探究運用相互教學法於國中生後設認知及英語閱讀理解之成效

孫莉恩

摘要

本研究目的在於瞭解教導國中生相互教學法，對於其後設認知及英語閱讀理解之成效。本研究採取準實驗研究，參與研究對象為北部164位八年級學生，分為二班實驗組接受相互教學法訓練，及二班對照組未接受相互教學法，於十週的教學實驗中探討：(1) 相互教學法是否能幫助學生提升後設認知能力；(2) 後設認知能力的提升是否有助於閱讀理解的增進；(3) 相互教學法是否能提升學生英語閱讀理解；(4) 學生對於相互教學法策略運用的看法。研究問卷資料以描述統計、迴歸方法進行統計分析。

研究結果顯示，和未接受相互教學法的學生相較，接受相互教學法訓練之學生在後設認知能力及英語閱讀理解上，均具明顯進步。學生因接受相互教學法訓練而提升之後設認知，對於英語閱讀理解進步具有正面的影響。此外，研究也顯示，在相互教學法的四個策略中，學生較常運用預測 (predicting) 和澄清 (clarifying) 於英語閱讀上。學生普遍認為，相互教學法有助於提升閱讀及思考能力。因此，閱讀策略的教學在教學過程中有其必要性。

關鍵詞：相互教學法、後設認知、閱讀策略、閱讀理解

投稿日期：2013/03/06 接受日期：2013/06/25
Reciprocal Teaching as a Reading Strategy Instruction to Improve EFL Junior High School Students’ Metacognitive Awareness and English Reading Comprehension

Li-en Sun *

Abstract

The primary purpose of this study was to understand the effects of reciprocal teaching, as a means of strategy instruction in reading class, on EFL junior high students’ metacognitive awareness and English reading comprehension. The 164 eighth grade participants selected in this quasi-experimental research came from four classes in a junior high school in Taiwan and were divided into experimental and control groups. Two English teachers were assigned two classes each, one experimental group in which they were responsible for practicing reciprocal teaching and one control group without reciprocal teaching. Elementary GEPT (General English Proficiency Test) reading comprehension pre- and post-test, as well as metacognitive awareness questionnaires were applied to determine the effects of reciprocal teaching instruction in comparison with traditional reading methods on reading comprehension. A response to reciprocal teaching questionnaire was administered in the experimental groups to understand students’ perceptions of applying reciprocal teaching in daily reading tasks. The analysis of covariance (ANCOVA) revealed that students with instruction in reciprocal teaching had greater improvement than students receiving traditional reading methods in performance on GEPT reading test and metacognitive awareness. Moreover, a step-down multiple regression indicated that experimental group, GEPT reading comprehension pretest score and metacognitive awareness post-test score were positively related to improvement in GEPT reading comprehension post-test scores. As for the strategies applied during reading, students reported that predicting and clarifying were two strategies that were used most. The findings offered a strong suggestion that reciprocal teaching is a practical strategy instruction enabling students to develop the awareness of strategy use and improve English reading comprehension. Further, this study sheds light on the importance of initiating strategy instruction in EFL reading classrooms.

Keywords: Reciprocal teaching, reading strategy, metacognitive awareness, reading comprehension

* Assistant Professor, Department of Applied English, Kainan University.
I. Introduction

1. Research Background

Language is a survival kit in the world of globalization. Among the few major languages, English appears to be the dominant one. English is the universal language that is used pervasively in communication, technology, business, trade, science, and education. Due to the fact that being able to communicate and understand English ensures the competitiveness among nations (De Wit, 2002), many non-English speaking countries put efforts on promoting English education. Taiwan is no exception. English language learning and the study of English teaching have prospered in Taiwan under the spread of “English fever.”

Seeing the importance of acquiring English ability, the Ministry of Education in Taiwan made English a required core course from elementary school to college in 2001. In addition to adding English as a testing subject in senior high school and college entrance exams, most college and universities adopt the General English Proficiency Test (GEPT), The Test of English as a Foreign Language (TOEFL), or Test of English for International Communication (TOEIC) as a graduation requirement. To pass these exams, English reading ability appears to be important. According to Lin (2007), English reading comprehension questions take fifty to seventy percent of the whole test score. Thus, reading comprehension plays a crucial role in determining students’ English level in Taiwan.

Despite the effort and attention made by government in English education, the outcome is not usually pleasing. Chang (2002) and Lin (2007) indicated that students’ scores in senior high school and college entrance exams showed a bipolar distribution, meaning that students score either very high or very low. Students with lower English reading proficiency comprised half of the student population. Besides, as Chen (2008) put it, “according to the English Testing Service (ETS) record, the TOEFL and TOEIC scores of Taiwanese students have fallen behind most other Asian countries, with the exception of Japan, Thailand, and Saudi Arabia in 2006” (p. 1). The unsatisfactory results revealed that there might be concerns in Taiwan’s English reading instruction.

A possible explanation to Taiwanese students’ performance in English reading comprehension might be attributed to heavy reliance on the grammar-translation method in reading instruction, which puts emphasis on explaining linguistic components such as lexical decoding, grammar analysis, and sentence by sentence translation. Furthermore, students in Taiwan usually depend on the teacher to provide correct answers without learning independently and actively. Under this circumstance, students seldom apply effective reading strategies to improve or enhance reading comprehension since they mostly use translating, decoding, and parsing when reading (Baker & Brown, 1984; Field, 1985). The English teacher, providing the dominant role in the classroom, lectures most of time and hardly initiates interaction with/among students. The consequence of this kind of teaching style results in a rigid and teacher-centered classroom. Hence, it is essential for both teachers and students to develop an alternative method and attitude in English learning and teaching.

To elaborate the concept of English teaching, the goal of teaching English is to prepare students
for mastering four language skills namely speaking, reading, listening and writing. Among these four skills, reading has always been the topic that draws greater attention in language instruction. Research indicates that reading ability plays an important role in academic achievement (Salinger, 2003). The students with better reading ability tend to perform better than those with insufficient reading ability. In language learning, it is essential for second language (L2) learners to be equipped with sufficient reading proficiency to survive in academic environments (Carrell, 1989).

In second language learning, reading achievement is highly related to reading strategies. The fact that the readers who are likely to apply reading strategies are inclined to be successful readers has been proved (Carrell, 1989; Garner, 1982; O’Malley & Chamot, 1990). Oxford (1990) offers a classification system by categorizing various strategies used by learners into six sub-categories: cognitive strategies, memory strategies, compensation strategies, metacognitive strategies, affective strategies and social strategies. Among these six, metacognitive strategies involve the learners’ planning, arrangement and evaluation of their own learning. Based on this concept, teaching metacognitive strategies means training students how, when and why to use strategies in reading, and helping students develop monitoring abilities to modify their own learning process. This, in turn, leads students to better reading comprehension and the ultimate goal of being independent readers (Paris, Cross & Lipson, 1984).

Findings show that metacognition facilitates the transfer of the reader’s skill, knowledge and strategy use (Paris, Lipson, & Wixson, 1983). As Fung, Wilkinson & Moore (2003) put it, “Metacognition involves the awareness of one’s own mental process and abilities, as well as those mechanisms that allow one to evaluate and regulate one’s progress during the learning activity” (p. 4). Metacognitive knowledge is essential for readers to concentrate on the text, adjust the reading process and check the reading outcome. As for second language learning, Anderson (1999) asserted that the metacognitive awareness was the most important strategy that a second language learner can develop while reading.

In addressing the metacognitive strategy as a part of reading strategies in improving reading comprehension, reciprocal teaching is considered an effective comprehension-fostering teaching technique. It is an instructional model designed by Palinscar and Brown (1984) to help students develop cognitive and metacognitive strategies to improve reading comprehension. According to Rosenshine & Meister (1994), reciprocal teaching has two features: (a) teaching students explicit comprehension strategies that they can apply to the reading; (b) an instructional model processed through the dialogue between the teacher and students in order to obtain meaning from the text. The procedures of reciprocal teaching are carried out by four strategies: predicting, questioning, summarizing and clarifying. The teacher first takes the leading role to instruct in the use of the four comprehension-fostering strategies and then gradually releases the leading responsibility to students (Rosenshine & Meister, 1994). Students take the role in leading text discussion once they are familiar with and ready to apply the strategies. Reading comprehension is potentially increased during the process of continuous strategy use. Research has also shown that the employment of reciprocal
teaching positively enhances students’ reading achievement (Frances & Eckart, 1992; Klingner & Vaughn, 1996; Palincsar, & Brown, 1984).

Students’ metacognitive awareness is also significantly correlated to reading performance. As stated above, it is also believed that reading strategies have great impact on metacognitive awareness. Reciprocal teaching is considered a metacognitive strategy if the purpose of the instruction is to teach and improve students’ comprehension and self-monitoring in the reading process (Palincsar, & Brown, 1984). Thus, metacognitive reading skills are increased through this kind of instruction.

2. Purposes and Research Questions

This study aimed to explore several dimensions regarding the effects of reciprocal teaching on Taiwanese junior high students. First of all, the effectiveness of reciprocal teaching on reading comprehension was examined. Second, the study aimed to understand the effects of reciprocal teaching on metacognitive awareness. Third, the impact of metacognitive awareness on reading comprehension under the employment of reciprocal teaching is discussed. Students’ responses towards reciprocal teaching are also discussed. Specifically, this study addresses the following questions:

(1) Do students receiving reciprocal teaching instruction have better metacognitive awareness than students without reciprocal teaching instruction?
(2) Does metacognitive awareness under the influence of reciprocal teaching promote reading comprehension?
(3) Do students receiving reciprocal teaching instruction have better English reading comprehension than students without reciprocal teaching instruction?
(4) What are students’ attitudes towards reciprocal teaching instruction?

II. Literature Review

1. Reciprocal Teaching

Developed by Palincsar and Brown (1984), reciprocal teaching is a teaching and reading strategy that incorporates cognitive and metacognitive instruction for reading comprehension. Originally, reciprocal teaching was designed to improve the reading comprehension of students who can decode but have difficulty in comprehending texts. It is an intervention strategy that provides poor readers cognitive and metacognitive practices to improve their reading comprehension. The procedures apply a “collaborative small-group” (Fung, Wilkinson, & Moore, 2003, p. 2) discussion for teaching and learning comprehension-fostering and monitoring strategies by engaging students in the four activities—predicting, clarifying, question generating and summarizing. Each activity has its own function. Predicting focuses on resolution; questioning identifies important information on which to establish purposes for reading; summarizing deals with plot, and clarifying addresses the strategies to employ to construct meaning (Heilman, Blair, & Rupley 1990).
The founders of reciprocal teaching, Palincsar and Brown (1984) conducted a study to investigate the application of reciprocal teaching in reading and find its effect on reading comprehension. The subjects were 24 seventh-grade students divided into 4 groups; two control groups experienced traditional reading instruction, and the other two experimental groups received RT instruction. After a thirty-day instructional period, the results were quite significant. First of all, the reading comprehension of students in the experimental groups was improved, which supported the effectiveness of RT. Second, the findings also indicated that the tendency toward strategy use among students was increased, especially in question generating and summarizing. Third, students were observed to have positive results on reading comprehension tests for the following eight weeks, which revealed the potentiality of positive strategy transfer.

In the field of second language reading, due to the barely satisfactory situation of English reading performance in the standardized tests in Taiwan, Lin (2007) conducted a research focusing on the effect of RT on English reading comprehension and metacognition. In the research, there were 82 ninth graders in two classes (one control, the other one experimental) receiving twelve weeks of instruction. The results were quite positive. Overall, the students in experimental group receiving RT had better reading comprehension than the students with traditional reading instruction. In addition, the awareness of strategy use also increased, especially in summarizing and predicting. Further, after the strategy training, students became more confident in English reading and expressed the willingness to apply strategies for future reading.

Nevertheless, researchers also indicated concerns of reciprocal teaching. Rosenshine and Meister (1994), who reviewed sixteen studies on RT, also expressed their concerns and questions even though they recognized certain success of RT in providing students with strategy instruction and presenting students’ significant improvement in experimenter-designed comprehension tests. One concern pointed out by researchers was the lack of significant difference showing that students receiving RT had better performance than those receiving other cognitive reading strategy training, indicating that any cognitive reading strategy is beneficial and improves students’ reading ability and that RT is not the only way to contribute to successful reading comprehension.

Another study conducted by Little and Richards (2000) examined the transfer of RT to students’ independent reading (cited from Reiter, 2002). The finding revealed the positive correlation between RT and sixth graders’ reading comprehension. However, there was no evidence showing that students would apply these strategies in their individual reading. Even though the original study by Palinscar and Brown (1984) indicated the evidence of strategy transfer, contradictory results still exist among several studies.

2. Metacognitive Awareness

The development of metacognitive awareness plays an important role in reading achievement. Metacognitive awareness consists of two domains. The first is about readers’ awareness of strategies during the reading process. The second is the awareness of whether or not the comprehension happens
and the application of strategies to correct comprehension (Singhal, 2001). A successful reader is likely to use metacognitive strategy to clarify the goal of reading, recognize the information, monitor reading process, evaluate the results and avoid reading failure. Cohen (2003) suggested that metacognitive strategies serve to manage and supervise the strategy use that may facilitate language learning in completing associated tasks. Many researchers consider failure to achieve reading comprehension to be the result of an absence of metacognitive awareness, which represents readers’ abilities to employ proper strategies to monitor the reading process (Borkowski & Kurtz, 1987).

3. The Relationships among Reciprocal Teaching, Metacognitive Awareness, and Reading Comprehension

According to Casanave (1988), successful reading comprehension comes from readers’ ability to access content and schemata knowledge as well as monitor the reading process by applying various strategies. It is true that readers’ background knowledge and the ability to decode words and grammar rapidly and accurately are essential to comprehension of the texts. What should be emphasized more is the conscious employment of strategy use in effective reading comprehension.

Metacognitive awareness, considered as the awareness of strategy use, is assumed to be related in achieving reading comprehension. In terms of strategy use, language learning depends on being able to effectively apply cognitive strategies. One’s knowledge and application of effective strategies may lead to a sense of control over learning outcomes. Students need to have the ability to apply certain strategies in comprehending the texts.

The application of reciprocal teaching reflects the development of metacognition. The strategy involves the awareness of one’s own thinking and internalizes the self-monitoring and self-regulatory skills by engaging students routinely in four strategic activities – questioning, summarizing, clarifying and predicting when reading the text. The discussion between the teacher and students triggers the thinking process while reading, which facilitates the information processing in developing metacognition (Dell’Olio & Donk, 2007).

III. Methodology

A quasi-experimental research was used to investigate that the application of reciprocal teaching instruction would improve junior high school students’ metacognitive awareness and English reading comprehension.

1. Participants

The total of 164 students from 4 classes was taken from eighth graders enrolled in a junior high division of a private senior high school located in northern Taiwan. All students were native Taiwanese. The average year for learning English was 5 years. Two classes were assigned to be experimental groups and the other two were assigned as control groups. In order to make sure that the students from two groups/four classes have similar English proficiency, a researcher-designed English
test was administered. The result showed that there was no significant difference between the English language proficiency levels of the two groups ($M = 78.70$, $SD = 15.22$; $M = 76.48$, $SD = 16.89$; $p > .05$).

Two instructors were chosen to employ reciprocal teaching and traditional reading teaching in the research. Both were experienced English teachers and had been teaching English in junior high schools for more than ten years. For the purpose of acquiring an objective experimental result, each teacher was responsible for adopting reciprocal teaching in one experimental class and traditional reading instruction in a control class.

2. Research Schedule

The researcher designed a 10-week instructional schedule for both experimental and control groups. So as not to interfere with the original class schedule, reciprocal teaching instruction was incorporated into the school’s established learning schedule; in addition to the designated textbook, supplementary reading materials were adopted for the research to use in both the reciprocal teaching groups and the traditional reading instruction groups. Each week, students in each experimental group received reciprocal teaching instruction, and each control group was given traditional reading instruction during five class periods.

3. Instruments

Four instruments were used in this research: a demographic questionnaire, GEPT reading comprehension pre- and post treatment tests (elementary level), Metacognitive Awareness Questionnaire, and a student’s response to reciprocal teaching questionnaire.

(1) The Demographic Questionnaire

A demographic questionnaire was designed by the researcher for the purpose of understanding students’ English learning history and background information. The question items included gender; the year they starting learning English; the duration of English learning; any experience of living in English-speaking country; attending an elementary English-medium school or learning institute, or having a private English tutor; and passing the GEPT test. These data served as independent variables in the data analysis.

(2) The Reading Comprehension Test

The reading comprehension tests for this research were adapted from the simulated reading comprehension proficiency test at the elementary level of the General English Proficiency Test (GEPT). The elementary level of GEPT is designed for test-takers with the proficiency of average junior high graduates. Students were only required to take a total of thirty-five reading comprehension questions. Two elementary GEPT reading comprehension tests were applied to the four classes, one at the beginning of the experiment as a pre-test and the other at the end of the experiment as a posttest.
(3) Metacognitive Awareness Questionnaire

The Metacognitive Awareness Questionnaire (MAQ) items in this research were adopted by the researcher from the studies of Carrell (1989), Chiu (1998), Lin (2007), and the Metacognitive Awareness of Reading Strategies Inventory (MARSI) developed by Mokhtari and Reichard (2002). This Chinese version questionnaire aimed to understand students’ conceptualizations of reading and assess students’ awareness and use of reading strategies while reading academic materials.

The responses of twenty-seven items in five sections were recorded according to a five-point Likert scale. The first section (Items 1-6) aimed to explore students’ confidence as readers and perceived ability to read English. Section two (Items 7-11) was designed to explore the factors that make reading difficult. Section three (Items 12-15) concerned the repair strategies students use when they encounter reading difficulties. The fourth section (Item 16-21) focused on students’ perceptions about effective reading strategies. Items 22-27 in the last section sought to tap students’ understanding of the concept of a good reader. The results of the metacognitive awareness questionnaire were calculated by the mean scores of the twenty seven items. The same questionnaire was given to each of the four classes at the beginning of the experiment as a pre-test and at the end of the experiment as a posttest to detect any changes in attitude or awareness.

(4) Attitude towards Reciprocal Teaching Questionnaire

The student response questionnaire for attitude towards reciprocal teaching was developed by Chiu (1998) and modified by the researcher in light of the employment of reciprocal teaching. There are two sections in the questionnaire. The ten items in the first section were aimed at understanding the participants’ opinions and attitudes towards reciprocal teaching. The 5 point Likert Scale was used in this section and results were calculated by the mean scores of the ten items. The second section contained two open-ended questions that tapped the strategies students favored in daily reading tasks and their willingness to apply reciprocal teaching in future readings. This questionnaire was distributed to the two experimental class groups at the end of the experiment.

4. Research Variables

The dependent variables in the research included metacognitive awareness and GEPT reading comprehension scores. Independent variables consisted of instructional style (reciprocal), students’ demographic data and metacognitive awareness.

For the research process, the first step aimed to exam if reciprocal teaching as an independent variable enhanced students’ metacognitive awareness, which served as dependent variables in this step. Then, the results were tested to see if metacognitive awareness, as an independent variable, improved GEPT reading comprehension scores treated as a dependent variable. Further, the relationship between the independent variable of reciprocal teaching and the dependent variable of GEPT reading comprehension scores was also analyzed. The research framework is illustrated in Figure 3-1.
5. Research Procedures

(1) Prior to Instruction

Before conducting the experiment, the researcher invited two English teachers to discuss the
schedule of the instruction, the choice of supplementary material, as well as the application of
reciprocal teaching (RT). Most importantly, two English teachers needed to understand the rationale,
strategies, forms, and processes of RT. The researcher and two English teachers had four meetings
regarding the application of RT. In the first meeting, the researcher explained the background,
rationale, instructional foundations, and processes of RT to teachers. In the second and third meeting,
the focus was on the teachers’ practice to use thinking-aloud process, familiarize the four RT
strategies, and initiate whole classroom and in group discussions. In the last meeting, two teachers
took turns to practice instructing RT to a group of students (5 students from ninth graders, not from
the subjects in this study).

(2) Instruction Procedures

At the first regular English class before applying instructional methods, a demographic
questionnaire, a pretest of reading comprehension – GEPT, and a metacognitive awareness
questionnaire were administered to all students from both the control and experimental groups.
Subsequently, each instructor was responsible for applying reciprocal teaching in one experimental
group and traditional reading instruction in the other control group. Students from both the
experimental groups and the control groups met five times a week in the ten-week instruction. Each
class period was fifty minutes.

A. Schedule and Activities for Experimental Groups

Reciprocal teaching was incorporated in the regular English class for the experimental groups.
Explicit-teaching-before-reciprocal-teaching (ET-RT) was adopted in the experiment, indicating that
the teacher taught four strategies: predicting, clarifying, questioning and summarizing prior to
engaging students in dialogues. A two-week span that included ten hours of class time was planned
for instruction in one strategy and reading practice. In the first week, the teacher introduced and
demonstrated why, when, and how to use the specific strategy by applying “Thinking aloud” to model
the strategy. In the second week, under the guidance of the teacher, students formed groups to practice
“thinking aloud” and the use of the strategy. Once students were familiar with the strategy, they took
their roles (leader, predictor, clarifier, questioner, and summarizer) in the group and processed
discussion in reading the text and solving problems. Each strategy was introduced and practiced for
two weeks. The last two weeks focused on initiating discussion and integrating all four strategies in
reading.

B. Schedule and Activities for Control Groups

In the control groups, students received traditional reading instruction, which relied heavily on
the teacher’s lecture and grammar translation practice. Each lesson (two texts and two reading
worksheets) took up two weeks of ten-hours of class to finish. When introducing a reading text, the
teacher explained each unfamiliar vocabulary word and elucidated grammar points related to the text
first. Then, students completed vocabulary and grammar exercises. Next, the teacher explained every
sentence of the text and translated the sentences into Chinese. Students needed to note down important
vocabulary and grammar points that were pinpointed by the teacher. Instruction in how to do
skimming for main ideas and scanning for details was given as well for the purpose of preparing
students for testing patterns.

After a ten-week instructional period, the GEPT posttest on reading comprehension and the
metacognitive awareness questionnaire were administered to both the control groups and the
experimental groups. The Student Response towards Reciprocal Teaching Questionnaire was only
given to the experimental groups.

6. Data Analysis

Pretests and posttests of metacognitive awareness and reading comprehension were administered
at the beginning and the end of the research. The data were analyzed using the Statistical Package for
the Social Sciences (SPSS). Descriptive analysis was used to describe the data from pre- and posttests
in reading comprehension and the metacognitive awareness questionnaire. Analyses of covariance
(ANCOVA) were employed to compare the group differences between the control and experimental
group in variances of GEPT and metacognitive awareness. Further, step-down regression was adopted
to investigate the effectiveness of metacognitive awareness on reading comprehension under the
influence of reciprocal teaching in comparison to the traditional reading instruction. The Student
Response to Reciprocal Teaching Questionnaire was calculated by frequencies and percentages
indicating the evaluation, strategy use, and willingness to apply reciprocal teaching in the future.

IV. Results

1. Descriptive Analysis

ANCOVA descriptive analysis was used to examine the group difference between pretest and
posttest of metacognitive awareness and GEPT reading comprehension. As indicated in table 4-1 and
4-2, the results showed that there was a statistically significant difference in metacognitive awareness
between groups, \( F(1, 162) = 52.597, p < 0.001 \). Compared to the mean score of the control group (\( M = 98.33 \)), the experimental group had a higher mean score (\( M = 106.80 \)).

Table 4-1 ANCOVA Summary of Instruction Effects on Metacognitive Awareness Post Scores by Group

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1347.702</td>
<td>1</td>
<td>1374.702</td>
<td>37.896*</td>
</tr>
<tr>
<td>MA pretest</td>
<td>11252.569</td>
<td>1</td>
<td>11252.569</td>
<td>310.194*</td>
</tr>
<tr>
<td>Group</td>
<td>1907.999</td>
<td>1</td>
<td>1907.999</td>
<td>52.597*</td>
</tr>
<tr>
<td>Error</td>
<td>5840.419</td>
<td>161</td>
<td>36.276</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1745319.000</td>
<td>164</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. \( N = 164 \).
*\( p < .001 \)

Table 4-2 Descriptive Statistics of Metacognitive Awareness Pretest and Posttest Scores by Group

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( N )</td>
<td>( M )</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>82</td>
<td>101.54</td>
</tr>
<tr>
<td>Control Group</td>
<td>82</td>
<td>99.39</td>
</tr>
</tbody>
</table>

Regarding the effect of reciprocal teaching on reading comprehension, the results in table 4-3 and 4-4 indicated a difference between groups, that was statistically significant, \( F(1,162) = 56.028, p < 0.001 \). The students, receiving 10 weeks instruction of reciprocal teaching (\( M = 78.33 \)), had significant improvement in the performance of reading comprehension than students instructed in traditional reading methods (\( M = 69.26 \)).

Table 4-3 ANCOVA Summary of Instruction Effects on GEPT Reading Post Scores by Group

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>478.629</td>
<td>1</td>
<td>478.629</td>
<td>6.194*</td>
</tr>
<tr>
<td>GEPT pretest</td>
<td>33268.158</td>
<td>1</td>
<td>33268.158</td>
<td>430.537***</td>
</tr>
<tr>
<td>Group</td>
<td>4329.391</td>
<td>1</td>
<td>4329.391</td>
<td>56.028***</td>
</tr>
<tr>
<td>Error</td>
<td>12440.683</td>
<td>1</td>
<td>77.271</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>936655.000</td>
<td>164</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. \( N = 164 \).
*\( p < .05 \), **\( p < .01 \), ***\( p < .001 \)

Table 4-4 Descriptive Statistics of GEPT Reading Pretest and Posttest Scores by Group

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( N )</td>
<td>( M )</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>82</td>
<td>66.49</td>
</tr>
<tr>
<td>Control Group</td>
<td>82</td>
<td>71.26</td>
</tr>
</tbody>
</table>
The results from primary data analyses revealed that students in the experimental groups with training in reciprocal teaching exhibited better performance in metacognitive awareness and reading comprehension compared to students in the control groups who had traditional reading instruction.

2. Analysis of the Effects of Reciprocal Teaching on Metacognitive Awareness and Reading Comprehension

A set of multivariate regression analyses were employed to further investigate the impact of demographic factors, the instructor effect, pretest scores of metacognitive awareness, and GEPT reading on the posttest scores in each of these areas.

(1) Effects of Reciprocal Teaching Group, Demographic Data, GEPT Reading Pretest, and Metacognitive Awareness Pretest on Metacognitive Awareness Posttest

The summary of regression analysis in table 4-5 shows that the model significantly predicted metacognitive awareness post score, $F(12, 151) = 34.823, p < 0.001$, $R^2$ for the model was .735, and adjusted $R^2$ was .713. These results indicated that reciprocal teaching helped students of the experimental group improve metacognitive awareness compared with control group students taught by traditional reading instructional methods. Also, the statistics reveal that students having had the experience of living in English speaking countries ($t = -2.122, p < 0.05$) had no better metacognitive awareness than students without experience living abroad. In addition, GEPT pretest ($t = 2.780, p < 0.01$) and metacognitive awareness pretest ($t = 16.878, p < 0.001$) were found to positively influence the post score of metacognitive awareness.

Table 4-5 Summary of Multiple Regression Analysis for Variables Predicting Metacognitive Awareness Post Scores

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE$</th>
<th>$\beta$</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>18.165***</td>
<td>4.798</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>7.278***</td>
<td>1.082</td>
<td>.329</td>
<td>.480</td>
</tr>
<tr>
<td>Male</td>
<td>.285</td>
<td>.966</td>
<td>.013</td>
<td>.024</td>
</tr>
<tr>
<td>Studied English at younger age</td>
<td>.225</td>
<td>1.222</td>
<td>.010</td>
<td>.015</td>
</tr>
<tr>
<td>Have lived in English country</td>
<td>-.781*</td>
<td>3.709</td>
<td>-.095</td>
<td>-.170</td>
</tr>
<tr>
<td>Attend language institute</td>
<td>.595</td>
<td>1.233</td>
<td>.023</td>
<td>.039</td>
</tr>
<tr>
<td>Has tutor</td>
<td>-.140</td>
<td>2.347</td>
<td>-.003</td>
<td>-.005</td>
</tr>
<tr>
<td>Pass GEPT</td>
<td>-.596</td>
<td>1.342</td>
<td>-.021</td>
<td>-.036</td>
</tr>
<tr>
<td>GEPT score (Pretest)</td>
<td>.099**</td>
<td>.036</td>
<td>.137</td>
<td>.221</td>
</tr>
<tr>
<td>Instructor</td>
<td>.835</td>
<td>.966</td>
<td>.038</td>
<td>.068</td>
</tr>
<tr>
<td>Metacognitive Awareness total score</td>
<td>.737***</td>
<td>.044</td>
<td>.735</td>
<td>.808</td>
</tr>
</tbody>
</table>

Note. $N = 164$.

$R^2 = 0.735, \text{Adjusted } R^2 = 0.713, F(12, 151) = 34.823, p < .001$.

* $p < .05$, ** $p < .01$, *** $p < .001$. 
Effects of Reciprocal Teaching Group, Demographic Data, GEPT Reading Pretest, and Data of Metacognitive Awareness on GEPT Reading Posttest

A subsequent regression analysis was used to predict GEPT reading posttest scores with the control of demographic data, the GEPT reading pretest and data of metacognitive awareness. Table 4-6 demonstrated a statistical significance, $F (12, 151) = 51.232, p < .001$, $R^2 = .803$, adjusted $R^2 = .787$, explaining 80 percent of the variance of the GEPT post score. As for the other predictors, students who received reciprocal teaching demonstrated better GEPT post scores with $t = 4.165, p < 0.001$. Also, GEPT pretest scores played an important role in predicting GEPT post scores. Besides, it also showed significant influences of post scores of metacognitive awareness on GEPT post scores. The results indicated that students’ metacognitive awareness was improved after the training in reciprocal teaching. It can be concluded that reciprocal teaching improved students’ metacognitive awareness. With the enhancement of metacognitive awareness, students obtained higher scores in the GEPT posttest.

Table 4-6 Summary of Multiple Regression Analysis for Variables Predicting GEPT Reading Posttest Scores

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>$\beta$</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-15.599*</td>
<td>7.261</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>7.749***</td>
<td>1.571</td>
<td>.222</td>
<td>.372</td>
</tr>
<tr>
<td>Male</td>
<td>-.987</td>
<td>1.313</td>
<td>-.028</td>
<td>-.061</td>
</tr>
<tr>
<td>Studied English at younger age</td>
<td>.615</td>
<td>1.660</td>
<td>.018</td>
<td>.030</td>
</tr>
<tr>
<td>Have lived in English country</td>
<td>-.997</td>
<td>5.503</td>
<td>-.008</td>
<td>-.016</td>
</tr>
<tr>
<td>Attend language institute</td>
<td>3.220</td>
<td>1.672</td>
<td>.077</td>
<td>.155</td>
</tr>
<tr>
<td>Has tutor</td>
<td>-4.390</td>
<td>3.187</td>
<td>-.057</td>
<td>-.111</td>
</tr>
<tr>
<td>Pass GEPT</td>
<td>3.067</td>
<td>1.825</td>
<td>.067</td>
<td>.136</td>
</tr>
<tr>
<td>GEPT score (Pretest)</td>
<td>.863***</td>
<td>.049</td>
<td>.759</td>
<td>.818</td>
</tr>
<tr>
<td>Instructor</td>
<td>-.948</td>
<td>1.356</td>
<td>-.027</td>
<td>-.059</td>
</tr>
<tr>
<td>Metacognitive Awareness post score</td>
<td>.249***</td>
<td>.065</td>
<td>.158</td>
<td>.297</td>
</tr>
</tbody>
</table>


*p < .05, **p < .01, ***p < .001.

Reciprocal Teaching Evaluation

In the first part of students’ response to reciprocal teaching questionnaire, the percentage of students expressing the opinion that RT enhances reading comprehension was 84.1. About 63 percent of students agreed that reciprocal teaching enhanced thinking ability. However, about 1.2 percent of students questioned whether reciprocal teaching could really promote thinking. As for reading strategies, nearly 81 percent of students found that they had learned some reading strategies after the instruction. In the item concerning the meaningfulness of RT, about 77 percent of students considered reciprocal teaching meaningful. Two thirds of the students felt that the English class was more...
interesting than before, and 63.4 percent of students expressed that reciprocal teaching promoted their learning interest. However, 2.4 percent of the students did not think that reciprocal teaching promoted English learning interests and 34 percent were neutral toward the concept that reciprocal teaching elicited learning interest.

(2) Strategies of Reciprocal Teaching

The second part of the questionnaire contained two open-ended questions. The first question was about students’ preferences in reciprocal teaching strategy use and reasons why they used them when they were reading. The results indicated that 24 out of 82 students (29.27%) reported that predicting was the strategy they used most in reading. Very close in number were the 23 students (28.05%) who favored clarifying. The third strategy was summarizing (21 students, 25.61%), followed by questioning (14 students, 17.07%). What can be inferred from this report is that students applied predicting and clarifying more often than the other skills learned in reciprocal teaching.

The last question was aimed at determining students’ willingness to utilize strategies learned in reciprocal teaching in the future. The results showed that the majority of students (75 students, 91.50%) expressed the willingness to use reciprocal teaching in the future whereas 7 students (8.5%) did not plan to use it.

V. Discussions of the Findings

After a ten-week experimental instruction, the results of the statistical analysis revealed that the training in reciprocal teaching in reading led to a positive reinforcement of students’ metacognitive awareness of strategy. Also, students who received reciprocal teaching instruction obtained greater improvement in reading comprehension in comparison with students without receiving reciprocal teaching instruction.

1. Findings Related to Question One

Results from ANCOVA analysis and descriptive analysis presented evidence that reciprocal teaching provided students with chances to be aware of strategy use. ANCOVA analysis demonstrated the improvement of the experimental group in metacognitive awareness after training in reciprocal teaching. In contrast, the students in the control group showed a decrease in the awareness of strategy use.

In this study, reciprocal teaching provided students with opportunities to experience strategy use by explicitly teaching four cognitive comprehension strategies – predicting, clarifying, questioning, and summarizing. Further, students processed comprehension monitoring by verbalizing the strategy they used during discussion, which provoked students’ awareness of their own thinking. In the classroom applying reading methods such as grammar translation and vocabulary explanation, however, students acquired no explicit knowledge of reading strategies other than memorizing vocabulary and analyzing grammar structure. This might be the explanation of a decrease in strategy
use awareness of the control group. Thus, after the training in reciprocal teaching, students in the experimental group obtained more knowledge about comprehension strategies than students in the control group.

2. Findings Related to Question Two

In the further investigation to see if students acquiring more strategy use awareness had better reading comprehension, the analysis results supported the assumption. Generally, the result that higher metacognitive awareness promoted reading comprehension in the present study was congruent with former studies by Baker and Brown (1984) in children’s reading instruction, Cross and Paris (1988) in third and fifth grade children, Carrell (1989) in college ESL students, and others.

Analysis results revealed that reciprocal teaching enhanced experimental group students’ metacognitive awareness and further, with enhanced metacognitive awareness, experimental group students outperformed control group students on the GEPT reading comprehension section. Concerning demographic data influence in predicting metacognitive awareness posttest scores, the predictor of experience living in an English-speaking country was related to the improvement of metacognitive awareness. However, the predictor presented a negative relation. According to the data, students without the experience of living abroad performed better than students who had lived in English speaking countries.

There might be some reasons to explain such an outcome. First of all, the sample was too small; only three out of 164 students had ever lived in an English-speaking country. Second, even though acquiring more vocabulary and oral language skills, the students with the experience of living in foreign countries did not have enough English reading training at local schools to make a difference. In addition, the length of time lived in an English speaking country might be a factor since the students having an experience living abroad in this research spent less than two years in an English speaking country. Thus, compared to students who had not lived abroad but received strategy instruction and training at school, the experience of living in English speaking countries was not an advantage in contributing to the change of metacognitive awareness.

In addition to the effectiveness of metacognitive awareness in promoting reading comprehension, the instructional groups and GEPT pre-test played two significant roles in predicting the GEPT posttest score. As expected, students in the experimental group had better improvement in the GEPT posttest than students in the control group. The result indicated that, with the training in reciprocal teaching, students had improved metacognitive awareness and better reading comprehension. Moreover, the GEPT pre-test score played a positive role in predicting the GEPT post-test score. The reason might be attributed to the fact that students with higher pre-test scores tended to have better English ability or learning interests and were more willing to participate in new learning tasks than students with lower pre-test scores. Hence, the pre-test score as related to possessed English ability and interest became the predictor in explaining the later test score.
3. Findings Related to Question Three

The third question focused on the direct relationship between the instruction of reciprocal teaching and GEPT reading comprehension scores. ANCOVA analysis results present a significant result. In comparison with the scores of the GEPT pre test, the control group performed better than the experimental group did before reciprocal teaching instruction. However, after receiving reciprocal teaching training, the experimental group markedly outperformed the control group in the GEPT post test. Thus, the result revealed that the training in reciprocal teaching had a positive and significant effect on improving reading comprehension.

The result that reciprocal teaching was beneficial for improving reading comprehension was congruent with the studies by Palincsar and Brown (1984) and Lysynchuk, Pressley and Vye (1990) in L1 setting, and the studies by Fung, Wilkinson, and Moore (2003) and Klingner and Vaughn (1996) in ESL/EFL settings. The possible reasons for the success of the present study can be concluded as follows. First of all, the method of explicit-teaching-before-reciprocal teaching (ET-RT) was adopted in this research. The first consideration of ET-RT was to introduce the language of reciprocal teaching (Fung, Wilkinson, & Moore, 2003). For students with lower English proficiency, it was necessary to familiarize them with the language use in reciprocal teaching before engaging in the cognitive and metacognitive dialogues. The teachers in the present study used both L1 and L2 to demonstrate and explain the thinking-aloud process, comprehension, and monitoring strategies. As students became familiar with the language and strategy usage, they gradually developed the sense of control over and metacognitive awareness of the reading texts, both of which might bring positive influences to reading comprehension.

Next, the integration of reciprocal teaching into the regular class schedule might have contributed to the results of comprehension improvement. By integrating reciprocal teaching into a regular class, students took the learning seriously without viewing the activities of RT as “fancy learning tricks.” The third explanatory reason might be the adoption of narrative and expository passages which are the genres most major exams use. Through repetitive modeling and practicing of comprehension strategies, students developed familiarity with the genres of narration and exposition. Also, practice in forming the questions related to these genres was frequent. During the tests, students applied thinking and comprehension strategies learned from the class and consequently obtained enhanced results. In contrast, students who received traditional reading instruction still relied heavily on the teacher to provide knowledge and information on the texts. Vocabulary, cloze tests and grammar structure drills were the strategies students used to deal with tests. Without the stimulation of effective reading strategy instruction, the performance in reading comprehension remained the same.

4. Findings Related to Question Four

(1) Reciprocal Teaching Evaluation

The overall evaluation of reciprocal teaching aimed to understand students’ general perceptions
of reciprocal teaching. More than eighty percent of students claimed that their reading comprehension improved after receiving reciprocal teaching and they acquired useful comprehension strategies. What became perceptible to students about the impact of the new practice on reading comprehension and strategy use was consistent with their test outcomes, indicating that reciprocal teaching is not only useful in L1 reading but also greatly influences on L2 reading. In addition, the questionnaire also revealed that most students considered reciprocal teaching meaningful and were willing to apply it to future readings. Lin’s (2007) investigation of reciprocal teaching in her classes led her to conclude that the non-threatening class atmosphere and cooperative learning led to such successful learning outcomes. In other words, in contrast to traditional English learning which is rigid in teaching approaches, reciprocal teaching instills a lively and interactive element that cultivates learning interest. No wonder students expressed the opinion that English class was more interesting than before.

Another important finding was students’ recognition of acquiring reading strategies. In reciprocal teaching, the teacher introduces and demonstrates the use of four strategies by engaging in cognitive and metacognitive dialogues. Students acquire the strategy knowledge and operational experiences through repetitive practice. This kind of process helps students internalize procedures and enables them to perform higher level tasks (Rosenshine & Meister, 1994). When students are able to realize the importance of strategy, there is a greater chance that they will apply the strategies in reading. This is the expected result that the researcher is eager to see in her classroom. The researcher believes that improving test grades is subsidiary to reciprocal teaching, but providing students with a chance to apply useful reading strategies and helping students take charge of their own learning are the most important elements in reading instruction.

As for the concept of enhancing thinking ability, even though more than half of the students agreed with the concept that reciprocal teaching promoted thinking ability, around one quarter of the students did not believe or had no clue that the application of reciprocal teaching related to thinking ability enhancement. The possible reason could be that students were unaware of the thinking process they used during reading, discussion, and test-taking; to reflect on thinking ability might be confusing to students since most of them are putting effort into making sense of the texts without paying attention to their thinking process while reading. Another finding indicated that one third of the students were neutral toward the idea that reciprocal teaching fosters English learning interest. To activate students’ learning interest and further maintain it usually takes time and effort. The duration of the experiment in the present study was only 10 weeks, which appeared to be insufficient to boost English learning interests for all students.

(2) Strategies of Reciprocal Teaching

The open-ended question in this section of the questionnaire asked students to name the strategies they used during reading. The resultant ranking was predicting, clarifying, summarizing, and questioning, in that order. As students indicated, predicting fulfilled the goal of exercising thinking ability and fostered the ability of making connections. The second strategy students preferred was
clarifying. Students favoring clarifying reported that the strategy helped them cope with comprehension breakdown such as encountering unknown vocabulary or unclear concepts. Summarizing took third place as a student-preferred strategy. Students believed that summarizing meant grasping the main ideas and looking at the whole picture of the texts, which is useful in helping them review the important concepts of the reading. Questioning was the least used strategy that students reported. The possible explanation could be that Taiwanese students are not taught to raise questions and usually are not active questioners because of having been passive knowledge recipients for most of their schooling.

VI. Conclusions and Pedagogical Implications

1. Conclusions

Based on the discussion presented, the following conclusions can be generated. First, the training of reciprocal teaching is beneficial in increasing students’ metacognitive awareness. Students with reciprocal teaching tended to have better awareness of strategy use than students with traditional reading methods. Subsequently, the study also proved that students in the experimental group having improved metacognitive awareness obtained better performance in the GEPT reading post test in comparison to students in the control group.

The second conclusion addresses the direct impact of metacognitive awareness on self-efficacy. The findings indicated that metacognitive awareness, after being triggered by instruction in reciprocal teaching, was positively related to the improvement of reading comprehension. Students with the reciprocal teaching training obtained improved metacognitive awareness; this improved metacognitive awareness subsequently contributed to the change in reading comprehension.

After a ten-week instructional period, students with training in reciprocal teaching achieved better results than students with traditional reading instruction in the performance on the GEPT reading post test. Thus, according to these findings, it can be concluded that reciprocal teaching can effectively enhance not only metacognitive awareness, but also reading comprehension.

2. Pedagogical Implications

In addition to the experimental results displayed previously, further considerations are provided for pedagogical implications.

First, there is a need to adopt reciprocal teaching training in daily English classes and make the practice of it routine. The effectiveness of an instructional model relies not only on the teacher’s or students’ awareness of a specific teaching model but also on continual practice. In Taiwan, a traditional teacher-centered and rigid teaching style is usually found in most classrooms. This situation is understandable since teacher-dominant teaching and grammar translation language instruction usually lead to faster learning results in EFL classrooms, an effect which is most welcomed by students and parents. On the contrary, strategy instruction such as practiced in reciprocal teaching is
time-consuming; a teacher needs to take extra time and effort in preparing, processing, and monitoring the teaching. In spite of these facts, teachers may benefit by considering the inclusion of reciprocal teaching along with their daily routine and gradually making reciprocal teaching a part of their commonly used instructional model. Students also need sufficient time to practice and master strategy use in reading. By integrating reciprocal teaching into the regular class schedule, students will obtain efficacious use of strategy, which is beneficial for success in reading comprehension.

Another recommendation hinges on the fact that the acquirement of language learning strategies should be reinforced. According to Oxford (1990), “Language learning strategies encourage greater overall self-direction for learners. Self-direction is particularly important for language learners, because they will not always have the teachers around to guide them as they use the language outside the classroom. Moreover, self-direction is essential to the active development of ability in a new language” (p. 10). For a long time, English education in junior high school in Taiwan has focused more on teaching testing strategies than learning strategies. Even though students may perform well in tests, they do not have language learning strategies to sustain their interest in extended English learning. This may be the reason that many people in Taiwan are struggling with English learning both during school time and after leaving school. This situation also reveals the importance and urgent need of language learning strategy training and instruction. In the process of strategy instruction, the initial step is to help students recognize the strategies they already use (Cohen, 1998; Rubin, Chamot, Harris, & Anderson, 2007). Then, the teacher provides various strategies according to tasks and texts. Further, explicit information of what, how, and why about the particular strategy use is needed in instruction (Carrell, 1996; Cohen, 1998; Ellis & Sinclair, 1989). Finally, students should be provided with time and opportunities to practice strategy use within the appropriate contexts. Once students internalize strategies by using and practicing them constantly, it is expected that they will become self-directed learners, and transfer positive strategy use to new learning.

Based on this study’s findings, it appears essential to help students develop the concept of metacognition in the reading process. To engage metacognition with reading, Baker (2002) pinpointed the importance of integrating motivation, knowledge, strategies, and social interaction, each of which represent metacognitive factors into reading. Metacognitive ability can be initiated in several ways. One would be explicitly teaching students metacognitive strategies including connecting new and former information before reading, thinking about the strategy that is most likely to be useful in the particular texts, evaluating the reading process by eliciting questions before and during reading, and using self-monitoring techniques to synthesize or summarize the information obtained. Another way to promote metacognitive ability is applying think-alouds through group discussion (Hassan, 2003). Think-alouds ask students to articulate the thinking process and the ways to solve comprehension difficulties. Conducting think-alouds in group discussion can stimulate the ability among members to see, correct, hear, and reflect, which reinforces the cognitive process and self-regulation. A third possibility would be the teacher’s provision of ample opportunities for students to practice employing strategies in reading and his or her planned gradual release of responsibility from the teacher to
A fourth pedagogical implication is the importance of developing multiple assessment tools instead of relying on paper tests only. In general, people recognize the learning outcome based on paper test results since the test score is usually considered a reflection of students’ learning efficacy. Especially in reading comprehension, the test grades often represent how much a student comprehends the text. However, as stated in previously, reading comprehension is a complex cognitive process which is embedded within the interaction among cognition, metacognition, affection, and social experience. Hence, such a paradigm shift is dependent on a realization by teachers and parents that assessing reading comprehension is multidimensional.

References


Carrell, P. L. (1996). Second language reading strategy training: What is the role of metacognition? Department of Applied Linguistics and ESL, Georgia State University, Atlanta, GA.


De Wit, Hans. (2002) Internationalization of higher education in the United States of America and
Europe. Westport, CN: Greenwood Press.


