- **Superordinate, hyponymic** (*bears—animals*)**,** and **co-reference repetition** (based on real-world knowledge rather than linguistic knowledge, 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*)

Lexical Cohesion and Macrorules (LCM): The LCM treatment condition incorporated the use of lexical relations and macrorules. Similar to the LC group, the LCM participants were directed to observe elements or ideas in the text which referred to one another so that they could determine what content was most important. The LCM students were also engaged in the application of *macrorules* (van Dijk and Kintsch, 1983). As proposed by the theory, the rules are claimed to organize text information, condense it into its essential points, thus assisting a reader in indicating or forming the macropropositions. Macrorules include:

Deletion: The deletion rule eliminates the information which is not relevant, nor necessary to the interpretation of a global fact, or a central theme of the discourse.

Generalization: In this rule, a list of words or items is replaced by a more general word in the same class. It involves producing a superordinate term (e.g. the term *pets* for cats, dogs, goldfish and parrots). Similarly, one can substitute a superordinate action for a list of subcomponents of that action, i.e., *John went to London*, for: John left the house, John went to the train station, John bought a ticket, etc.

Construction: In this rule, several propositions are taken together as one overall action or concept and replaced by an appropriate proposition that signifies a global fact.

Skill-Based Teaching (ST): Students receiving 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.

Skill-based instruction was divided into three phases: pre-reading, during-reading, and post-reading. For pre-reading, students looked at the title of a particular passage and were encouraged to make predictions about the likely content of the text, based on the title. They were also motivated to build background knowledge on the topic of the reading selection. The instructor discussed and explained the syntactic structure and new vocabulary. While reading, students read the text silently, and discussed the content of the reading passage in small groups of 3-4. The groups took turns reading one paragraph and translating each sentence into Thai. The instructor provided assistance when necessary. For post-reading activities, the instructor asked questions pertaining to the content and main idea of the text. Students discussed in groups, provided responses, and came up with a main idea statement of the reading passage. The instructor checked students' answers and told them what the correct responses were.

Testing and Scoring Procedures: product data

The pre-test was administered to all participants prior to the experiment. The post-test was carried out 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 had 1 hour to complete the test.

Each selection response was scored as correct (1 point) or incorrect (0 point); each production response received score of 1 (correct and complete), 0.5 (correct but incomplete) or 0 (incorrect). Since the main idea had already been 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 scored on the basis of appropriate, comprehensible main idea sentences rather than spelling and grammatical structure. All tests were independently marked by two raters. Interscorer agreement was calculated using this formula: $Agreements / (Agreements + Disagreements) \times 100$. Agreement was found to be 90.92%. Any disagreements were resolved by discussion.

Questionnaire: perception data

A questionnaire was administered after the completion of the instruction (it had been piloted with 44 university students; the reliability coefficient was 0.82). It was developed to elicit the students' feedback concerning the effectiveness of the main idea strategies and the acceptability of the training. For Part A, students were instructed to read each statement carefully (because both positive and negative statements or questions were included and randomly ordered) and indicate whether they agree or disagree with it. Items on Part A questionnaire were scored according to a Likert 4-point rating scale (*4—Strongly agree; 3—Agree; 2—Disagree; 1—Strongly disagree*). The scores from the thirteen items were totaled for each participants group, and were statistically analyzed afterwards.

The four 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 10 hours. In this part of the questionnaire, students were allowed to write either in Thai or in English. They were reminded to provide answers for all items. Students were also asked to give detailed information on their responses rather than short answers.

In order to obtain as much truthful information as possible, students completed the questionnaires anonymously and they were assured that their responses would remain confidential. They were reassured that their responses would certainly have no effects on their course grades and that the information obtained from the questionnaire would greatly benefit the *Fundamental English Reading* course and EFL students.

Strategy Interviews: process data

Semi-structured group interviews with students were organized, following the intervention phase, to obtain information concerning student's main idea strategy use. Due to the students' tight schedules, taking part in the interviews was voluntary. Volunteer students from each instructional group (LC: 7; LCM: 5; ST: 3) were interviewed by the researcher in their spare time on the university premises. Throughout each interview, the students were allowed to communicate in their native language (Thai) in order that they felt relaxed and not limited by their English proficiency, and thus provided responses or useful information as much as possible.

Interviews lasted between 15 and 20 minutes per student. Interview conversations were tape-recorded.

Questions based upon the students' strategies used in main idea comprehension were prepared on a guide list and were available to the researcher. This was to ensure that all the students were asked similar questions and that the course of the interview would adhere to identical issues (e.g. strategies used in main idea comprehension). However, the order and wording of questions could be modified depending on particular circumstances. The interview questions were, for example, "How did you get the main idea of the story?," "What strategies did you use when you tried to grasp the main idea of the passage you read?," or "Why do you think the vocabulary is so important?". Once the questions were answered, the interviewer asked more specific questions which were focused on information from the participants' responses to investigate further, for instance, "Can you give me an example of word relations?" or "Can you give an example of your background knowledge you have used?" If the students provided only brief responses, the researcher asked them to elaborate more on their responses to a particular question.

3. Results

Quantitative Results

Inferential statistics were employed to analyze the quantitative data of the research in order to provide responses to two research questions: RQ 1 and RQ 2. Descriptive statistics were used to analyze the data from closed-type questionnaire to answer RQ 3.

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

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?

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

To provide the answer to the first research 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. Separate analyses were performed at three phases for: 1) scores on the selection (multiple choice) responses (items 1-10); 2) scores on production (written) responses (items 11-15); and 3) the overall scores (items 1-15). The results indicated that students, both in the experimental and the control groups, significantly improved their performance on the main idea comprehension test from the pre-intervention phase to the post-intervention phase ($p < .05$), except for the selection responses (items 1-10) in which a significant difference in the ST group was not found.

The results of the paired-samples *t*-test analyses are presented in Tables 1-3 below:

Table 1: Pre- and Pot-test Mean Scores of the Experimental and Control Groups (Items 1-10)

Groups	Measure	N	Mean	SD	t	Sig.
LC	Pre-test	36	4.42	1.48	-2.06	0.02
	Post-test	36	5.08	1.92		
LCM	Pre-test	34	3.91	1.58	-2.13	0.02
	Post-test	34	4.62	1.39		
ST	Pre-test	36	4.36	2.02	-0.58	0.28
	Post-test	36	4.61	1.69		

Note: paired-samples statistics

Table 2: Pre- and Pot-test Mean Scores of the Experimental and Control Groups (Items 11-15)

Groups	Measure	N	Mean	SD	t	Sig.
LC	Pre-test	36	0.75	0.77	-9.58	0.00
	Post-test	36	2.69	0.89		
LCM	Pre-test	34	0.37	0.57	-11.89	0.00
	Post-test	34	2.62	0.89		
ST	Pre-test	36	0.36	0.59	-11.51	0.00
	Post-test	36	2.33	1.04		

Note: paired-samples statistics

Table 3: Pre- and Pot-test Mean Scores of the Experimental and Control Groups (Items 1-15)

Groups	Measure	N	Mean	SD	t	Sig.
LC	Pre-test	36	5.17	1.65	-7.36	.00
	Post-test	36	7.78	1.93		
LCM	Pre-test	34	4.28	1.76	-7.72	.00
	Post-test	34	7.24	1.60		
ST	Pre-test	36	4.72	2.20	-4.94	.00
	Post-test	36	6.94	1.94		

Note: paired-samples statistics

In order to show a clear picture of the results relating to the effects of the intervention on the LC, the LCM and the ST groups, the mean scores on main idea comprehension from the pre-test to the post-test of students in all three treatment conditions are demonstrated in Figure 1:

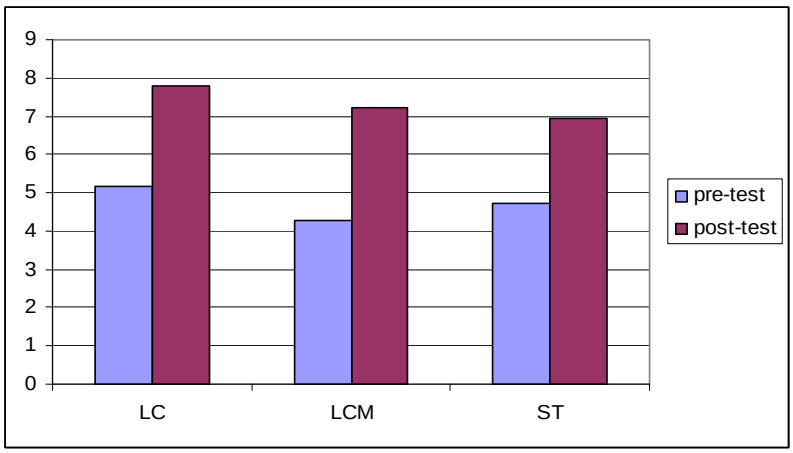

Figure 1: The comparison of the mean values of the three conditions from the pre-test to the post-test

In response to the second research question, One-Way ANOVAs were implemented in three different phases for: 1) scores on the selection responses (items 1-10); 2) scores on production responses (items 11-15); and 3) the overall scores (items 1-15), similar to the paired-samples analyses, in order to test the statistical significance of group differences. Results from all the analyses revealed no statistically significant

differences of mean scores among the three instructional groups ($p > .05$).). In other words, there are no distinctions in the effects of the three teaching models. Tables 4-6 presents the mean difference scores and standard deviations for the main idea comprehension performance on test items 1-10, 11-15 and 1-15, respectively.

Table 4: Means and Standard Deviations for Experimental and Control Groups (Items 1-10)

Groups	N	Mean	SD
LC	36	0.66	1.94
LCM	34	0.70	1.93
ST	36	0.25	2.56

	SS	df	MS	F	Sig.
Between groups	4.54	2	2.27	0.48	0.61
Within groups	485.80	103	4.71		
Total	490.34	105			

Note: one-way ANOVA

Table 5: Means and Standard Deviations for Experimental and Control Groups (Items 11-15)

Groups	N	Mean	SD
LC	36	1.94	1.21
LCM	34	2.25	1.10
ST	36	1.97	1.02

	SS	df	MS	F	Sig.
Between groups	1.97	2	0.98	0.79	0.45
Within groups	128.98	103	1.25		
Total	130.96	105			

Note: one-way ANOVA

Table 6: Means and Standard Deviations for Experimental and Control Groups (Items 1-15)

Groups	N	Mean	SD
LC	36	2.61	2.12
LCM	34	2.95	2.23
ST	36	2.22	2.69

	SS	df	MS	F	Sig.
Between groups	9.43	2	4.71	0.84	0.43
Within groups	576.96	103	5.60		
Total	586.39	105			

Note: one-way ANOVA

Figure 2 provides a visible picture of the differences in the discrepancy mean scores of the pre- and the post-test on the overall main idea comprehension test between the experimental and the control conditions.

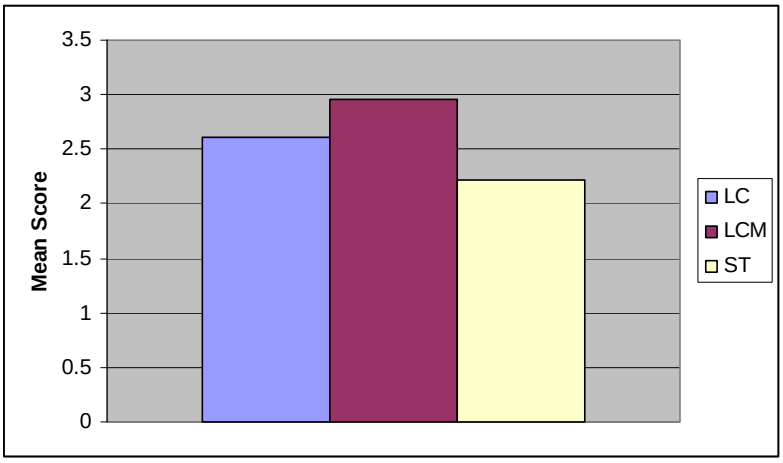

Figure 2: The differences in the discrepancy mean scores of the pre- and post-test on the overall main idea comprehension test between subject groups

Regarding the students' perceptions towards each instructional method, descriptive statistics were used to analyze the data gathered from the responses on the Likert scale closed-type questionnaire (each item offered a closed response format with four options: *4—Strongly agree; 3—Agree; 2—Disagree; 1—Strongly disagree*). They

were performed to calculate the frequency and percentage, as well as the average score (mean) and the standard deviation of each subject group, reflecting students' judgment about each of the instructional methods. The analysis of the close-type questionnaire showed that there were slight distinctions among the groups. The LCM participants tended to more support the training they had received (M = 3.18, SD = 0.20) than their LC (M = 3.04, SD = 0.35) and ST (M = 3.16, SD = 0.30) peers. Responses to the open-ended questions were qualitatively analyzed using the 'content analysis' procedure. Students responded positively to the main idea instructional methods. The LC and LCM students agreed that the lexical cohesion model could help them understand important ideas of texts, although it was not an easy task. Many of them indicated their intent to apply it to their future studies. The ST condition comprised students of differing views; some participants were satisfied with the instruction while others judged that the approach they experienced was something they had already known and, to some students, it did not really improve their main idea strategies.

The line graph demonstrates the comparison of the mean values of students' attitudes towards each main idea instructional model.

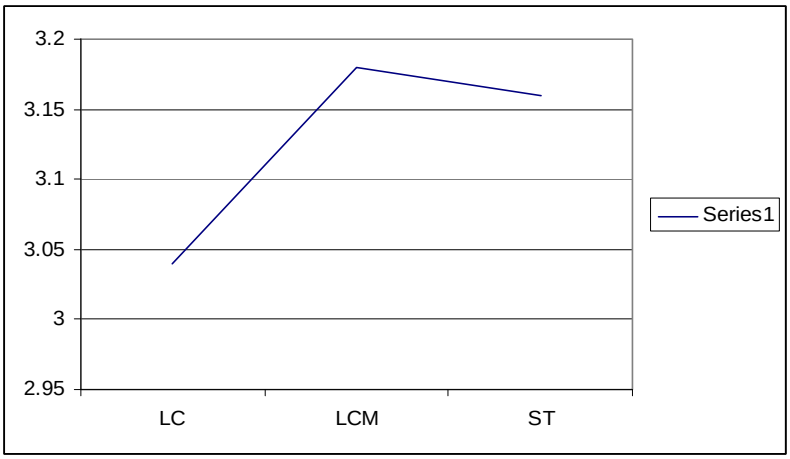

Figure 3: The comparison of the mean values reflecting attitudes of students in the experimental and the control groups

Qualitative Results

Analyses of the qualitative data of the research were aimed at providing responses to two research questions: RQ 3 and RQ 4.

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

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

Open-type Questionnaire

The open-ended questionnaire data were analyzed by the researcher in two phases. The analyses in the first phase began with a search through all the responses to the open-ended questions. Responses to each question from each case were minutely scrutinized for key concepts. Second, a cross-case analysis was performed to search for similarities between the cases (students' answers varied in details). At this stage, 'content analysis'[1] was applied to categorize similar responses pertaining to thoughts, feelings, perceptions and so forth. Data coded similarly were then compared and contrasted.

This part of the questionnaire started with the question, *Prior to this course (355201), what strategy(ies) did you usually use in your English reading to grasp the main idea of a text?* This question was actually intended to acquire general information about main idea skills the students had often made use of. The methods of establishing the main point of a discourse which students in all three conditions reported can be grouped into these categories: translating every word or sentence; using a dictionary; guessing; rereading; recognizing repeated words; using background knowledge; reading topics or headings, or the first sentence of each paragraph; reading through and summarizing the whole discourse using feelings or instincts; and no strategies at all. Responses to question 1 suggested that Thai EFL students participating in the present study had made every effort to understand the discourse they encountered, as well as to build the overall meaning of its content, no matter whether the methods they applied would be very useful for the task or not. One problem that was emphasized by many

[1] Content analysis involves reducing data into key content categories (Dornyei, 2003).

students in each group was that they could never be certain that the main idea determined for each text would correspond with the author's intent. Another problem was that, before the instructional treatment, students in all three classes had no guiding rules which they could actually use as the basis for constructing the central theme of a passage. One student wrote, for example, *"I just keep reading on and on. When I finish the whole passage, I come up with the main idea. I just make a guess…there's no rules for that."* Other students described in their responses that since there were no precise guidelines, they generally made great use of their feelings and instincts, helping them in deciding the mental representations of the texts. Answers to open-ended question 1 as a whole demonstrated that students of the three teaching approaches were, before the intervention, similar in that they had neither strategies nor basic criteria for determining the main idea of the discourse.

In reply to the second question, *Do you think the strategies you have practised in class make main idea identification or construction an easier task? In what ways?,* students' responses generally indicated that they had learned more concrete ideas about how they could deal with the identification or generation of a text's main theme. As a result of the main idea instructional treatments, most students of all three groups accepted that their main idea and reading skills were really improving. The degree of satisfaction with the improvement, however, varied across subject groups. The LC and LCM classes claimed that they had learned more explicit directions on how to locate or generate main ideas, and that the instruction they had experienced effectively enhanced their main idea skills. One LCM student, for instance, described, *"Forming main ideas is no easy task for me. This technique helps me out a lot. Now I learn to order my thoughts…I can think more systematically. It makes the task much easier."* Another LC subject also noted, *"When I searched for relations betweens words, I noticed something particularly significant in the text…the specific point emphasized by the author."* The data from these examples revealed that students in the LC and LCM conditions really made great use of the main idea comprehension techniques they had been trained in. Students considered that the approaches assisted them in developing their thinking 'within the framework' of the passage during the reading processes

The ST students also thought positively about the teaching method they had undergone. They asserted they could tackle the main idea comprehension task more

easily. The recognition of 'key words', in their views, was of considerable assistance in achieving the text meaning quickly. One student of the ST group, for example, reported, *"It's easier to find the main idea of a text this way. Even though I didn't understand every single sentence, I could tell what the text was about."* Tracing key words is regarded by students in this class as an effective way of grasping the most important idea of a discourse. The data gathered from responses to question 2 demonstrated that the vast majority of ST students were well satisfied with the strategies they had practiced.

Question 3 was, *If you have to read English texts outside the class, will you make use of the strategies you have learned from this course? If not, what technique(s) will you employ in order to help you determine the most important content?* Students' answers to this question varied from class to class, and also from person to person. Virtually all students in the ST condition said, "Yes," without further explanation. The answers suggested that they were quite positive about the teaching mode, and that they considered the strategies to be beneficial to their general English reading. In the same manner, the LC participants considered word connections as helpful. One participant responded, *"Yes, I'll use this technique, together with the ones I'd always used before."* As regards the LCM condition, responses to question 3 varied widely from student to student. The main idea instruction of this type was regarded as very effective by many students who made positive replies such as, *"I'll definitely use those strategies because they are good reading guidelines which I can follow," "Yes, I will…They help me understand texts much better."* Some students, however, provided their reasons for not preferring the LCM strategies although they accepted that the techniques they had learnt actually assisted them in this reading task. One of them expressed, *"I felt that the approaches takes a great amount of time…To me, if it's not for a test, I will use my instinct as usual."* Another remarked similarly, *"I'll use them in exams because I'll have time to find word links. But, I don't think it can be done easily in real life…Tracing word relations takes time."* One student explained, *"I usually use key words in my reading, but I never go into detail as we did in class. In my opinion, it was a lengthy process of reading. In fact, many other skills also help, for example, using topics, headings, or illustrations."* Results of the data obtained from the LCM group indicated that the majority of students in this condition perceived the treatment as a very efficient means of determining the most important content of discourse in general

whereas few students did not support the application of the experimental strategies, particularly to English texts of various types they may encounter outside the classroom.

In responses to the final question, *What do you think of the classroom atmosphere during main idea comprehension practice*, students of all three classes expressed their views which varied in detail. In the skill-based teaching condition, the students were pleased with their classroom environment. They enjoyed working in groups and exchanging opinions with their peers. However, there was one student who was discontented with the instruction. She replied to this question, *"To me, it's not different from other English reading classes. It's OK with me, but I got very bored sometimes…especially when you do the same thing day after day."* Similar to the ST group, there seems to be a mixture of likes and dislikes (of the classroom atmosphere) in LC students' responses to this question. Students of the LC group expressed distinct opinions about their classroom environment. Three of them favoured their learning conditions during the main idea training. Their responses were such as, *"I enjoyed the new technique. It allowed us to think and work by ourselves."* Nonetheless, the rest of LC participants were not satisfied with the atmosphere of their classroom. For example, they gave the following descriptions of their class: *"There should have been some sort of motivation or stimulation, so that every one of us became more active and alert."* Some students said, *"We had little time to do the exercises. The time limit really put me under pressure."*

When asked to think about the environment of their classroom, students of the LCM condition exhibited remarkably positive points of view. They asserted that this form of main idea instruction provided them with an intimate classroom setting where they could practise novel main idea strategies, exchange their opinions or ideas with group members. They, for instance, had the following response, *"I had so much fun practising those new strategies with other classmates. The instructor also gave us guidance and support."*

The students' written responses indicated that the LCM class showed more positive attitudes towards the main idea instructional approach they had experienced than those of the ST class. Meanwhile the ST students' replies seemed to be more positive than those of the LC participants.

Strategy Interviews

Finally, interviews in the form of semi-structured dialogues were conducted with each instructional condition after the intervention to elicit more direct information concerning reading strategies used for main idea comprehension. These interviews were carried out in order to reply to the fourth research question. The transcripts of the responses collected from the three interviews (LC: 7; LCM: 5; ST: 3) were minutely scrutinized by the researcher for some representative processes as utilized by students of each treatment condition. The results indicated that the three instructional groups differed in terms of main idea strategy use. The pattern of the strategy use in the LC condition was similar to that of the LCM group—their main idea process was based on the observation of lexically connected items. The recognition of word connections were claimed to make text information more explicit and provide them with a clearer picture of what the central theme of the text could be. The complaints were about their inadequate vocabulary and the lengthy period of time required in the word connections recognition process. Regarding the LCM instruction, the data suggested that for the deletion rule, many students could distinguish between important and unimportant details more easily, with the assistance of lexical connections. The construction rule was more difficult than deletion and generalization because a good understanding of the text content and a higher level of linguistic knowledge are required. Many LCM students accepted that the simultaneous integration of lexical cohesion and macrorules could facilitate their main idea comprehension and helped them create main idea sentences. The approach, however, according to their responses, was sometimes inadequate for the understanding of the text's main point. Accordingly, it was necessary for them to use other reading skills such as finding meaning of words, understanding the syntactic structure and retrieving background knowledge. Choosing the first sentence of the passage as a main idea statement was also regarded as a last resort, when all attempts had failed.

The interview data also revealed the ST group's application of various techniques during reading. Many ST students focused their attention on finding the meaning of individual words, understanding the grammatical structure of a clause or sentence, translating text information into Thai and making use of the titles or headings of the reading passages. They were guided towards locating stated main ideas in expected

positions of a paragraph. That is, the ST participants learned to determine the main idea by selecting either the first or the last sentence of the reading material. Besides, they used 'key words' in understanding the text content. These key words, as they reported, were only word repetitions (i.e. *bear—bear, bird—bird*) or the vocabulary frequently mentioned by the author. The observation of key words in this teaching condition is distinct from the model used in the LC and LCM classes where students used Hoey's taxonomy of lexical cohesion to find lexically related items.

4. Discussion and Conclusions

Two observations can be made based on the study's findings. First, the application of lexical cohesion and macrorules alone, was shown to be inadequate for the understanding of macrostructures. Main idea comprehension is a complex task that involves a variety of reading components and knowledge sources (Pressley, 1998; Afflerbach, 1990; Carriedo and Alonso-Tapia, 1996). General findings can be summed up to show that the formation of main idea requires readers to integrate text-processing skills other than those used in each of the three instructional approaches. The significant increases in the main idea performance of the participants could be the direct consequences of both the LC, LCM and ST treatments and other various reading processes they had employed. Based on the research data, it is clear that none of those processes by themselves were sufficient to facilitate the comprehension of the central theme. Even in the LCM instruction where students were guided towards the combination of lower-order word recognition skills and higher-order comprehension skills, it seemed that other text processing skills were also necessary for the participants to construct text meaning. As revealed by the interview responses, the LCM subjects also utilized other reading skills to compensate for the approaches that seemed ineffective in certain situations. These skills might also positively affect the readers' formulation of main ideas. This finding may provide support for the claim that the determination of main ideas primarily depends on a series of reading techniques—a reader cannot solely rely upon a single approach in order to achieve macrostructures.

Second, some students did not successfully applied the strategies they have practiced (i.e. using lexical cohesive links and the macrorules) while processing texts at

the post-test. There are some possible factors that may explain the ineffective use of the procedures. During the intervention, the LC and LCM students were strongly encouraged to apply the reading processes which had been recommended. However, it is probable that the techniques they had practiced were not properly carried out in a real situation, for instance, the post-test. For the LC and LCM conditions, the ineffective use (by some participants) of lexical connections seemed to be a result of their limitations of vocabulary knowledge. Students' inadequate vocabulary discouraged them from practicing and becoming familiar with the procedures. The interpretation of the text is also hindered by this language problem (Perry & MacDonald, 2001; Hirsch, 2003). If the LC and LCM subjects had had a wider vocabulary and improved their skills in recognizing lexical connections, then they should have been able to perform significantly better than the control group at the post-test. Regarding the LCM approach, whereas the participants were capable of applying the deletion and generalization rules, they found the construction rule much more difficult to operate. This is due to the fact that the construction rule required them not only to focus attention to the information contained in the text but also to integrate ideas from several sentences. Some LCM students, as a result, could not operate the rule effectively.

5. Pedagogical Implications

Lexical cohesion appeared to be an area that needs improvement for EFL learners. During the training session, some of the LC and LCM students were found to have difficulties recognizing lexical relationships effectively. The most frequently used lexical devices were simple repetitions (*a bird—birds*) and complex repetitions (*defend—defending*). Other types of connections (i.e. synonyms, antonyms, and superordinates) were sparingly identified. This limitation in the recognition of cohesive items seems to conform to other previous studies (Yamada, 2005; Liu & Braine, 2005; Kai, 2008), which revealed that non-native speakers of English were reliant upon simple repetitions whereas native speakers tended to use a wider variety of lexically cohesive devices.

The students' restricted use of vocabulary was partly caused by their limitation in language proficiency, vocabulary skills and/or little training in word recognition (Liu & Braine, 2005; Kai, 2008; Wang, 2009). Kern (2000) proposes that students should be

guided through the recognition of word relationships; they should be instructed to focus attention on word derivation (i.e. how words like *write, writing, written, and writer*, are related). This notion of word associations is, to a certain extent, similar to Hoey's (1991) suggestion that vocabulary should be taught and learned in morphological forms (i.e. *frequent—frequently—frequency*). The awareness of these linguistic resources may help develop students' ability to read in a foreign language and to increase their understanding of the text they encounter. EFL students should therefore be allowed a sufficient amount of time for practice and development of this vital skill.

Macrostructure formation, according to Lin (2008), is directly related to the reader's ability to grasp the text content and determine the meaningful relationships among the elements and ideas of the text. In this regard, EFL readers should be directed to operate the *deletion, generalization,* and *construction* rules. That is, students can be activated to delete minor details, figure out the essential parts, integrate ideas from small elements or propositions in the text, and to construct macrostructural sentences. Since the macrorule processes have been claimed as too complex to operate (Afflerbach, 1990; Friend, 2001), EFL students should be allocated enough time to practice the rules until they reached criterion performance.

6. Limitations and suggestions for future study

There are several limitations of the current research which should be taken into account in future studies. First, regarding the strategy use emphasized in the LC and LCM groups, the most obvious features of the instructional approaches were the use of word connections and the macrorules. This was to limit the scope of the present study. However, it does not mean that these processes are the only recommended reading components which the students can utilize to approach text information more efficiently. In fact, as revealed by the interview data, there were many other types of reading techniques employed by the subjects. These strategies might also positively affect the readers' formation of text meaning.

The second limitation lies in the use of lexical cohesive relations. The findings suggest that Thai EFL learners with inadequate command of English vocabulary were found to have greater difficulties in performing the task. The technique of using word

connections would have been more efficient if the subjects had possessed higher proficiency in word knowledge. Future research, therefore, should look more closely at the relationship between vocabulary knowledge of skilled and less-skilled EFL readers and their ability to recognize lexical relations.

Another factor which could have affected the research findings was the limit to the amount of time for main idea instruction. It seems essential for the subjects to receive a longer period of instruction, as well as more extensive training in necessary strategies and skills for main idea comprehension, including the recognition of lexical relations and the application of macrorules. Longer practice in the procedures may have assisted the students in performing the task more properly, thereby producing more conclusive results.

REFERENCES

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

Brit, M.A., & Sommer, J. (2004). Facilitating textual integration with macrostructure focusing tasks. *Reading Psychology, 25*, 313-339.

Celce-Murcia, M., & Olshtain, E. (2000). *Discourse and Context in Language Teaching.* Cambridge: Cambridge University Press.

Cohen, H. G., Rosenbaum-Cohen, P. R., Ferrara, J., & Fine, J. (1988). Reading English for specialized purposes: discourse analysis and the use of student informants. In P. L. Carrell, J. Devine, & D. E. Eskey (Eds.), *Interactive Approaches to Second Language Reading*. Cambridge: Cambridge University Press.

Dhieb-Henia, N. (2003). Evaluating the Effectiveness of Metacognitive Strategy Training for Reading Research Articles in an ESP Context. *English for Specific Purposes, 22*, 387-417.

Elosua, M.R., Garcia-Madruga, J.A., & Gutierrez, F. (2002). Effects of an intervention in active strategies for text comprehension and recall. *The Spanish Journal of Psychology, 5* (2), 90-101.

Friend, R. (2001). Effects of strategy instruction on summary writing of college students. *Contemporary Educational Psychology, 26*(1), 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.

Gilabert, R., Martnez, G., & Vidal-Abarca, E. (2005). Some good texts are always better: text revision to foster inferences of readers with high and low prior background knowledge. *Learning and Instruction, 15*, 45-68.

Grabe, W. (2002). Foundations for L2 reading instruction. *The Language Teacher Online, 26.07, July.* Retrieved July 21, 2009, from http://www.jalt-publications.org/tlt/articles/2002/07/grabe.

Grabe, W. (2009). *Reading in a Second Language: Moving from Theory to Practice.* Cambridge: Cambridge University Press.

Grabe, W., & Stoller, F.L. (2002). *Teaching and Researching Reading.* Harlow: Pearson Education.

Hirsch, E.D., Jr. (2003). Reading Compresion 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.

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.

Kai, J. (2008). Lexical cohesion patterns in NS and NNS dissertation abstracts in applied linguistics: A comparative study. *The Linguistics Journal, 3* (3), 132-144.

Kern, R. (2000). *Literacy and Language Teaching*. Oxford: Oxford University Press.

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* (pp. 157-170). 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* (pp. 1270-1328). 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.

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

Liu, M., & Braine, G. (2005). Cohesive features in argumentative writing produced by Chinese undergraduates. *System, 33,* 623-636.

Lin, L. (2008). The study of English learners' synthesizing process while reading. *Asian EFL Journal, 10* (1), 1-13.

McNamara, D. (2001). Reading both high-coherence and low-coherence texts: Effects of text sequence and prior knowledge. *Canadian Journal of Experimental Psychology, 55*(1), 51-62.

Mikulecky, B.S., & Jeffries, L. (2003). *More Reading Power:* Reading for Pleasure, Comprehension Skills, Thinking Skills, Reading Faster (Second Edition). New York: Addison-Wesley Longman.

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. Retrieved November 4, 2009, from http://www.ineer.org/Events/ICEE2001/Proceedings/papers/201.pdf

Pressley, M. (1998). *Reading Instruction That Works: The Case for Balanced Teaching.* New York: The Guildford Press.

Schmitt, N. (2000). *Vocabulary in Language Teaching.* Cambridge: Cambridge University Press.

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

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.

Strazny, P. (Ed.). (2005). *Encyclopaedia of Linguistics: Volume 1.* New York: Fitzroy Dearborn.

Van den Broek, P., Lynch, J.S., Naslund, J., Ievers-Landis, C.E., & Verduin, K. (2003). The Development of Comprehension of Main Ideas in Narratives: Evidence from the Selection of Titles. *Journal of Educational Psychology, 95* (4), 707-718.

Van der Schoot, M., Vasbinder, A.L., Horsley, T.M., & van Lieshout, E. (2008). The role of two reading strategies in text comprehension: An eye fixation study in primary school children. *Journal of Research in Reading, 31*(2), 203-223.

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.

Vidal-Abarca, E. & Sanjose, V. (1998). Levels of Comprehension of Scientific Prose: The Role of Text Variables. *Learning and Instruction, 8*(3), 215-233.

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

Wang, D. (2009). Factors affecting the comprehension of global and local main idea. *Journal of College Reading and Learning, 39*(2), 34-52.

Wilawan, S. (2006). *Lexical Cohesion and Metacognitive Strategy Training: An Integrated Approach to Main Idea Comprehension.* Unpublished PhD Thesis, University of Leeds, UK.

Yamada, K. (2009). Lexical patterns in L2 textual gist identification assessment. *Language Testing, 26*(1), 101-122.

Yang, Y. (2002). Reassessing Readers' Comprehension Monitoring. *Reading in a Foreign Language*, *14*(1), 18-42.

Appendix 1

Main Idea Comprehension Test *Pre-test*

Part A: *Read each passage carefully, then choose the most appropriate main idea sentence.* *(1 point each)*

1. Humor is a powerful emotional medicine that can lower stress, dissolve anger and unite families in troubled times. Mood is elevated by striving to find humor in difficult and frustrating situations. Laughing at ourselves and the situation helps reveal that small things are not the earth-shaking events they sometimes seem to be. Looking at a problem from a different perspective can make it seem less formidable and provide opportunities for greater objectivity and insight. Humor also helps us avoid loneliness by connecting with others who are attracted to genuine cheerfulness. And the good feeling that we get when we laugh can remain with us as an internal experience even after the laughter subsides. Mental health professionals point out that humor can also teach perspective by helping patients to see reality rather than the distortion that supports their distress. Humor shifts the ways in which we think, and distress is greatly associated with the way we think. It is not situations that generate our stress, it is the meaning we place on the situations. Humor adjusts the meaning of an event so that it is not so overwhelming.

a. Humor improves mental and emotional health.
b. Humor has been used in medicine throughout recorded history.
c. Being able to find humor in life can be helpful when dealing with diseases.
d. Humor adjusts the meaning of an event so that it is not so overwhelming.

2. They are the world's driest places. Sometimes rain doesn't fall there for years. These dry areas—deserts—cover about one-fifth of the earth's surface.

Perhaps you think of a desert as a place filled with sand. This is true of many deserts, but not all. Areas near the North and South poles are also considered deserts by some scientists. They define a desert as any area where the moisture that is lost, mostly by evaporation, is greater than the moisture that falls as rain or snow.

Many deserts are near the equator, where the air is dry and warm. Others are in regions blocked off from oceans by mountains. In these areas the moisture from the ocean winds evaporates as the winds pass over the mountains and cool off. But some deserts are found right next to oceans. Deserts usually form along coastlines if there is a cold current in the ocean water. The cold wind blowing across that current and onto the nearby land holds little moisture.

Most deserts get less than ten inches of rain a year. Because the land is so dry, the rain doesn't penetrate it; it just washes over the surface. Some deserts almost never get any rain. For instance, it rains in the Atacama Desert on the coast of Chile about once every hundred years!

a. A desert is any location that loses more moisture than it gets.
b. Most deserts get less than ten inches of rain a year.
c. Areas near the North and South poles are also considered deserts by some scientists.
d. The most important characteristic of a *desert* is that it receives very little *rainfall*.

3. If you're looking for a whale, you have a whole family of creatures to choose from. The papa of the whale family is, of course, the whale itself. But there are other members as well. Relatives, you might say.

Few people realize that dolphins are part of the whale clan. In fact, many people do not realize that dolphins aren't fish. Fish breathe through gills and lay eggs. The dolphin does neither. Dolphins, like all the members of the whale clan, are mammals. They breathe air, and they have

babies like land mammals and feed them with milk. Dolphins are fascinating to watch. They can leap high out of the water and perform turns in the air. These leaps give the dolphin time to breathe.

Porpoises also belong to the whale family and are very much like dolphins. The main difference between dolphins and porpoises is the size and shape of the snout. The dolphin's nose is long and thin. The snout of the porpoise is short and stubby. Both creatures are smart and friendly to humans.

a. Like whales, dolphins are mammals.
b. An animal family is made up of many different kinds of animals.
c. Dolphins, porpoises, and whales are all part of the same family.
d. The main difference between dolphins and porpoises is the size and shape of the snout.

4. The Leaning Tower of Pisa has defied the laws of gravity for seven and a half centuries. Every year, on June 19th, a professor from the University of Pisa climbs to the bell tower and measures the increase in the slant with special instruments. And every year the professor makes the same report: the tower has leaned a fraction of an inch more. Last summer, the 175 foot-high tower was leaning an incredible 15 feet out of line. Scientists say that unless a way is found to arrest the tilt, the tower will crumble in less than 80 years.

The tower is leaning because the soft subsoil of Pisa will not support it. Its foundation is sinking into the soil at an angle, causing the tower to lean. Since a tremor could jar the foundation loose, the ringing of the tower's bells was forbidden in 1959. Trucks are not allowed to pass in the vicinity of the tower for this same reason.

Scientists insist there is only one way to save the tower. It must be dismantled stone by stone and rebuilt with a new, immobile concrete base that would resist the treacherous soil. But the citizens of Pisa are in no hurry. After all, the leaning tower attracts 400,000 tourists every year.

a. There is only one way to save the Leaning Tower of Pisa.
b. Every year a professor measures the increase in the tower's slant.
c. The tower is leaning because the subsoil of Pisa will not support it.
d. The Leaning Tower of Pisa is in increasing danger of collapsing.

5. People who are exposed to a large increase in steady, prolonged background noise experience lasting elevations in their blood pressure. One study, for example, found that children who attended school near the busy, noisy Los Angeles International Airport had higher blood pressure than children attending quieter schools. If the noise is not just loud but also intermittent, those exposed to it experience symptoms of psychological distress. In a study of people living near a newly opened highway, for instance, 84 percent of those interviewed reported that they were still irritated by the sound of the traffic even after a year of exposure. In other words, the sounds of the highway never receded into background noise. Several studies have shown that this noise-induced irritability can lead to increased aggression and decreased helping behavior. If sounds are not only loud and intermittent but also unpredictable, people tend to experience both behavioral and physiological symptoms of stress. For example, subjects in laboratory experiments who were exposed to noise of this type could not cope well with frustrating tasks. Their ability to perform tasks that required sustained attention to detail also suffered; in one of these studies, people subjected to loud, unpredictable noises made numerous errors as they completed proofreading tasks and tried to solve difficult puzzles.

a. Noise elevates stress and damages health.
b. Stress is very harmful to the health.
c. America is a very noisy place.
d. People who live in noisy areas tend to be stressed out and irritable.

6. In modern times, many small nations oppose the policies of larger, more powerful nations. They know, however, that they cannot engage these superpowers one on one. Some of these smaller countries are controlled by religious fanatics, who will stop at nothing to fulfill their goals. Some may inspire their followers with the belief that dying for their country is a direct ticket to heaven. To such

people, the lives of innocent citizens are not important, and if these innocents are killed, that's the way it is. Leaders of this type also want publicity for their causes, and they know they can get it on T.V. To get media exposure, they train their soldiers to commit acts of murder and sabotage. They also provide these soldiers with supplies and money. Through all this, terrorism has become the newest form of warfare throughout the entire world.

a. Terrorism has become the newest form of warfare throughout the entire world.
b. In modern times, many small nations oppose the policies of larger, more powerful nations.
c. Religious fanaticism is largely responsible for the increasingly violent nature of terrorism.
d. T*errorist* incidents have *caused* irreparable loss of life and property.

7. Columbus once saved his life because he knew from scientific facts in his almanac just when there was going to be an eclipse of the moon. He was marooned on the island of Jamaica for many weeks in the year 1504. The natives were unfriendly and refused to give him any food. Columbus warned them that if they did not feed him, he would turn off the light in the sky at night. His almanac had told him that on the moon. But the poor Indians didn't have any books to give them this information. So when the eclipse did occur, they were terrified. They gave Columbus all the food he needed and begged him, in return, to give them back the light

a. Columbus was marooned on Jamaica for many weeks in the year 1504.
b. The natives refused to give him food.
c. Columbus once saved his life because he knew when there was going to be an eclipse of the moon.
d. Columbus made an important scientific discovery.

8. Countless people have discovered small fortunes in their attics by digging out the correspondence of their ancestors. The forgotten letters often bear stamps worth thousands of dollars. Not long ago, a rare penny stamp of Mauritius was found in this way. Mauritius was a British colony in Africa. It issued its first postage stamp to celebrate a visit by the Queen. The man who engraved the stamp was hurrying to finish in time. In his haste he mistakenly engraved "Post Office" instead of "Post Paid" around the sides of the stamp. By the time the error was discovered and corrected, a sheet of the stamps had already been printed. Only a dozen survive.

An American traveling in Africa purchased one of the faulty stamps. He did not use it, but kept it as a souvenir of his stay in Mauritius. When he returned home, he put the stamp in a trunk with other souvenirs. Later he died and the trunk was forgotten. Twenty years passed. A grandson of the American who had bought the stamp was playing in the attic. By chance he opened the trunk and found the stamp. A stamp dealer identified it. Still unused, it was sold for $30,000 at an auction.

a. People have discovered small fortunes by finding forgotten stamps.
b. Only a dozen of the rare penny stamps survive.
c. One of the faulty stamps was purchased by an American traveling in Africa.
d. Still unused, the stamp was sold for $30,000 at an auction.

9. Poor preparatory practices and nonuse of protective chemicals have been primarily responsible for a recent decline in North African agricultural production. Substandard preparatory techniques—including bad soil preparation, improper tillage practices, inadequate amounts of fertilizers, and insufficient amounts of irrigation water—have caused decreases in the amount of available food in the region. For instance, when farmers in Chad tried to grow wheat without deep plowing in order to save money, wheat production immediately declined. Even when farmers in the area have used appropriate practices to get their crops out of the ground, they often have not used suitable chemicals to protect their growing crops from disease. For example, in 1981, unprotected onion fields in Libya were attacked by bacterial root rot. Consequently, onion production in Libya was extremely low that year. In summary, solutions for these two problems must be found so that the people of North Africa will have sufficient food.

a. Farmers in North Africa have been confronting many problems concerning agricultural production.
b. The people of North Africa have, for several decades, been suffering the shortage of food.
c. Poor preparatory practices and nonuse of protective chemicals have been responsible for a recent decline in North African agricultural production.
d. Solutions for the agricultural problems must be found so that the people of North Africa will have sufficient food.

10. Although we can never determine exactly how extensive drug abuse is in the United States, much is known about its effects. Driving under the influence of drugs is beginning to take its toll in highway deaths and injuries, and perhaps 15 percent of auto accidents are now associated with drugs. Alcohol, one of our most common drugs, is far more dangerous than its broad social acceptability would imply. Many people recognize alcohol's association with about half of all deaths from automobile accidents. Few know, however, that, compared with non-drinkers, the death rate is twice as high for those who drink five or more drinks at least four times a week or that cirrhosis of the liver (a direct result of alcoholism) is the sixth most common cause of death in the United States. People are also only beginning to realize that alcohol is the third major cause of birth defects in the United States.

a. It is estimated that 15 percent of U.S. auto accidents involve drugs.
b. Cirrhosis of the liver is a more common cause of death than people realize.
c. The U.S. has a significant drug-abuse problem.
d. Drug abuse is a major problem throughout the world.

Part B: *Read each passage carefully, then write an appropriate main idea sentence.* *(1 point each)*

11. If you wanted to open a café in your city, where would you go for ideas? Italy, of course. There are more cafes there than in any other country—one for every 400 people. More specifically, you should go to Naples. This city is famous for its excellent and very strong coffee. It is also home to a new "Coffee University," where you can learn all you ever need to know about coffee. There are lessons on the history and production of coffee and on the business of running a café. There are also lessons about another side to café management: the quality of the service. In Naples, you are taught that running a successful café is a kind of art. The place has to have a good feeling about it, so that people want to go there. This depends partly on the speed and quality of the service. It also depends a great deal on how the waiters relate to the customers.

12. Imagine going to sleep in October and waking up in May! Animals such as marmots and ground squirrels stay warm by sleeping all winter. This special kind of sleep is called hibernation. During this sleep, the heart slows down, and the animal breathes more slowly. It doesn't move around, so it uses less energy.

Animals like the marmot and the ground squirrel inhabit the coldest parts of the world. They need special talents to survive in these frigid places. Their furry coats keep them snug when the temperature falls below zero. It often gets this cold in the Arctic.

Before the long winter, some animals eat and eat. After a while, they grow very fat. When winter comes, they live on the fat saved up in their bodies. The fat layers help keep them warm.

Arctic animals also have other ways to beat the cold. Rabbits in the Arctic, for example, have very small ears. Small ears keep heat in, while big ears let it out. Small things usually keep heat in. Have you ever slept in a room that is very small and notice how hot it can get?

It rarely gets warm in the Arctic. Animals such as caribou look forward all year to summer, when they can eat fresh grass again. Every minute of sunshine is important to their lives.

13. Martin Luther King, Jr., went to jail several times for protesting injustice, beginning with his first civil rights crusade in Montgomery, Alabama, in 1955—until his assassination in Memphis in 1968. While in jail, he was pushed around, knocked down, and intimidated. Many times, during protest marches King led, he was the target of fruit, bricks, and bottles thrown by crowds. He was always the target of spying and rumor because of his motives in the civil rights movement and his personal life. He often saw his followers beaten, clubbed, stoned, and spat on. There was frequent verbal abuse, sometimes intensely obscene in nature. During this entire period, he was able to convince and train his followers in the principles of nonviolence that made his movement very successful. King advanced the cause of civil rights for minority groups during the years of his direction of the Southern Christian Leadership Conference. His tactics gave way to those of younger, more militant groups later on, but his achievements have been lasting ones.

14. The situation comedies (sitcoms) we see on television have a very long history. The first sitcoms go back to the fourth century B.C. In that period, Athens, Greece, was a busy, wealthy place. People had active social lives, and they liked entertainment. Much of this came in the form of plays. While some of the plays were very serious, others were lighthearted. A man named Menander wrote many light plays or sitcoms. The best known one is called “Dyskolos”, which means “the ill-tempered man.” The play is about a grouch who has lots of money. Many people in Athens don’t like him and like to play tricks on him. The tricks make Menander’s character mad, but they made the audiences of fourth-century Athens laugh. That’s what the situation comedies of today do for us.

15. He was there to greet the dinosaurs when they arrived on earth. He is still with us 170 million years and billions of kitchens lather than being honored, this sage is despised. Nobody likes a cockroach. Perhaps our hatred of this hearty insect is due to envy. No creature knows more about survival than the cockroach.

A cockroach can live in the middle of the desert or under a kitchen sink. Recently, roaches have been found living in TV sets—the parts that heat up provide warmth, and the wax in the set serves as food. Roaches can survive on almost anything from rose petals to laundry soap. They can even do without any food or water at all for up to a month.

Cockroaches like living with people because there’s always food around. Even ships at sea are plagued by cockroaches. One sea captain offered a bottle of brandy to any sailor who could catch one thousand roaches on board the ship. The crew turned in 32,000 of the pests.

Many fancy poisons are used to kill roaches, but there is no hope of getting rid of them completely. So keep your food wrapped up as possible. But remember, the roach’s existence is one of those creepy facts of life on earth.

Part A: *Read each passage carefully, then choose the most appropriate main idea sentence.* *(1 point each)*

1. There is nothing new, of course, about the idea of a novel baby product springing from a mother's homey solution to an everyday problem. The first baby swing, the Graco Swingomatic, was introduced in 1955, after an engineer at a Philadelphia metalworks factory watched his wife quiet a cranky baby using a back-yard swing. The difference is that today's mom inventors are entering a market in which there is an apparently limitless demand for new products. Each new invention spawns a host of others. The car seat, so simple and beneficial, first became widely available in the early eighties; more recently it has given rise to the car-seat-accessory business, which includes the car-seat cover, the car-seat travel bag, the car-seat mobile snack tray and activity center, the car-seat mat (which protects the seat from the car seat), and the car-seat clip-on blanket.

a. The first baby swing, the Graco Swingomatic, was introduced in 1955.
b. Parents should be aware of the potential dangers of some baby products.
c. Mom inventors are inspired by the limitless market for new baby products.
d. There is nothing new about the idea of a novel baby product springing from a mother's homey solution to an everyday problem.

2. Making a study schedule is one important step in becoming a successful student in college. Students should schedule one hour of study time for every one hour of class time. At exam time, more study time may be necessary. Also, students must study in an appropriate place. It is important to study in a quiet place away from the distraction of other people and such things as the television and the radio. Students should find a comfortable place with plenty of space for all the necessary study supplies. Then, students need to study the information in small amounts. It is a good idea to learn the required concepts slowly and thoroughly instead of trying to learn everything on the evening before the exam. Students who want to be successful in college should remember these three helpful study strategies.

a. Making a study schedule is one important step in becoming a successful student in college.
b. It is best to review the material right after class when it's still fresh in your memory.
c. Place, as well as time, is regarded as the main factors affecting the exam results.
d. Students who want to be successful in college should remember three helpful study strategies.

3. The most satisfying relationships are those in which both partners refrain from continually disagreeing, criticizing, and making negative comments to each other. Both individuals learn to accept the other and do not feel compelled to continually point out flaws or failures. One study found that well-adjusted couples focus their complaints on specific behaviors, whereas maladjusted couples complain about each other's personal characteristics. Well-adjusted couples are also kinder and more positive and have more humor in their interactions. They tend to agree with each other's complaints, whereas the partners in maladjusted relationships launch counter-complaints. In addition, happy couples, when compared to unhappy couples, display more affection through positive nonverbal cues, display more supportive behaviors, and make more attempts to avoid conflicts.

a. A good relationship establishes the need to continually disagree and the freedom to make frequent negative comments to each other.
b. Well-adjusted couples use humor and share complaints in a positive and supportive manner.
c. To communicate well, couples should avoid using nonverbal cues.
d. To communicate well, couples should never avoid conflicts

4. In many cultures, the elderly are not only respected but also revered. In Native American, Hispanic, and Asian societies, for example, older people are cherished for their knowledge, experience, and wisdom. In mainstream American culture, however, the media feeds anxieties about aging by bombarding citizens with advertisements for creams, cosmetics, hair color, diet supplements, and other products that will ward off aging and make people look and feel younger. The general population often stereotypes elderly people as slow, feeble, cranky, and burdensome. Many taxpayers resent the cost of entitlement programs, such as social security and Medicare, which benefit senior citizens. Even professionals tend to have a low opinion of the elderly. Medical students use nicknames such as "vegetable" and "Gork" (short for "God only really knows" the cause of the person's symptoms) to describe elderly patients. Very few of these students choose geriatrics for their specialty. Most doctors do not devote as much time and energy to their elderly patients as they do to their younger patients. And when elderly people become depressed, their doctors are more likely to prescribe drugs rather than send them to psychotherapists because they believe that older people are too set in their ways to be able to work through their problems.

a. Many cultures respect and honor the elderly.
b. Americans should respect and honor elderly citizens.
c. Americans tend to be meaner and more disrespectful than people of other cultures.
d. Many Americans fear aging and are prejudiced against the elderly.

5. In many European countries in the eighteenth and nineteenth centuries, a cafe was an important gathering place. People went there to read the newspaper, to discuss politics and art, to meet friends, or just to have a good cup of coffee. For much of the twentieth century, people had less time and interest in sitting and talking. They also seemed to lose interest in good coffee. As a result, the café lost its importance as a meeting place. Toward the end of the twentieth century, however, it began to come back into fashion, so now there are many cafes in most cities. Some of the classic old cafes are popular once again, and there are also many new cafes. Some, like Starbucks or Peets, are part of American chains of cafes that all look alike and sell the same kind of coffee. Other cafes are designed in different styles, from ultramodern to old-fashioned. Some can be found along main streets, and others are located in book-stores and department stores. Whatever their style of location, they all offer you a chance to sit down, relax, and enjoy a cup of coffee.

a. The café, which lost its popularity in the early twentieth century, became popular again towards the end of that century.
b. In many European countries in the eighteenth and nineteenth centuries, a cafe was important gathering place.
c. The café is the place where one can sit down, relax, and enjoy a cup of coffee.
d. Towards the end of the twentieth century, people all over the world tend to consume more coffee than they used to.

6. Going to college after high school is what some students choose to do. Many others prefer to find a job. For those who are not sure whether to go to school or find a job, the military service might be the answer. The Army, Navy, Marines, Air Force, and coast Guard all offer careers and provide schooling. A person can learn a trade in the service. This can become a career while in the service, and it may also be a career once that person returns to civilian life. Lengths of service run from two to six years, depending on which branch you join. These terms can be renewed. For those who finally want to go to college, the service can be used as a time for growing up and saving money.

a. Going to college after high school is what some students choose to do.
b. For those who are not sure whether to go to school or find a job, the military service might be the answer.
c. After high school students have more freedom to do as they wish.
d. Young people are motivated to join the armed forces.

7. Primitive man learned that he could have more of the good things of life by trading with other men. For example, he could exchange an extra animal skin for food, a club, or a spear. With the coming of civilization man began to use grain, olive oil, crops, and cattle as barter items. But trading with goods was inexact and burdensome. It was necessary to carry around a load of hay on your back to exchange for a dozen bushels of wheat. In about 700 B.C. a people in Asia Minor known as the Lydians decided that gold, silver, and other metals should *stand* for the value of goods. They invented a rough coin called the *stater*, which was made of gold and silver. A certain number of staters could be used to buy a bag of salt, a tool, or clothing. In this way the old custom of barter was gradually replaced by the use of money, although some primitive people still use goods as a medium of exchange.

a. Money replaced goods as a medium of exchange.
b. Primitive man learned that he could have more of the good things of life by trading with other men.
c. Trading with goods was inexact and burdensome.
d. With the coming of civilization man began to use grain, olive oil, crops and cattle as barter items.

8. Amber is a substance that lasts and lasts. Scientists are very glad of this. Without amber, we would not have many of the world's important insect remains. Amber is a hard, yellowish-brown resin found in the earth. It is translucent, which means you can see through it. It is known for its ability to preserve things.

Long ago, amber was not as hard as it is today. It was soft and gummy. Insects that weren't careful about where they walked often got trapped in it. The poor bugs that got caught in the sticky amber died. But they were forever preserved. The golden resin worked like a wax mold. It shaped itself around the insects. The resin hardened as the bodies of the dead insects slowly fell into decay.

The last traces of the insects trapped in amber have been gone for thousands of years. But the imprints of their bodies remained fixed in the hardened resin. Although the bugs are gone from the earth, their imprints remain for us to study. Many of these imprints are very fine and detailed. Preserved imprints of creatures and plants that once lived are called fossils. They help scientists learn more about life on earth in the past.

a. Objects from long ago can tell us a lot about our past.
b. Insects got caught in the sticky amber resin.
c. Amber has preserved the shapes of ancient insects.
d. Preserved imprints help scientists learn more about life on earth in the past.

9. In the United States and many industrialized countries, asthma is a serious health problem for many children, especially in cities. When a person has an asthma attack, the bronchial tubes that bring air to the lungs become blocked and it becomes very difficult to breathe. Doctors have long believed that the ozone in automobile exhaust causes asthma in children. The summer Olympics in Atlanta, Georgia, provided some evidence to support this theory, because city officials closed the downtown area to all automobile traffic for seventeen days. During those days, only half the usual number of children in the area were taken to doctors or hospitals because of asthma attacks. A recent scientific report confirms the evidence of Atlanta and says that many asthma attacks could be prevented by reducing pollution from automobiles. This could be possible if more people took buses or trains to work instead of using their cars.

a. In the U.S. and many industrialized countries, asthma is a serious health problem for many children.
b. Different factors may be more likely to cause asthma in urban children.
c. Although there is currently no "cure" for asthma, there are many ways to reduce asthma symptoms.
d. Asthma attacks in many children could be prevented by reducing the automobile traffic so that there is less pollution.

10. Because early humans had to chew up plants to get enough calories to survive, their mouths contained an extra row of molar teeth. Today, however, only 5 percent of the population has a healthy set of these third molars, or wisdom teeth. Many people just have them removed. The coccyx, the fused vertebrae at the base of the spine, is the useless remainder of the tail that early humans lost as they evolved, and surgical removal of the coccyx has no effect on the body's performance. Like the coccyx, human body hair once had a function. Hair on the chest and back helped keep early humans warm while eyebrows kept sweat out of the eyes. Now most of the hair left on the modern human body serves no function. A trio of ear muscles once allowed early humans to move their ears just as dogs and rabbits do. Although modern humans still have these muscles, we don't use them unless we make a conscious effort to learn how to wiggle our ears. Several other small muscles in the body, which were once important for actions like hanging, climbing, and grasping with the feet, are still present in the majority of humans, but they, too, no longer serve any function.

a. Early humans were more like animals than modern humans are.
b. Quite a few human body parts are now useless.
c. Many body parts cause problems for modern humans and have to be removed.
d. The human body offers much evidence that humans evolved from apes.

Part B: *Read each passage carefully, then write an appropriate main idea sentence.* *(1 point each)*

11. Did you ever hear of “singing sand”? This is the kind of sand that makes bizarre sounds when it is walked on or driven over, or when the wind blows across its surface. The sound such sand makes is something between a crunch and a squeak, but it often has a definite musical tone. In the United States, singing sand has been found along the seashore in Massachusetts and in the shifting sands north of Alamosa, Colorado. People in different parts of the world have given these musical sands different names. In South Africa they are called “crying sands.” In Hawaii they are called “Braking sands.” And in Afghanistan they are called “drumming sand.” But whatever the sands may be called, scientists have not yet agreed as to what causes them to make such weird sounds.

12. Listening skills are crucial for developing and maintaining relationships. Listening clues you into others' needs, wants, and values, and it enables you to respond to them in appropriate ways. In the initial stages of a relationship, partners share a great deal of information. The amount of information tapers off in the later stages as a relationship continues over time. This tapering off creates the illusion that you don't have to listen as much or as well as you did early on. But listening is a way to demonstrate ongoing interest in another person. Even in long-term relationships, you do not know everything your partner has to say. It is still important to stop, look, and listen—to put down the newspaper or turn off the radio when your close friend begins talking to you.

13. The marmot, a relative of the woodchuck, is nature’s air-raid warden. He has two enemies—the grizzly bear and the golden eagle. To guard against these marauders the marmot has devised an air-raid protection system somewhat like man’s. If he sees a bear or an eagle, he immediately gives a high, piercing whistle. The whistle warms other marmots to take shelter. It is the farthest-reaching sound made by any animal, and can be heard two miles away.

When the warning is given, the marmots seek safety under-ground. For several minutes they wait quietly. Then a sentry ventures out to see if the danger is past. If all is well, the sentry utters a low entirely different whistle, which appears to be the “all clear” signal. Brown heads pop up all over the countryside, and the marmot world resumes its business.

14. Relationship talk is talking about the nature, quality, direction, or definition of a relationship. Relationship talk is generally considered inappropriate in the early stages of a relationship. A relationship might be prematurely terminated if one partner tries to talk about the relationship too early. Willingness to talk about the relationship is one way to implicitly signal your partner about your level of interest and commitment to the relationship. As relationships move toward greater intimacy, however, the amount of direct relationship talk increases. As the relationship escalates, we should be prepared to discuss our thoughts and feelings about it. In more intimate relationships, relationship talk helps the partners resolve differences in their perceptions of the relationships that might be contributing to conflict and dissatisfaction. Unwillingness to talk about the relationship in an intimate relationship can ultimately drive a partner away.

15. American radio is now dominated by the music industry, but in the past, radio was the primary source of entertainment. Evenings brought adventure stories, dramas, and comedies. A show called “Lux Presents Hollywood” offered one-hour summaries of current films. Afternoon listeners got caught up in dramatic fifteen-minute serial dramas about domestic life. Because laundry soap makers sponsored most of these, they were known as “soap operas.” Radio broadcast major sports events to fans across the nation. During World War II, Armed Forces Radio carried Bowl games, the Kentucky Derby, the World Series, and other major sports events to soldiers throughout the world.

By the late 1940s, TV had changed all that, so that now radio is dominated by popular music. Most stations play rock and country music. Some offer “easy listening,” the popular ballads of the past. A few stations, mostly National Public Radio, broadcast classical music. AM stations usually broadcast news or talk shows all day. FM stations often broadcast news and local weather on the hour. Because of TV, radio has had to redefine its role.

Appendix 2

<u>แบบสอบถาม</u>

เรื่อง ความคิดเห็นที่มีต่อวิธีการจับใจความสำคัญจากเรื่องที่อ่าน

แบบสอบถามนี้มีวัตถุประสงค์เพื่อใช้เป็นเครื่องมือเก็บข้อมูลในการทำวิจัยเรื่องวิธีการจับใจความสำคัญจากเรื่องที่อ่าน และเพื่อสอบถามความคิดเห็นที่มีต่อวิธีการดังกล่าวของนิสิตมหาวิทยาลัยเกษตรศาสตร์ ที่เรียนวิชา 01355201: Fundamental English Reading ในภาคฤดูร้อน ปีการศึกษา 2552

ขอความกรุณานิสิตช่วยตอบแบบสอบถามนี้ให้**<u>ครบทุกข้อ</u>** ตามความเห็นของท่าน คำตอบของท่านจะเป็นประโยชน์อย่างยิ่งสำหรับการวิจัยและการเรียนการสอนวิชา 01355201 ข้อมูลแบบสอบถามทุกฉบับจะถือเป็นความลับ และจะนำเสนอผลการวิจัยในลักษณะรวมๆ เท่านั้น

<u>ส่วนที่ 1</u> โปรดทำเครื่องหมาย √ ลงในช่องที่ตรงกับความคิดเห็นของท่าน

ลำดับ	ทัศนคติ	เห็นด้วยอย่างยิ่ง	เห็นด้วย	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง
1	วิธีการจับใจความสำคัญที่ท่านฝึกช่วยให้ท่านอ่านเรื่องได้อย่างมีประสิทธิภาพ				
2	วิธีการที่ฝึกช่วยให้ท่านมีแนวทางในการจับใจความสำคัญที่ชัดเจนขึ้น				
3	หลังจากที่ได้ฝึกวิธีการจับใจความสำคัญท่านคิดว่าจะสามารถทำคะแนนได้ดีขึ้นในการสอบ Post-test				
4	ท่านจะยังคงใช้วิธีการดังกล่าวในการจับใจความสำคัญจากเรื่องที่ท่านอ่านนอกชั้นเรียน				
5	ท่านรู้สึกพึงพอใจกับการใช้วิธีการเหล่านี้ในการจับใจความสำคัญ				
6	วิธีการดังกล่าวทำให้ท่านเป็นกังวลมากขึ้นขณะที่พยายามจับใจความสำคัญจากเรื่องที่อ่าน				
7	วิธีการจับใจความสำคัญที่ท่านได้ฝึกฝนในภาคการศึกษานี้ทำให้ท่านรู้สึกเสียเวลาและไร้ประโยชน์				
8	ท่านคิดว่าการใช้วิธีการดังกล่าวขณะที่อ่านเรื่องไปด้วยเป็นเรื่องที่ทำได้ยาก				
9	อาจารย์ผู้สอนวิชา reading ควรฝึกให้นิสิตใช้วิธีการจับใจความสำคัญที่ใช้ในภาคการศึกษานี้ต่อไป				
10	วิธีการจับใจความสำคัญแบบดังกล่าวไม่สามารถช่วยให้ท่านจับใจความสำคัญได้				
11	ท่านคิดว่าท่านสามารถจับใจความสำคัญจากเรื่องที่อ่านได้ด้วยตนเองโดยไม่จำเป็นต้องเรียนรู้วิธีการที่ฝึกในชั้นเรียน				
12	วิธีการจับใจความสำคัญที่ฝึกในชั้นเรียนกระตุ้นให้ท่านรู้จักคิดไตร่ตรองและสามารถอ่านเรื่องได้อย่างเป็นขั้นตอน				

ส่วนที่ 2

1. ก่อนที่เรียนวิชา 355221 ท่านเคยใช้วิธีการใดช่วยในการจับใจความสำคัญ

2. ท่านคิดว่าวิธีการที่ได้ฝึกฝนในชั้นเรียน ช่วยให้ท่านจับใจความสำคัญได้ง่ายขึ้นหรือไม่ อย่างไร

3. ถ้าท่านต้องอ่านเรื่องที่เป็นภาษาอังกฤษนอกเหนือจากที่อ่านในชั้นเรียนนี้ ท่านจะใช้วิธีการที่ฝึกในชั้นเรียนหรือไม่ ถ้าไม่ใช้ท่านจะใช้วิธีการใดช่วยในการจับใจความสำคัญ โปรดระบุ

4. ท่านมีความรู้สึกอย่างไรกับบรรยากาศในชั้นเรียน ขณะที่มีการฝึกวิธีการจับใจความสำคัญ

ขอขอบคุณนิสิตที่ได้กรุณาสละเวลาในการกรอกข้อมูลแบบสอบถามนี้

Appendix 3

Practice Exercise Sample

Session **1**

---

1. ***Rain Forests***

Tropical rain forests grow near the equator, in the hottest part of the world. Rain forests are always wet. The moisture just never dries up.

The trees in a rain forest are very tall and have very few limbs. The leaves are all at the top. They form a high ceiling. Very little sunlight comes through the leaves. Inside a rain forest it is as dark and quiet as a church.

There are very few low-growing plants on the rain forest floor. Walking through a rain forest is like being at a circus's high trapeze show—the most exciting things are happening high above the ground. Monkeys swing on vines, with baby monkeys on their backs. Large snakes crawl from branch to branch. Giant bats make squeaky noises.

The animals that stay near the ground are fascinating, too. The gentle tapir, which looks like a small horse with a long nose, covers itself with mud from head to foot. When the mud dries, it forms a kind of armor. It protects the tapir from biting insects. Another ground animal is the anteater. It has a long, sticky tongue that works like a fly trap. But the tongue is really an ant trap. For breakfast, lunch, and dinner the anteater eats nothing but ants, ants, and more ants!

a. Many animals in the rain forest stay high in the trees.

b. A rain forest is a home for many interesting animals.

c. Many interesting animals live in tropical climates.

d. Tropical rain forests grow in the hottest part of the world.

2. ***DDT Disaster: Pelicans in California***

The California brown pelican population was severely reduced in the 1950s and 1960s by a cause and effect cycle involving the insecticide DDT (*d*ichloro-*d*iphenyl-*t*richloroethane). In the 1950s, California farmers began using aerial spraying of DDT to kill the insects infesting their crops. However, after the insecticide had accomplished its purpose, it did not disappear from the environment. Instead, the DDT remained on the ground until it was washed into nearby lakes and rivers by seasonal rains. Once in the water, the DDT was absorbed by tiny marine plants and animals. Some of these organisms died; others were eaten by fish. The fish absorbed the DDT into their bodies; again some died, but others survived and were eaten by brown pelicans. The pelicans were not directly killed by the insecticide; however, the DDT made the shells of the pelican eggs so thin that they cracked easily. As a result, few baby pelicans were hatched. Between 1950 and 1972 (when DDT was banned), the brown pelican population in California declined from 2,500 to less than 500.

a. The California brown pelican are now in danger of extinction.

b. California farmers were completely unaware of the terrible effects of their use of aerial spraying of the DDT.

c. The California brown pelican population was severely reduced in the 1950s and 1960s by a cause and effect cycle involving the insecticide DDT.

d. The use of the insecticide DDT caused serious damage to living creatures and the environment.

3. ***An Ancient Disaster***

For more than 600 years, Pompeii was an important city in the Roman Empire. Located on the Bay of Naples in southern Italy, Pompeii was a favorite spot for wealthy Romans to build their country villas. The city was busy and prosperous, and the streets were lined with shops, houses, and temples. Citizens had use of an open-air theater and public baths. But this dream city had one flaw. Pompeii sat at the foot of Mount Vesuvius.

In A.D. 79, on the morning of August 24, Vesuvius erupted violently. Fire and ash filled the sky and buried the beautiful city. When Vesuvius finally settled down, Pompeii lay buried under pumice nearly ten feet thick. The volcano so changed the area that the spot where Pompeii, a port city, once stood was now two miles from the ocean. Many people died in the great eruption, either from falling rock and collapsing buildings or from the volcano's poisonous fumes. The great city of Pompeii had disappeared.

So it was a great surprise when, in the 1700s, a peasant discovered some statues buried in his vineyard. When people began to dig further, they unearthed the houses, food, and even the bodies of some of the citizens of the once-bustling Pompeii. The city had been covered so quickly that everything in it seemed to be frozen in time.

_____

_____

4. ***The Greatest Jumper***

The world's best jumpers all come from Australia. Most Olympic athletes train for years before they succeed in making a twenty-foot long jump. But the kangaroo, the greatest jumper on earth, can travel in twenty-foot leaps, moving almost as fast as a car on the highway!

The kangaroo's build enables it to travel at this high speed for extremely long distances without stopping. Its small head and short front feet reduce resistance to the wind, giving the animal a streamlined appearance. All of the kangaroo's weight is concentrated on the back of its body—in the thick, long tail and the long hindquarters. The animal can sit on its tail as if it were a chair or use it to maintain balance during long bounds. The kangaroo's hind feet, which are like springboards when it jumps, can be as long as ten inches from heel to toe.

Another interesting aspect of the kangaroo is the strength in its front feet. If those front feet were to be dressed in boxing gloves, the kangaroo could probably win a boxing match. It is known that the kangaroo can deliver strong punches; it can also hop around

and completely exhaust an opponent. But despite advantages in speed and endurance, the kangaroo will not hurt other animals and will eat only vegetables. And although the kangaroo can leap over five-foot fences as if they were nothing this surprising animal really can't walk.

_____

_____

5. ***Flying Tigers***

Hawks and falcons are the wolves and tigers of the bird kingdom. They are meat-eaters that rely on strength and skill to catch their unwary victims. These birds have unusually good eyesight, great skill in flight, and sharp beaks and talons that quickly end the struggles of their prey.

The hawks—a family that includes the bald eagle—tend to be large birds that hunt by soaring and gliding high in the air until they spot their prey on the ground. Then they drop down in a fast and accurate swoop, giving no warning until their wings flash open to break their fall, and their sharp talons close on their victims.

Falcons are usually smaller than hawks. They have long, narrow wings designed for very fast flight. This family includes the peregrine falcon, called the bird of kings, which has been trained to hunt for the royalty of Europe and Africa for centuries. The peregrine, in its swoop upon its prey, has been clocked at speeds of over 100 miles per hour.

Until recently, hawks and falcons had suffered from people's war on insects. Small animals ate the insects that had been sprayed with chemicals; then these were eaten by larger animals that were in turn eaten by the birds of prey. After the hawks had eaten a number of these animals, the chemicals had a deadly effect. The birds began to lay eggs with very thin shells that broke when the birds tried to hatch them. But now, due to careful efforts to restore the hawk and falcon population, these birds are beginning to make a comeback.

_____

_____

1. ***Rain Forests***

rain forests—rain forest **trees—limbs—leaves—branch**
monkeys—snakes—bats—animal—tapir—anteater

Tropical rain forests grow near the equator, in the hottest part of the world. Rain forests are always wet. The moisture just never dries up.

The trees in a rain forest are very tall and have very few limbs. The leaves are all at the top. They form a high ceiling. Very little sunlight comes through the leaves. Inside a rain forest it is as dark and quiet as a church.

There are very few low-growing plants on the rain forest floor. Walking through a rain forest is like being at a circus's high trapeze show—the most exciting things are happening high above the ground. Monkeys swing on vines, with baby monkeys on their backs. Large snakes crawl from branch to branch. Giant bats make squeaky noises.

The animals that stay near the ground are fascinating, too. The gentle tapir, which looks like a small horse with a long nose, covers itself with mud from head to foot. When the mud dries, it forms a kind of armor. It protects the tapir from biting insects. Another ground animal is the anteater. It has a long, sticky tongue that works like a fly trap. But the tongue is really an ant trap. For breakfast, lunch, and dinner the anteater eats nothing but ants, ants, and more ants!

a. Many animals in the rain forest stay high in the trees.

b. A rain forest is a home for many interesting animals.

c. Many interesting animals live in tropical climates.

d. Tropical rain forests grow in the hottest part of the world.

2. ***DDT Disaster: Pelicans in California***

California **brown pelican—brown pelicans**
1950—1960—1972 **insecticide—DDT**
kill—died-- killed

The California brown pelican population was severely reduced in the 1950s and 1960s by a cause and effect cycle involving the insecticide DDT (*d*ichloro-*d*iphenyl-*t*richloroethane). In the 1950s, California farmers began using aerial spraying of DDT to kill the insects infesting their crops. However, after the insecticide had accomplished its purpose, it did not disappear from the environment. Instead, the DDT remained on the ground until it was washed into nearby lakes and rivers by seasonal rains. Once in the water, the DDT was absorbed by tiny marine plants and animals. Some of these organisms died; others were eaten by fish. The fish absorbed the DDT into their bodies; again some died, but others survived and were eaten by brown pelicans. The pelicans were not directly killed by the insecticide; however, the DDT made the shells of the pelican eggs so thin that they cracked easily. As a result, few baby pelicans were hatched. Between 1950 and 1972 (when DDT was banned), the brown pelican population in California declined from 2,500 to less than 500.

a. The California brown pelican are now in danger of extinction.

b. California farmers were completely unaware of the terrible effects of their use of aerial spraying of the DDT.

c. The California brown pelican population was severely reduced in the 1950s and 1960s by a cause and effect cycle involving the insecticide DDT.

d. The use of the insecticide DDT caused serious damage to living creatures and the environment.

3. ***An Ancient Disaster***

Pompeii—the city—this dream city **buried—covered**
Mount Vesuvius—the volcano—the volcano's **erupted—settled down—eruption**

For more than 600 years, Pompeii was an important city in the Roman Empire. Located on the Bay of Naples in southern Italy, Pompeii was a favorite spot for wealthy Romans to build their country villas. The city was busy and prosperous, and the streets were lined with shops, houses, and temples. Citizens had use of an open-air theater and public baths. But this dream city had one flaw. Pompeii sat at the foot of Mount Vesuvius.

In A.D. 79, on the morning of August 24, Vesuvius erupted violently. Fire and ash filled the sky and buried the beautiful city. When Vesuvius finally settled down, Pompeii lay buried under pumice nearly ten feet thick. The volcano so changed the area that the spot where Pompeii, a port city, once stood was now two miles from the ocean. Many people died in the great eruption, either from falling rock and collapsing buildings or from the volcano's poisonous fumes. The great city of Pompeii had disappeared.

So it was a great surprise when, in the 1700s, a peasant discovered some statues buried in his vineyard. When people began to dig further, they unearthed the houses, food, and even the bodies of some of the citizens of the once-bustling Pompeii. The city had been covered so quickly that everything in it seemed to be frozen in time.

_____

_____

4. ***The Greatest Jumper***

jumpers—jump—leaps—hop—leap **kangaroo—kangaroo's—the animal**
build—head—feet—body—tail—hindquarters—heel—toe

The world's best jumpers all come from Australia. Most Olympic athletes train for years before they succeed in making a twenty-foot long jump. But the kangaroo, the greatest jumper on earth, can travel in twenty-foot leaps, moving almost as fast as a car on the highway!

The kangaroo's build enables it to travel at this high speed for extremely long distances without stopping. Its small head and short front feet reduce resistance to the wind, giving the animal a streamlined appearance. All of the kangaroo's weight is concentrated on the back of its body—in the thick, long tail and the long hindquarters. The

animal can sit on its tail as if it were a chair or use it to maintain balance during long bounds. The kangaroo's hind feet, which are like springboards when it jumps, can be as long as ten inches from heel to toe.

Another interesting aspect of the kangaroo is the strength in its front feet. If those front feet were to be dressed in boxing gloves, the kangaroo could probably win a boxing match. It is known that the kangaroo can deliver strong punches; it can also hop around and completely exhaust an opponent. But despite advantages in speed and endurance, the kangaroo will not hurt other animals and will eat only vegetables. And although the kangaroo can leap over five-foot fences as if they were nothing this surprising animal really can't walk.

_____

_____

5. ***Flying Tigers***

Hawks and falcons are the wolves and tigers of the bird kingdom. They are meat-eaters that rely on strength and skill to catch their unwary victims. These birds have unusually good eyesight, great skill in flight, and sharp beaks and talons that quickly end the struggles of their prey.

The hawks—a family that includes the bald eagle—tend to be large birds that hunt by soaring and gliding high in the air until they spot their prey on the ground. Then they drop down in a fast and accurate swoop, giving no warning until their wings flash open to break their fall, and their sharp talons close on their victims.

Falcons are usually smaller than hawks. They have long, narrow wings designed for very fast flight. This family includes the peregrine falcon, called the bird of kings, which has been trained to hunt for the royalty of Europe and Africa for centuries. The peregrine, in its swoop upon its prey, has been clocked at speeds of over 100 miles per hour.

Until recently, hawks and falcons had suffered from people's war on insects. Small animals ate the insects that had been sprayed with chemicals; then these were eaten by larger animals that were in turn eaten by the birds of prey. After the hawks had eaten a number of these animals, the chemicals had a deadly effect. The birds began to lay eggs with very thin shells that broke when the birds tried to hatch them. But now, due to careful efforts to restore the hawk and falcon population, these birds are beginning to make a comeback.

_____

_____