before, while and after reading. This is confirmed by the results in the journals and interviews.

Thirdly, the MST helped the students form the appropriate learning beliefs and enhance their confidence and self-efficacy. Learners' beliefs are composed of management beliefs, which mean knowing the importance of a series of management activities, such as setting goals, making up plans, choosing strategies, regulating and controlling strategies, etc (Wen, 1996). One of the important findings from the research was that among the differences between high and low proficiency students, their beliefs about language learning play an important role in influencing learners' choices of strategies along with their learning process which influence learners' proficiency, learning outcomes and their attitudes (Hwang, Tsai, & Yang, 2008).

The MST involved the students in the reading activities in the classroom, provided immediate feedback to let them know what the appropriate beliefs in English reading comprehension were. For the students who had inappropriate beliefs, once they experienced their own improvement after the change of beliefs, their confidence and self-efficacy improved.

In summary, from the analysis of the reasons above that caused the students' positive attitudes, the strengths of the MST in the present study can be demonstrated. The MST contributed a lot to the development of the students' reading ability if the students held positive attitudes towards the training. They started to think metacognitively about the strategies they could use to improve their reading comprehension to become not only better readers, but also autonomous and strategic learners (Willingham, 2007).

### 5.2.2 Neutral and Negative Attitudes

However, in spite of general agreement, there were some students who showed indecisiveness or disagreement towards the metacognitive strategy training. Two main categories can be summarized to explain the reasons why those students had neutral or negative attitudes towards the MST.

First, the reading proficiency might be one of the reasons influencing the students' attitudes towards the MST. After the MST, a very few students still had negative attitudes towards the training. For example, one of the students from the low proficiency group said: *"I cannot understand, my reading does not have improvement, it is time wasting for me."* Since metacognitive strategy in reading emphasizes awareness and self-control of the reading process emerges gradually, 18 weeks training might not be enough for some students, especially the low proficiency students, to understand and master it well enough to conduct their use of it autonomously in reading comprehension. Data from the interviews and journals showed that some students felt at a loss in writing their journals and they did not know what to write at the beginning of the training. This is one factor that might have caused their negative attitudes towards the MST.

Second, another important reason which emerged from the data was that the importance of the metacognitive strategy use was not fully recognized by some students. Therefore, training for this kind of students might have to put more stress on changing their attitudes and concentrate more on the results of their strategy use. For

example, in some cases students may not have a schema that is pertinent to the text, or they may need help in activating the pertinent schema to be able to comprehend the text. In cases like this it may not be possible for the students to understand the text, and the teacher must be prepared to engage in building new background knowledge as well as activating existing background knowledge (Carrell, Devine, & Eskey, 2006). Through this kind of specific strategy training, the students' successful reading experience will facilitate their positive attitudes and boost their comprehension. As discussed in the previous section, building vocabulary is listed as one of the instructional dilemmas for second language metacognitive strategy training (Grabe & Stoller, 2002, p.76). Thus, by enlarging vocabulary we can also build schemata in a parallel way (Coady, 1993).

Thirdly, individual differences are another important explanation for the students' negative attitudes. Individual differences typically includes personality, motivation, intelligence, interests, self-efficacy, and self-esteem etc. It is impossible to predict exactly what support individual students need for their reading (Anderson, 1991). It is worth pointing out that metacognitive reading strategy instruction involves active learning and growth on the part of individual students. It does not mean that through instruction, all students will use the very same strategies because students will have individual differences, and they should be given the chance to choose and use those strategies that are associated closely with their particular learning styles. At the same time, it can not be guaranteed that every student exposed to metacognitive

reading strategy instruction will succeed. Applying metacognitive strategy in reading is only one of the methods in reading comprehension, it can have considerable effects on reading, but it is not suitable for everyone and in every situation. What the teachers can do is to try to step in and out of a learning activity to support the student's individual needs and growing independence. This process has also been referred to as scaffolding, as Willis (2009) pointed out, and what teachers can do is just to figure out where the students are going and then help them get there.

The students who held neutral attitudes believed MST might be useful but some doubts still existed for them. One typical comment in the written feedback was by student HP7: *"I think it may be well worth, but I am not sure, who knows?"* The reluctance on the part of most of the participants to take a strong stand on agreement or disagreement indicates that they might have had an ambiguous understanding of the tasks. It is possible for these students to change their attitudes with their teachers' help, for example, through scaffolding. It means that control over reading is shared with students so that they are encouraged to become responsible, self-directed learners. Many teachers find it is more interesting and satisfying than directive teaching because it involves getting to know the students and actively involving them in their own learning.

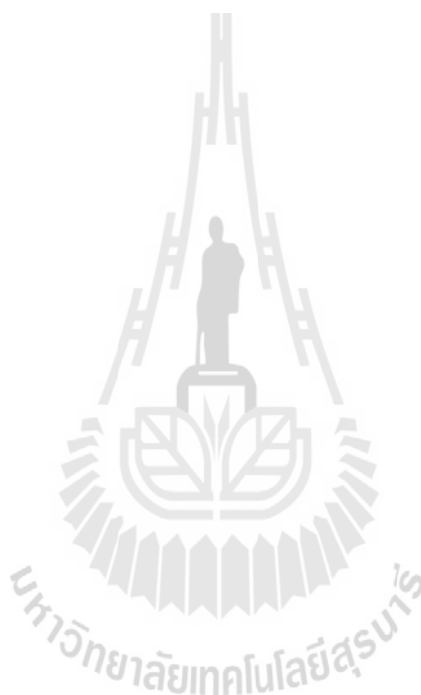
The previous discussion has provided an overview of the students' attitudes towards the MST and analyzed the reasons behind them. It indicated that teachers and researchers should take into consideration many factors when designing the training.

For example, teachers could provide more guidance and assistance for low proficiency EFL learners to explore and practise metacognitive strategy use so that they could benefit from the MST in reading comprehension. An appropriately designed, learner-centered, and constructive MST has the potential to assist EFL learners at different language proficiency levels to cope with significant changes in developing reading ability (Carrell, 1989).

In conclusion, the discussions above of the questionnaires, the students' journals and the semi-structured interviews in the present study reflect that students exhibited positive opinions towards the MST in their reading comprehension. Many factors such as the students' needs and beliefs in reading, their roles and responsibilities, the differences between the high and low proficiency students' were inevitable and critical while conducting the MST. In the present study, students are the center of the whole learning and teaching process, and metacognitive strategy use can motivate students to be actively engaged in the process of reading comprehension. Actually L2 or foreign language ability is slow to develop and rapid progress cannot be expected in students' reading ability within one semester or even a year. The purpose of metacognitive instruction is to help students become more active, more self-directed, and more discerning with regard to which strategies are best for them as individuals.

### 5.3 Summary

In summary, this chapter discussed some of the important findings which had arisen from the present study, and referred to research studies and theories which were relevant to those findings. Chapter Six, the final chapter, will discuss the pedagogical implications, the limitations of the study, and offer some suggestions for further research.



## **CHAPTER 6**

### **CONCLUSION**

This chapter concludes the dissertation. It is organized into four sections. Section one summarizes the major findings of the present study; section two presents the implications of the study for L2 reading and its applications to reading instruction. Section three describes the limitations of the study. Finally, section four proposes recommendations for future research in L2 reading.

#### **6.1 Summary of the Study**

The present study was conducted to examine the effects of MST on EFL students' academic reading comprehension and to describe their attitudes towards the MST. It employed a mixed method design: a quantitative framework to assess the students' reading ability at the beginning and at the end of the pedagogical intervention, and a qualitative framework to explore the students' attitudes towards the training. The following research questions were examined in this study.

1. What metacognitive strategies do high proficiency and low proficiency third-year English majors of Guizhou University use in their academic reading comprehension?

2. Does metacognitive strategy training have any effects on academic reading comprehension? If so, what are the effects?
3. Does the students' metacognitive strategy use have any relationship with their English reading comprehension achievement?
4. What are the students' attitudes towards the metacognitive strategy training in academic reading comprehension?

In order to examine these questions, a quasi-experimental design consisting of pretest-treatment-posttest was used. The duration of the treatment was 72 hours distributed through an 18-week semester. The pedagogical intervention in this study aimed to improve learners' English reading ability through MST. The instruments taken in this study were the Pre and Post MSQ, Pre and Post RCT, questionnaires, students' journals, and the retrospective data from the semi-structured interviews. The 58 participants of this study belonged to two intact classes, who were enrolled in the Advanced English Course at Guizhou University, China.

The quasi-experimental design of this study made it possible to find answers to the four research questions stated above through both quantitative and qualitative methods.

The answers to the first question were found through a quantitative comparison of participants' performance before and after the treatment through the Pre and Post MSQ and the semi-structured interviews. The Pre MSQ revealed the self-perceived use or actual use of strategies before MST while the strategies reported

in the Post MSQ indicated the changes and development of metacognitive strategy use after MST. The participants' answers to the MSQ were analyzed by using the SPSS program, 15.0. The mean scores of the high and low proficiency students' metacognitive strategy use before and after training were also compared by using a Paired *t*-test respectively. Then, the overall mean, standard deviation, and the mean differences of metacognitive strategy use in the reading comprehension by the high proficiency and low proficiency students before and after training were presented. Furthermore, the differences in the order of metacognitive strategy use in the reading comprehension by the high proficiency and low proficiency students before and after MST was also compared. Data from their interview protocols was used as the methodological triangulation to illustrate a more comprehensive metacognitive strategy use and analyzed qualitatively.

The quantitative data of this study pointed towards the fact that the students who received MST in reading did indeed benefit from it. The results displayed that after training, both the high and low proficiency students had a substantial awareness and control of their cognitive activities while reading, appearing to identify their own problems, strengths and weaknesses more clearly and they used three of the strategies Planning, Monitoring, and Evaluating with high percentages. The statistics also showed that the frequencies, percentage, and differences of strategy use identified in the low proficiency students after training increased after training. It was found that the high proficiency students demonstrated a better understanding of how to read

efficiently by reflecting on their reading problems. The qualitative data revealed that the MST in the reading makes the students aware of their own reading process and how they approach the reading task in a way that helps them to improve their reading effectively. Therefore, their changing attitudes towards the reading comprehension suggested that encouraging the students to participate in MST might contribute to the development of positive concepts for EFL readers.

In summary, the data from the MSQ and interviews clearly showed the whole picture of metacognitive strategies for both high and low proficiency third-year English majors of Guizhou University as used in their academic reading comprehension. It also indicated that the MST had some effects on the academic reading comprehension of the participants, and what the effects were and how reading comprehension was affected was discussed when the data obtained by the RCT.

In order to answer research question two, the RCT was employed to assess the students' reading performance. The findings of the pretest were used to set a baseline for comparison and to help interpret the findings, particularly if any improvement or differences occurred at the end of the experiment. It was found that the differences between the experimental group ( $\bar{X} = 18.62$ ,  $SD = 3.057$ ) and the control group ( $\bar{X} = 18.26$ ,  $SD = 3.104$ ) were not significant in the pretest. The posttest served to measure the effects of the pedagogical intervention on the students' reading ability. It was administered when the pedagogical intervention was finished. The same RCT was used for the posttest. Results from independent samples *t*-test

indicated that the mean scores of the experimental group ( $\bar{X} = 23.58$ ,  $SD = 3.526$ ) were significantly ( $p < 0.05$ ) different from the control group ( $\bar{X} = 19.86$ ,  $SD = 3.132$ ). With regard to the improvement of the experimental group, a paired  $t$ -test was used to perform a comparison of the pretest and posttest in order to verify the effect of the pedagogical intervention on the EFL learners, and the results revealed that MST had significant effects on the experimental group.

The third research question intended to identify whether the students' metacognitive strategy use has some relationship with their English reading comprehension achievement. A correlation analysis and regression analysis were conducted to gain an insight into the relationship between the experimental group's posttest scores on metacognitive strategy use and English reading comprehension achievement. A significant positive correlation was found between the overall metacognitive strategy and the reading achievement which was 0.374 ( $p < .01$ ). This indicated that metacognitive strategies played a very important role in students' reading comprehension. Each of the three sub-metacognitive strategies was positively correlated with reading achievement. The results of the regression analyses confirmed that metacognitive strategy had significant predictive power as regards reading achievement.

Responses to the fourth research question were provided by analyses of the data gathered through questionnaires and entries of the participants' journals, and semi-structured interviews.

The participants' responses to the five Likert-scale questionnaire items about their attitudes towards the MST were analyzed quantitatively. The results revealed that more than half of the students had positive attitudes. The results revealed that the students had three types of attitudes towards the MST. The first type was positive where the respondents commented favourably on the training. The second type was a neutral attitude where the respondents believed that the training had some effects on their reading comprehension, but there were some specific things they did not like about the training. The third type was negative, where the respondents stated their dislikes of the training. Also, results revealed that high proficiency students had higher mean scores for their attitudes, while the low proficiency students had lower scores in this regard. Furthermore, the high proficiency students had more positive attitudes than the low proficiency students.

## **6.2 Pedagogical Implications**

The research findings summarized earlier demonstrate that the MST has strong effects on EFL students' academic reading comprehension. The findings of this study formulate specific although not extensive conclusions that will hopefully shed light on particular issues of reading development in a foreign language. Some significant implications for the teaching and learning of English as a foreign language for Chinese university students may be drawn as follows:

Firstly, the implementation of MST should be conducted as early as possible since the independent use of metacognitive strategy develops gradually through experience (Flavell, 1979, Kluwe, 1987). Data from the students' interview confirmed that the explicit MST should begin at an earlier stage in students' reading ability development rather than at an advanced stage. This supported the findings of Foorman and Breier (2003). They found that early intervention was more effective than later intervention, and they argued that strategy training should begin much earlier than it traditionally does. It is highly recommended that metacognitive strategy should be embedded in the teaching of reading daily and started at the beginning of a reading teaching course, thus the students' metacognitive strategy awareness can be effectively promoted and it will lead them to be autonomous readers.

Secondly, MST should be implemented in a systematic manner by explicit instruction. The instruction of the whole set of strategies is more successful than separate individual strategy training. Teachers can help learners become more aware of metacognitive strategy through explicit instruction so that they can obtain self-control of their own learning processes (Brown, 1987, Hernández-Laboy, 2009; Butler & Winnie, 1998). The findings from this study are directly beneficial to other researchers aiming at developing students' L2 reading abilities with different language proficiency levels as well as teachers' L2 reading instructional methods. Self-reflection is effective for the students to be aware of their strengths or weaknesses. Data from the interview displayed the students' preferences for reflective journals. In this

case, journal writing can play an important role as an appropriate tool in encouraging students to think about their own reading processes and consider ways of improving their reading ability. The students are motivated when they experience success through self-reflection. As Padgett (2000) suggested, engaging students in journal writing could be a way to increase the students' interest in the reading task.

Thirdly, MST should be conducted to employ a variety of instruments to measure participants' metacognitive reading strategy awareness and usage, as well as their reading comprehension achievement. It is believed that the combined use of qualitative methods such as survey, interviews, as well as the procedures of quantitative research might provide extensive insights into students reading strategies use and reading processes, and might ensure the quality and credibility of the study. Retrospective interviews should be conducted to better understand students' strategy usage and to supplement and support the results obtained through questionnaires and reflective journals. Metacognitive strategy diary could also be used to make plans, monitor, and evaluate their performance.

Fourthly, more attention should be paid to the vocabulary in EFL reading. Similar to EFL learners in other cultures, Chinese EFL learners reported having problems with vocabulary. Data from the interview supported this. Students believed that the more vocabulary they have, the more effectively they acquire the strategies. In this case, EFL teaching may have to provide more opportunities for dealing with new vocabulary items. It is important, therefore, to provide systematic instruction to develop vocabulary in

terms of both quantity and quality when conducting MST.

Lastly, proper training for instructors should be provided. This research study indicates that a regular classroom teacher needs to explain and model metacognitive reading strategies usage as an experienced and proficient reader in order to make the invisible reading processes visible to students. Both pre-service and in-service teachers should receive effective training to become expert readers in order to model metacognitive usage. In the teacher training program, teachers should be required to study the theoretical basis of metacognitive reading strategies, to observe the demonstration of the strategies, to practice these strategies, and to evaluate their learning behaviors. After training, all teachers should be required to video-tape their metacognitive reading strategy instruction lessons over the course of a month. All teachers will be provided with oral and written feedback on their ability to implement the lessons. Additional coaching and feedback should be provided by the supervisor and trainers with individual teachers.

### **6.3 Limitations of the Study**

Although the present study yielded many insights and perspectives about implementing MST in an EFL reading class in a Chinese context, some limitations should be recognized.

First, the subjects of this study were a limited population of 58 third-year undergraduate English major students at Guizhou University, China, who were

advanced-level EFL learners. Other majors and levels were not included in this study. The findings of this study should be viewed with caution before making generalizations about other populations regarding the reading comprehension of L2 learners.

Second, the sampling procedure of the present study decreased the generalizability of the research findings. The participants were chosen based on convenience and availability. The inclusion was not randomized and the selection of the participants in the study was based on their classroom enrollment. Consequently, there were not equal number of students in the experimental and control group, so the findings are only generalizable for this particular population.

Third, the RCT results may also have limited validity. The expository passages (six) used in the RCT were limited due to the time limitation. The students might have preferred different kinds of texts. In addition, only multiple-choice questions were employed in this RCT, which may fail to offer a whole picture of the assessment of the students' reading ability. Alternative approaches, including identifying omitted structural material, unscrambling texts, and identifying and correcting illogical texts, should be employed to assess reading comprehension (Alderson, 2000).

Finally, the subjective nature of questionnaires can not be avoided, and they can not guarantee that all the participants will provide accurate information. Some students may not give an honest response, but make choose one that they think may be right or better, so the self-perceived responses might have been inconsistent.

## 6.4 Recommendations for Future Research

The present study has investigated the effects of MST on EFL students' academic reading comprehension. However, due to the limitations of the present study, further research should be used to obtain more detailed information with a greater variety of populations.

First, studies should be conducted to determine whether the effects of explicit metacognitive reading strategy instruction on students' metacognitive awareness and their reading ability is influenced by certain variables such as students' age, gender, motivation, majors, personal learning style, etc. Also studies should be conducted to determine whether the effects of explicit metacognitive reading strategy instruction on students' metacognitive awareness and their reading ability is influenced by certain teacher characteristics such as age, gender, personality, teaching method, years of teaching experience, etc.

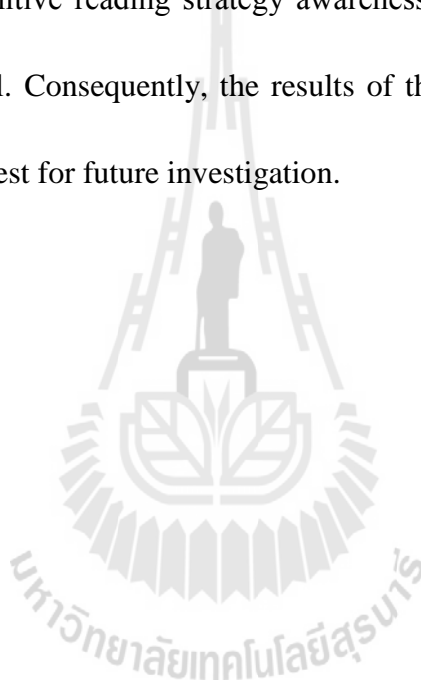
Second, it would be interesting to extend the research to other facets of English learning such as listening, speaking and writing or in an integrated language class in future research for more comprehensive insights into the effects of metacognition in language learning, or in urban school settings (Hult, 2006; Guterman, 2003; Goh, 2008). It could be noticed from the literature in the field and current research findings that metacognitive strategies have an impact on language learning in general (Liu, 2010) and in reading comprehension particular.

Third, peer tutoring including cross-age peer tutoring and same-age tutoring can be used in comprehension strategy training for students who have different reading ability. Research results indicate positive effects on reading achievement for both tutors and tutees of peers in explicit metacognitive reading strategy instruction (Van Keer, 2004). Furthermore, in the process of explicit MST, individual works, pair works, and group works are used at guided practice stage of this strategy instruction. By using these methods, peer tutoring can be used in collective work while practicing metacognitive strategies to improve students' reading performances.

Fourth, another issue of interest is computer-based reading. To date, there has been little research into computer-based MST (Hauck, 2005), so it would be interesting to investigate how the students plan, monitor and evaluate their reading with the assistance of computers. There should be more empirical studies in this regard.

A final suggestion for future research is that a comparison of the metacognitive processes of L1 and L2 readers in a similar academic environment, involving students having less English proficiency, studying in different disciplines, and having a cultural background other than Chinese. In addition, future research such as a longitudinal and ethnographical design is interesting to confirm the findings of the study and to investigate the students' development in metacognitive strategy use in the reading process over time.

All in all, the study of metacognitive reading strategy training is still at an exploratory stage in China, and more theoretical and empirical studies should be conducted to develop the teaching of English reading and learning. Although metacognitive reading strategy training may not solve all the problems that Chinese university learners' have in English reading comprehension, it does have some impact on students' metacognitive reading strategy awareness, and to some extent on their reading ability as well. Consequently, the results of this study provide a number of different areas of interest for future investigation.



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## **APPENDIX A**

### **Excerpts from the Syllabus for Advanced English Course I**

#### **Program Description**

Advanced English I will cover the 11 units of the textbook A New English Course. This course meets twice a week daily, for a total 72 hours.

#### **Objectives**

This course corresponds to the sixth of a series of total six courses designed to contribute to the development of reading skills as well as other basic and comprehensive language skills.

Advanced English I is a compulsory course intended to provide students with opportunities to gain expertise in five language skills, especially reading skills in accuracy, fluency and grammar, based on the previous 2-year intensive learning at university. Students are expected to develop oral and written skills, expand vocabulary, read and understand authentic English articles of some difficulty, write different types of text, and expand their knowledge of the culture of English speaking countries.

#### **Contents**

Unit 1 Two Words to Avoid, Two to Remember

Unit 2 The Fine Art of Putting Things Off

Unit 3 Walls and Barriers

Unit 4 The Lady, or the Tiger? Part I

Unit 5 The Lady, or the Tiger? Part II

Unit 6 Dull Work

Unit 7 Beauty

Unit 8 Appetite

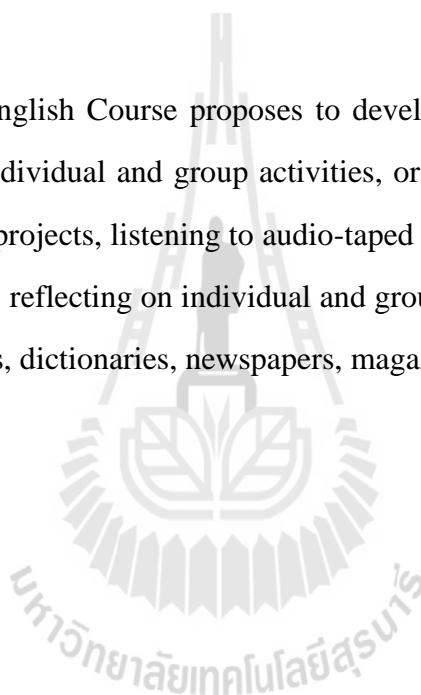
Unit 9 A Red Light for Scofflaws

Unit 10 Straight-A Illiteracy

Unit 11 On Consigning Manuscripts to Floppy Discs and Archives to Oblivion

## **Methodology**

The Advance English Course proposes to develop students' English language proficiency through individual and group activities, oral and written reports, reading tasks, participation in projects, listening to audio-taped materials, answering questions from different sources, reflecting on individual and group performance, consulting the internet, encyclopedias, dictionaries, newspapers, magazines, novels, etc.



## APPENDIX B

### Sample Texts from *A New English Course*

#### Text I, Unit Two: The Fine Art of Putting Things Off

By Michael Demarest

“Never put off till tomorrow,” exhorted Lord Chesterfield in 1749, “what you can do today.” That the elegant earl never got around to marrying his son’s mother and had a bad habit of keeping worthies like Dr. Johnson cooling their heels for hours in an anteroom attests to the fact that even the most well-intentioned men have been postponers ever. Quintus Fabius Maximum, one of the great Roman generals, was dubbed “*Cunctator*” (Delayer) for putting off battle until the last possible *vinum* break. Moses pleaded a speech defect to rationalize his reluctance to deliver Jehovah’s edict to Pharaoh. Hamlet, of course, raised procrastination to an art form.

The world is probably about evenly divided between delayers and do-it-nowers. There are those who prepare their income taxes in February, prepay mortgages and serve precisely planned dinners at an ungodly 6:30 p.m. The other half dine happily on leftovers at 9 or 10, misplace bills and file for an extension of the tax deadline. They seldom pay credit-card bills until the apocalyptic voice of Diners threatens doom from Denver. They postpone, as Faustian encounters, visits to barbershop, dentist or doctor.

Yet for all the trouble procrastination may incur, delay can often inspire and revive a creative soul. Jean Kerr, author of many successful novels and plays, says that she reads every soup-can and jar label in her kitchen before settling down to her typewriter. Many a writer focuses on almost anything but his task for example, on the Coast and Geodetic Survey of Maine’s Frenchman Bay and Bar Harbor, stimulating

his imagination with manes like Googins Ledge, Blunts Pond, Hio Hill and Burnt Porcupine, Long Porcupine, Sheep Porcupine and Bald Porcupine islands.

From *Cunctator's* day until this century, the art of postponement had been virtually a monopoly of the military ("Hurry up and wait"), diplomacy and the law. In former times, a British proconsul faced with a native uprising could comfortably ruminate about the situation with Singapore Sling in hand. Blessedly, he had no nattering Telex to order in machine guns and fresh troops. A U.S. general as late as World War II could agree with his enemy counterpart to take a sporting day off, loot the villagers' chickens and wine and go back to battle a day later. Lawyers are among the world's most addicted postponers. According to Frank Nathan, a non postponing Beverly Hills insurance salesman, "The number of attorneys who die without a will is amazing."

Even where there is no will, there is no way. There is a difference, of course, between chronic procrastination and purposeful postponement, particularly in the higher echelons of business. Corporate dynamics encourage the caution that breeds delay, says Richard Manderbach, Bank of America group vice president. He notes that speedy action can be embarrassing or extremely costly. The data explosion fortifies those seeking excuses for inaction—another report to be read, another authority to be consulted. "There is always," says Manderbach, "a delicate edge between having enough information and too much."

His point is well taken. Bureaucratization, which flourished aimed the growing burdens of government and the greater complexity of society, was designed to smother policymakers in blankets of legalism, compromise and reappraisal—and thereby prevent hasty decisions from being made. The centralization of government that led to Watergate has to economic institutions and beyond, making procrastination a worldwide way of life. Many languages are studded with phrases that refer to putting things off—from the Spanish *mañana* to the Arabic *bukrafil mishmash* (literally "tomorrow in apricots," more closely "leave it for the soft spring weather

when the apricots are blooming”).

Academic also takes high honors in procrastination. Bernard Sklar, a University of Southern California sociologist who churns out three to five pages of writing a day, admits that “many of my friends go through agonies when they face a blank page. There are all sorts of rationalizations: the pressure of teaching, responsibilities at home, checking out the latest book, looking up another footnote.

Psychologists maintain that the most assiduous procrastinators are women; though many psychologists are (at \$50- plus an hour) pretty god delayers themselves. Dr. Ralph Greenson, a U. C. L. A. professor of clinical psychiatry (and Marilyn Monroe’s one-time shrink), takes a fairly gentle view of procrastination. “To many people,” he says, “doing something, confronting, is the moment of truth. All frightened people will then avoid the moment of truth entirely, or evade or postpone it until the last possible moment.” To Georgia State Psychologist Joen Fagan, however, procrastination may be a kind of subliminal way of sorting the important from the trivial. “When I drag my feet, there’s usually some reason,” says Fagan. “I feel it, but I don’t yet know the real reason.”

In fact, there is a long and honorable history of procrastination to suggest that many ideas and decisions ay well improve if postponed. It is something of a truism that to out off making a decision is itself a decision. The parliamentary process is essentially a system of delay and deliberation. So, far that matter, is the creation of a great painting, or an entrée, or a book, or a building like Blenheim Palace, which took the Duke of Marborough’s architects and laborers 15 years to construct. In the process, the design can mellow and marinate. Indeed, hurry can be the assassin of elegance. As T. H. White, author of *Sword in the Stone*, once wrote, time “is not meant to be devoured in an hour or day, but to be consumed delicately and gradually and without hesitate.” In other words, *pace* Lord Chesterfield, what you don’t necessarily have to do today, by all means put off until tomorrow.

From: G. Levin, 4<sup>th</sup> ed., pp. 429-434 (966 words)

## **APPENDIX C**

### **Unit 2: *The Fine Art of Putting Things Off***

#### **(A Proposed Lesson Plan)**

##### **Goal:**

Students will be trained to use metacognitive strategies to plan, monitor and evaluate their reading comprehension ability and this plan focuses on the training of practicing planning reading strategies.

##### **Objectives:**

1. To develop students' metacognitive skills in planning for the reading.
2. To develop self-monitoring skills by asking the students how they monitor their reading comprehension while reading.
3. To develop self-evaluating skills through the measurement of students' success towards the goal the reading comprehension task.

##### **Materials and equipment:**

1. Student Book of A New English Course, Book 6
2. Work Book of A New English Course, Book 6
3. Dictionary
3. Blackboard

## Teaching procedures:

### Pre-reading:

#### Step 1: Advance Organizer and Making Predictions

To help the students learn to determine the nature of the reading task and set his reading goal.

- **Discuss the pre-reading questions on page 16 of the Students' Book:**

1. "Procrastination is the thief of the time" is a very well-known proverb that reminds us that we should "Never put off till tomorrow what we may be done today", which is yet another proverb. Have you been taught to do thing promptly? Do you personally believe in these two proverbs and act accordingly?
2. Why do you suppose the author calls "putting things off " a fine art? Do you think he is serious, or is he just being ironical?

#### Step 2: Organizational Planning and Surveying the Text

- **Students elaborate the prior knowledge connected with the reading tasks and have an overview of what the text is about.**

1. Students will read "The Fine Art of Putting Things Off" on page 16-18 from *A New English Course: Book 6* by Michael Demarest.
  - ☐ Look at the length of the reading (9 paragraphs).
  - ☐ Think about the prior knowledge about the title "The Fine Art of Putting Things Off".
  - ☐ Note the topic and the main idea.
2. Students are asked to write a focused free journal entry about the topic, get ready for the follow-up group discussion.

#### Step 3: Selective Attention and Self-Management

- **Let the students focus on some specific task, such as vocabulary and topic, and guide them learn to manage these tasks.**

1. Before students start reading the text, go over the Dictionary Work of the Student Book with them.
2. Ask the students to record the meaning of the key words from the context of their reading in a vocabulary log. Share the experience of how they learn this vocabulary.
3. Students discuss about the topic in groups to gauge their prior knowledge and encourage interaction.

### **While-reading:**

#### **Step 1: Comprehension Monitoring by First Reading and Rereading**

- **Students should be able to identify, comprehend and interpret the details from the text after first reading.**

Students read the text in group of five or six, teacher explain the metacognitive strategies they might use in solving their reading problems, such as asking the students like the following:

Which of your predictions turned out to be true?

What surprised you?

How is the correctness of your word-guessing?

- **Students should be able to recognize word meaning in context, response to tone and connotation, apply context clues, correctly define and spell vocabulary after rereading.**

1. Students reread the text to develop fluency and build vocabulary.
2. Teacher explain metacognitive reading strategies, such as guessing word meaning by using context and word formation clues; considering syntax and sentence structures; analyzing reference words, predicting text contents; reading for specific piece of information; and using dictionary appropriately.

### **Step 2: Production Monitoring by Group Discussion and Presentation.**

- **Students should be able to monitor the main aspects of their reading comprehension and the effectiveness of strategy use.**

1. Students discuss their monitoring in the main aspects in reading such as vocabulary, reading speed, structural analysis, main ideas, interfering, reading tasks and etc. and how they use the metacognitive reading strategies to deal with them.
2. Choose one representative student in each group to present their main points in discussion, orally sharing their understanding in reading comprehension.

### **Post-reading:**

#### **Step 1: Self-evaluation and Self-reflection by Writing Journals**

- **Students should be able to write their reactions, comments, questions and feelings etc. about the text.**

After class, students write their feedbacks in the journals for each unit and all the journals are kept as portfolio for the one part of final evaluation of this course.

#### **Step 2: Responding to Students' Journals**

- **Teacher dialogues with the students by communicating on opinions on the topic, difficulties in understanding texts, problems in using the metacognitive strategies in reading, etc.**

Teacher responds to the students' journals each time, monitors their learning process in order to promote their effective metacognitive strategy use in the reading comprehension.

## APPENDIX D

### Background Information Questionnaire

#### (English Version)

***Directions:** This questionnaire is designed to gather information on your background. Please kindly spare a few minutes to fill out it. Your personal information and response to this questionnaire will be kept confidential.*

Suggestions for answering the questionnaire:

1. Please tick (✓) one of the answers which best indicates your reality.
2. Please finish doing all the items. If any of the items is undone, the analysis of the data will be in trouble.

#### **Part 1 Personal information**

Please fill in the information or tick (✓) in the space provided.

Name: \_\_\_\_\_

Age: \_\_\_\_\_

Gender:    (    ) Male    (    ) Female

#### **Part 2 Language background**

1. How many years have you been studying English?

\_\_\_\_\_

2. Please indicate the letter grade you received in previous English reading courses.

Basic reading: \_\_\_\_\_

Comprehensive reading: \_\_\_\_\_

3. How do you rate your proficiency in English reading?

(    ) Excellent

(    ) Good

(    ) Fair

(    ) Poor

4. Have you ever known metacognitive strategies in reading comprehension?

(    ) I know quite well

(    ) I know

- (    ) I know a little  
(    ) I do not know

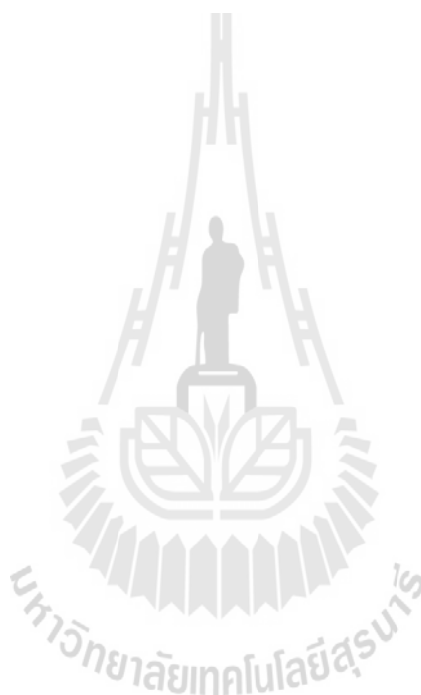
5. Have you ever had any experience of joining training course about metacognitive reading strategy?

(    ) Yes

(    ) No

If yes, please specify?

---



## Background Information Questionnaire

### (Chinese Version)

说明：该问卷旨在调查你的个人信息和语言学习背景，请认真填写。我们将对你的个人信息和回答严格保密。

#### 问卷调查指南

1. 请在符合你的实际情况的答案前打√。
2. 请回答全部问题。如果问题回答不全，将会影响我们的数据分析。

#### 第一部分：个人信息

姓名：\_\_\_\_\_

年龄：\_\_\_\_\_

性别：（ ）男 （ ）女

#### 第二部分：语言学习背景

1. 你学了少年英语？

\_\_\_\_\_

2. 请填写你的基础阅读和泛读的成绩。

基础阅读 \_\_\_\_\_

泛读 \_\_\_\_\_

3. 你如何定位你的阅读能力？

（ ）很好

（ ）好

（ ）一般

（ ）差

4. 你知道阅读理解中的元认知策略吗？

（ ）我知道得很清楚

（ ）我知道

（ ）知道一点

（ ）我不知道

5. 你是否曾有过参加元认知阅读策略培训的经历？

（ ）有

（ ）没有

如果有，请注明：\_\_\_\_\_

## APPENDIX E

### Metacognitive Strategy Questionnaire (MSQ)

#### For Reading

##### Pre-questionnaire

**Directions:** In this part, you will find the statements about reading. When you read a text, think about what kind of things you do *before, during*, and *after* reading. Take time to carefully examine each item and check the responses by ticking (✓) in the box that best indicates how well the statement describes you.

- 1 = Never or almost never true
- 2 = Usually not true (less than 50%)
- 3 = Somewhat true (about 50%)
- 4 = Usually true (more than 50%)
- 5 = Always or almost always true

**Example:** Consider the following item and choose the response by ticking (✓) in the box.

Item	Content	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
	Before beginning to read, I go to the library and surf the Internet to get information concerning the topic.					✓

If you go to the library or surf the Internet to get the information concerning the topic before you begin to read if you do it all the time or almost always, please **tick 5**.

- It is important to answer in terms of how well each statement describes you, NOT in terms of what you think you should do, or what other people do. THIS IS NOT A TEST. There is no right or wrong response to these statements. The score you obtain will not affect your grade.

- Depending on your language learning ability and proficiency, you may be using different types of strategies. The metacognitive reading strategies presented here are general. Not everyone needs the same kind of strategies. A “low” score does not mean you are a bad learner.

Appendix E(cont.)

**Part 1:** The following statements tell what you do *before* you read the text.  
*Before I start reading an English text, .....*

Items	Contents	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
1	I have considered the previous success with the similar tasks and identify the purpose of the assigned tasks.					
2	I will activate the background knowledge to get a general idea.					
3	I preview the questions or the instructions, so I understand what to do.					
4	I try to predict the contents of the text from the title.					
5	I will come up with a list of reading strategies I will probably use.					
6	I scan the text first and concentrate on what I will read.					
7	I read the task before reading the text.					
8	I read the text before I read the task.					
9	I will determine the major points I will pay attention to, such as the headings and sub-headings, the topic sentence, and the text structure.					
10	I will recall my weak points in reading comprehension and try to comprehend when reading begins.					
11	I locate the task questions in the specific paragraph of the text because I think it's easier.					
12	I plan before I read because I think it is helpful.					

## Appendix E (cont.)

**Part 2:** The following statements tell what you do *during* reading the text.

*While reading an English text, .....*

Items	Contents	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
13	I first read for the general ideas of the text.					
14	I pay selective attention to the information predicted and required in the task.					
15	I verify my inference of the previous paragraph and predict what will come in the next paragraph.					
16	I can find ways to overcome the problems when I get stuck with difficult vocabulary.					
17	I can find ways to concentrate on my reading even when there are many distractions around me.					
18	I can refocus my concentration on reading though the text and task I'm reading and doing are difficult.					
19	I underline the difficult sentences and words and try to understand them.					
20	I skip words or sentences I do not understand.					
21	I translate sentence by sentence.					
22	I have focused on one specific goal at a time. For example, first I concern with the general ideas of the text. Next, I will read for the key words or implied meaning of the sentences.					
23	I keep reading even I have difficulty and constantly check my understanding of the text.					

## Appendix E (cont.)

Items	Contents	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
24	I regulate my reading speed according to the given time and length of the text.					
25	I can use reading strategies to help me comprehend the text better.					
26	I search for the answers for the task questions.					
27	I can think of ways to solve my reading problems even they are very difficult.					
28	I consider whether I understand the beginning and the ending of the text correctly.					
29	I can choose appropriate reading strategies to solve my immediate reading problems.					
30	I change the strategies if they can not help me in accomplishing the reading comprehension task.					

**Part 3:** The following statements tell what you do to help improve your reading *after* you read it.

*After reading an English text, .....*

Items	Contents	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
31	I realize that my major concern is coming with the better understanding by accomplishing the task.					
32	I check to see if my reading strategies are helpful for the text comprehension.					

## Appendix E (cont.)

Items	Contents	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
33	I enjoy discussing with my classmates for the difficult points and exchanging the reading experience to get a more effective reading method to achieve my goal.					
34	I use my own reading plan for judging how well I read.					
35	I refer to the reading goal to evaluate if I achieve it.					
36	I set a higher reading goal such as comprehension level for next time based on what worked best this time and what I think I should keep or change.					
37	I am able to use the characteristics of a good reader as criteria to evaluate my own reading.					
38	I will spend time to motivate myself to improve the reading even I find that I do a poor job.					
39	I spend time reflecting on my reading performance.					
40	I recall and summarize the reading strategies to see what might I keep or change to make an improvement on my reading next time.					

## Metacognitive Strategy Questionnaire (MSQ) For Reading

### Post-questionnaire

**Directions:** In this part, you will find the statements about reading. When you read a text, think about what kind of things you did *before*, *during*, and *after* reading. Take time to carefully examine each item and check the responses by ticking (✓) in the box that best indicates how well the statement describes you.

- 1 = Never or almost never true
- 2 = Usually not true (less than 50%)
- 3 = Somewhat true (about 50%)
- 4 = Usually true (more than 50%)
- 5 = Always or almost always true

**Example:** Consider the following item and choose the response by ticking (✓) in the box.

Item	Content	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
	Before beginning to read, I go to the library and surf the Internet to get information concerning the topic.					✓

If you go to the library or surf the Internet to get the information concerning the topic before you begin to read if you do it all the time or almost always, please **tick 5**.

- It is important to answer in terms of how well each statement describes you, NOT in terms of what you think you should do, or what other people do. **THIS IS NOT A TEST**. There is no right or wrong response to these statements. The score you obtain will not affect your grade.
- Depending on your language learning ability and proficiency, you may be using different types of strategies. The metacognitive reading strategies presented here are general. Not everyone needs the same kind of strategies. A “low” score does not mean you are a bad learner.

## Appendix E (cont.)

**Part 1:** The following statements tell what you did *before* you read the text.  
*Before I started reading an English text, .....*

Items	Contents	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
1	I considered the previous success with the similar tasks and identify the purpose of the assigned tasks.					
2	I activated the background knowledge to get a general idea.					
3	I previewed the questions or the instructions, so I could understand what to do.					
4	I tried to predict the contents of the text from the title.					
5	I could come up with a list of reading strategies I would probably use.					
6	I scanned the text first and concentrated on what I will read.					
7	I read the task before reading the text.					
8	I read the text before I read the task.					
9	I determined the major points I would pay attention to, such as the headings and sub-headings, the topic sentence, and the text structure.					
10	I recalled my weak points in reading comprehension and tried to comprehend when reading began.					
11	I located the task questions in the specific paragraph of the text because I thought it was easier..					
12	I planned before I read because I think it was helpful.					

## Appendix E (cont.)

**Part 2:** The following statements tell what you did *during* reading the text.  
*While reading an English text, .....*

Items	Contents	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
13	I first read for the general ideas of the text.					
14	I paid selective attention to the information predicted and required in the task.					
15	I verified my inference of the previous paragraph and predicted what would come in the next paragraph.					
16	I could find ways to overcome the problems when I got stuck with difficult vocabulary.					
17	I could find ways to concentrate on my reading even when there were many distractions around me.					
18	I could refocus my concentration on reading though the text and task I'm reading and doing are difficult.					
19	I underlined the difficult sentences and words and tried to understand them.					
20	I skipped words or sentences I did not understand.					
21	I translated sentence by sentence while reading.					
22	I focused on one specific goal at a time. For example, first I concerned with the general ideas of the text. Next, I read for the key words or implied meaning of the sentences.					

## Appendix E (cont.)

Items	Contents	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
23	I kept reading even I had difficulty and constantly checked my understanding of the text.					
24	I regulated my reading speed according to the given time and length of the text.					
25	I could use reading strategies to help me comprehend the text better.					
26	I searched for the answers for the task questions.					
27	I could think of ways to solve my reading problems even they are very difficult.					
28	I considered whether I understood the beginning and the ending of the text correctly.					
29	I could choose appropriate reading strategies to solve my immediate reading problems.					
30	I changed the strategies if they could not help me in accomplishing the reading comprehension task.					

**Part 3:** The following statements tell what you did to help improve your reading *after* you read it.  
*After reading an English text, .....*

Items	Contents	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
31	I realized that my major concern is coming with the better understanding by accomplishing the task.					

## Appendix E (cont.)

Items	Contents	Never true 1	Usually not true 2	Somewhat true 3	Usually true 4	Always true 5
32	I checked to see if my reading strategies were helpful for the text comprehension.					
33	I enjoyed discussing with my classmates for the difficult points and exchanging the reading experience to get a more effective reading method to achieve my goal.					
34	I used my own reading plan for judging how well I read.					
35	I referred to the reading goal to evaluate if I achieve it.					
36	I set a higher reading goal such as comprehension level for next time based on what worked best this time and what I think I should keep or change.					
37	I could be able to use the characteristics of a good reader as criteria to evaluate my own reading.					
38	I spent time to motivate myself to improve the reading even I found that I do a poor job.					
39	I spent time reflecting on my reading performance.					
40	I recalled and summarized the reading strategies to see what might I keep or change to make an improvement on my reading next time.					

## APPENDIX F

### Pre Interview Questions (English Version)

Interview questions	Metacognitive strategies
<p><b>Before reading:</b> Imagine that you are going to read the text, what kind of things you will do before reading?</p> <ol style="list-style-type: none"> <li>1. What do you do before you started to read? How does this help you read?</li> <li>2. Do you set your reading goal?</li> <li>3. How do you plan to do the reading tasks?</li> <li>4. Have you thought of any planning before you start to read? Do you think planning is a useful strategy?</li> <li>5. Do you elaborate the prior knowledge connected with the reading tasks?</li> <li>6. Do you review the content of the reading task?</li> <li>7. How do you focus on a specific problem and try to solve it?</li> <li>8. Do you think of any particular reading strategies for the specific tasks?</li> <li>9. Do you apply one or more specific reading strategies relevant to the specific tasks?</li> <li>10. Do you adjust the reading strategy use for achieving reading goals? How?</li> </ol> <p><b>During reading:</b> Think of the time while reading, what kind of things you will do to complete the reading task?</p> <ol style="list-style-type: none"> <li>11. Do you check the understanding, accuracy &amp; appropriateness of the overall reading process?</li> <li>12. Do you have difficulties in any task? If you had difficulties, what particular methods or strategies you used to complete the reading task?</li> </ol>	<p><b>Planning strategies:</b></p> <p><i>Advance Organizer</i></p> <p><i>Advance Organizer</i> <i>Advance Organizer</i> <i>Organizational Planning</i></p> <p><i>Organizational Planning</i> <i>Organizational Planning</i></p> <p><i>Selective Attention</i> <i>Selective Attention</i> <i>Self-Management</i> <i>Self-Management</i></p> <p><b>Monitoring strategies</b></p> <p><i>Comprehension Monitoring</i></p> <p><i>Comprehension Monitoring</i></p>

Interview questions	Metacognitive strategies
<p>13. Do you monitor the main aspects such as vocabulary, sentences of the reading? What is your main focus?</p> <p>14. What of those methods or strategies will help you read? How?</p> <p><b>After reading:</b> Think of the time you finish your reading, what kind of things you will do after you complete the reading task?</p> <p>15. Do you make an assessment of whether one succeeds in /achieves the reading goal? How?</p> <p>16. Do you evaluate the efficiency of your reading? How?</p> <p>17. Do you evaluate your reading strategies? How?</p> <p>18. Do you reflect your own problems? How?</p>	<p><i>Production Monitoring</i> <i>Production Monitoring</i></p> <p><b><i>Evaluating strategies:</i></b></p> <p><i>Self-Assessment</i></p> <p><i>Self-Evaluation</i></p> <p><i>Self-Evaluation</i></p> <p><i>Self-Reflection</i></p>

## Pre Interview Questions

### (Chinese Version)

访谈问题	元认知策略
<p><b>阅读前：假如你要开始阅读一篇文章，在开始阅读文章之前你通常做什么？</b></p> <ol style="list-style-type: none"> <li>1. 你在阅读开始前通常做什么？这样做如何能促进你的阅读吗？</li> <li>2. 你会设定一个阅读目标吗？</li> <li>3. 你怎样来计划完成你的阅读任务？</li> <li>4. 你在阅读前思考过要计划吗？你认为计划是一种策略吗？</li> <li>5. 你会把阅读任务和以前的知识联系起来吗？</li> <li>6. 你会预览一下阅读任务的内容吗？</li> <li>7. 你是怎样把重心放在某个特定的问题上去尽量解决它的？</li> <li>8. 你对某个特定的阅读任务会考虑运用某个阅读策略吗？</li> <li>9. 你针对特定的阅读任务会采用一个或者多个具体的策略吗？</li> <li>10. 为了达到你的阅读目的，你会调整阅读策略的使用吗？如何调整？</li> </ol>	<p><b>计划策略</b></p> <p>           预前组织            预前组织            预前组织            组织计划            组织计划            组织计划            选择性注意            选择性注意            自我管理            自我管理         </p>
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<p><b>阅读后：假如你已经完成阅读，在完成阅读任务后你会怎么做？</b></p> <ol style="list-style-type: none"> <li>1. 你会对自己是否达到阅读目的进行自我评价吗？如何评价？</li> <li>2. 你会评估自己的阅读效果吗？如何评估？</li> <li>3. 你会评估你的阅读策略吗？如何评估？</li> <li>4. 你会反思自己的阅读问题吗？如何反思？</li> </ol>	<p><b>评估策略</b></p> <p>           自我评价            自我评估            自我评估            自我反思         </p>

## Post Interview Questions (English Version)

Interview questions	Metacognitive strategies
<p><b>Before reading:</b> Think of the time you did before starting to read. What kind of things did you do before you started to read?</p> <ol style="list-style-type: none"> <li>1. What did you do before you started to read? How did this help you to read?</li> <li>2. Did you set your reading goal?</li> <li>3. How did you plan to do the reading tasks?</li> <li>4. Did you elaborate the prior knowledge or strategy connected with the reading tasks?</li> <li>5. Did you think of your strategy for the specific task?</li> <li>6. Did you review the content of the reading task?</li> <li>7. How did you focus on a specific problem and try to solve it?</li> <li>8. Did you know what you were supposed to do to improve your reading? Describe it.</li> <li>9. Did you apply one or more specific reading strategies relevant to the specific tasks?</li> <li>10. Did you adjust the reading strategy use for achieving reading goals? How?</li> </ol>	<p><b>Planning strategies:</b></p> <p><i>Advance Organizer</i></p> <p><i>Advance Organizer</i></p> <p><i>Advance Organizer</i></p> <p><i>Organizational Planning</i></p> <p><i>Organizational Planning</i></p> <p><i>Organizational Planning</i></p> <p><i>Selective Attention</i></p> <p><i>Selective Attention</i></p> <p><i>Self-Management</i></p> <p><i>Self-Management</i></p>
<p><b>During reading:</b> Think of the time while you were reading, what kind of things did you do to complete the reading task?</p> <ol style="list-style-type: none"> <li>1. Did you check the accuracy &amp; appropriateness of the overall reading process? How?</li> <li>2. Did you have difficulties in any task? If you had difficulties, what particular methods or strategies you used to complete the reading task?</li> </ol>	<p><b>Monitoring strategies</b></p> <p><i>Comprehension Monitoring</i></p> <p><i>Comprehension Monitoring</i></p>

Interview questions	Metacognitive strategies
<p>3. Did you monitor the main aspects of the reading? What is your main focus?</p> <p>4. How did those methods or strategies will help you read?</p> <p><b>After reading:</b> Think of the time you finished your reading, what kind of things you did after you complete the reading task?</p> <p>1. Did you make an assessment of whether one succeeds in /achieves the reading goal? How?</p> <p>2. Did you evaluate the efficiency of your reading? What were your own criteria?</p> <p>3. Did you evaluate your reading strategies? How?</p> <p>4. Did you reflect your own problems? How did you plan to improve that?</p>	<p><i>Production Monitoring</i>  <i>Production Monitoring</i>  <i>Evaluating strategies:</i></p> <p><i>Self-Assessment</i></p> <p><i>Self-Evaluation</i></p> <p><i>Self-Evaluation</i></p> <p><i>Self-Reflection</i></p>

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## APPENDIX G

### Reading Comprehension Test

**Name:** \_\_\_\_\_

**Group:** \_\_\_\_\_

*Directions: Read the following Passages and answer the questions which accompany them by choosing A, B, C, or D. Mark your answers on ANSWER SHEET. You are required to answer all. Questions concerning the test content will not be allowed, nor will the use of dictionaries.*

#### **Passage 1**

We all know that the normal human daily cycle of activity is of some 7-8 hours' sleep alternating with some 16-17 hours' wakefulness and that, broadly speaking, the sleep normally coincides with the hours of darkness. Our present concern is with how easily and to what extent this cycle can be modified.

The question is no mere academic one. The case, for example, with which people can change from working in the day to working at night is a question of growing importance in industry where automation calls insistently for round-the-clock working of machines. It normally takes from five days to one week for a person to adapt to a reversed routine of sleep and wakefulness, sleeping during the day and working at night. Unfortunately, it is often the case in industry that shifts are changed every week; a person may work from 12 midnight to 8 a.m. one week, 8 a.m. to 4 p.m. the next, and 4 p.m. to 12 midnight the third and so on. This means that no sooner has he got used to one routine than he has to change to another, so that much of his time is spent neither working nor sleeping very efficiently.

One answer would seem to be longer periods on each shift, a month, or even three months. Recent research by Bonjer of the Netherlands, however, has shown that

people on such systems will revert to their normal habits of sleep and wakefulness during the week-end and that this is quite enough to destroy any adaptation to night work built up during the week.

The only real solution appears to be to hand over the night shifts to a corps of permanent night workers whose nocturnal wakefulness may persist through all week-ends and holidays. An interesting study of the domestic life and health of night-shifts workers was carried out by Brown in 1957. She found a high incidence of disturbed sleep, digestive disorder and domestic disruption among those on alternating day and night shifts, but no abnormal occurrence of these symptoms among those on permanent night work.

This latter system then appears to be the best long-term policy, but meanwhile something may be done to relieve the strains of alternate day and night work by selecting these people who can adapt most quickly to the changes of routine. One way of knowing when a person has adapted is by measuring his performance, but this can be laborious. Fortunately, we again have a physiological measure which correlates reasonably well with the behavioral one, in this case performance at various times of the day or night, and which is easier to take. This is the level of body temperature, as taken by an ordinary clinical thermometer. People engaged in normal daytime work will have a high temperature during the hours of wakefulness and a low one at night; when they change to night work the pattern will only gradually reverse to match the new routine and the speed with which it does so parallels, broadly speaking, the adaptation of the body as a whole, particularly in terms of performance and general alertness. Therefore by taking body temperature at intervals of two hours throughout the period of wakefulness it can be seen how quickly a person can adapt to a reversed routine, and this could be used as a basis for selection. So far, however, such a form of selection does not seem to have been applied in practice.

(578 words)

**1. The main theme of the passage is \_\_\_\_\_.**

- [A] sleep and body temperature.
- [B] the effects of lack of sleep.
- [C] how easily people can get used to working at night.
- [D] the effect of automation on working efficiency.

**2. Why is the question 'no mere academic one'?**

- [A] Because of research by Bonjer and Brown.
- [B] Because sleep normally coincides with the hours of darkness.
- [C] Because some people can change their sleeping habits easily.
- [D] Because shift work in industry requires people to change their sleeping habits.

**3. The main problem about night work is that \_\_\_\_\_.**

- [A] people do not want the inconvenience of working on night shifts.
- [B] people are disturbed by changing from day to night routines and back.
- [C] not all industries work at the same hours.
- [D] it is difficult to find a corps of good night workers.

**4. The best answer to the problem seems to be \_\_\_\_\_.**

- [A] not to change shifts from one week to the next.
- [B] to have longer periods on each shift.
- [C] to employ people who will always work at night.
- [D] to find ways of selecting people who adapt quickly.

**5. Scientists are able to measure adaptation by taking body temperature because \_\_\_\_\_.**

- [A] body temperature is a good basis for selection.
- [B] people have low temperature at night.
- [C] the temperature reverses when the routine is changed.
- [D] people have high temperature when they are working efficiently.

**Passage 2**

Life really should be one long journey of joy for children born with a world of wealth at their tiny feet. But psychologists now believe that silver spoons can leave a bitter taste. If suicide statistics are an indicator of happiness, then the rich are a miserable lot. Figures show that it is the wealthy who most often do away with themselves.

Internationally famous child psychiatrist Dr. Robert Coles is the world's top expert on the influence of money on children. He has written a highly-acclaimed book on the subject, *The Privileged Ones*, and his research shows that too much money in the family can cause as many problems as too little. "Obviously there are certain advantages to being rich," says the 53-year-old psychiatrist, "such as better health, education and future work prospects. But most important is the quality of family life. Money can't buy love."

It can buy a lot of other things, though, and that's where the trouble starts. Rich kids have so much to choose from that they often become confused. Over-indulgence by their parents can make them spoilt. They tend to travel more than other children, from home to home and country to country, which causes feelings of restlessness.

"But privileged children do have a better sense of their positions in the world," adds Mr. Coles, "and they are more self-assured. I can't imagine, for instance, that Prince William will not grow up to be self-assured." Prince William is probably the most privileged child in the world and will grow up to fill the world's most privileged position---King of England. It is a fact that no one knows how much the Queen is worth. There are the royal estates---two palaces, two castles and a country mansion. There's also the royal picture collection, the stamp collection, the library, the jewels and the royal yacht *Britannia*. Before he inherits that lot, William will succeed his father as Prince of Wales and enjoy the income from the Duchy of Cornwall, currently worth 771,480 pounds a year. Known jokingly around the Palace as West Country Limited, the Duchy consists of 26,600 acres of Cornwall including mineral rights for

tin mining and 2,000 acres of forestry. It also owns the Oval cricket ground, 900 flats in London, oyster beds and a golf course.

So money will never be one of Prince William's problems. Living anything that resembles a normal life will. "He will have a sense of isolation," cautions Dr. Coles, "and he could suffer from the handicap of not being able to deal with the everyday world because he will never really be given the chance. Royals exist in an elaborate social fantasy. Everything they have achieved is because of an accident of birth. There can be no tremendous inner satisfaction about that."

Today's wealthy parents perhaps realise their riches can be more of a burden than a blessing to their children. So their priority is to ensure that their families are as rich in love as they are in money.

(505 words)

**6. From the first paragraph we can learn that \_\_\_\_\_.**

- [A] life is a joyful experience for rich children.
- [B] more rich people have to go to see psychiatrists.
- [C] many rich people have silver spoons at home.
- [D] there is a higher incidence of suicide amongst the rich.

**7. Robert Coles' believes that \_\_\_\_\_.**

- [A] rich children can be deprived of the thing they are most in need of.
- [B] there are as many advantages to being poor as there are to being rich.
- [C] rich children are rarely given too many material things.
- [D] rich children don't get enough rest.

**8. What is said about Prince William?**

- [A] Prince William is the richest child in the world.
- [B] It is unlikely that Prince William will have a great deal of self-satisfaction.

[C] He will not feel lonely when he becomes an adult.

[D] He could become physically disabled.

**9. Coles suggests that the members of the Royal Family \_\_\_\_\_.**

[A] have not earned what they have.

[B] live in a dream world.

[C] get what they have accidentally.

[D] will not have a chance to achieve anything.

**10. What is the main point of the author?**

[A] Most wealthy parents are not aware of the problems that money can bring.

[B] Wealthy parents bring their children a lot of sufferings.

[C] Wealthy parents should give their children as many advantages as they can.

[D] Wealthy parents should try to give their children love as well as money.

**Passage 3**

Throughout the 20th century, historians have argued about the reasons for the unprecedented drive for colonial expansion that seized Europe and, to a lesser extent, the United States, in the last decades of the 19th century.

The majority of those engaged in this often heated debates have tended to join one of two camps: those who favor a political explanation for the outburst of territorial enlargement, and those who argue that it was fundamentally economic concerns when deciding to intervene in disputes or to involve in Africa, Asia, or the South Pacific. The British preoccupation with protection strategic overseas naval stations, such as those in Malaya and in South Africa, for example, was linked to an underlying perception of growing threat to their Indian Empire. That empire was in turn more than just their "garrison in the east" and largest colonial possession. It was a major source of raw materials for British industries and a key outlet for both British manufactured good and

British overseas investment. Thus, political and economic motives were often impossible to separate; doing so unnecessarily oversimplifies and distorts our understanding of the forces behind the haste for empire in the late 19th century.

It would also be a mistake to see a complete break between the pattern of European colonial expansion before and after 1870. Though a good deal more territory was added per year after that date, there were numerous colonial wars and additions to both the British and French empires all through the middle decades of the 19th century. One of the key differences between the two periods was that before 1870, Britain had only a weak France with which to compete in the outside world. This meant that the British were less likely than at the end of the century to be pushed into full-scale invasions and annexations because they feared that another European power was about to seize potentially valuable colonies. It also allowed the British to rely heavily on threats and gunboat raids rather than outright conquest to bring African kings or Asian Emperors into line. With its "white" settler colonies (Canada, Australia, and New Zealand) and India, plus enclaves in Africa and Southeast Asia, the British already had all the empire they could handle. Most British politicians were cautious about or firmly opposed to adding more colonies. The British were watchful to French advance in various parts of the globe, which were usually made to restore France's great-power standing following setbacks in Europe. But the French were far too weak economically and too politically divided to contest Britain's naval mastery or its standing as the greatest colonial power.

(438 words)

**11. Which of the following is the best summary for paragraph 1?**

- [A] Often simplified understanding does more harm than good.
- [B] The cause of the late 19th century expansion is not very clear.
- [C] The reason for the topic in discussion is quite a mixed one.
- [D] In many cases economy distorts politics in international affairs.

**12. Which of the following is true of paragraph 2?**

- [A] Fear of a French invasion caused Britain to build up an empire.
- [B] The position of France used to be better in the area of Europe.
- [C] Prior to 1870 France had no place in discussing European affairs.
- [D] The British were all overtaken by the idea of global expansion.

**13. The word "outright"(line II, paragraph 2) is closest in meaning to\_\_\_\_\_.**

- [A] complete.
- [B] reasonable.
- [C] righteous.
- [D] constant.

**14. It can be inferred that the mentality of the British in late 19th century invasion was one of \_\_\_\_\_.**

- [A] shamefulness.
- [B] satisfaction.
- [C] inquisitiveness.
- [D] contradiction.

**15. Which of the following sentences in the passage is an idea rather than a fact?**

- [A] "The majority of those engaged in this often ..." (lines 4 - 5, paragraph 1)
- [B] "It would also be a mistake to see a complete ..." (lines 1 - 2, paragraph 2)
- [C] "One of the key differences between the two ..." (lines 5 - 6, paragraph 2)
- [D] "The British politicians were cautious about ..." (lines 14-15, paragraph 2)

**Passage 4**

Have you heard about the book which pushes blood types as determining whether somebody should be vegetarian or not? The idea of choosing foods based on your blood type was popularized by Peter J. D'Adamo, ND, in his book, *Eat Right For Your Type* (G.P. Putnam's Sons, 1996). D'Adamo, a naturopath, proposes that those

who have blood type A should be vegetarian, while those with blood type O must eat meat and eliminate wheat and some other grains. He says that following the correct diet for your blood type will help you maintain optimal health and weight, avoid many infections, and fight back against life-threatening illnesses. Is there any truth to his claims?

While D'Adamo spends more than 350 pages explaining the minute details of the foods, supplements, medications, and exercise regimens which should be followed by people with each blood type, he fails to scientifically document the effectiveness of his recommendations. Many of the claims which he makes are not backed up by published research. For example, depending on your blood type, you are presented with detailed lists of foods which are highly beneficial, neutral, or to be avoided. How were these lists generated? Has any research been published showing adverse health effects from use of foods which should be avoided? No studies are presented which support what appear to be the author's speculations.

Numerous studies have shown that vegetarians live longer than non-vegetarians and have a lower risk of a number of chronic diseases. These studies are likely to be based on people from all blood type groups. It certainly seems that a vegetarian diet has benefits for those studied, regardless of their blood type. Similarly, studies like those of Dean Ornish appear to demonstrate the beneficial effect of a vegetarian diet and other lifestyle changes on a number of individuals, and not just those of a certain blood type.

Eat Right For Your Type should not be used as the basis for dietary change. Statements like "I could never be a vegetarian, I'm type O" are not based on scientific evidence and may even lead people to avoid making dietary changes which could benefit both their health and the health of our planet. Our advice? Stick with a varied, whole foods-based vegetarian diet regardless of your blood type.

(413 words)

**16. What is the author's attitude toward D'Adamo's advice?**

- [A] Unbelieving.
- [B] Supportive.
- [C] Hesitating.
- [D] Disdaining.

**17. According to the author, which of the following has been amply proved?**

- [A] Vegetarian diet has brought about many lifestyle changes.
- [B] Non-vegetarians have a higher risk of many chronic diseases.
- [C] Dietary changes at regular intervals will benefit people's health.
- [D] Diet according to one's blood type will help people maintain optimal weight

**18. By using the word "pushes" (line I, paragraph I), the author seems to believe that the idea of choosing foods based on one's blood type is \_\_\_\_.**

- [A] Convincing.
- [B] Applicable.
- [C] Far-fetched.
- [D] Plausible.

**19. Which of the following statements is true of the passage?**

- [A] A vegetarian diet will bring about optimal health regardless of any blood types.
- [B] A vegetarian diet will produce a neutral effect for people with blood type O.
- [C] The same diet for people of different blood types will benefit their health.
- [D] Different diets for people of the same blood type will produce adverse health effect.

**20. It can be inferred that the author \_\_\_\_\_.**

- [A] favors strict diet according to one's blood type.
- [B] advocates limited diet regardless of one's blood type.
- [C] prefers a combination of meat and vegetarian diet as a lifelong habit.
- [D] favors a varied, whole foods-based vegetarian diet.

### **Passage 5**

As a medium of exchange, money permits the separation of exchange into the two distinct acts of buying and selling, without requiring the seller to purchase goods from the person who buys his products, or vice versa. Hence producers, who know they will be paid in money, can concentrate on finding the most suitable outlet for their goods, while buyers, who will pay in money, can concentrate on finding the cheapest market for the things they wish to purchase. Specialization, which is vital to an advanced economy, is encouraged, because people whose output is not a complete product but only a part of one in which many others are involved can be paid an amount equivalent to their share of the product.

Another advantage of money is that it is a measure of value, that is, it serves as a unit in terms of which the relative values of different products can be expressed. In a barter economy it would be necessary to determine how many plates were worth on hundred weight of cotton, to how many pens should be exchanged for a ton of coal, which would be a difficult and time-consuming task. The process of establishing relative values would have to be undertaken for every act of exchange, according to what products were being offered against one another, and according to the two parties' desires and preferences. If I am trying to barter fish for bananas, for example, a lot would depend on whether the person willing to exchange bananas is or is not keen on fish.

Thirdly, money acts as a store of wealth. It is difficult to imagine saving under a barter system. No one engaged on only one stage in the manufacturing of a product

could save part of his output, since he would be producing nothing complete. Even when a person actually produced a complete product the difficulties would be overwhelming. Most products deteriorate fairly rapidly, either physically or in value, as a result of long storage, even if storage were possible, the practice of storing products for years on end would involve obvious disadvantages, imagining a coal-miner attempting to save enough coal, which of course is his product, to keep him for life. If wealth could not be saved, or only with great difficulty, future needs could not be provided for, or capital accumulated to raise productivity.

It is clear that many essential characteristics of an advanced economic system--widespread exchange, division of labor and accumulation of capital--are closely linked with the use of money. Without money to facilitate exchange, production and saving, it would be impossible for an economy to develop beyond the primitive level which survives in communities still conducting their economic affairs on a barter basis.

(457 words)

**21. Using money as a medium of exchange means that\_\_\_\_\_.**

- IA] you have to sell something in order to buy something.
- [B] you have to buy something in order to sell something.
- [C] you don't have to buy something in order to sell something.
- ID] the seller and the purchaser are the same person.

**22. Specialization is encouraged because\_\_\_\_\_.**

- [A] people can use their money to buy whatever they want,
- [B] people do not need to make a complete product for exchange.
- [C] people make an intangible contribution to the manufacture of a product,
- [D] people cannot use their money to buy whatever they want.

**23. Any exchange under a barter economy would\_\_\_\_\_.**

- [A] be neither simple nor quick.
- [B] have no value.
- [C] be both simple and quick.
- [D] be determined by simplicity and speed.

**24. One difficulty in saving under a barter economy would be that\_\_\_\_\_.**

- [A] it would be difficult to imagine money.
- [B] some people do not make complete products, so they could not save them.
- [C] some products would be too small to save.
- [D] people are only engaged in one stage of manufacturing.

**25. Advanced economics\_\_\_\_\_.**

- [A] still exist in some places.
- [B] cannot possibly exist.
- [C] depend on widespread exchange, division of labor and accumulation of capital.
- [D] do not depend on the use of money.

#### **Passage 6**

Babies are less likely to grow up into fat children if they are fed breast milk exclusively, which provides powerful ammunition for the campaign to encourage mothers to choose the breast over the bottle.

German scientists say their findings are the result of the largest study to date investigating the link between breast-feeding and obesity later in life. The findings suggest breast-feeding could turn out to be a powerful strategy for fighting the spiraling level of childhood obesity. The study, which tracked 9,357 children in Bavaria, found that the longer babies were breast-fed exclusively before being switched to formula or food, the lower their chances of starting school as overweight children.

The German study found that infants given only breast milk until they were 3 to 5 months old were more than a third less likely to be obese by the age of 5 or 6 than babies given only formula from the start. Those breast-fed exclusively for 6 months to a year fared even better--they were 43 percent less likely to be obese. Breast-feeding beyond a child's first birthday was better still, giving babies a 72 percent lower chance of turning out to be obese children.

Even just some breast milk proved to be better than none, according to the study. Children who were breast-fed for only the first month or two of their lives were 10 percent less likely to be obese by the time they entered elementary school.

Besides being more likely to be obese, bottle-fed children also had a greater chance of being simply overweight by elementary school. As with obesity, the risk diminished the longer breast-feeding continued into childhood.

Children were classed as overweight if their body mass index—which allows comparison of the girth of people of different heights--was in the highest 10 percent of all children their age and sex in Bavaria. They were labeled obese if they were in the highest 3 percent.

The researchers took into account several factors that could have skewed the results, such as eating habits, socioeconomic class, birth weight, parents' and siblings' ages, how long the children played outside and whether they had their own bedrooms.

In fact, the fatter children were eating less butter, fewer desserts and whole-milk products, and more low-fat dairy foods--probably in an attempt to lose weight.

However, what is not clear from the study is how much of the children's weight problem was due to an inherited tendency to be fat. Experts noted that genetics might be responsible for a small percentage of the cases, but could not be the total explanation. A follow-up study which takes into account parents' weight suggests a genetic disadvantage doesn't seem to make much difference.

But is it something in the breast milk, or something associated with the act of breast-feeding that makes a difference? It's a bit early for us to draw such a conclusion.

(483 words)

**26. The first paragraph shows that\_\_\_\_\_.**

- [A] breast-feeding is more beneficial to children's growth than bottle-feeding.
- [B] breast milk is the prime cause of childhood obesity.
- [C] bottle-feeding provides a powerful strategy for inherited obesity.
- [D] breast-feeding can curb the ever-increasing cases of adult obesity.

**27. The word "ammunition" (line 2, paragraph I) means\_\_\_\_\_.**

- [A] weapons.
- [B] gun powder.
- [C] primers.
- [D] shells.

**28. Which of the following factors do the researchers take into account when they study the children?**

- [A] Their heights.
- [B] Their gender.
- [C] Their school environment.
- [D] Their birth weight.

**29. What is the author's attitude toward the new finding?**

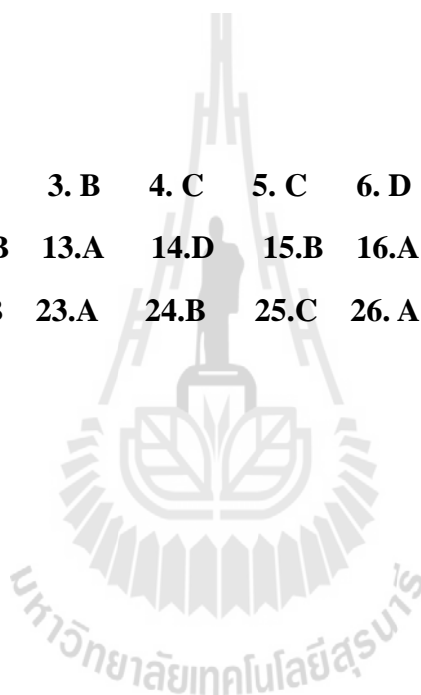
- [A] Admiring.
- [B] Certain.
- [C] Cautious.
- [D] Disapproving

**30. Which of the following titles best summarizes the passage?**

- [A] A Little Breast Milk Goes a Long Way
- [B] Impressive Results of Breast-Feeding.
- [C] A New Strategy for Fighting Adult Obesity.
- [D] It is Too Easy to Favor the Breast over the Bottle.

### **Answers to the Reading Comprehension Test**

**Answers: 1. A    2. D    3. B    4. C    5. C    6. D    7. A    8. B    9. A    10. D**  
**11. C    12. B    13. A    14. D    15. B    16. A    17. B    18. C    19. A    20. D**  
**21. C    22. B    23. A    24. B    25. C    26. A    27. A    28. D    29. C    30. B**



## APPENDIX H

### Suggested Format of Reading Journal

**Directions:** You are asked to write your reactions to the text you have read every time. Some suggested questions are provided for your reference. Do take risks and get voice on paper. I read them for ideas only and no grades for that!

**Name:** \_\_\_\_\_  
**Date:** \_\_\_\_\_  
**Title:** \_\_\_\_\_

#### Before reading:

1. What did you do before you started to read? How did this help you read?
2. Did you plan before reading the text? If yes, how did you do?
3. Did you know what the important aspects of the reading comprehension are? If yes, what are they?
4. Did you think of reading strategies you've learned before? If yes, how did these strategies help you to read?
5. Did you know what you were supposed to do to adjust your reading comprehension? Describe it.

#### During reading:

1. Did you check the overall reading process for the accuracy or appropriateness?
2. When you meet difficulties such as getting stuck in some reading comprehension tasks, what did you do?
3. How did you decide to make changes or adapt your reading strategies to the comprehension task?
4. What were the reading strategies that helped you complete the reading tasks? How did it help?

**After reading:**

1. How did you make assessment of whether you met your reading goal?
2. Did you self-evaluate how well you comprehend the text? If yes, how did you do?
3. Did you evaluate the reading strategies used in the reading comprehension? If yes, how did you do?
4. Did you reflect why you could/could not read efficiently? Describe your reasons.

**Other Comments**

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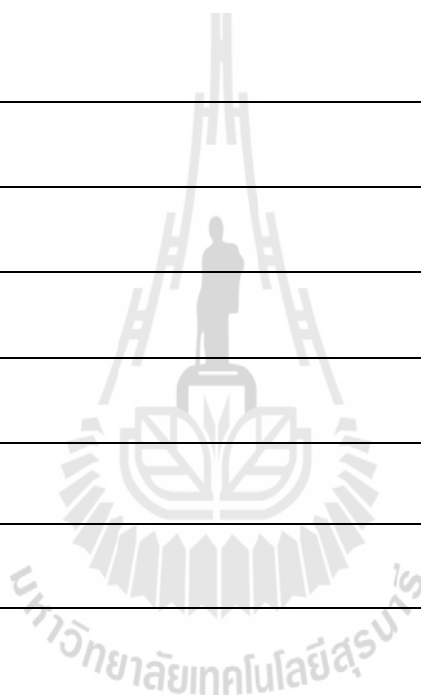
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**APPENDIX I**

**Questionnaire of Students' Attitudes towards the**

**Metacognitive Strategy Training**

**(English Version)**

Name \_\_\_\_\_

Class: \_\_\_\_\_

*Directions: This questionnaire is designed to gather information on how you think about the metacognitive strategy training in reading you had. Please kindly spare a few minutes to fill out this questionnaire. Your personal information and response to this questionnaire will be kept confidential.*

**Suggestions for answering the questionnaire**

Please tick ( ✓ ) one of the answers which best indicates your reality or attitudes.

Please finish all the items. If any item is undone, the analysis of the data will be in trouble.

1. Can you finishing reading test within 60 minutes?

☐

Yes

☐

No

If so, how many minutes do you need? \_\_\_\_\_

Please tick ( ✓ ) one of the answers which best indicates your reality or opinion.  
Please note that there are no right or wrong answers you're your response.

Item	Content	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	I am satisfied with the MST in reading.					
2	The MST in reading improves my reading comprehension.					
3	I can use more metacognitive reading strategies before, while and after reading.					
4	I know clearly when, how and why to use metacognitive strategies in my reading comprehension.					
5	I will join such kind of training in the future if I have chance.					

**Thank you for your co-operation!**

**Questionnaire of Students' Attitudes towards the  
Metacognitive Strategy Training  
(Chinese Version)**

**对元认知策略培训的看法调查**

姓名：\_\_\_\_\_

班级：\_\_\_\_\_

说明：该问卷调查旨在收集你对所参加的元认知策略培训的看法，请认真填写。

我们将对你的个人信息和所做的回答预于严格保密。

问卷调查指南：

请你在最符合你的观点的方框内√；请完整回答所有问题，如果问题回答不全，将会影响我们的数据分析。

1. 你能在 60 分钟之内完成阅读测试吗？

☐

能

☐

不能

如果不能，那么你需要多少分钟？\_\_\_\_\_

请仔细阅读并思考下面的题目，然后选择符合你看法的选项。请注意选择没对错之分。

题号	内容	非常同意	同意	不确定	不同意	非常不同意
1	我对元认知策略培训感到满意。					
2	元认知策略培训提高了我的阅读水平。					
3	我能够在阅读前，阅读中和阅读后使用更多的元认知阅读策略。					
4	我清楚知道在阅读理解中什么时候，怎样以及为什么使用元认知策略。					
5	将来如果有机会，我将还会参加此类培训。					

谢谢合作！



## **APPENDIX J**

### **The Interview for Guide for MST: The Pilot Study (English Version)**

1. Can you finish the Reading Comprehension Test in 60 minutes?
2. What do you like/dislike most about the MST you have joined? Why / why not?
3. How do / don't you think the MST will help you improve your reading comprehension? Give some examples.
4. Do you have any problems applying the metaognitive strategies in reading? If any, what are they?
5. Do you have any suggestions with the MST? If any, what are they?

### **(Chinese Version)**

1. 您能在 60 分钟之内完成阅读测试吗？
2. 关于你参加的元认知策略培训，你最喜欢/不喜欢的是什么？为什么？
3. 你认为元认知策略培训在哪方面能够/不能够帮助你提高阅读能力？
4. 你在阅读中使用元认知策略有什么困难吗？如果有，是什么？
5. 你对元认知策略培训有建议吗？如果有，是什么？

## **The Interview Guide for MST: The Main Study**

### **(English Version)**

1. What do you like/dislike most about the MST you have joined? Why / why not?
2. How do you think the MST will help/not help you improve your reading comprehension? Give some examples.
3. Do you have any problems applying the metaognitive strategies in reading? If any, what are they?
4. Do you have any suggestions with the MST? If any, what are they?
5. In the future, will you apply metacognitive strategies in reading? Why?

### **(Chinese Version)**

1. 关于你参加的元认知策略培训，你最喜欢/不喜欢的是什么？为什么？
2. 你认为元认知策略培训在哪方面能够/不能够帮助你提高阅读能力？
3. 你在阅读中使用元认知策略有什么困难吗？如果有，是什么？
4. 你对元认知策略培训有任何建议吗？如果有，是什么？
5. 今后在阅读中你会继续使用元认知策略吗？为什么？

## APPENDIX K

### A Sample Interview Script

#### A Sample Interview Script (The Translated Version)

Interviewer: Lian Zhang (LZ)

Interviewee: Student number 3 in the high proficient group (HP3)

Date: 5, July, 2008

Time: 14:30 P.M.

Place: College of International Studies, Guizhou University, Guiyang, China

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LZ: Good afternoon.

HP3: Good afternoon.

LZ: Take a seat please.

HP3: Thanks.

LZ: How are you?

HP3: I'm fine, thank you! Teacher, what is today's interview about? Will it be graded?

LZ: No, do not worry! This interview is just for collecting the data of my Ph.D. thesis.

And I will record the interview for analyzing it. Is it ok for you?

HP3: Sure, no problem.

LZ: Great, keep relaxing, the interview will ask the questions about the metacognitive strategy training you have got this term. To be exactly, about the three stages in the reading process, that is, pre-reading, while-reading and post-reading.

HP3: Yes, I see.

LZ: Let's start with the first question. (Q1)What do you do before you started to read?

How does it help you to read?

HP3: I often scan the reading task, and then I know what aspects I should pay more attention to when I read; I'd like to set my goal for reading.

LZ: Yes, (Q2) that means you plan how to accomplish the task, right?

HP3: Yes, I always do that.

LZ: (Q3) Do you use reading strategies you've learned?

HP3: Yes, I usually recall reading strategies I used before because I know that some of them can be used, eh, you know some have high frequency usage.

LZ: Do you think these strategies help you to read?

HP3: Certainly, very useful, for example, rereading, I use it every time when I am not sure about my understanding. I prefer to use self-questioning, predicting and sometimes translation etc.

LZ: That's good; it seems that you have learnt a lot from the class.

HP3: I think so.

LZ: (Q4) What are the important aspects of the reading comprehension?

HP3: There are many important aspects, for example, difficult vocabulary, sentence meaning from the context, main idea of specific paragraph, background knowledge, so many to mention.

LZ: Yes, since just now you mention you'd like to use some reading strategies, (Q5) do you think you can select appropriate strategy for specific task?

HP3: Normally, I think I can, but the result may not be always satisfying, sometimes, I still get a wrong answer due to my lack of related knowledge.

LZ: I see, (Q6) I want to know that you deal with the sub-reading task separately or at one time?

HP3: First, I will finish the reading task at one time, and then I will check them one by one to make sure that my understanding is correct or not.

LZ: (Q7) Well, do you think you know when, where and how to use the reading strategies?

HP3: I use the reading strategies when I meet problems, I should try what I can to solve them. Different strategies are used according to the different reading tasks.

LZ: (Q8) For example?

HP3: Eh, example, let me think, I can guess the meaning of a new word from the context by predicting, sometimes using prefix or suffix.

LZ: Yeah. (Q9) Do you adapt your comprehension to the reading task?

HP3: Sure, I have to, what I want to achieve is to get the correct answers of the reading tasks, I want to get a high score.

LZ: Ok. So (Q10) what do you consider the main focus of the reading, word, phrase, sentence or essay level?

HP3: How to say, I think all of them need to be considered in terms of different reading tasks.

LZ: (Q 11) What are the reading strategies that help you read successfully? Can you list them?

HP3: A lot, the most frequent use of reading strategies are: rereading self-questioning, paying attention the topic sentence, guessing word meaning, predicting, using background knowledge, inferring, generalizing, etc.

LZ: Do you think you can read efficiently?

HP3: Yes, I think so.

LZ: (Q12) Do you think why you could do that?

HP3: Because I know how to read in English effectively, that is to say, I know how to solve different problems by using different reading skills and strategies to comprehend the text better.

LZ: (Q13) Do you recall and summarize the reading and strategies to see what I might keep or change to make an improvement on the reading next time?

HP3: I do it by writing journals; I think this is my good habit which makes me improve a lot in reading.

LZ: (Q14) After reading, do you self-evaluate how well you read?

HP3: I do it by using Self-Evaluation Checklist. It's clear for me to know my performance each time.

LZ: (Q15) Do you think you meet the requirements of the reading task?

HP3: Normally I can get 80-90% correct answers of the reading task; I think I meet the requirements.

LZ: (Q16) Do you reflect your own performance and problems?

HP3: Yes, especially after the reading test, I often recall what I did in the test to see whether I can do it better or not.

LZ: (Q17) Do you reflect on the gains you got?

HP3: Yes, this can motivate me to achieve a higher level of comprehension; what I gained makes me more confident in the future reading since I become more experienced.

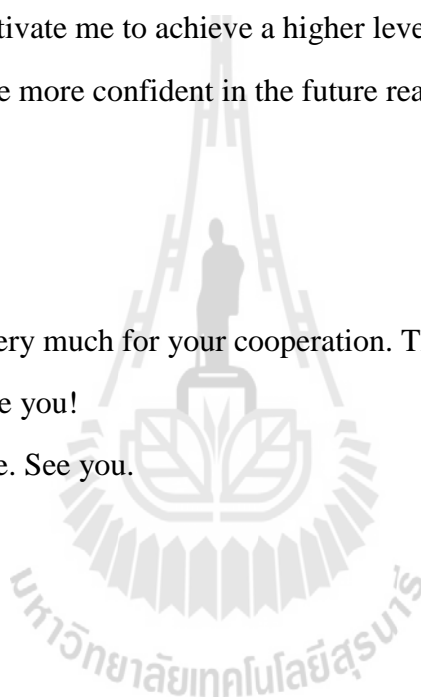
LZ: Anything else?

HP3: No, That's it.

LZ: Well, thank you very much for your cooperation. That's the end of our interview.

Thanks a lot! See you!

HP3: You are welcome. See you.



## **APPENDIX L**

### **Samples of Students' Journals**

Respondents: Student number 6 in the high proficient group (HP6)

Student number 10 in the low proficient group (LP10)

Place: College of International Studies, Guizhou University, Guiyang, China

#### **HP6**

##### **Unit 2**

Before reading, sometimes I think about whether this topic I met before. For me, I think vocabulary is the most important thing because I can not concentrate on reading if I think about some strategies. I'm sorry I have to say maybe MST is not suitable for me, I don't really understand why I need it; it is a waste of time? Time is limited I have to pay attention to reading itself. Shall we have better way to enhance our reading comprehension?

##### **Unit 6**

I gradually get used to use the reading strategies in my reading comprehension; it makes me read more purposefully and effectively. Before reading, I often read the questions before I read the text and get the ideas that what are the important aspects I should pay attention to in the reading. I begin to consciously control my reading process instead of reading without any purposes. I try to use some strategies while reading especially I met some difficult problems. For example, I met a difficult word; I will guess the meaning first, if not successful, consult the dictionary or ask for help. Inferring from the context could be very useful for me; I often can get the right answers from inferring. After reading test, I think about whether I did it well or not in the reading comprehension and I find that some mistakes can be avoided if I change

another strategy to deal with it. It is very useful to list your own problems and find the ways to solve them. I believe as time goes by, I will become more strategic and confident reader.

### **Unit 11**

MST have changed my way of reading, and I find the way I read before is not effective, I learn a lot of reading skills and strategies which are very useful for me. Before I only focus on vocabulary, in fact, metacognitive strategy use and vocabulary are both needed for better comprehension. I become more confident and responsible in my reading now. Just like a soldier with many good types of equipment, MST helps me to be an autonomous reader to apply different strategies to deal with different reading problems. I have clear ideas in mind what I should do before reading while reading and after reading.

### **LP10**

#### **Unit 2**

I'm sorry I have to say the MST is not useful for my reading comprehension, time is limited I have to pay attention to reading itself. Using strategies, for me, it is an extra job, why I use them? Especially the evaluating strategies, that should be the teacher's duty, how can I do it well?

#### **Unit 6**

MST might be effective for reading, but I feel difficult to use them in my reading process, maybe my reading ability is low and I can not understand and master the strategies. To tell the truth, I still think that memorizing more vocabulary could be the most important thin in improving my reading comprehension.

### **Unit 11**

I have to admit that I don't like the training, I think I spent a lot of time on that, but nothing improved, it is time wasting for me. May be I should try other method to improve my reading comprehension.