LEXICAL COHESION AND METACOGNITIVE STRATEGY TRAINING: AN INTEGRATED APPROACH TO MAIN IDEA COMPREHENSION

Sujunya Wilawan

Abstract

This study was performed to investigate the degree to which three different types of instructional procedure affected Thai EFL students' main idea comprehension. In particular, it aimed to explore the combined effect of lexical cohesion and metacognitive strategy training on the improvement of students' main idea performance. The participants of the study consisted of sixty undergraduate students at Kasetsart University in Thailand. The students were randomly assigned to one of three teaching conditions over a 15-hour period. Treatments involved the use of lexical cohesion and metacognitive strategy training, metacognitive strategy training alone, and traditional skill-based instruction as a control.

The study included both quantitative and qualitative approaches. The main idea comprehension test was used to assess students' performance on main idea comprehension. Think-aloud protocols and strategy interviews were employed to examine the strategy use during main idea processing. Post-intervention questionnaires were also applied in order to investigate the students' attitudes towards the instructional procedures.

The research outcomes, on the whole, indicated that students receiving instructional treatment which incorporated lexical cohesion and metacognitive strategies outperformed participants in the other two groups on the main idea comprehension post-test although the results were not statistically significant. The findings suggested that the students' enhancement in main idea comprehension was related to their integrative application of bottom-up, top-down, and metacognitive strategic processes. Both quantitative and qualitative results also revealed that the use of lexical relations played a significant role in helping EFL students establish mental representations of English reading passages.

1. Introduction

Researchers, for decades, have searched for a viable procedure which would assist readers with the construction of meaningful representation of the information in a text. Van Dijk and Kintsch (1983), for instance, propose a model of language comprehension in which discourse can be comprehended through microprocessing (the relations between sentences) and macroprocessing (the formation of mental representations of the text content). They claim that the macroprocesses generally operate automatically. Van Dijk and Kintsch also identify *macrorules* for obtaining the macrostructure of discourse, such as deletion, generalization, and construction. These rules, however, did not provide clear, concrete guidelines about how a main idea sentence can be formulated (Afflerbach, 1990; Friend, 2001; Kintsch, 2002, 2004). For example, in the deletion process, some readers are unable to distinguish between relevant and irrelevant information because they lack the skills to judge what information is important for comprehension. Other researchers suggest that main idea determination may not always be automatic, as van Dijk and Kintsch (1983) propose. Rather, it involves the application of one or more cognitive strategies (Pressley, 1998; Afflerbach, 1990; Carriedo and Alonso-Tapia, 1996).

With respect to English reading instruction, while other text processing skills can be taught, it seems that there are virtually no effective instructional strategies for main idea determination. Researchers indicate that students at different educational levels are not

receiving adequate instruction in summarizing the text material into a main idea (Jacobowitz, 1990; Tomitch, 2000). Traditional approaches tend to direct students to search for main points of text at specific locations of paragraphs (e.g. Simmons & Palmer, 1994; Allen, 2005). Over-reliance upon main idea sentences at particular portions of text also results in failures to resolve or discern textual information (Otero and Kintsch, 1992, cited in Hacker, 2004). According to current theories, the construction of text meaning should be an active, complex activity in which readers are required to use metacognitive skills (i.e. the planning, monitoring, revising, and evaluating of the strategies employed during reading) (Baker and Brown, 1984, cited in Carrell, 1998; Celce-Murcia and Olshtain, 2000; Brown et al., 2004).

In second or foreign language processing, the task of comprehending the mental representation of text is even more difficult and demanding. Johns and Mayes (1990) analyzed summary protocols of ESL students and indicated that the learners had difficulty in determining key concepts of text. In Thailand, students also encounter similar problems with this type of reading task (Soonthornmanee, 2001). Based on the researcher's 12-year teaching experience, deciding the main points of reading selection has been one of the major problems experienced by Thai EFL students taking English reading courses. Language instructors (i.e. the researcher's colleagues at Kasetsart University, Thailand) also find it a hard skill to teach.

Previous research indicating the positive effects of metacognitive strategy training on main idea comprehension (i.e. Jitendra et al., 2000; Stevens et al., 1991; Spiak, 1999) has been conducted with English native speakers whose linguistic competences and discourse knowledge are assumed to be automatic. The findings of those studies, therefore, may not be directly applicable to ESL/EFL readers who appear to be less proficient in language skills (Grabe, 2002; Grabe and Stoller, 2002). Several researchers argued that less-skilled readers' improvement in metacognitive knowledge can be enhanced if they are provided with foundational elements of text understanding (Perfetti et al., 1996; Yang, 2002), which includes lexical processing. The present study intended to fill in the gaps by supplementing another aspect of local bottom-up processes; that is, teaching EFL students how to appropriately indicate semantic relations between information units, as a means of increasing discourse coherence at the local level, thereby capturing the major content more easily. It also serves to complement the metacognitive strategy use which seems to consider the top-down approaches to be a priority (Dhieb-Hania, 2003).

The current investigation aims to explore an alternative means of teaching main idea comprehension in an EFL context, i.e. Thailand. It was intended to examine the impact of lexical cohesion on the comprehension of central concepts of English discourse, and to find if, and to what extent, the combined effect of lexical relations and metacognitive strategy training procedure could help Thai EFL students increase main idea comprehension performance.

2. Review of the Literature

2.1 Theoretical Models of Reading Processes

An appropriate understanding of a passage requires an effective combination of bottom-up and top-down processing (Pressley, 1998; Celce-Murcia and Olshtain, 2000; Landry, 2002; Grabe, 2002; Hirsch, 2003). Skilled readers have been found to shift their strategies consciously throughout the reading process, incorporating both reading approaches. Unlike skilled readers, especially those in the first language, EFL learners may not appear as efficient and proficient as first or second language readers in using various strategies in the comprehension processes (Celce-Murcia and Olshtain, 2000). Therefore, it can be argued that EFL readers should be trained to become aware of different reading strategies which

they can consciously apply when confronting difficulties in the text they read. In this regard, EFL readers should be motivated to increase metacognitive awareness (knowledge about cognition and regulation of cognition) of the reading processing approaches. Through metacognitive strategy training, a reader is trained to promote self-regulation at word, clause, and text level. Research has shown that metacognitive awareness and use of reading strategies are particularly important to ESL/EFL learners (Soonthornmanee, 2001; Salataci and Akyel, 2002; Yang, 2002; Dhieb-Hania, 2003; Fung et al., 2003).

2.2 Linguistic Theories and Models of Discourse Processing

Van Dijk and Kintsch Global Structure Model (1983)

According to van Dijk and Kintsch (1983), discourse processing involves two sets of related strategies: *local* and *global* strategies. The local level of the discourse, or the *microstructure*, is the surface structure of the individual propositions or sentences and their relations. In their 1978 model, Kintsch and van Dijk proposed a strategy for quickly establishing a coherence relation among sentences. They use the argument repetition procedure in which shared arguments among sentences or propositions are traced in order to infer coherence of a discourse[1]. Texts containing more argument overlap among adjacent sentences are assumed to be more locally coherent than those with less argument overlap. This argument-referent repetition approach is claimed to help establish relations between facts denoted by propositions, thereby constructing a coherent text.

The global semantic structure, or the *macrostructure*, determines the overall coherence of a discourse. Meanings of the larger elements of a discourse are derived from generalizations of the microstructural propositions or sentences. The interpretation of a discourse at this stage depends greatly upon the reader's integration of the message encountered in the text with their preexisting background knowledge. Macrostructures can be expressed in several forms such as topics, topic sentences, titles, headings, and so on. A topic sentence, for example, represents the information that summarizes the text and is known as a *macroproposition*. Thematic macropropositions, however, may not always be explicitly stated in the text. Under the circumstances, inference-making plays a crucial role in deciding the main theme. This process is based not only on the local level, but also on the global level (e.g. prior knowledge), as well as such factors as the knowledge, beliefs, goals, and interests of language users.

Text comprehension also involves the ability to make sense of information presented in a text, which depends heavily upon the reader's prior knowledge and experience of the world, or *schema* (Afflerbach, 1990; Gallini et al., 1993; Friend, 2001; Davoudi, 2005). Van Dijk and Kintsch (1983) place emphasis on the activation of a *situation model*, which crucially concerns the incorporation of more general knowledge from semantic or episodic memory and previous experiences, pertaining to the same or similar situations. This process enables the reader to interpret discourses correctly in the sense that a particular situation model restricts the reader's understanding of details or events described by the text itself; the reader merely draws information from general or domain knowledge in episodic memory that is needed for text processing (van Dijk and Kintsch, 1983; Kintsch, 2002). Afflerbach (1990) explored the impact of prior knowledge on expert readers' use of strategies to formulate the main idea of a text. Subjects of the study were found to automatically generate the main idea sentence significantly more often when they were familiar with the content domain of the text. Readers who had insufficient prior

[1] A proposition usually consists of a predicate and one or more arguments. A predicate refers to properties or relations, whereas arguments refer to individuals such as things or persons.

knowledge, on the other hand, needed to employ other comprehension strategies for the construction of the main idea statement.

Gallini and Spires (1995) and Friend (2001) investigated the effects of the micro (local) and macro-level (global) strategies on text comprehension. The microprocessing and the macroprocessing were applied separately as different instructional modes. Results of the two studies were by and large consistent in that the macro-level strategies were found to be more efficient and effective in text processing than the micro-level components. However, this does not mean that the micro-level strategies are necessarily less significant. This micro-level (argument repetition) model was much further examined and subsequently regarded by van Dijk and Kintsch (1983) as essential but insufficient for constructing coherent text bases. In other words, it would be more appropriate to integrate the micro and the macro-level strategies, rather than considering them as separate discourse processes.

The idea that different strategic processes are involved in the interpretation of a discourse, as proposed by van Dijk and Kintsch (1983), is consistent with those of a large number of reading researchers. However, the van Dijk and Kintsch (1983) notion that the process of constructing the macrostructure of a text takes place automatically during reading through 'macrorules,' has been opposed by several researchers investigating text comprehension processes. In reading instruction, especially in the context where less-skilled students are unlikely to decide the important content of the text and to know how and when to infer missing information, the theory cannot easily be put into practice. In this regard, Hoey (1991) recommends a more precise and explicit approach to main idea determination.

Hoey's (1991) Analysis of the Role of Lexis in Discourse

In his *Patterns of Lexis in Text*, Hoey (1991) claims that lexical relations are a major characteristic of coherent discourse and contribute significantly to the creation and organization of text. Hoey (1991, 1994) classifies lexical cohesion into the following categories: simple lexical repetition (e.g. *a bear—bears*); complex lexical repetition (e.g. *a drug—drugging*); simple paraphrase (e.g. *to sedate—to drug*); complex paraphrase (e.g. *heat—cold*); superordinate, hyponymic (*bears—animals*), and co-reference repetition (e.g. *Mrs. Thatcher—The Prime Minister*); membership of a closed (lexical) set (e.g. *March—April*); personal pronouns (e.g. *canal—it*); deixis, i.e. demonstrative pronouns (*the works of Plato and Aristotle—these writers*); ellipsis (*a work of art—the work*); substitution (*tennis balls—ones*).

Hoey pays much attention to repetition which is crucial to the organization of discourse. He, therefore, focuses on sentences that show an above-average number of connections (those sharing three or more links—three is regarded as the minimum number necessary for the analysis to create a connection between sentences). Sentences, according to the model, are categorized into two types: *marginal* and *central*. Marginal sentences show no signs of connection with other sentences in a text. Nor do they contribute to the development of the text's theme. Central sentences have a great number of bonds with the rest of the text, and are definitely relevant to the development of the theme. Central sentences can then be used to create summaries of texts.

Hoey (1991, 2001) also maintains that his analysis of lexical cohesion can be utilized in reading instruction. He suggests students be trained to explore lexical cohesive items, particularly those that share three or more repetition links, and to recognize semantic connections that operate between sentences in a text. The recognition of lexical links and bonds can be useful because it provides clues for finding the relevant sentences, and gives rapid access to the text content. The approach, then, may provide EFL students with a more

concrete means of grasping the most important information of a discourse. Hoey's (1991) concept of lexical cohesion as related to the teaching of ESL/EFL reading, however, has not been investigated in much detail thus far. This study was conducted to examine Hoey's framework on lexical cohesion by stressing the role of this type of cohesion as a way to supplement metacognitive strategy training in order to increase EFL students' main idea identification and construction performance.

2.3 Lexical Cohesion and Metacognitive Strategy Training in Main Idea Instruction

The Integrated Models

The success of main idea determination relies heavily on the concurrent operation of various reading processes (Afflerbach, 1990; Carriedo and Alonso-Tapia, 1996). Based on the summarization framework proposed by Hoey (1991, 2001), EFL readers can be guided towards establishing local coherence, capturing semantic relatedness between text parts, and identifying the most important sentence of a discourse. Lexical relations, however, have the potential of providing readers with clues to the structure and the central theme of a text, but may be insufficient for the complex process of main idea determination which also concerns such procedures as generalization and construction (Kintsch, 2002). In the mean time, metacognitive strategy training encourages readers to simultaneously utilize local bottom-up and global top down strategies during text processing (Celce-Murcia and Olshtain, 2000).

Research indicates that metacognitive knowledge can be taught and learned through explicit reading strategy instruction. In strategy instruction, *Reciprocal Teaching* appears to be a possible method of developing students' cognitive and metacognitive strategies. (Soonthornmanee, 2001; Salataci and Akyel, 2002; Fung et al., 2003). In this type of instruction the teacher becomes a mediator who provides explicit explanation, modeling, and scaffolding to help students improve and monitor their own comprehension, and apply their linguistic knowledge as well as background knowledge by using four metacognitive strategies: *questioning, predicting, clarifying,* and *summarizing* (Palincsar and Brown, 1984). ESL/EFL reading studies have shown that metacognitive training through Reciprocal Teaching can effectively improve students' reading comprehension. In Thailand there are very few studies in this area, Soonthornmanee (2001) being one of the few examples. She examined the effectiveness of metacognitive awareness and comprehension, as employed by Reciprocal Teaching. According to the results of the study, both skilled and less-skilled students in the Reciprocal Teaching group outperformed those in the skill-based teaching group on both reading proficiency and achievement tests. The findings added support to Palincsar and Brown's (1984) assertion that Reciprocal Teaching can be an effective method to promote students' comprehension monitoring skill.

3. Research Methodology

Participants

The 60 participants of the study were recruited from Year 2-4 undergraduate students taking *English Reading I* course at Kasetsart University, Bangkok. To ensure that the students had adequate decoding skills, which is very important in the comprehension processes (Perry & MacDonald, 2001; Yang, 2002; Hirsch, 2003), those having received grades A, B+, B, C+, and C from *Foundation English III* were selected (students of these grades were from average to good readers of B1 intermediate level as classified by the Common European Framework of Reference whereas those of lower grades were regarded as very weak by instructors in the department and therefore were unlikely to benefit from the intervention). The participants were randomly assigned to one of the three treatment

conditions. Each group consisted of 20 subjects; four persons from each grade level were included (shortage of students of a particular grade was resolved by recruiting those of the nearest grades). The participants shared similar characteristics in terms of age, level of education, and gender distribution.

The students attended class every weekday (1.5 hours per session). They were utterly oblivious of the instructional treatment they were receiving. The instruction took place in a naturally occurring classroom setting. It involved 10 sessions, covering 15 hours of the course (an approximate period of 2 weeks).

Before the intervention, students in each group were requested to participate in the think-aloud component of the research. Twenty-three students from three treatment conditions volunteered: 8 from the LRT; 9 from the RT; and 6 from the ST. From these 23 students, 15 (7 from the LRT; 4 from the RT; and 4 from the ST) agreed to participate in strategy interviews after the completion of the intervention.

Materials

Main Idea Comprehension Test

To assess students' reading comprehension concerning main idea determination, a main idea comprehension test was utilized. The Main Idea Comprehension Test was modified from main idea comprehension exercises in three different ESL/EFL reading workbooks by the researcher. Three weeks before intervention began, four test forms were piloted with 49 volunteer students who had already completed *Foundation English III*. Scores from the 4 piloted tests were afterwards examined for two characteristics of the test: reliability and item difficulty. Out of the four test forms, two were carefully selected; 10 test items from one test were used as selection (multiple choice) responses; 10 from the other test as production (constructed main idea) responses. The test was further examined for content validity by two English reading instructors and was unanimously judged to cover the relevant language skill (because this study focused mainly on main idea skills, only main idea comprehension needed to be measured). The Main Idea Comprehension Test consisted of 20 items: 10 selection items in Part A ($\alpha = 0.6806$); and 10 production (constructed main idea) items in Part B ($\alpha = 0.6846$). Of those 20 test items, eight were main idea-explicit (four in Part A: items 1, 3, 5, 8; four in Part B: items 11, 12, 18, 20), and twelve were main idea-implicit (six in Part A: items 2, 4, 6, 7, 9, 10; six in Part B: items 13, 14, 15, 16, 17, 19). Every single test item contained one English reading passage. For the multiple choice items, students were to choose the best main idea sentence from four options. For each production item, they were required to identify or construct a main idea statement (in English) of the story they had read.

Reading Passages Used in the Treatment

Forty-one informational passages were selected by the instructors of all groups from three ESL/EFL reading workbooks: *Six-way Paragraph: Middle Level* (Walter, 2000); *Reading by Doing: An Introduction to Effective Reading* (Simmons & Palmer, 1994); and *88 Passages to Develop Reading Comprehension* (Gilmore et al., 1984). These workbooks were chosen because main idea comprehension skill was one of their major focuses. All texts used for instruction and practice contained either implicit or explicit main idea statements and were the same for all classes. They were also general enough to be understood by students of all disciplines. A practice exercise set of 4-5 training passages, was prepared for each instructional session. The average length of the passages chosen ranged from 150-220 words.

For the LRT group, the reading texts for instructional session 1 were scanned sentence by sentence by the researcher for lexical relationships. Lexically linked chains

consisting of three or more items in each text were bold-faced and placed in a list at the top of the page to give the students an idea of how related words could be traced, as well as an overview of the theme of the reading selection.

Reading Passages Used in the Think-Aloud Tasks

Six informational texts were selected to be used in the think-aloud activities. Out of the six passages, four were applied as practice exercises in the think-aloud training sessions. The other two reading passages—comparable in length, difficulty, and types of topics—were used for the think-aloud tasks to examine students' reading strategies while reading English texts at the pre-intervention and post-intervention.

Procedures

Instructional Procedures

Instruction in all three settings was similar in content, reading load and practice exercises. The main objective of the instruction was to train students to recognize the thematic elements of a passage more effectively. Each group of participants was taught by one of the three instructors. Participants in all conditions were encouraged to use their first language (Thai) among their peers during the training in order to ease the linguistic burden, and also to increase understanding of important concepts (Fung et al., 2003). They were directed to apply the main idea comprehension strategies they had learned during the instructional period.

Skill-Based Teaching (ST): Students receiving the skill-based method were periodically provided with specific skills crucial to main idea comprehension: finding topics and key words, identifying details, drawing inferences, and grasping main ideas (e.g. locating particular portions of paragraphs). Through this traditional method, the instructor did not explicitly teach main idea comprehension skills, but rather students were given a very brief explanation of the skills followed by practice exercises.

Reciprocal Teaching (RT): Following the procedures portrayed by Palincsar and Brown (1984), students in this class were divided into small groups of 3-4. During the early stages of instruction, the instructor explained and explicitly modeled the application of the four metacognitive strategies: *summarizing*, *questioning*, *clarifying*, and *predicting*. Summarizing was a way to differentiate between the most important information of a text and supporting details. Questioning while reading was a useful method through which students asked questions about the text and determined whether the material had been understood. To practice clarifying, students identified unfamiliar words, confusing phrases or sentences and concepts which did not make sense to them, and found the answers using strategies such as rereading, using context clues, or activating background knowledge. Through predictions, students discussed what could possibly happen in the next paragraph of text, which was followed by their confirmation or disapproval of the hypotheses and by generating questions that usually related to relevant prior knowledge.

Then the instructor prepared all the students for the role of the leader who would be responsible for helping the small group understand the text they were reading by using the four strategies. Each student in the small group took turn in leading the dialogue by actually summarizing the content, making up a question on the main idea, discussing any difficulties, and making a prediction about the incoming information by him/herself. The instructor and other students constantly helped the leader perform the strategies. Finally, the instructor gradually reduced assistance as students began to control the four strategies. During the practice the whole group discussed the topic and content of each passage

together and arrived at a consensus main idea sentence. The instructor verified the answer and provided feedback and further explanations when necessary. Once students accurately identified or generated a main idea, they were allowed to move on to the following practice exercises.

Lexical Cohesion plus Reciprocal Teaching (LRT): In the initial session the LRT instructor introduced the concept of Reciprocal Teaching and metacognitive strategies by describing the importance and benefits of working in a small group and helping one another. Similar to the RT group, the instructor modeled and practiced the four metacognitive skills. Students were informed that the aim of such activities was to help them develop and monitor their own comprehension. Following the procedure described in Hoey (1991), the instructor explained how to identify lexically cohesive links to help them in understanding the text structure and capturing the main idea. Students were informed that lexical connections could give them important clues to what the main information was and where they could find it; they were guided to sentences with the same or closely related words or phrases in them.

Students worked collaboratively (in groups of 3-4) on practice exercises, engaged in the four metacognitive strategies. They were constantly encouraged to search for word links after their first reading of the passage, as well as to use them in order to establish connections among concepts and ideas across elements in the discourse. They, then, discussed the topic, the text's content and the possible lexical connections. During practice, the instructor periodically checked the students' lists of appropriate lexical links for each text and provided assistance as needed. When each group arrived at a main idea statement, the instructors checked the answer and provided corrective feedback. If the answer was inappropriate and therefore could not be a possible main idea, the instructor reminded the students to review their word links which could help them recognize the thematic elements of the text.

Testing and Scoring Procedures: product data

The pre-test was administered on the day before the first intervention session began. The post-test (the same test as the pre-test) was administered on the day after the last session following the same procedures as the pre-test. Both administrations of the test were organized at exactly the same time for all classes. Students were allocated 2 hours to complete the test. In both administrations, students were instructed to choose the correct answers for the multiple choice items or write appropriate one-sentence main idea statements for the production responses.

Each of the multiple-choice test items (Part A) were scored as correct (1 point) or incorrect (0 point); for Part B, each response received score of 1 (correct and complete), 0.5 (correct but incomplete) or 0 (incorrect). The maximum score on the test was 20. The main idea was defined for all participants as a one-sentence summary of the passage. Responses of more than one sentence were scored as 0. Written responses were then scored on the basis of appropriate, comprehensible main idea sentences rather than spelling, grammatical and sentential structure. Based on these criteria, two experienced certified English instructors (School of Humanities, Kasetsart University), without knowledge of the treatment conditions, independently marked all of the tests using the answer keys. Interscorer reliability was calculated using this formula: Agreements÷(Agreements+ Disagreements) × 100. Agreement was found to be 90.92%. Any disagreements were resolved by discussion. In the case that there was no conclusive score (between the two independent scorers) on a particular test item, three sets of scores (as rated by the two scorers and the researcher) on the very item were compared and a decision was taken.

Questionnaire: perception data

A questionnaire consisting of two parts—a) closed-response items (Likert 4-point rating scale), and b) open-response items, was administered after the completion of the instruction (it had been piloted with 44 university students; the reliability coefficient was 0.8273). It was developed to explore students' perceptions regarding the acceptability of the training. Each closed item in Part A offered a closed response format with four options (*4—Strongly agree; 3—Agree; 2—Disagree; 1—Strongly disagree*). Students were instructed to indicate whether they agree or disagree with it. The open-ended questions in Part B provided students with an opportunity to express their thoughts and attitudes towards the instructional method they had experienced for 15 hours. Students were allowed to write either in Thai or in English. They were reminded to provide answers for all items and give detailed information on their responses rather than short answers. Students completed the questionnaires anonymously.

Think-Aloud Protocols: process data

Twenty-three volunteer participants were asked to perform two think-aloud protocols: prior to and following the main idea intervention. They were to verbally report everything they were thinking, including the strategies they were using in order to construct a main idea sentence. Participants were allowed to use their first language (Thai) to think aloud. The verbal reports were carried out individually and recorded using a cassette tape-recorder, and afterwards transcribed and analyzed by the researcher. The think-aloud data indicated students' strategy use during reading for the main idea. The recordings averaged 20 minutes per participant.

Since the think-aloud task was a new experience for the participants, two separate training sessions were organized by the researcher before the actual recordings. The participants were briefed on the purpose of the task and the procedure to be followed. The central aim of the training was to acquaint students with this reading and thinking task, and to encourage the students to verbalize their thought processes as much as possible.

Strategy Interviews: process data

Semi-structured interviews with students were organized, following the intervention phase, to investigate the students' reading strategies applied in main idea comprehension processes. Fifteen volunteer students who participated in the think-aloud tasks were interviewed individually by the researcher on the university premises. Throughout each interview, the students were allowed to communicate in their native language in order that they felt relaxed and not limited by their English proficiency, and thus provided useful information as much as possible. Interviews lasted between 15 and 20 minutes per student. Interview conversations were tape-recorded.

Analyses of Data

The quantitative and qualitative data were analyzed in order to provide responses to the four research questions:

RQ 1: Do students who receive the LRT and the RT instruction achieve significantly higher scores from the pre-test to the post-test as compared to students in the control group?

To answer this question, paired samples *t*-tests were conducted to determine whether there was any significant difference between the students' mean scores on the pre-test and the post-test of the experimental groups and the control group. Paired-samples *t*-tests allowed the researcher to examine whether the main idea comprehension skills had been acquired by students of each group during the intervention.

RQ 2: Are there any significant differences between the mean values of the experimental and control groups? Which of the three instructional methods is superior in producing higher levels of main idea comprehension improvement?

To test the statistical significance of group differences, data were analyzed using One-Way ANOVAs. Separate analyses were performed at seven different phases for: 1) scores on the selection (multiple choice) responses (items 1-10); 2) scores on production responses (items 11-20); 3) scores on stated main idea selection items (items 1, 3, 5, 8); 4) scores on unstated main idea selection items (items 2, 4, 6, 7, 9, 10); 5) scores on stated main idea production items (items 11, 12, 18, 20); 6) scores on unstated main idea production items (items 13, 14, 15, 16, 17, 19); and 7) the combined overall scores (items 1-20). The level of significance was set at 0.5.

RQ 3: Do students of the experimental groups have positive attitudes towards their instructional methods as compared to the control group?

Descriptive statistics were used to analyze the data gathered from the responses on the closed-type questionnaire. They were performed to calculate the frequency and percentage, as well as the mean and standard deviation of each subject group, reflecting students' judgment about each of the instructional methods. Answers to the open-ended questions were qualitatively analyzed using the 'content analysis' procedure.

RQ 4: Are the main idea processing strategies of students of the LRT class different from those of the RT and ST groups after instruction?

The think-aloud transcripts were divided into separate segments. Each segment consisted of phrases, clauses, or sentences which corresponded to an 'apparent short thought unit' (Green, 1998). The analysis approaches were conducted through coding which involves organizing raw data into categories. In the present study, a protocol coding scheme adapted from Salataci and Akyel's (2002) coding scheme was employed. This coding scheme is comprised of three parts: a) bottom-up strategies; b) top-down strategies; and c) metacognitive strategies. Under these three broad categories, fifteen sub-strategies were included. The coding scheme is illustrated in Table 1:

Table 1 Coding Scheme

No.	Main Strategies	Sub-strategies
1	*Bottom-up*	The reader attempts to understand the meanings of individual words and grammatical structure of a clause or sentence.
2		The reader recognizes word relations between sentences when trying to grasp the main idea of a text.
3		The reader recognizes relations between various forms of topic-related vocabulary (i.e. bird-birds, protect- protection-protecting).
4		The reader rereads a text segment more than once.
5		The reader translates words or phrases from English into Thai.
6	*Top-down*	When the reader reads a word he/she does not know, he/she tries to figure out its meaning by looking at the rest of the story.
7		The reader predicts the likely content of the succeeding portion of the text.
8		The reader confirms or rejects the prediction he/she has made about the content of the succeeding portion of the text.
9		The reader draws a conclusion about the meaning of text content when he/she finishes reading.
10		The reader has related text content and what he/she knew about it.
11		The reader comments on the reading and questions the information in the text.
12		The reader connects new information with the previously stated content.

13		The reader summarizes (in his/her head or in writing) important information that he/she reads after each paragraph.
14	*Metacognitive*	While the reader reads, he/she periodically checks whether the material is making sense to him/her.
15		The reader expresses awareness of the components of the process, describes strategy use in case of comprehension failure, monitors comprehension, and assesses his/her degree of understanding of the text.

Each unit identified in the think-aloud transcripts, representing a statement made by a student, was labeled as belonging to one or more of the 15 strategy categories. The categorized reading strategies of each subject group were then calculated in terms of frequencies of their occurrence using descriptive statistics. After that, the occurrences of particular reading strategies used by each subject group before the intervention were compared with those exploited after the intervention. In addition to the quantitative part, the content of all the protocols was qualitatively examined for individual differences in reported strategy use and to provide additional evidence to support the quantitative findings of the research.

Interview responses were also analyzed following similar procedures to the think-aloud protocols; they were coded using the 15 strategy categories (the same coding scheme as the think-aloud protocols). Once all the data were coded with the 15 codes, the coded reading strategies were then ranked from the most frequently to least frequently used by the students of each group. Specific strategies which did not fit into any of the 15 codes but utilized by some students were also recognized and added to an 'additional strategies' list. The interview responses were carefully coded by the researcher on two different occasions to check intra-coder reliability—the first and the second coding was performed fifteen weeks apart. The intra-coder reliability was calculated using a similar formula to inter-rater reliability. Intra-coding agreement was 99.05%.

4. Results

RQ 1: The results of paired-samples *t*-tests indicated that there was a significant difference between the mean scores on the pre-test and the post-test of both the experimental groups (the LRT and the RT) and the control group (the ST) at the .05 level. Students of all three conditions significantly improved their performance on the main idea comprehension test from the pre-intervention phase to the post-intervention phase. Mathematically speaking, students in the LRT group seemed to have the best improvement (p = .00025) in main idea comprehension as compared to the RT and the ST subjects. Table 2 presents paired-samples *t*-test results:

Table 2: Pre- and Post-test Mean Scores of the Experimental and Control Groups

Groups	Measure	N	Mean	SD	t	Sig
LRT	Pre-test	20	10.30	2.20	-6.64	.00025
	Post-test	20	13.50	1.69		
RT	Pre-test	20	11.33	1.85	-1.77	.0465
	Post-test	20	12.55	2.51		
ST	Pre-test	20	9.83	2.35	-3.89	.0005
	Post-test	20	11.95	2.08		

Note: paired-samples statistics

RQ 2: Results from all the One-Way ANOVA analyses indicated that there were no significant differences of mean scores among the three treatment conditions. However, there was, mathematically, a noticeable difference among the three methods of main idea instruction. The findings revealed that students in the LRT group were the best in improving their performance in main idea comprehension as compared to those in the RT and the ST conditions in every single aspect of the test (except for the stated main idea production items). In the meantime, ST students, apart from the unstated main idea production items, were found to exhibit better improvement in the task than students of the RT group in all cases. Although the differences between groups were not statistically significant, there were obvious distinctions in the impacts of the three instructional approaches. Table 3 provides the overall results of the One-Way ANOVA analyses on specific items of the test.

Table 3
Means and Standard Deviations on the Main Idea Comprehension Test for Experimental and Control Groups

Test Items		LRT		RT		ST	
		M	***SD***	***M***	***SD***	***M***	***SD***
1-10	(selection items)	1.85	1.84	.75	2.12	1.30	1.87
11-20	(production items)	1.35	1.61	.48	1.79	.83	1.44
1,3,5,8 (stated main idea selection items)		.70	1.17	.10	1.02	.35	.93
2,4,6,7,9,10 (unstated main idea selection items)		1.15	1.27	.65	1.53	.95	1.54
11,12,18,20 (stated main idea production items)		.38	1.19	-.17	1.18	.43	1.13
13,14,15,16,17,19 (unstated main idea production items)		.98	.87	.65	1.11	.40	1.22
1-20	(all items)	3.20	2.15	1.23	3.09	2.13	2.44

The ANOVA results, therefore, corresponded with the paired-samples *t*-test findings in that the LRT yielded the best effects of instruction on students' main idea comprehension. The statistical results support the research hypothesis which states that the integrated effect of lexical cohesion and metacognitive strategy training approach (LRT) would positively enhance students' performance in main idea comprehension and produce a different impact as compared to metacognitive strategy training alone (RT), and the skill-based teaching (ST).

RQ 3: Descriptive statistical results indicated that at the end of the intervention, students of all three classes responded positively to the questionnaire. However, there were slight distinctions among the groups in their perceptions towards each instructional procedure. The LRT students (M = 41.55, SD = 3.32) tended to more support their main idea strategies after the intervention than their ST peers (M = 40.95, SD = 4.38). On the other hand, the RT participants (M = 39.25, SD = 4.15) seemed to show the least satisfaction among the three groups. Findings from the open-ended questionnaire analysis also showed that the LRT and ST readers reflected more positive attitudes towards the main idea teaching approaches than the RT participants who seemed to have somewhat different views on the instructional treatment.

RQ 4: Descriptive statistics were also applied to explore the overall differences in the mean percentages of main idea strategies across the think-aloud protocols of research participants. Details of the results are presented in Table 4:

Table 4 **Differences in Strategy Use Between the Experimental and the Control Conditions**

Strategy	LRT			RT			ST		
	pre	post	dif	pre	post	dif	pre	post	dif
1. The reader attempts to understand the meaning of individual words and grammatical structure of a clause or sentences.	87.5	62.5	-25	87.5	100	12.5	100	60	-40
2. The reader recognizes word relations between sentences when trying to grasp the main idea of a text.	0	75	75	0	0	0	0	0	0
3. The reader recognizes relations between various forms of topic-related vocabulary (i.e. bird-birds, protect-protection-protecting)	37.5	75	37.5	37.5	25	-12.5	0	0	0
4. The reader rereads a text segment more than once.	75	62.5	-12.5	62.5	75	12.5	80	20	-60
5. The reader translates words or phrases from English into Thai.	100	100	0	100	100	0	100	100	0
Difference in Mean Percentages			**15**			**2.5**			**-20**
6. When the reader reads a word he/she does not know, he/she tries to figure out its meaning by looking at the rest of the story.	37.5	50	12.5	50	50	0	60	40	-20
7. The reader predicts the likely content of the succeeding portion of the text.	50	50	0	50	62.5	12.5	40	20	-20
8. The reader confirms or rejects the prediction he/she has made about the content of the succeeding portion of the text.	37.5	0	37.5	0	0	0	0	20	20
9. The reader draws a conclusion about the meaning of	87.5	87.5	0	100	100	0	100	100	0

text content when he/she finishes reading.									
10. The reader has related text content and what he/she knew about it.	50	75	25	0	62.5	62.5	0	60	60
11. The reader comments on the reading and question the information in the text.	50	75	25	37.5	62.5	35	20	60	40
12. The reader connects new information with the previously stated content.	75	50	-25	50	37.5	-12.5	80	20	-60
13. The reader summarizes (in his/her head or in writing) important information that he/she reads after each paragraph.	62	78.5	16.5	100	100	0	20	20	0
Difference in Mean Percentages			**2.06**			**10.94**			**2.5**
14. While the reader reads, he/she periodically checks whether the material is making sense to him/her.	0	75	75	0	100	100	20	40	20
15. The reader expresses awareness of the components of the process, describes strategy use in case of comprehension failure, monitors comprehension, and assesses his/her degree of understanding of the text.	12.5	62.5	50	0	25	25	20	0	-20
Difference in Mean Percentages			**62.5**			**62.5**			**0**
Overall Differences in Mean Percentages			**14.43**			**15**			**-5.33**

Results of the think-aloud protocol analysis revealed that there were differences in the patterns of strategy use among students of the three treatment conditions after the intervention. When the strategies used before and after instruction were compared, the LRT and RT students used far more processing strategies after the treatment. They incorporated various reading processes: bottom-up, top-down, and metacognitive skills. The LRT students seemed to utilize a wide variety of reading sub-strategies in their main idea

comprehension processing, both in terms of bottom-up (particularly the use of word relations between sentences and relations between various forms of vocabulary) and metacognitive approaches whereas the RT readers mostly reported using more top-down than bottom-up processes.

As indicated by the qualitative analysis, although the LRT and the RT participants revealed similar mean proportions of metacognitive strategies, there was a difference in the type of metacognitive sub-skills exploited in these two conditions. That is, whereas the LRT students incorporated varying types of metacognitive sub-processes during reading, the RT learners showed more limited use of these high-level strategies. The finding also indicated a lesser degree of the bottom-up and top-down strategy use in the ST condition, by comparison with those of the LRT and the RT classes—they merely used specific bottom-up and top-down skills in their reading.

Findings of the think-aloud analysis were strongly supported by the interview data. Interviews responses indicated that the LRT readers reported using virtually all types of processing skills. The RT learners also employed different types of strategies. The distinction in the strategy use between these two conditions, however, is that the LRT students learned to observe word relations between sentences and relations between various forms of topic-related vocabulary while the RT readers made no use at all of these two bottom-up skills. With regard to the ST participants, the finding indicated no application of metacognitive strategies during their text processing. The students of this group tended to pay more attention to bottom-up than top-down reading approaches.

5. Discussion and Conclusions

On the whole, the qualitative outcomes were consistent with those revealed by the quantitative analysis. The quantitative findings indicated that the LRT students showed the greatest improvement on main idea comprehension from the pre-test to the post-test. These outcomes were also supported by the qualitative evidence showing the use of multiple reading strategies by the LRT readers in their main idea comprehension process. The higher performance of the LRT participants on the main idea comprehension test could possibly be associated with the varying kinds and combination of processing skills they employed. The analyses shed light on the intimate relationship between the processes and products of text processing for the understanding of the important concepts.

Results from the quantitative and qualitative analyses reported positive effects of the integrated instruction of lexical cohesion and reciprocal teaching on increasing students' main idea comprehension performance in the post-test. Lexical cohesion served as part of decoding skills and it assisted the students in constructing the text meaning. In addition, students in the LRT group were also guided through the metacognitive training procedures which helped them become consciously aware of what they were doing and be able to manage the use of appropriate strategies for deciding the important information of the text they read. With this integrated method of instruction, the LRT students were equipped with a more practicable, reliable strategy for main idea determination and consequently outperformed those in the RT and the ST groups.

An explanation for the higher scores on stated main idea production items (11, 12, 18, and 20) in the ST group than the LRT and the RT groups is that the LRT students had gained knowledge and skills through metacognitive strategy training as well as recognizing lexical relations as a way to tackle main idea determination. As a consequence of this training model, the LRT students were more capable of identifying and/or constructing main idea statements than their ST counterparts. These LRT participants also became less dependent on locating the stated main idea sentences in expected positions of a paragraph (i.e. first, second, or last sentences). Instead, they attempted to generate their own

appropriate main idea statements, rather than identifying ones in the text. This ability to construct main idea sentences by the LRT students was much in evidence in the research outcome of the unstated main idea production items (items 13-17, and 19). The LRT students performed the best on these test items among the three conditions as occurred repeatedly in several other findings of the present study. Conversely, the ST students who were accustomed to selecting rather than constructing main idea statements had difficulties in tackling the task when confronted with the main idea-implicit production response items in which good comprehension of the discourse is required. This could be the reason why the performance of the ST group was shown to be the weakest in the research finding on those unstated main idea production items.

The finding concerning the unstated main idea production items (items 13-17, and 19) revealed that the RT students showed greater progress than those in the ST condition. Through the use of metacognitive knowledge, the RT students were expected to become more competent in main idea comprehension than their ST counterparts. The RT participants learned to monitor their own reading process and achieve the overall meaning of the text through the practice of the four reciprocal reading skills, particularly summarizing, without resort to selecting or identifying stated main idea sentences at specific positions in a paragraph. They interpreted the texts and inferred their meanings with the help of their own knowledge. In contrast, the ST students learned to locate main idea sentences; they were aware of the positions in which the main idea sentences are usually placed in a text. With this knowledge, ST students determined the main idea of a passage simply by selecting a sentence (either the first or the last sentence) of the paragraph. The familiarity with searching for existing main idea statements might result in difficulties in production situations. This, therefore, could be another possible explanation for the decrease in the performance of the ST students on the main idea-implicit production items.

Interestingly, students receiving the skill-based (ST) method also performed relatively well at the post-test despite the fact that they utilized only a small number of processing strategies. Although they were not given explicit criteria which could be followed, the ST students were encouraged to use readily available linguistic cues, for example, titles, headings, or thematic sentences, in order to determine the main information of text. These cues, according to van Dijk and Kintsch (1983) and Goldman and Rakestraw (2001), are crucial to the understanding of the macrostructure of a discourse. More importantly, the application of key words was included in this treatment condition. The concept of using key words to capture the main content of a text was moderately similar to the notion of exploiting lexical cohesion in discourse comprehension in the LRT condition. However, the approach to finding key words used in the ST group was quite different in detail from the way the LRT students were taught to locate lexical links. The ST students were simply directed to pick out words that were important in understanding and related to the topic of a passage, and to connect them together to build up a picture of what the text should be concerned with. The effect of key words as employed in the ST condition was evident in the research outcome.

There were two possible interpretations of the findings from the present study:

1. the recognition of lexical connections appeared to be an important component of the meaning construction process;
2. the combination of various strategies yielded a beneficial effect on main idea determination.

Lexical Relations as Integral to the Construction of Meaning

The findings provide some support for the claim that lexical cohesion may have facilitated main idea comprehension processing. The results of the study demonstrated that the LRT students showed signs of improvement in their ability to perceive lexical cohesion in text and to use it to support main idea comprehension over the instructional session. This finding was consistent with Hoey's (1991) contention that the recognition of lexical relations allows readers to build specific relationships among concepts and ideas across text propositions, and it also provides rapid access to the main information of a text. The other part of the theory which claims that lexical relations allow readers to identify or extract the most important sentence of a text was not strongly supported in the EFL context of the present study. However, this should not be taken to imply that the results of the study contradicted Hoey's theoretical model. During the training session, the LRT participants seemed to accept the idea of using multiple connections from the words to construct text meaning, rather than extract the sentence that shares most lexical links with other sentences. This might be partly explained by the fact that the process of finding word connections to select or locate main idea sentences seemed to be too complicated, difficult and time-consuming for them. Instead, using words of multiple links to establish the meaningful representation, as the students claimed, was more practical and could be quickly applied.

In the present study, lexical cohesion could promote comprehension in two ways. First, it laid foundations for the understanding of relations among concepts and ideas across individual elements in the text. According to Friend (2001), this microstructural element helps provide readers with important concepts necessary for the global understanding of the content, thereby the overall theme of a discourse. When processing text information, the LRT students initially searched for words that shared at least three links (two links in certain circumstances). Words that were semantically related to other words or to the main theme of discourse were activated whereas those that were not related became deactivated during processing. Connected text elements were then formed into ideas and a situation model is constructed. These word connections helped make explicit important meaning relations in the text and also allowed the readers to obtain the author's intended message (van Dijk and Kintsch, 1983, Kintsch, 1998; Kintsch, 2004; Wolfe et al., 2005). Finding semantic relations, therefore, directed the students' attention towards recognizing necessary information, thereby quickly building a picture of what the text would be concerned with.

Second, lexical cohesion could enhance memory for recently established concepts (Wolfe et al., 2005). During reading, memory for those concepts and ideas which was previously activated through word associations was carried over and remained active into later processing. Lexical relations could have helped the LRT readers to maintain information that linked text propositions together and form connections between previous information and the incoming materials. Subsequently, with their metacognitive awareness, the students generated an appropriate important text concept. This final process, however, operates concurrently with global top-down approaches. In the current investigation, these word connections were found to help increase coherence and therefore facilitate the construction of the overall theme of a discourse. The LRT participants, based on their questionnaire responses, considered that the observation of word relations provided them with the primary source from which coherent understanding could be achieved. This finding corroborates the assertion that the use of (lexical) anaphoric devices is essential for establishing coherence during text understanding (van Dijk and Kintsch, 1983; Celce-Murcia and Olshtain, 2000; Vivianco, 2005), and that it helps to maintain the theme of a discourse (van Dijk and Kintsch, 1983; Hoey, 1991, 2001; Garnham and Oakhill, 1992).

According to Friend (2001) and Jacobowitz (1990), in reading instruction, students should be guided to construct rather than selecting main idea statements. With the assistance of multiple word connections, as has been discussed so far, the LRT students became more active, independent readers; that is, they could 'construct' accurate mental representations of text by themselves instead of overrelying on finding main ideas in specific parts of the reading passages. As revealed by the outcomes of the current investigation, the development of their main idea construction seemed to be strongly associated with their local bottom-up skills in observing related words among text units on the basis of multiple connections. The additional benefits of tracing lexical relations, accordingly, should be considered in reading instruction as an important step to improve EFL students' main idea skills.

Combination of Processing Strategies

Differences in the patterns of strategy use among the three treatment conditions that affect test performance may also contribute to the stronger correlation between the *integration* of various reading processes and the understanding of main ideas. Results of the analyses demonstrated that the LRT instructional procedure had a facilitating effect on the comprehension of text meaning representation in a way that it served to increase both local and global coherence.

The LRT participants processed text information in two different stages. First, they were introduced to a decoding process wherein they learned to construct meaning embedded in the small units of text. To be precise, they were instructed to establish coherence links among propositions or individual parts of a discourse in order to create text meaning at the local level. Second, on the basis of the top-down approaches, cohesive lexical links could specifically help the subjects activate relevant prior world knowledge, or *schemata* (Schmitt, 2000), which correlated with the information being processed. Through reciprocal reading strategies, the subjects retrieved their previously acquired knowledge, drew larger scale conclusions, and supplied the missing links among concepts and ideas across text parts during reading in order to build up a coherent mental representation of the text content. More importantly, the instructional treatment raised the LRT readers' awareness of the comprehension problems and usefulness of the strategies, as well as the strategies to regulate strategy use. These metacognitive processes enabled the students to formulate more accurate and coherent representations of discourse (Cote et al., 1998).

In contrast to findings regarding the LRT condition, the technique of reciprocal teaching alone in the RT group was found to produce a less positive effect on the students' main idea comprehension. The single approach seemed to be insufficient for the teaching of main idea, especially for EFL learners in the setting of this study. This does not by any means indicate that reciprocal teaching is an unproductive instructional procedure for main idea comprehension. A possible explanation may be the fact that the global top-down processing was a top priority in the RT instructional model (Dhieb-Henia, 2003). Celce-Murcia and Olshtain contend that if too much reliance is placed on top-down or global processing, complete understanding of discourse may be disrupted by inappropriate schemata and irrelevant extratextual knowledge (2000: 129). As revealed by the think-aloud protocol data, the RT students also focused on local concerns such as grammatical structure and word meaning. Although this specific bottom-up structure of the language was fundamental to the local comprehension of a discourse, it merely assisted the RT readers in processing fragments of text information. In other words, it did not appropriately establish local links between parts of the text. The RT students used it as an initial step towards the understanding of meaning of individual words and propositions. The comprehension of these small elements, however, did not directly contribute to the

establishment of the meaningful relations between clauses and sentences. The RT readers seemed to engage in global top-down processing while the proper understanding of the local meanings of those sentential relations had not yet been achieved. As a consequence, the construction of necessary informational content as a whole could, to a certain extent, be hindered during text reading. The outcomes of the research lent further support to the claim that EFL readers should be provided with instruction that maintains an appropriate balance between bottom-up and top-down processing skills in order to gain the overall understanding of a text (Celce-Murcia and Olshtain, 2000).

However, the fact that the RT treatment was found to be less effective than the LRT instruction does not by any means indicate that it is an unproductive teaching procedure for main idea comprehension. Findings of the present investigation tentatively suggest that the enhancement in the LRT students' understanding of the main ideas appeared to be due directly to the application of word relations. According to Friend (2001), this microstructural element helps provide readers with important concepts necessary for the global understanding of the content, thereby the overall theme of a discourse. It could therefore be inferred from the present outcomes that if readers in the RT condition had also received specific training in the observation of connections among concepts and ideas across sentences and paragraphs, their performance on main idea comprehension could possibly have been relatively different from the actual findings of the current investigation.

Results of the study revealed that the ST students showed higher performance on the stated main idea production test items (items 11, 12, 18, and 20) than their LRT and RT counterparts despite a smaller variety of reading strategies. This finding is not in accordance with the view that the comprehension of a discourse requires the application of varying text processing skills. Judging from the written responses to those test items, it is difficult to assume that the ST participants' use of strategic processing was directly linked to their competence in main idea comprehension. Having received the ST training, students in this group became reliant upon finding the explicit main idea sentences in expected positions of a paragraph. Their answers to the main idea explicit production items, therefore, were mainly based on the first or last sentences of the reading materials. Owing to the fact that the test was comprised of both stated and unstated main idea items, it was likely that the ST readers had already scored certain points on the main idea explicit responses. The skill-based method may only have enhanced the students' ability to identify or select main idea sentences, but it did not actually affect their general capacity for processing discourse content. As opposed to the ST condition, students in the LRT and RT classes were found to use their knowledge and strategies they had practiced, struggling to construct appropriate main idea sentences by themselves. Even though fewer correct responses to the main idea explicit production test items were provided, they signaled that students in these two experimental groups could have actually acquired processing strategies necessary for main idea comprehension, and that their performance on the post-test appeared to correlate with the strategies they employed.

6. Instructional Implications

Based on the current findings, the LRT intervention seemed to have some impact on the students' improvement in main idea comprehension performance. The effects of this combined strategy instruction, accordingly, should be taken into consideration. Instructors can use the LRT teaching approach as a means of promoting the students' awareness of the usefulness of the combined strategies for main idea processing, as well as supporting the students' attempts to become independent, strategic readers. In the LRT classroom, the instruction can begin with a description and model of the recognition of lexical relations and the four metacognitive strategic processes by the instructor. The students should

initially be taught to identify lexical anaphoric relations in the reading passages, and shown how these relations can be used as a primary strategy to draw stronger connections between concepts and ideas across different parts of a text. It is, nevertheless, unnecessary for the students to remember specific terms for those associated vocabulary (i.e. synonyms, antonyms, hyponyms, etc.). Afterwards, the four strategies for reciprocal reading can be introduced. These higher-order processes are viewed as comprehension-monitoring activities (Palincsar and Brown, 1984) which enable the students to control their own learning and thinking and then to create coherence necessary for discourse comprehension, thereby allowing the LRT participants to achieve a more accurate understanding of the important text ideas. In the LRT classroom environment, the students are provided with opportunities to practice strategies they have been taught. Also, they engage in reading activities where they work together in pairs or in groups of three or four, so that they can evaluate, explain, and elaborate the strategies to one another. During the early stages of practice, the instructor should provide support and guidance to the students as they are practicing the strategies, prompting their use and providing feedback when necessary. Once the students have acquired more of the essential skills and taken on more responsibility, the instructor may decrease his/her role as a model.

Another instructional implication of this study is that the students should be allowed more time to develop the necessary integrative processing used in the LRT procedure, so that they become more experienced and independent in text reading. Since recognizing word relations is a new technique of reading for main ideas, EFL students who seem to have lower knowledge of vocabulary than native speakers should be provided with a sufficient amount of time for practice and development of this vital skill (this strategy may seem time-consuming at first). It is essential that the readers have the appropriate resources to make multiple connections from words in a text because the LRT procedure can become beneficial only when the students have less difficulty in basic vocabulary knowledge and skills. Hoey (1991) and Kern (2000) suggest that vocabulary should be taught and learned in morphological forms (i.e. *depend—depends—depending*). In a similar manner, Schmitt (2000) maintains that students' word knowledge can be developed if instructors provide them with the definitions of new words along with their synonyms and antonyms (i.e. *shallow = not deep*). Both forms of vocabulary teaching can also be included in a reading class in order to improve general language skills, which serve to provide a solid foundation for the observation of connections between words. The instruction, however, must take place over years rather than over weeks or months. Due to the fact that the majority of students come from an instructor-centered background, they also do require supplementary training in the four reciprocal reading strategies. That is, they must learn to be able to simultaneously incorporate various strategies during text reading, integrate all the information they have received, and at the same time connect it with their prior world knowledge. Experiences obtained during practice will help the readers gain familiarity and become more competent in the use of those newly acquired processes.

7. Limitations of the Study

A number of limitations of the present study should be carefully considered. First, regarding the bottom-up strategy use emphasized in the LRT instructional approach, the most obvious feature of this processing was the use of word relations between sentences and relations between various forms of topic-related vocabulary (strategy 2 and 3). This was to limit the scope of the present study. However, it does not mean that these strategic processes are the only recommended bottom-up strategies which the students can utilize to approach text information more efficiently. In fact, as revealed by the think-aloud protocols and the interview data, there were many other types of bottom-up strategies

employed by the subjects. These skills might also positively affect the readers' establishment of local connections that links information from different sentences or paragraphs of a text. Second, the current investigation was constrained by the relatively small number of participants. With the small number of samples, it would be inappropriate to draw conclusions from the statistical findings and claim that the subjects could well represent the general population of Thai EFL students in the university.

Although the think-aloud protocol technique is a widely used method which provides a great deal of information about the reading process (Ericsson and Simon, 1993), in the present study, it is probable that the subjects did not express all the strategies employed while processing text. During the think-aloud training sessions the participants seemed to be relaxed about the task. Nonetheless, when conducting formal protocols, there could be cases where the students understood the text very well but they were not good at verbalizing their thoughts. This is due directly to the fact that the students might not be accustomed to the situation where the reading task had to be performed concurrently with the verbalization of their processing strategies. Longer practice in the procedure may have assisted the students in performing the task more properly, thereby producing more reliable data.

A further limitation is related to the assessment of the students' performance in main idea comprehension. Owing to the fact that the present study explored the simultaneous effects of lexical cohesion and metacognitive strategy training (LRT) on main idea determination—both in terms of selection and construction of main idea sentences, the main idea comprehension test was deliberately designed to include both stated and unstated main idea items. Since the ST readers were trained to locate main idea statements at particular positions of a paragraph, they tended to score more points on the main idea-explicit test items than those in the LRT and RT treatment groups. For this reason, the test items with main idea-explicit sentences seem to give the ST students a great advantage over the LRT and the RT participants. To avoid the possible effects of the main idea selection technique, the test measure could be refined by reducing the number of items with explicit main ideas to a minimum. This, however, could possibly have been done if the emphasis of the research had been only on the construction of main idea-implicit statements. A final limitation concerns the pre-post assessments. The fact that the same main idea comprehension test was administered twice as the pre- and the post-test could have affected the research findings. The students' improvement on the post-test may be attributed to familiarity with the questions or the testing format they had encountered in the pre-test. To solve this problem, a longer period of time is needed for the preparation of the test which should be designed to include two different versions available for administration at the pre- and the post-test.

References

Afflerbach, P.P. (1990). The Influence of Prior Knowledge on Expert Readers' Main Idea Construction Strategies. *Reading Research Quarterly,* **XXV/1**, 31-46.

Allen, S. (2005). *Making Connections: Reading and Understanding College Textbooks.* Boston, Massachusetts: Thomson Wadsworth.

Baker, L., & Brown, A. (1984). Metacognitive Skills and Reading. In P. Pearson (ed.) *Handbook of Reading Research, Volume 1.* New York: Longman.

Brown, A.L., Palincsar, A.S., & Armbruster, B.B. (2004). Instructing Comprehension-Fostering Activities in Interactive Learning Situations. In R. Ruddell, & N. Unrau (eds.) *Theoretical Models and Processes of Reading.* Newark, DE: International Reading Association.

Carrell, P.L. (1998). Can Reading Strategies be Successfully Taught? *The Language*

Teacher Online, 1-14. http://www.jalt-publications.org/tlt/files/98/mar/carrell.html Retrieved 18/08/2004.
Carriedo, N., & Alonso-Tapia, J. (1996). Main Idea Comprehension: Training Teachers and Effects on Students. *Journal of Research in Reading,* **19 (2)**, 128-153.
Celce-Murcia, M., & Olshtain, E. (2000). *Discourse and Context in Language Teaching.* Cambridge: Cambridge University Press.
Cote, N., Goldman, S.R., & Saul, E.U. (1998). Students Making Sense of Informational Text: Relations Between Processing and Representation. *Discourse Processes,* **25 (1)**, 1-53.
Davoudi, M. (2005). Inference Generation Skill and Text Comprehension. *The Reading Matrix,* **5 (1)**, 106-123.
Dhieb-Hania, N. (2003). Evaluating the Effectiveness of Metacognitive Strategy Training for Reading Research Articles in an ESP Context. *English for Specific Purposes,* **22**, 387-417.
Friend, R. (2001). Effects of Strategy Instruction on Summary Writing of College Students. *Contemporary Educational Psychology*, **26**, 3-24.
Fung, I.Y.Y., Wilkinson, I.A.G., & Moore, D.W. (2003). L1-Assisted Reciprocal Teaching to Improve ESL Students' Comprehension of English Expository Text. *Learning and Instruction*, **13**, 1-31.
Gallini, J.K., & Spires, H.A. (1995). Macro-Based, Micro-Based, and Combined Strategies in Text Processing. *Reading Psychology: An International Quarterly*, **16**, 21-41.
Goldman, S.R., & Rakestraw, J.A., Jr. (2001). Structural Aspects of Constructing Meaning from Text. In M.L. Kamil, P.B. Mosenthal, P. D. Pearson, & R. Barr (Eds.) *Handbook of Reading Research: Volume III.* New Jersey: Lawrence Erlbaum Associates.
Grabe, W. (2002). Foundations for L2 Reading Instruction. *The Language Teacher Online,* July, 1-4. http://www.jalt-publications.org/tlt/articles/2002/07/grabe Retrieved 27/09/2005.
Grabe, W., & Stoller, F.L. (2002). *Teaching and Researching Reading.* Harlow: Pearson Education.
Green, A. (1998). *Verbal Protocol Analysis in Language Testing Research: A Handbook.* Cambridge: Cambridge University Press.
Hirsch, E.D., Jr. (2003). Reading Comprehension Requires Knowledge—of Words and the World. *American Educator,* Spring, 10-29.
Hoey, M. (1991). *Patterns of Lexis in Text.* Oxford: Oxford University Press.
Hoey, M. (1994). Pattern of Lexis in Narrative: A Preliminary Study. In S-K. Tanskanen, & B. Warvik (eds.) *Topics and Comments: Papers from the Discourse Project,* **13**, 1-39.
Hoey, M. (2001). *Textual Interaction.* London: Routledge.
Jacobowitz, T. (1990). AIM: A Metacognitive Strategy for Constructing the Main Idea of Text. *Journal of Reading,* **33 (8)**, 620-624.
Jitendra, A.K., Hoppes, M.K., & Xin, Y.P. (2000). Enhancing Main Idea comprehension for Students with Learning Problems: The Role of a Summarization Strategy and Self-Monitoring Instruction. *The Journal of Special Education,* **34 (3)**, 127-139.
Johns, A.M., & Mayes, P. (1990). An Analysis of Summary Protocols of University ESL Students. *Applied Linguistics,* **11**, 253-272.
Kintsch, W. (2002). On the Notions of Theme and Topic in Psychological Process Models of Text Comprehension. In M. Louwerse, & W. van Peer (eds.) *Thematics: Interdisciplinary Studies.* Amsterdam: Benjamins.

Kintsch, W. (2004). The Construction-Integration Model of Text Comprehension and Its Implications for Instruction. In R. Ruddell, & N. Unrau (eds.) *Theoretical Models and Processes of Reading.* Newark, DE: International Reading Association.

Kintsch, W. (2005). An Overview of Top-Down and Bottom-Up Effects in Comprehension: The CI Perspective. *Discourse Processes,* **39 (2 & 3)**, 125-128.

Kintsch, W., & van Dijk, T. (1978). Toward a Model of Text Comprehension. *Psychological Review,* **85**, 363-394.

Klingner, J.K., & Vaughn, S. (1996). Reciprocal Teaching of Reading Comprehension Strategies for Students with Learning Disabilities Who Use English as a Second Language. *The Elementary School Journal,* **96 (3)**, 275-293.

Landry, K.L. (2002). Schemata in Second Language Reading. *The Reading Matrix*, **2 (3)**, 1-14.

Palincsar, A.S. & Brown, A.L. (1984). Reciprocal Teaching of Comprehension-Fostering and Comprehension-Monitoring Activities. *Cognition and Instruction*, **1 (2)**, 117-175.

Perfetti, C.A., Marron, M.A., & Foltz, P.T. (1996). Sources of Comprehension Failure: Theoretical Perspectives and Case Studies. In C. Cornoldi, & J. Oakhill (eds.) *Reading Comprehension Difficulties: Processes and Intervention.* New Jersey: Lawrence Erlbaum Associates.

Perry, D., & MacDonald, P. (2001). *Word Knowledge and Vocabulary Instruction.* International Conference on Engineering Education. Oslo, Norway. August 6-10. http://www.ineer.org/Events/ICEE2001/Proceedings/papers/201.pdf Retrieved 7/11/2005

Salataci, R. & Akyel, A. (2002). Possible Effects of Strategy Training on L1 and L2 Reading. *Reading in a Foreign Language*, **14 (1)**, 1-17.

Simmons, J., & Palmer, B. (1994). *Reading by Doing: An Introduction to Effective Reading.* Illinois: National Textbook Company.

Soonthornmanee, R. (2001). *Effects of Reciprocal Teaching Approach on Reading Comprehension of Chulalongkorn University Political Science Freshmen.* Unpublished research document, Chulalongkorn University Language Institute.

Spiak, D.S. (1999). Reciprocal Reading and Main Idea Identification. *Teaching and Change*, **6 (2)**, 212-219.

Stevens, R.J., Slavin, R.E., & Farnish, A.M. (1991). The Effects of Cooperative Learning and Direct Instruction in Reading Comprehension Strategies on Main Idea Identification. *Journal of Educational Psychology,* **83 (1)**, 8-16.

Tomitch, L.M.B. (2000). Teaching Main Ideas: Are We Really 'Teaching'? *Linguagem & Ensino,* **3 (1)**, 45-53).

Van Dijk, T.A. (1980). *Macrostructures: An Interdisciplinary Study of Global Structures in Discourse, Interaction, and Cognition.* New Jersey: Lawrence Erlbaum Associates.

Van Dijk, T.A., & Kintsch, W. (1983). *Strategies of Discourse Comprehension.* London: Academic Press.

Vivanco, V. (2005). The Absence of Connectives and the Maintenance of Coherence in Publicity Texts. *Journal of Pragmatics,* **37**, 1233-1249.

Walter, P. (2000). *Six-Way Paragraph: Middle Level.* Illinois: Jamestown Publishers.

Wolfe, M., Magliano, J.P., & Larsen, B. (2005). Causal and Semantic Relatedness in Discourse Understanding and Representation. *Discourse Processes,* **39 (2 & 3)**, 165-187.

Yang, Y. (2002). Reassessing Readers' Comprehension Monitoring. *Reading in a Foreign*

Language, **14 (1)**, 18-42.

Department of Foreign Languages
Faculty of Humanities
Kasetsart University
Bangkok
Thailand

fhumsjp@ku.ac.th