THE EFFECTIVENESS OF THE SEMANTIC MAPPING TECHNIQUE ON READING ACHIEVEMENT OF THE FIRST-YEAR NURSING STUDENTS AT MAHIDOL UNIVERSITY

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Pornpun Oranpattanachai

ชื่อวิทยานิพนธ์ ประสิทธิภาพของการสอนการอ่านภาษาอังกฤษเพื่อความเข้าใจโดยใช้เทคนิคแผนผังสรุปโยงเรื่องของนักศึกษาพยาบาลปีที่ 1 มหาวิทยาลัยมหิดล

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บทคัดย่อ

การวิจัยเชิงทดลองนี้มีจุดประสงค์ที่จะหาประสิทธิภาพของการสอนการอ่านภาษาอังกฤษเพื่อความเข้าใจโดยใช้เทคนิคแผนผังสรุปโยงเรื่องของนักศึกษาพยาบาลปีที่ 1 มหาวิทยาลัยมหิดล

ตัวอย่างประชากรที่ใช้ในการวิจัย คือ นักศึกษาพยาบาลชั้นปีที่ 1 คณะวิทยาศาสตร์ มหาวิทยาลัยมหิดลจำนวน 60 คน ผู้วิจัยได้แบ่งตัวอย่างประชากรออกเป็น 2 กลุ่ม คือ กลุ่มควบคุมและกลุ่มทดลอง แต่ละกลุ่มมีจำนวนนักศึกษา 30 คน สำหรับกลุ่มควบคุมผู้วิจัยได้ใช้เทคนิคการสอนแบบเดิม ส่วนกลุ่มทดลองผู้วิจัยได้ใช้เทคนิคแผนผังสรุปโยงเรื่อง การทดลองในการทำวิจัยครั้งนี้ใช้เวลา 18 ชั่วโมง ในภาคการศึกษาที่สองของปีการศึกษา 2535 เครื่องมือที่ใช้ในการทำวิจัย คือ แบบสอบก่อน-หลังการทดลองและแบบสอบถาม

สรุปผลการวิจัย

1. นักศึกษาในกลุ่มควบคุมสามารถทำคะแนนในข้อสอบวัดความเข้าใจด้านการอ่านเพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติจากการเปรียบเทียบคะแนนก่อนการทดลองกับคะแนนภายหลังการทดลองที่ระดับความเชื่อมั่น .001

2. นักศึกษาในกลุ่มทดลองสามารถทำคะแนนในข้อสอบวัดความเข้าใจด้านการอ่านเพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติที่ระดับความเชื่อมั่น .001 จากการเปรียบเทียบคะแนนที่ได้รับก่อนการทดลองกับคะแนนภายหลังการทดลอง

3. นักศึกษาในกลุ่มทดลองสามารถทำคะแนนในข้อสอบวัดความเข้าใจด้านการอ่านสูงกว่านักศึกษาในกลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติที่ระดับความเชื่อมั่น .01

4. นักศึกษาในกลุ่มทดลองที่มีความสามารถในการอ่านภาษาอังกฤษดีสามารถทำคะแนนในข้อสอบวัดความเข้าใจด้านการอ่านสูงกว่านักศึกษาในกลุ่มควบคุมที่มีความสามารถในการอ่านภาษาอังกฤษดี แต่อย่างไรก็ตามไม่มีความแตกต่างอย่างมีนัยสำคัญทางสถิติ ส่วนนักศึกษาที่มีความสามารถในการอ่านค่อนข้างต่ำสามารถทำคะแนนในข้อสอบวัดความเข้าใจด้านการอ่านภาษาอังกฤษได้สูงกว่านักศึกษาในกลุ่มควบคุมที่มีความสามารถในการอ่านค่อนข้างต่ำอย่างมีนัยสำคัญทางสถิติที่ระดับความเชื่อมั่น .001

5. จากแบบสอบถามความคิดเห็นของนักศึกษาในกลุ่มทดลองพบว่านักศึกษาในกลุ่มทดลองสามารถทราบแนวทางของเรื่องก่อนการอ่าน มีความกระตือรือร้นในการอ่าน ทราบความหมายของคำศัพท์ที่เกี่ยวพันกับเรื่องก่อนการอ่าน เห็นความสัมพันธ์ของเนื้อเรื่องที่อ่าน รวมทั้งทำให้จำเนื้อเรื่องที่อ่านได้แม่นยำยิ่งขึ้น นอกจากนี้นักศึกษายังได้ประเมินความเข้าใจของตนเองว่าเทคนิคแผนผังสรุปโยงเรื่องช่วยทำให้นักศึกษาเข้าใจเรื่องที่อ่าน

Thesis Title The Effectiveness of The Semantic Mapping Technique on Reading Achievement of The First-Year Nursing Students At Mahidol University

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ABSTRACT

This experimental study was intended to investigate the effectiveness of the semantic mapping technique on the reading achievement of first-year nursing students at Mahidol University.

The subjects of this study were 60 first-year nursing students at the faculty of science, Mahidol University. All of them were female. The research design involved two groups: the control group and the experimental group. Each group consisted of 30 students. The control group was taught by the conventional technique while the experimental group was taught with a semantic mapping technique. The experiment was held over during the first semester of the academic year 1992-1993 within the period of 9 weeks totalling 18 hours in one

semester. The instruments employed were a pre/post test and a questionnaire.

The findings of this study can be summarized as follows:

1. There was a significant difference between the mean scores obtained from the posttest and those obtained from the pretest ($p<.001$) for students in the control group.
2. An equally significant difference was found between the mean scores of the posttest and pretest ($p<.001$) for students in the experimental group.
3. There was a significant difference between the mean scores of the experimental and the control groups ($p<.01$).
4. High reading-ability students in the experimental group scored higher than those in the control groups but the difference between the mean scores of those two groups was not significant ($p>.05$). Whereas low reading-ability students in the experimental group, their mean scores were significantly different from those in the control group at a .001 level.
5. It was revealed from the questionnaire that students in the experimental group reported a favorable attitude toward the semantic mapping technique. And students evaluated themselves that they comprehend the reading passages at the moderate level.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF TABLES

LIST OF FIGURES

LIST OF GRAPHS

CHAPTER I
INTRODUCTION

This study investigated the effectiveness of the semantic mapping technique on reading achievement of the first year nursing students at Mahidol University. To obtain the data, the study employed a pre/post tests design and a questionnaire. The results of the tests were analized to determine the effectiveness of the semantic mapping technique. The data obtained from the questionnaire were used to investigate how the students felt about the semantic mapping technique.

The study is divided into five chapters.

Chapter one presents the rationale of the study, the statement of the problem, the statement of the purposes, the scope and limitations of the study, the definition of terms and the assumptions of the study.

Chapter two reviews related literature.

Chapter three presents the subjects, the method (including the research design, instruments and procedure) and statistical devices used in the study.

Chapter four presents the findings of the study.

Chapter five consists of a summary of the study, discussions of the findings, and conclusion, implication for teaching and learning, and recommendations for further study.

Rationale of the Study

Thailand is currently developing into a newly industrialized country and the knowledge of new

science and technology is very important for continued development. Most modern ideas of science and technology are from the western world and the knowledge mainly published in English.

Since English is the key to much of the knowledge in science and technology; English has been widely taught in Thailand. The most important skill for most students of English throughout the world is reading (Paulston and Bruder, 1976: 167). For most Thai university students, the practical reason for studying English is to gain ability to read journals and books in English. For this reason, teaching techniques are needed that will help students to read textbooks and journals effectively and independently.

In recent years many studies have been carried out to investigate various techniques and activities which can develop students' reading skills so that they can better comprehend what they have read. Recent research in America has indicated that the semantic mapping technique, a graphic arrangement showing the major ideas and relationships in a text or among word meanings, used in teaching reading comprehension, has consistently positive results (Carrell, Pharis and Liberto: 1989).

In semantic mapping, a teacher chooses a key word from material that the students will read. The key word is listed on the board and students are asked to suggest terms associated with the key word. From the vocabulary list, a map is constructed. The relationships between

the key word and the target words are discussed throughly. Then the reading is assigned to the students. After reading, the students share the information and add new terms they have learned from the reading passage to the initial map. (An example of an initial map and a completed map are given below)

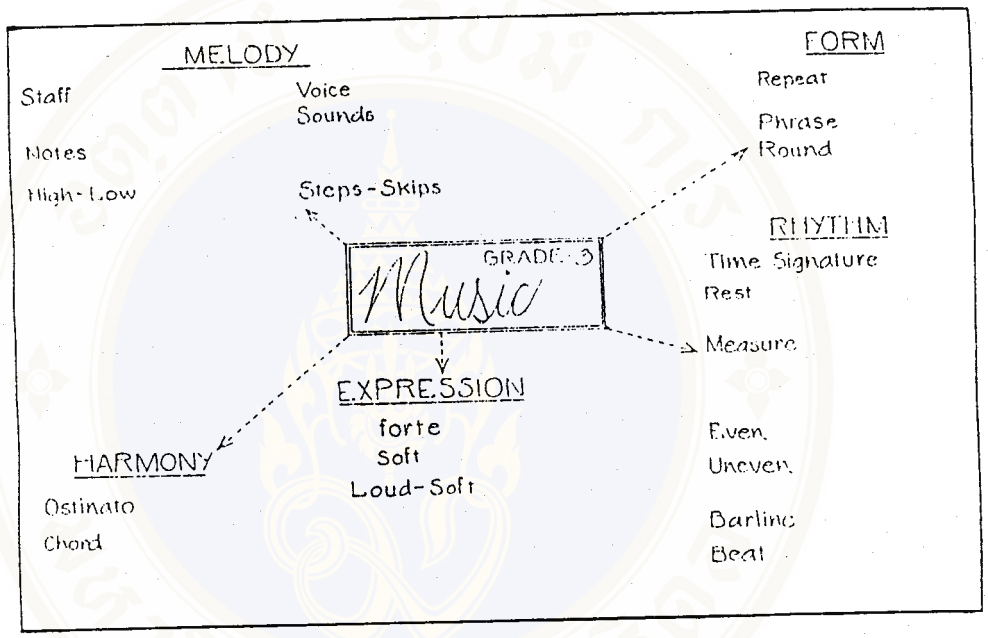


Figure 1

Initial map for Music

(Heimlich and Pittelman, 1986:24)

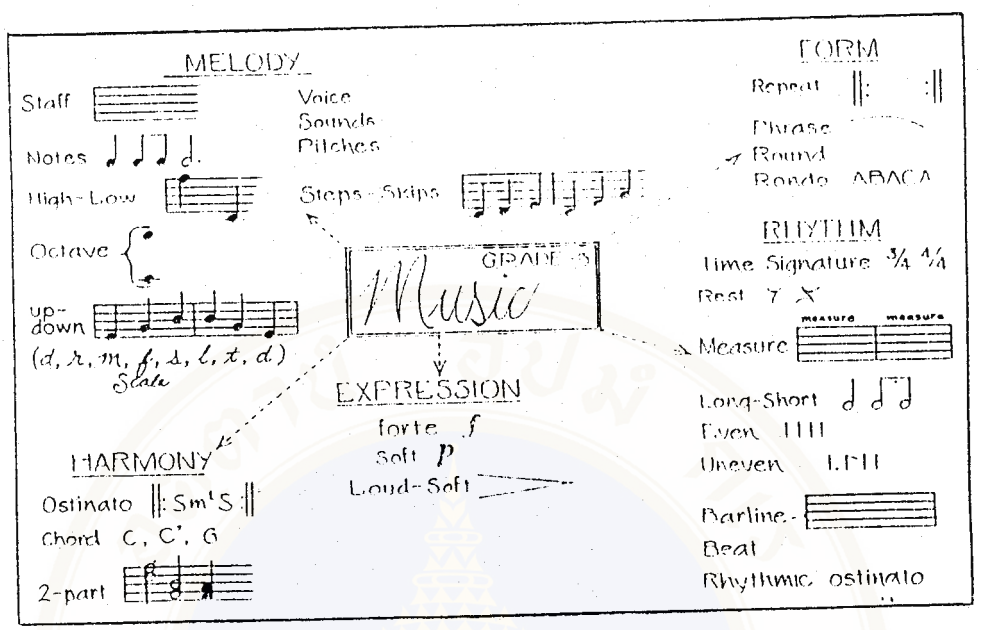


Figure 2

Completed Map for Music

(Heimlich and Pittelman, 1986:25)

A study done by Johnson and Pearson (1984 in Heimlich and Pittelman, 1986:6) reported that the semantic mapping technique was effective in comprehension instruction in the following way.

> In the prereading application, students develop a map of the topic of a story in order to (a) learn the key vocabulary words and (b) activate their prior knowledge of the story topic. In this way, the semantic mapping technique also motivates them to read the selection.
>
> As the story is read, or afterwords, students can add words and new categories to their own copies of the map. In the final phase of the procedure, which is a class discussion, an opportunity is provided for the identification and integration of the new information. This class discussion can also serve as a comprehension check for the teacher.

> As a postreading activity, semantic mapping affords students the opportunity to recall, organize, and graphically represent the pertinent information read.
>
> (Heimlich and Pittelman, 1986:6)

The semantic mapping process, therefore, facilitates text comprehension in that it draws upon and capitalizes on the categorical nature of memory. It triggers students' brains to retrieve information being stored in memory and involves them actively in the think-reading process. When students' knowledge is activated, a link is made between past experiences and text concepts. And then students' reading comprehension is enhanced.

Although much Thai research has compared two teaching techniques in reading, so far there is no proper Thai research conducted to investigate the effectiveness of the semantic mapping technique on reading comprehension at university level.

At Mahidol University in the faculty of nursing, reading skills are emphasized in the English syllabus. Nursing students at this university take two courses in English for Specific Purposes in which they are exposed to reading. The courses prepare students to read English textbooks in which scientific background knowledge plays an important role to assist in reading comprehension. Similarly an understand of graphs, diagrams and charts is needed to facilitate the students reading and recall

Given the situation, nursing students should be trained to relate their background knowledge to new information to understand what they read. They also should be trained to transfer the information they read in descriptive form to non-linear text such as graphs, diagrams and tables. The semantic mapping technique is one technique which may serve this teaching purpose and may work effectively in the reading class.

Hence, it is interesting to investigate the effectiveness of the semantic mapping technique in teaching reading comprehension to nursing students at Mahidol University.

Statement of the Problem

The goal of most reading is to comprehend what is read. But not all students at university level succeed in achieving a meaningful level in reading comprehension in English (Manasunton;1975). They have difficulties in understanding what they have read. When they face a difficult text, they tend to give up.

The reason why so many students have trouble learning to read is not well understood. Yet, recently, research has begun to appreciate the critical role that a student's prior knowledge plays in reading comprehension. That is, ESL reading students depend more on background knowledge of the topic than on linguistic analysis of the text for comprehension. Many studies have indicated the importance of relating background knowledge to new information to comprehend

what is read (Heimlich and Pittelman, 1986:2). Adam and Bruce (1980 in Heimlich and Pittelman, 1986:2) stated that:

> Comprehension, no longer viewed as simply getting meaning from the printed page, is seen as an active process in which students integrate prior knowledge with text information to create new knowledge.

Also, Block (1986 :472) identified the following comprehension strategies used by ESL readers:

1. Anticipate content: The reader predicts what content will occur in succeeding portions of text.

2. Recognize text structure: The reader distinguishes between main points and supporting details or discusses the purpose of information.

3. Integrate information: The reader connects new information with previously stated content.

4. Question information in the text: The reader questions the significance or veracity of content.

5. Interpret the text: The reader makes an inference, draws a conclusion, or forms a

hypothesis about the content.

6. Use general knowledge and associations: The readers used their knowledge and experience to comprehend the information in the text.

7. Comment on behavior or process: The reader describes strategy use, indicates awareness of the components of the process, or expresses a sense of accomplishment or frustration.

8. Monitor comprehension: The reader assesses his or her degree of understanding of the text.

9. Correct behavior: This is a combination of the strategies of integration and monitoring, since the reader must both connect new information with old and evaluate understanding.

10. React to the text: The reader reacts emotionally to information in the text.

Up to now, there seems no one technique used in reading classes in Thailand that can activate students' prior knowledge and ask them to use all of the strategies listed above to enhance their reading comprehension. The study done Manasunton (1975) found that reading ability of Thai university level students is unsatisfactory. Most of the students' errors were concerned

with the comprehension ability in interpretation and extrapolation; they lack abilities higher than the memory level (Manasunton; 1975).

Semantic mapping is a technique that activates and builds on students' prior knowledge base and encourages students to use many strategies to enhance their reading comprehension; anticipates content, recognizing text structure, integrating information, questioning information in the text, using general knowledge and associations, monitoring comprehension, and correcting behavior.

However, the effects of the use of the semantic mapping technique in the Thai context are still uncertain because of the large reading class, time constraints, and the students' dependence on linguistic knowledge, and Thai university students' passiveness when learning. These are drawbacks of an English reading class in Thailand.

Therefore, this research is aimed at determining the effectiveness of the semantic mapping technique for teaching reading comprehension to nursing students at Mahidol University.

Purpose of the Study

The purpose of this experimental study is to make a contribution towards the search for a reading technique which is effective in facilitating the students' comprehension of what they read. It will

investigate the effectiveness of the semantic mapping technique on the reading achievement of the first year nursing students at Mahidol University. The aims of this study are:

1. To determine the English reading achievement of students learning through the semantic mapping technique.

2. To determine the English reading achievement of students learning through the conventional technique.

3. To compare the English reading achievement of students learning through the semantic mapping technique and that of students learning through the conventional technique.

4. To compare the English reading achievement of students of different English reading ability -- high and low -- in both groups after instruction.

5. To investigate the students' attitude towards learning through the semantic mapping technique.

Significance of the Study

This study is designed to determine the effectiveness of the semantic mapping technique on

reading achievement of the first year nursing students at Mahidol University. It is expected that the results obtained will be useful in many ways.

1. They may provide teachers of English reading with an effective technique to facilitate the teaching reading in English.

2. They may suggest the strengths and weaknesses of the application of semantic mapping techniques in Thailand.

3. They may provide the students' attitudes towards the semantic mapping technique.

4. They may suggest ideas for future research study.

Scope and Limitation of the Study

1. The subjects in the study were the first year nursing students at Mahidol University. They were randomly classified into either a control group or an experimental group. The number of subjects and ability levels in the two groups was identical.

2. The study was conducted in the second semester of the academic year. The duration of the study was 18 fifty-minute sessions in the semester.

3. Reading materials for practice was taken from materials designed by the teaching staff at Department of foreign languages used to teach first year students in the faculty of nursing at Mahidol University. Two groups of the students studied the same materials.

4. The subjects in the control group practised in conventional reading instruction while those in an experimental group were trained to use a semantic mapping technique.

5. The two groups were both instructed by the investigator.

Definition of Terms

This study employs of the following terminology.

1. Semantic Mapping:

a term which embraces a variety of strategies designed to display graphically information within categories related to a control concept

2. Pre-and Post-Reading Test:

The English reading comprehension test constructed by the investigator. A pretest is given to students prior to teaching a course while a posttest is given at the end of the investigation.

3. The Control Group:

Sample population which is taught by the conventional technique.

4. The Experimental Group:

Sample population which is taught by the semantic mapping technique

5. Reading Comprehension:

Students' ability to understand what they have read

6. Students:

The first year nursing students studying at Mahidol University

7. High-Ability Students:

Students who obtained pretest scores from 23 to 31

8. Low-Ability Students:

Students who obtaine pretest scores from 11 to 22

9. The Conventional Technique:

The technique of teaching reading in a general reading class. Teaching reading is divided into three main stages: presentation, practice and evaluation. The presentation stage prepares students to read the text by teaching them the pre-reading activities in the book and vocabulary knowledge necessary to comprehend the text. In the

practice stage, teacher asks students to read the text paragraph by paragraph. Then the teacher uses translation and discourse connectors to facilitate students' understanding of the reading passage. The evaluation stage measures students' comprehension by asking them to do the exercises in the book.

10. The Discussion Technique: A teaching reading technique which is divided into three main stages: presentation, practice and evaluation. In the presentation stage, students share their knowledge and experiences relevant to the passage to be read with each other through discussions. In the practice stage, the teacher asks the students to read the text. In the last stage, the teacher measures students' comprehension by asking comprehension questions. At this stage the teacher attempts to help the students draw relationships between the content of the text and what they already know.

11. The Directed Reading Activity: A teaching reading technique which is divided into three main stages: presentation, practice and evaluation. In the presentation stage, students are asked to discuss what they already know about the topic to be read. Then, they are asked to read the new vocabulary words both in context and in isolation. In the practice stage, the teacher asks the students to read the text. In the evaluation stage, the students are asked to write

all they can remember from the text they read.

12. Saupe Method:

A method of estimating test reliability requires the calculation of the proportion of examinees who pass and the proportion who fail each item.

13. Hoyt Method:

A method of estimation test reliability via analysis of variance.

Basic Assumption

In this experimental study, it was assumed that:

1. Subjects in both groups would have similar academic backgrounds and English reading proficiency.

2. All subjects in both groups worked to the best of their ability.

3. The pretest would have no interference on subjects' posttest scores in both groups.

4. All subjects in the experimental group of this study would respond to all questionnaire items concerning their attitude towards the semantic mapping technique honestly.

CHAPTER II

REVIEW OF RELATED RESEARCH AND LITERATURE

This study aims to determine the effectiveness of the semantic mapping technique on English reading achievement of students at the tertiary level. The investigation was conducted in the faculty of nursing at Mahidol University in Bangkok. It is, then, necessary to review the related literature so as to provide background information. A brief review of related research and literature is presented below:

I. The Nature of Reading for Comprehension
II. Levels of Comprehension
III. Semantic Mapping Techniques
IV. Previous Research Studying the Semantic Mapping Techniques

I. The Nature of Reading for Comprehension

The ultimate objective for teaching reading is to ensure that students comprehend what they read (Harker,1975:2). But students reading in a foreign language seem to read with less understanding than one might expect them to have (Anderson, 1981 :1). They need to have ways of understanding the written text. Thus, essential steps in helping students improve their comprehension skill are proposed by many educators:

To comprehend the reading selection, Johnson (1982:503) proposed that the background knowledge of the topic and vocabulary development influence reading

comprehension. For the background knowledge of the topic, he noted that:

> ESL readers may depend more on background knowledge of the topic than on linguistic analysis of the text for comprehension because of their incomplete knowledge of the language
>
> (Johnson,1982:504)

The relationship between background knowledge and text comprehension in processing and recalling information has been studied by schema theorists. Durkin (1981) as mentioned by Heimlich and Pittelman (1986) stated that skilled readers actively call into play and integrate the knowledge and experiences stored in their memories with the words on the printed page. Harris and Smith(1976:233) suggested that in order to maximize the chances that children will understand what they read, it must be determined what relevant background experiences they have or will need to have before reading a selection.

The view of schema theory asserted that activating or building readers' existing knowledge prior to reading would improve comprehension and recall. Thus, to maximize reading comprehension, teachers need to find ways to help students activate and retrieve prior knowledge related to the topic about which they will be reading (National Institute of Education, 1978 in Heimlich and Pittelman, 1986:2). In other words, teachers must provide activities that give students an opportunity to mobilize

existing information(schemata) so that readers are ready to relate to their reading.

For vocabulary development, Johnson (1982:506) stated that vocabulary development is considered essential to reading comprehension. His point of view is supported by Karlin (1975 : 110) who claimed that knowledge of word meaning seems to be the most important single factor that accounts for variability in reading comprehension.

Johnson (1982 : 506) recommended that the emphasis on the development of vocabulary knowledge in reading textbooks may encourage word by word reading and consequently prevent the ESL readers from the development of the skill of processing syntax and context in sampling and confirming for meaning. Heimlich and Pittelman (1986 : 2), argued that for vocabulary instruction to be effective, the instruction must not be limited to individual word meanings, but rather attention must be given to the schema or entire conceptual framework elicited by the word meaning.

Karlin (1975:109) who mentioned the importance of vocabulary development as a factor which enhances comprehension includes other factors needed for comprehension in reading. These factors are establishing reading purposes, recognizing relationships and evaluating ideas. As for establishing reading purposes, he noted that:

> Reading with purpose is more efficient than reading without one because students who read for specified reasons will be thinking as they are reading and not merely receiving information they are supposed to consume

Williams (1986 : 7-11) further explained the importance of establishing reading purposes in that that effective readers who have reasons for reading will also influence his style of reading and the effective reader is one who is able to adapt his style to his purpose.

In terms of recognizing inferences, Karlin (1975:114) stated that:

> Reading requires more than receiving surface messages and that reading involves thinking about other ideas that messages may convey

Regarding to the evaluation of ideas, Karlin (1975:114) noted that:

> Evalution ideas is a natural extension of reading for meaning

Williams' (1986 : 2-11) viewpoint is similar to the viewpoint of Karlin (1975). That is to say, he agreed that to comprehend the reading selection, the reader should establish reading purposes, recognize relationships, and evaluating ideas. Furthermore, he includes other factors, knowledge of the writing system and knowledge of the language, for comprehension in reading.

Harris and Smith (1976:274), besides mentioning similar factors proposed by William (1986) for promoting comprehension: background knowledge, language abilities, purposes for reading, includes affective factors and thinking abilities as factors for enhancing reading comprehension. With regard to affective factors, he said that:

> Reading comprehension is improved when students read about a topic that interest them. Interest in a topic normally grows from experience; and it is experience that actually explains greater understanding

In terms of thinking abilities, he (1976:256) noted that:

> As reading the text, readers are in the process of thinking. They make comparisons, follow sequences of ideas and engage in any number of similar mental operations; so reading involves thinking.

From the viewpoints of Harris and Smith (1976), Johnson (1982), Williams (1985) and Karlin (1975), it can be concluded that the major factors enhancing reading comprehension are background knowledge, language abilities, purposes for reading, the development of vocabulary knowledge and the knowledge of the writing system.

II. Levels of Comprehension

In comprehending the reading selection, it is generally accepted that readers reach different levels of comprehension since different readers have different abilities to comprehend what they read.

Bloom et al.(1956:62 -197), Valette (1972:161-162) and Sanders (in Crouse, Everall and Henderson,1983:57-58) agreed that there are two main levels of reading comprehension : a low and high levels, and readers must develop reading comprehension from the lowest level to the high level.

The low levels of comprehension can be classified into:

Memory (Sanders, 1983) and sometimes called 'Knowledge' (Bloom et al. , 1956) or 'Mechanical Skills' (Valette, 1972)

Memory requires the recognition or recall of ideas, material or phenomens.

Translation (Sanders, 1983) or sometimes called 'Comprehension' (Bloom et al., 1956)

Translation requires translating ideas into other forms different from the original.

Interpretation (Sanders, 1983)

Interpretation requires relating facts, generalizations, definition, values, and skills. To relate means to discover or use a relationship between two or more ideas.

The high levels of comprehension can be classified into:

Application (Sanders, 1983 and Bloom et al., 1956)

Application presents problems that approximate the form and context in which students would encounter in life.

Analysis (Sanders, 1983 and Bloom et al., 1956)

Analysis requires the solution of a problem in light of the conscious knowledge of the parts and processes of reasoning.

Synthesis (Sanders, 1983 and Bloom et al., 1956)

Synthesis deals with putting together of elements parts so as to form a whole. This involves:

- production of a unique communication
- production of a plan, or proposed set of operations
- derivation of a set of abstract relations

Evaluation (Sanders, 1983 and Bloom et al., 1956)

Evaluation requires the making of judgements about the value of an idea, a solution, a method, using criteria developed by the individual himself.

To reach any level of reading comprehension, there are many variables involved. Based on this study the semantic mapping technique is investigated as independent variable to see whether it can enhance students' reading comprehension or not. Hence, this technique was reviewed below.

III. Semantic Mapping Techniques

Semantic mapping is not new, it has been around for years under the labels 'semantic webbing', 'semantic networking', or 'plot maps' (Heimlich and Pittleman, 1986:3)

A semantic map is a graphic arrangement showing how the major and minor ideas are related in a written work (Sinatra, Gemske and Morgan, 1986 : 4). They also added that the map consists of nodes which can be drawn as circles, rectangles, or squares containing key words or phrases, and connecting links in the form of lines or arrows drawn between the nodes.

Heimlich and Pittelman (1986:5) have suggested 3 of the most commonly used applications of the semantic mapping technique which are:

1. for general vocabulary development
2. for pre and postreading activies

3. as a study skill technique

1. For General Vocabulary Development

In this application, students participate in semantic mapping pre and postreading activities designed to develop vocabulary and to enhance comprehension

Johnson and Pearson (in Heimlich and Pittelman, 1986:6) have suggested the use of semantic mapping procedures in general vocabulary development.

Teaching Procedure

1. Choose a word or topic related to classroom work.
2. List the word on the chalkboard.
3. Encourage the students to think of as many words as they can that are related to the selected key word and then to list the words by categories on a sheet of paper.
4. Students then share the prepared lists orally and all words are written on the class map in categories.
5. Students can gain further practice in classification by labeling the categories on the semantic map.
6. Discussion of the semantic map is perhaps, the most important part of the lesson. The purpose of the exercise is to encourage students to become aware of new words, to gather new meanings from old

words, and to see the relationship among all the words.

Following is an example of classroom application of the semantic mapping technique for general vocabulary development suggested by Johnson and Pearson (1984 in Heimlich and Pittelman, 1980 : 27-30):

Objectives:

- Assess students' background of experiences related to rattlesnakes.
- Retrieve known vocabulary related to the central topic, Rattlesnakes.
- Connect new concepts (vocabulary) to known information through discussion.
- Organize information into categories.
- Generate research questions about the topic.

Teaching Procedure

1. Teacher writes the word 'rattlesnakes' on the chalkboard and draws a circle around the word.

2. Ask the students to think of words related to the topic, Rattlesnakes.

3. List the words the students suggest on the chalkboard the word list is shown in figure 3.

Figure 3

Student Elicited Word List for `Rattlesnake'

4. Discuss the words in the list. Next write these words on the semantic map, placing them in clusters or categories. After further discussion, have the students label each category on the map.
5. Through discussion, students formulate research questions about hunting rattlesnakes (i.e., `Why would people hunt rattlesnakes?'). Write these questions on the chalkboard.
6. Direct the students to read the story and find the answers to as many questions as possible. And then ask students to add new information gained through reading to the semantic map.
7. After the students have finished reading the story, discuss the answers to the questions formulated about rattlesnake

hunting.

8. After the students have had an opportunity to add all of the new information to the map, have them make their own copies of the semantic map from the chalkboard (the map is shown in figure 4).

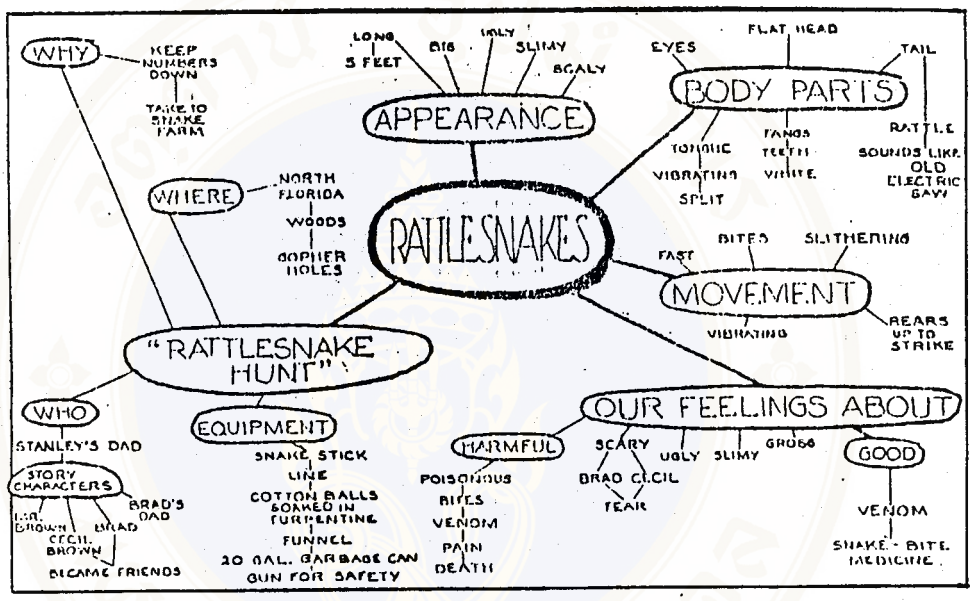


Figure 4

Group Map for 'Rattlesnakes'

Viewpoints about using the semantic mapping for general vocabulary development

Semantic mapping has been advocated by theorists and practitioners as a way to vocabulary learning :

Carrell, Pharis and Liberto (1987 : 55) pointed out that in prereading activity vocabulary words related

to the topic elicited from the students can help them learn the key vocabulary necessary for comprehension and to activate their prior knowledge bases of that topic.

Their viewpoint is supported by Pearson and Johnson (1978 in Sinatra, Gemake and Berg, 1982: 3) who proposed that semantic map is developed to build and extend vocabulary comprehension, and then prepares students for reading by having them retrieve known vocabulary related to the topic.

In addition, Stahl and Vancil (1986 : 64) stated that the semantic mapping procedure involves thinking about the relations between the target words and the students' own experiences; it is this active thinking that leads to effective vocabulary learning.

2. For Pre and Postreading Activities

Besides being effective for vocabulary development, the basic semantic mapping vocabulary building technique has also been demonstrated to be a good alternative to traditional activities used before reading a new passage, as well as after reading a passage (Heimlich and Pittelman, 1986:7).

Following is an example of classroom application of the semantic mapping technique for pre and postreading suggested by Johnson and Pearson (in Heimlich and Pittelman, 1986:30 -34).

Objectives:

The semantic mapping process is used to meet the following objectives:

- Assess students' prior knowledge of sharks.
- Learn key vocabulary words.
- Share prior knowledge and known vocabulary.
- Read and comprehend the story.

Teaching Procedure

1. Write the word 'Sharks' on an overhead transparency with a black marker and draw a circle around the word.
2. Ask the students to think of as many ideas and words as they can that relate to the word 'Sharks'
3. Using the black marker, list on the map in clusters or categories the words that students volunteer.
4. Have the students suggest labels for the categories and write them on the map.
5. If there are any key vocabulary words important to the comprehension of the story that have not been mentioned by the students, mention them and add them to the map with a red marker (A copy of the map is shown in Figure 5).

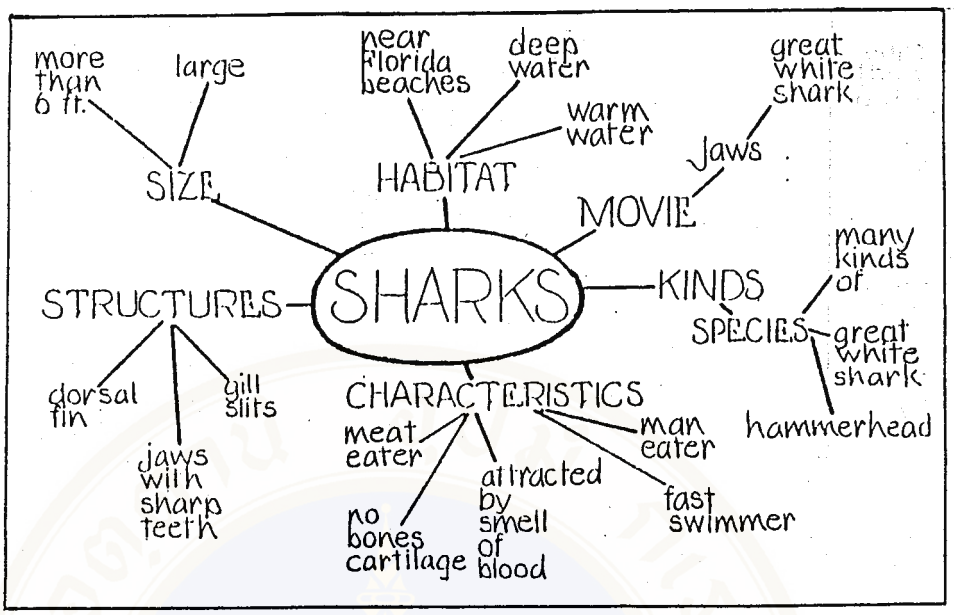


Figure 5

Initial Classroom Map for `Shark'

6. Direct students to read the story.
7. After students have finished reading the story, ask them to share the information they have learned about sharks. This discussion will help the teacher to assess students' story comprehension. Add new information about sharks to the map using a green marker (a copy of the map is shown in Figure 6).

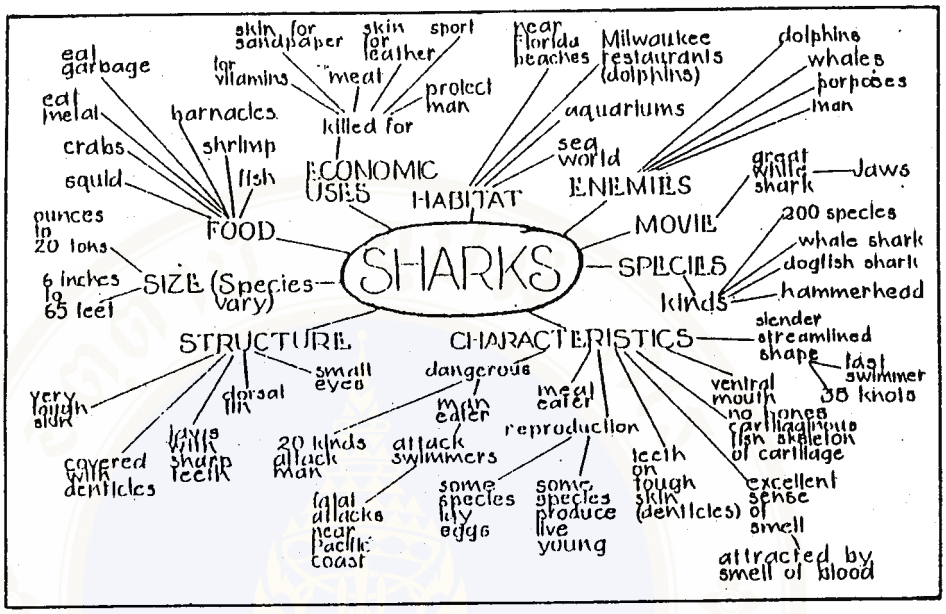


Figure 6

Completed Classroom Map for 'Shark'

Viewpoints about using the semantic mapping for pre and postreading.

The semantic mapping used before and after reading has been advocated by theorists and practitioners as a way to strengthen reading comprehension.

Stahl and Vancil (1986:64-66) pointed out that the semantic mapping technique is effective because it allows students to tie new information to students' already existing knowledge structures through the use of the map. They also added that in active discussion, the teacher is able to assess students' prior knowledge and adjust instruction to it.

Sinatra, Gemake and Morgan (1986 : 5) noted the advantage of this technique: a major classroom value of such map lies in the way that they holistically conceptualize a content. The network of nodes and connecting lines displays the relationship of the whole to the parts and the parts to the whole. The relationships expressed through the overall configuration and connective links are more important in conceptual development than how the nodes themselves are shaped.

Glenn and Reynold (1980 : 684) indicated that the success of semantic webbing depends on how much the teacher values the process of thinking for students.

Sinatra, Gemake and Berg ((1982 :22) stated that the maps improve children's reading comprehension by showing them not only how vocabulary words are related to each other in some conceptual hierachy, but also how the ideas in texts are organized in associative ways.

Taylor and Beach (1984) as mentioned by Flood and Lapp (1988 :783) stated that children's comprehension greatly increases when they create their own maps.

Ausubel (1968 in Sinatra, Gemake and Morgan, 1986 : 5) suggested that advance organizers increase learning and aid recall because they help clarify and organize the learner's cognitive structure prior to the learning task.

Sinatra, Gemake and Berg (1982 :28) stated that greater comprehension gains may be due to the fact that the semantic map visually presents all major points of the content.

Pearson with Spiro (1982 in Sinatra, Gemake and Berg, 1982 :23) indicated that when a reading assignment is completed, students can collectively modify, amend, or correct a prereading map to verify their knowledge.

3. As A Study Skill Technique

Hanf (in Heimlich and Pittelman 1986:6) - suggested that semantic mapping be used as an advance organizer, enabling better comprehension, as well as effective substitute for the traditional note-taking and outling procedure. She also noted that students use 3 basic steps to design a map:

1. Identification of main idea: The title or main idea is written on a sheet of paper.
2. Secondary categories: The principal parts of the textbook chapter will form the secondary categories in the semantic map. Before reading the textbook, students hypothesize what the basic parts of the chapter will be and then skim the chapter for the accuracy of their hypotheses. Labelsfor secondary categories are then written on the map.
3. Supporting details: In this final step of the procedure, students read the

chapter for details and complete the map by adding the details from memory.

Following is an example of classroom application of the semantic mapping technique suggested by Hanf (1971 in Heimlich and Pittelman, 1986 :20).

Objectives :

- Select important information from the unit of study.
- Organize the information onto a semantic map.
- Learn technical information and vocabulary about the digestive system.
- Develop a study guide.

Teaching Procedure :

1. Tell the students they are going to use a new type of review procedure called mapping to assist them as they study for their unit test on the digestive system. Then write the word 'Digestion' on the chalkboard and explain the procedure of semantic mapping.
2. Tell the students to write the word 'Digestion' in the center of their own papers and draw lines radiating out from the center.
3. Direct the students to skim the chapter on digestion in their textbooks to

identify the secondary category headings.

4. Have the students write on the lines of their maps the secondary category headings from the chapter.
5. Tell the students to close their books. Then ask the students to work independently to recall details or facts from the book about each of the categories and add them to their own maps.
6. After the students have completed their individual recall maps, have them develop a group map on the chalkboard, share details from their individual maps, and discuss them. Add new information to the appropriate category on the group map. Encourage the students to add new information to their individual maps.
7. Upon completion of the group map, direct the students to reread their textbooks to locate additional pertinent information for each of the secondary categories. Tell the students that as they find new information they should add it to their individual maps.
8. Through group discussion, students share the additional information obtained through the textbook review. Add this information to the group map, emphasizing technical vocabulary words. The students then update their individual maps.
9. Ask the students to survey their

individual maps and think about the various acitvities they experienced in the unit. Ask them to share any other information they feel is important to understanding the digestive system. Add this information to the group map and have the students add it to their individual maps. (The completed map is shown in Figure 7)

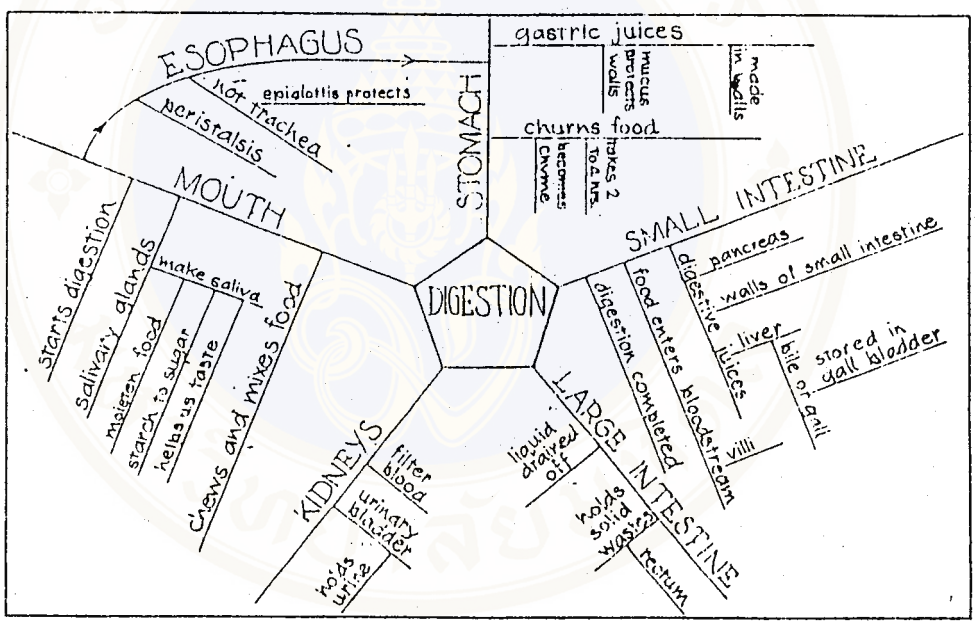


Figure 7

Completed Classroom Map for 'Digestion'

10. Encourage students to use their maps to study for the unit test. They may find the map to be a helpful study tool whether they choose to study individually, in pairs or in small groups.

Viewpoints about using the semantic mapping as a study skill

The semantic mapping has been advocated by theorists and practitioners as a study skill technique:

Hanf (1971 in Heimlich and Pittelman , 1986: 22-23) suggested that the semantic mapping was used to summarize information and served as a study tecnique, that is organizing information from content area material or outlining of lectures and class discussions.

Flood and Lapp (1988:781) stated that the semantic mapping technique can help students understand the main idea of a text as well as the relations among its parts: it helps them determine which ideas are superordinate ideas and which are subordinate ideas.

Sinatra, Gemake and Morgan (1986 : 6) suggested that the map would serve as a graphic advance organizer, and as students read, the prior networking of new ideas would help them process the text more efficiently.

Davidson (1986 : 55) indicated that the group mapping activity helps readers' recall and retain text information.

Sinatra, Gemake and Berg (1982 :28) noted that developing a map after reading, students are encouraged to remember information in a hierarchical way: it is a map format that best captures the selection's organization.

Varied Map Formats

Since most texts contain elements of several different types of writing, students may develop variations of semantic mapping types. The type used is dictated by the organization of the text.

According to Schmidt (1986 : 112 -116), Sinatra, Gemake and Morgan (1986 : 5-7), and Davis and McPherson (1989 : 237-240), the types of the semantic mapping can be classified into 9 types.

1. The Spider Map (Schmidt,1986) or sometimes called Classification Map' (Sinatra, Gemake and Morgan, 1986).

The spider map is the simplest and most common maps used to map paragraphs of main idea/ supporting details.

"The Jackson family has a favorite vacation resort. There is a lake nearby for water skiing and boating. They can also go hiking and horseback riding. Tennis courts and a swimming pool are close to their cabin."

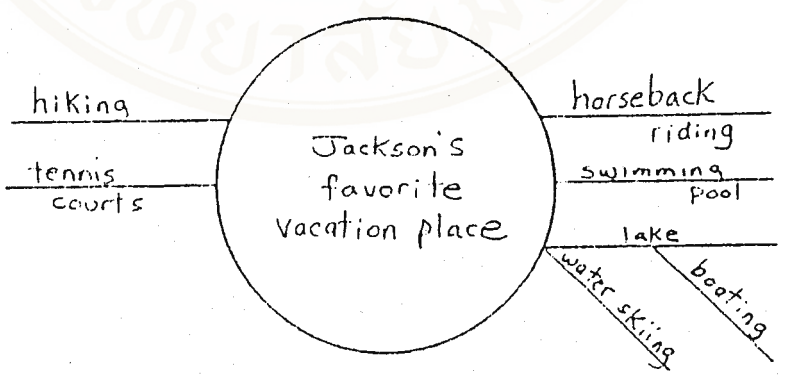


Figure 8a

The spider map : Main ideas and details

A variation is the 'one-legged spider'. It is used with paragraphs that state a generalization and give an example. (see Figure 8b)

"Many areas have a traditional food. In Boston baked beans are flavored with molasses and baked slowly in a special pot. Steaming brown bread is usually served with the beans. Usually this traditional Boston food is served on Saturday night, but it may be enjoyed at other times also."

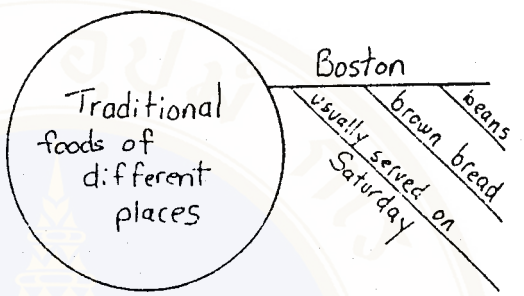


Figure 8b

The one-legged spider map: Generalization plus examples

2. <u>The Descending Ladder Map</u> (Schmidt, 1986) or is sometimes used 'Narrative Sequential Organization Map' (Sinatra, Gemeke and Morgan, 1986)

The descending ladder map is used to map paragraphs of narration, process and time order. (see Figure 9)

"It was already dark by the time Beth and Mary left the library. They immediately started walking as quickly as possible to the bus stop. Unfortunately, the bus had already left when they got there. They had to telephone Mary's mother for a ride home."

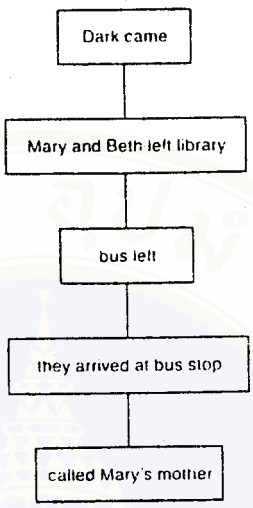


Figure 9

The time ladder map

3. The Comparison and Contrastive Map

In the map representing comparative and contrastive discourse, the top node displays the topic being compared and contrasted. The straight arrow path drawn between nodes on the left represents 'sameness'. The jagged arrow path to the right represents 'differences'. Detail boxes are provided for each 'same' and 'different' node. (see Figure 10) Following is a passage about DRUGS.

Drugs can be either man-made or have natural origins. The man-made or chemical drugs are far-fewer, the most common ones being barbiturates, amphetamines, and solvents. By contrast, the drugs from natural sources are numerous, the most common of all being alcohol, which can be made by fermenting grain and fruit. There are mild drugs such as nicotine which is contained in tobacco, and caffeine which is present in the coffee bean and the tea leaf.

Adapted from Critical Reading by

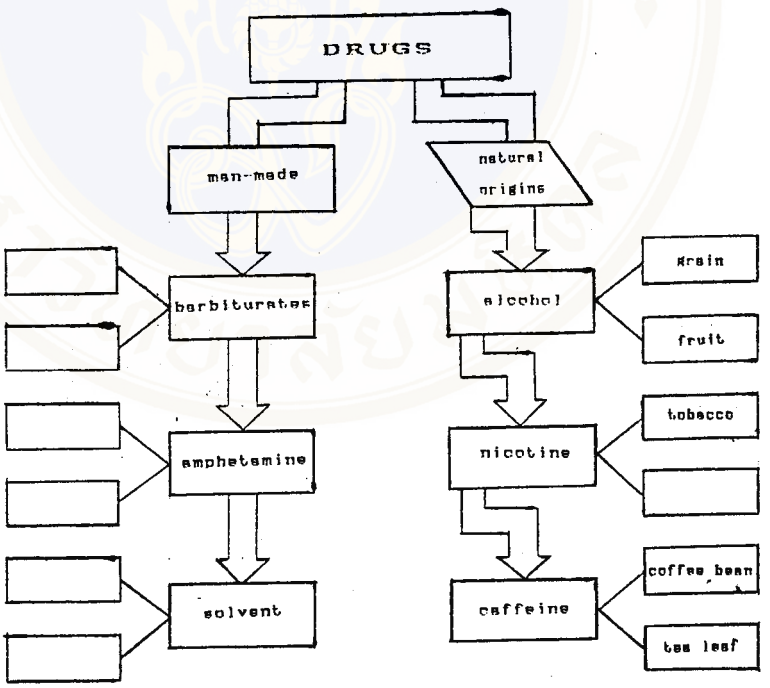


Figure 10

The Comparative and Contrastive Map

4. The Cause / Effect Map

The cause / effect map is used to map paragraphs of cause / effect. (see Figure 11a)

"Hundreds of years ago a fierce group of people called the Huns attacked China. The Huns wanted to conquer China. The Chinese built a huge wall 1,500 miles long to keep the Huns out of China. The wall is still standing today."

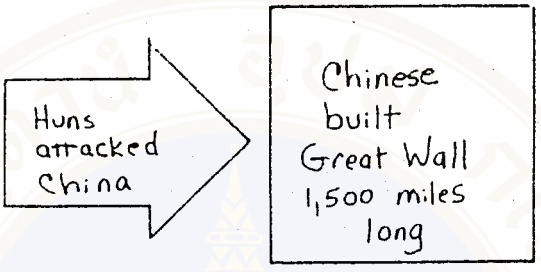


Figure 11a

The cause / effect map

A variation is the multiple cause, multiple effect, or chain reaction map. It is used with paragraphs that state multiple causation, multiple effects, or chain reaction. (see Figure 11b)

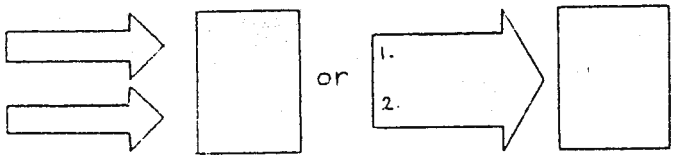


Figure 11b

The multiple cause, multiple effect, or chain reaction map

5. The Thematic or Descriptive Map

The second type of map displays elements and details about persons, places or things around the central theme. This kind of map displays associative connections among components. (see Figure 12) Following is a summary of 'Aids'.

AIDS stands for Acquired Immune Deficiency Syndrome. It is a viral infection that attacks the body's immune system and cripples the victim's ability to fight off certain illnesses and cancers, so that eventually he or she usually dies. The symptoms which occur after infection are fever, headache and sweating.

For the development of AIDS, the pattern of the disease varies widely. In many cases, it progresses slowly over the years but in some cases it develops quickly within months of infection. AIDS transmission is through sexual intercourse, blood transfusion and hypodermic injection.

At present, there is no cure nor any really effective treatment for the symptoms but the ways to avoid AIDS are educating the public about AIDS and using a condom when having sex with the person you don't know about his/her sexual history.

Adapted from Critical Reading by deparment of foreign languages, faculty of science, Mahidol university

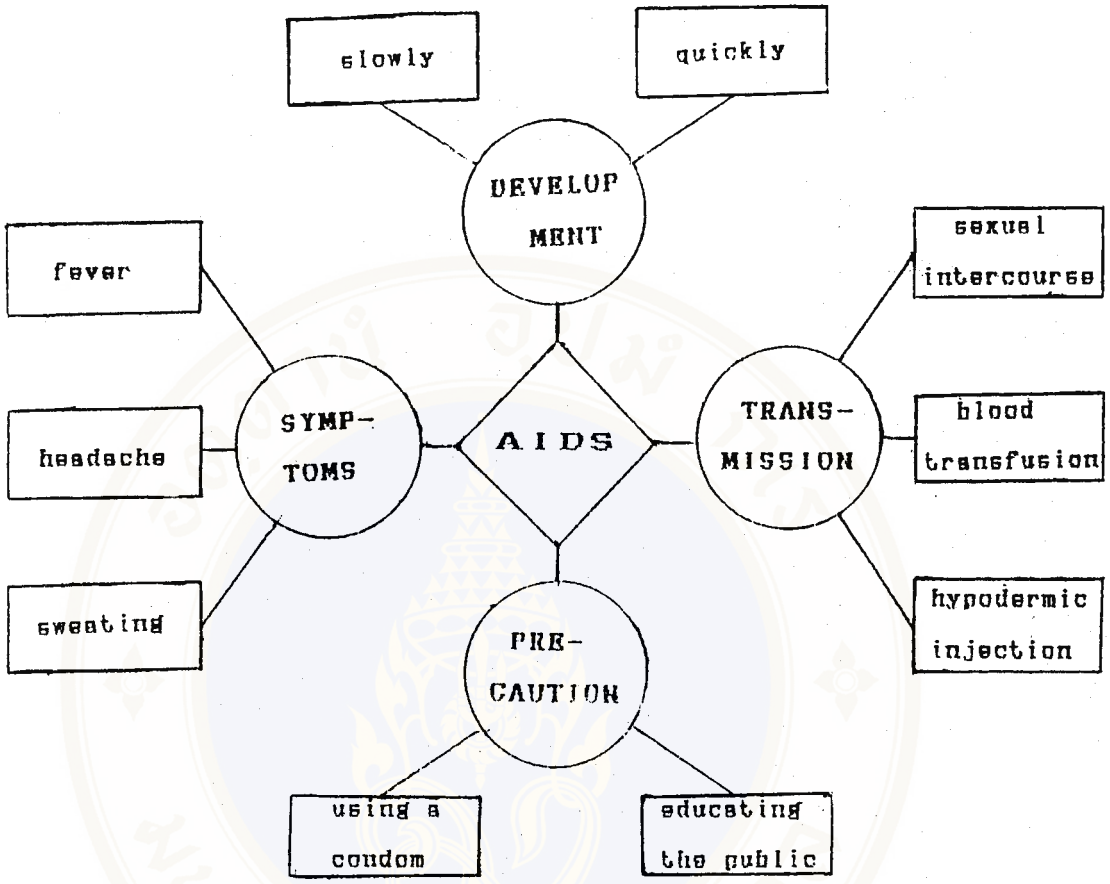


Figure 12
The Thematic or Descriptive Map

5. The Inferential Map

This kind of map is designed to help children first recognize explicit information and then to use that information to infer unstated ideas. (see Figure 13) Following is a summary of 'The Middle Muddle'

SUMMARY OF "THE MIDDLE MUDDLE"

At lunch Mike Muddle began making tracks in the potatoes with his fork. "Mike!" said Mrs. Muddle. "You're too old to play with your food."

Mike's older brother, Steve, pushed back his chair. "I have to get packed for our campout."

Mike asked, "Can I go with Steve?"

"No," his mother sighed. "You're too young to go camping."

Now it was Mike's turn to sigh. Everybody considered him either too small or too big to do what he wanted.

That afternoon, Mike decided to weed the tomato patch. Down at the end of the street, three men were digging a hole. "I can weed a tomato patch any day," Mike thought as he walked to the corner "But it isn't every day that I can watch men digging a hole right in the middle of my street."

"Hello there, young fellow," said a red-haired workmen.

Mike smiled. "Say, does that kitten belong to one of you?" he asked.

"Where? I don't see any..." The workmen looked around just in time to see the tip of a tail disappear into a narrow pipe.

"We've got to get that cat out," shouted one of the workmen.

"The water's going to be turned on in less than two minutes."

Mike could hear the kitten's frightened meowing. "We can't let the kitten drown!" he cried out in alarm. "We have to get it out!"

A workman lay flat on the ground and put his hand into the pipe. "I can't reach the kitten." sighed the man. "My arm's too big."

"Let the boy try," shouted someone in the group which had gathered to watch. "His arm's thin so it won't scrape the sides of the pipe."

Mike put his arm into the pipe. Suddenly he felt soft fur touch his fingertips. Carefully he pulled the kitten toward him. A loud cheer came from the group.

Then Mike thought of something. If he had been little, he would have been taking a nap. If he had been old, he would have been camping.

"Know what?" he whispered to the kitten. "It 's a good thing I'm the middle Muddle."

From Jack and Jill copyright 1970, The Saturday Evening Post Company

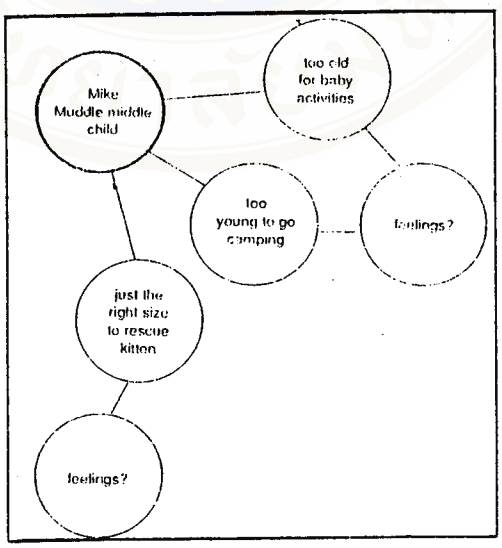


Figure 13

The Inferential Map

7. The Locating Information Map

In the locating information map, students read to locate specific information that supports conclusions or inferences. (see Figure 14)

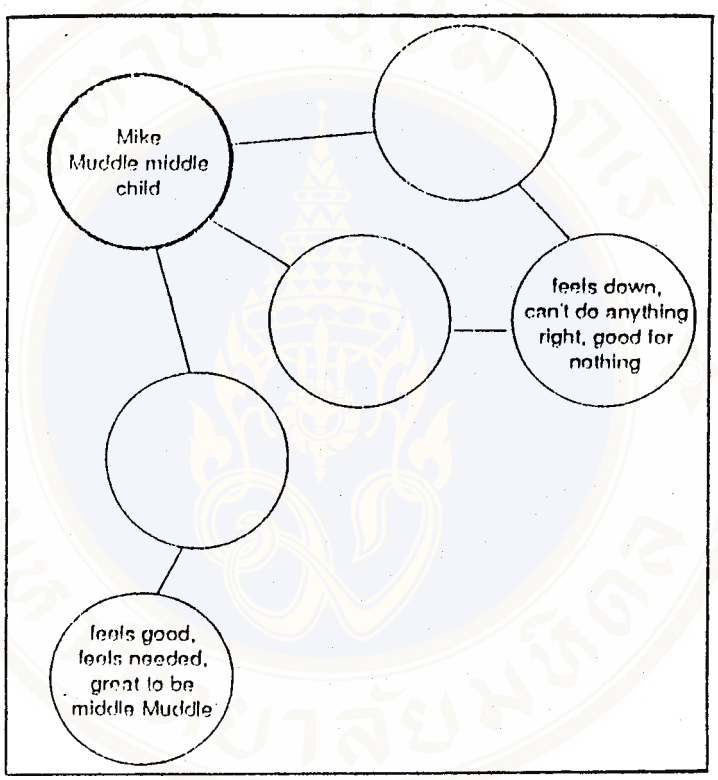


Figure 14

The Locating Information Map

8. The Drawing Conclusions Map

In the drawing conclusions map, students are encouraged to draw conclusion. Drawing conclusions differ from making inferences because the conclusions are dependent on information from the story. (see Figure 15)

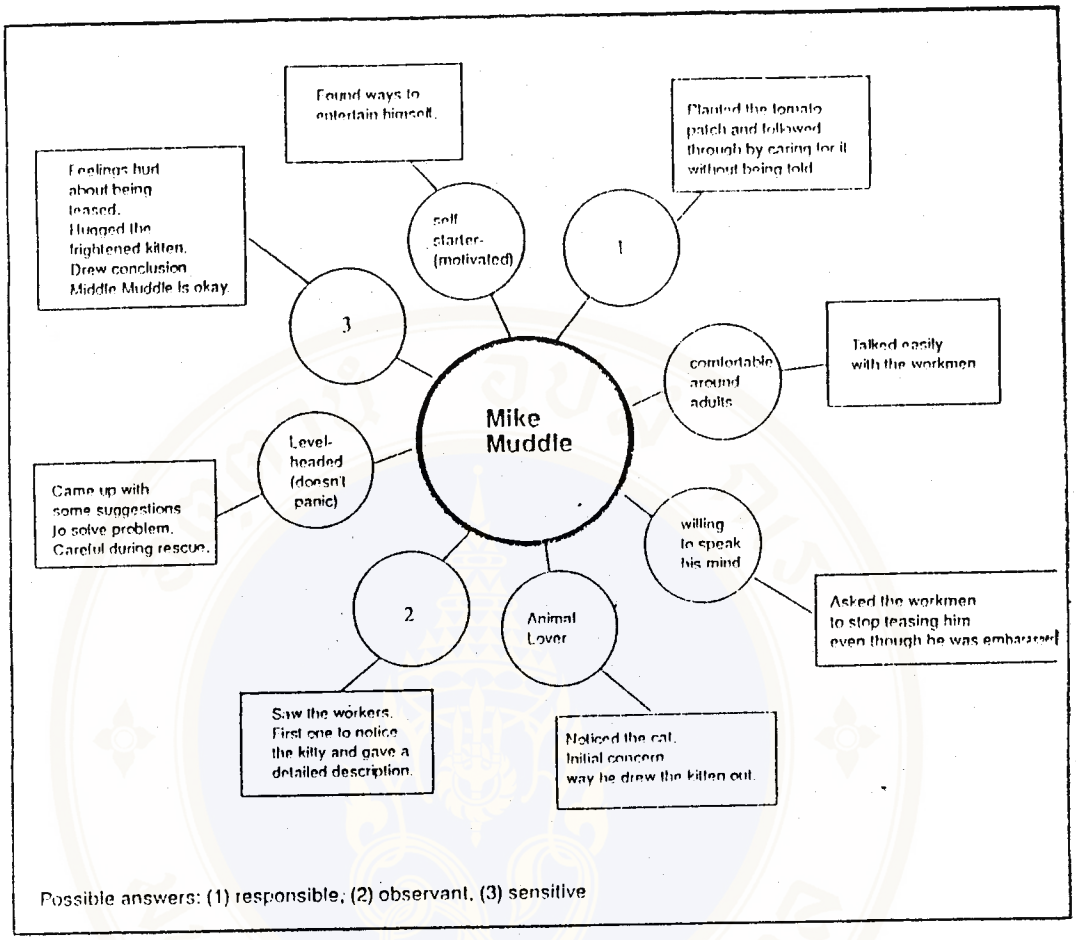


Figure 15

The Drawing Conclusion Map

9. The Combined map

The map can be developed by combination of these basic mapping patterns depending on the length and complexity of the text. (see Figure 16: the maps 2 different students developed)

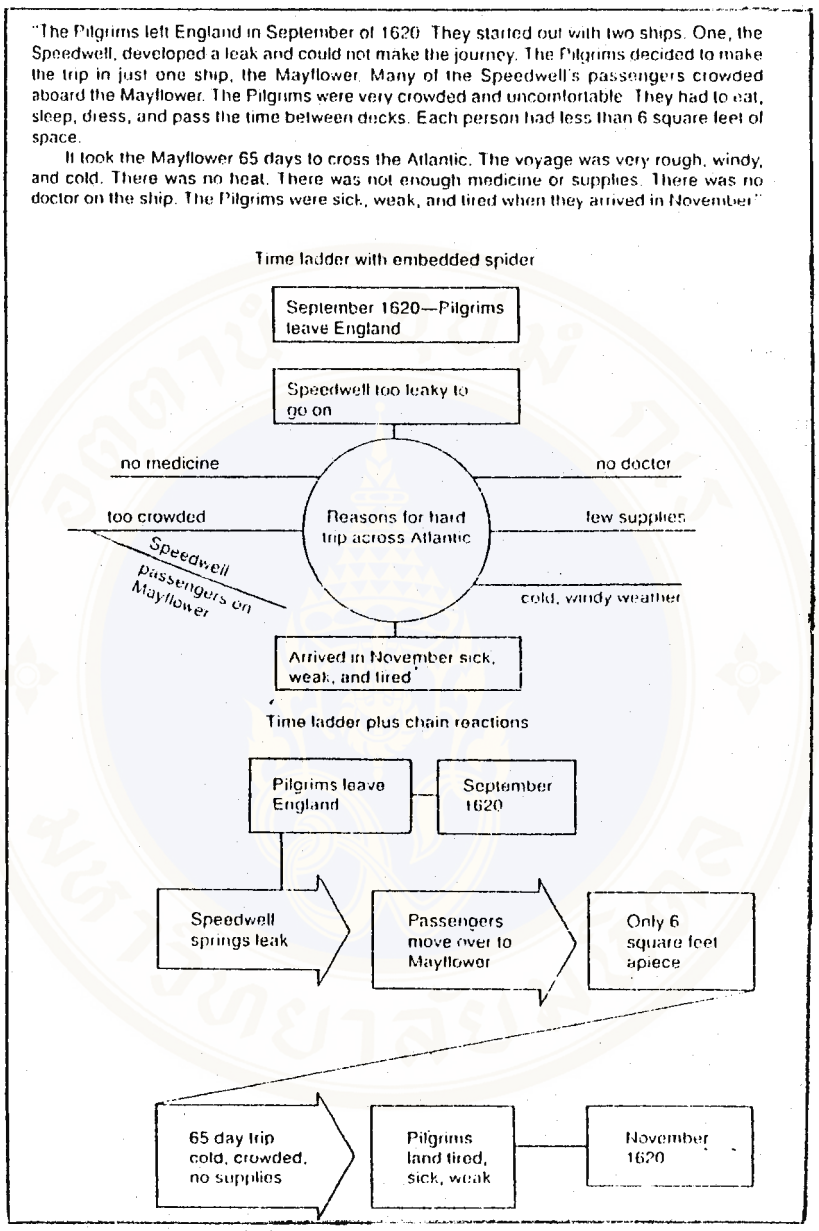


Figure 15

The Combined map

IV. Previous Research on the Semantic Mapping Techniques

Sinatra and Gemake (1982 : 22 -28) experimented

with disabled youngsters in order to compare the English reading comprehension achievement of disable youngsters taught through the semantic mapping technique and those taught through the verbal readiness technique in preparation for silent reading. The subjects were 27 disabled youngsters; their average age was 10 years and 5 months.

The results showed that for all 27 students, the mean number of comprehension questions correct using the semantic mapping technique was 37.9, while for the verbal readiness technique the mean number correct was 35.9, this difference significant at the .05 level.

Reutzel (1985:401- 404) conducted an experiment which compared the use of story maps and the DRA (directed reading activity) approach on students' reading achievement. The subjects were 102 fifth graders from two middleclass elementary schools in Texas.

The results indicated that the mean number of propositions recalled by the story map group was shown to be significantly higher than the DRA group

Carrell, Pharis and Liberto (1989:655 -699) examined the effects of metacognitive strategy on ESL students' reading achievement. The subjects consisted of a heterogeneous group of 26 ESL students in level 4 of the intensive program of the Center for English as a Second Language (CESL) at Southern Illinois University. The subjects were in four intact reading class; nine in the class that receive the semantic mapping training,

nine in the class that received the ETR (Experience - Text - Relationship) training, and three and five, respectively, in the classes that functioned as the control group.

The results showed that the control group did not have significant gain scores between their pre- and posttests, whereas each training group - the ETR and the semantic mapping groups - showed significant gain scores between their pre-and posttests. Thus, it appears that metacognitive strategy training does enhance L2 reading when compared to nonstrategy training, as in the control group.

Stahl and Vancil (1986: 64 - 66) examined the importance of discussion in effective vocabulary instruction, the study compared the relative importance of the different components of semantic mapping, the discussion and the physical map. The subjects, 45 sixth grade students, were divided into 3 classes. One class received the treatment with semantic mapping, using both the physical map and the extensive class discussion. The second class received only discussion; the relationships between the words were discussed but no physical map was generated, nor did students have a map available during their reading of the passage. The third class received only a map; a physical map was given to the students, but the relationships of the words were not discussed. The amount of time for the experiment was over 2 weeks.

The results showed that the scores were significantly higher in the two groups that used discussion than in the Map Only group at the .05 level of significance for cloze test, at the .01 level of significance for multiple choice test, and for an anomalous sentence test, the differnces were not significant. Scores in the two groups using discussion did not differ. Therefore, discussion seems to be the crucial factor in semantic mapping.

Morgosein, Pascarella, and Pflaum (1982 in Heimlich and Pittelman, 1986:4) found that semantic mapping had a greater impact on vocabulary acquisition than did the context cue approach for reading disabled seventh and eighth graders of Hispanic background.

Bronowski (in Heimlich and Pittelman, 1986:3) found that fourth through sixth grade children who were taught target vocabulary words through semantic mapping and semantic feature analysis significantly outperformed students who learned the words through contextual analysis.

Karbon (in Heimlich and Pittelman, 1986:4) conducted a study with rural Native American, innercity Black, and suburban sixth graders to examine the resources and processes used by children of different cultural groups during vocabulary instruction. Karbon found that students do exploit their unique experiences as a means of developing vocabulary. She recommends that teachers use vocabulary techniques that build on prior knowledge, emphasizing that semantic mapping

provides an alternative technique to vocabulary instruction that focuses on the relationships between new and known words.

Pittelman, Levin and Johnson (1985 in Heimlich and Pittelman, 1986:4) studied poor readers to see whether they learn more from semantic mapping vocabulary instruction when they are taught with other poor readers in a small group or when they receive whole class instruction with students of mixed reading abilities. Furthermore, poor readers who received semantic mapping instruction had significantly higher gain scores than did students in control classes. The study confirmed that teachers can feel comfortable using semantic mapping in both reading ability groups and whole class content area instruction.

Johnson, Pittelman, Toms-Bronowski and Levin (1984 in Heimlich and Pittelman, 1986:4) compared semantic mapping with semantic feature analysis and a basal approach for effectiveness as prereading instructional treatments for both vocabulary acquisition and passage comprehension with fourth grade students. All three prereading treatments were effective in teaching target vocabulary words. Both semantic mapping and semantic feature analysis had a facilitative effect on passage comprehension.

Jones (in Heimlich and Pittelman, 1986 : 4) replicated a portion of the study of Johnson et al. with black innercity fifth graders. She concluded that semantic mapping does positively effect vocabulary

acquisition and passage specific comprehension of expository passages.

In Thailand, Noppadon (1991) conducted an experiment compared English reading comprehension achievement of mathayom suksa three students learning through discussion with those learning through story map. There were 80 subjects in this study. Each group consisted of 40 students. The duration of the experiment was 6 weeks for 2 periods a week.

The study found that the English reading comprehension achievement of mathayom suksa three students learning through story map was higher than those learning through discussion at the .01 level of significance.

From the above review, it is evident that the semantic mapping technique is useful to the teaching of English reading. Its effectiveness to the teaching of English reading was investigated both in foreign context and in Thai context at the secondary level. However, this technique has never been conducted in English reading class for Thai students at the university level. This experimental study, consequently, is intended to determine the effectiveness of the semantic mapping technique on reading achievement of first-year nursing students at Mahidol University.

CHAPTER III

THE RESEARCH METHODOLOGY

This experimental study examined the effectiveness of the semantic mapping technique on reading achievement of first-year nursing students at Mahidol University. The subjects of the study were 60 first-year nursing students who were divided into an experimental group and a control group. The former learned through the semantic mapping technique. The latter learned through the conventional technique. Prior to the instruction, both groups took the same pretest. At the end of the course, a posttest was administered to both groups. The data obtained from the two groups were analyzed to find whether the differences in the progress of both groups was significant.

The procedures used in conducting the study included the following components:

I. The Subjects
   - A. The Sample Characteristics
   - B. The Sampling Procedure

II. The Method
   - A. The Research Design
   - B. Instruments
     - i. The Pretest & Posttest
     - ii. Lesson Plans
     - iii. Teaching Materials
     - iv. The Questionnaire
   - C. Procedures

III. Statistical Devices

I. THE SUBJECTS

A. THE SAMPLE CHARACTERISTICS

The subjects of this study were sixty first year nursing students at Mahidol University. They all were female and attended the reguler English class in the second semester.

B. THE SAMPLING PROCEDURE

The sampling procedure was carried out as follows:

1. Two groups were selected randomly from six groups of the first year nursing students.

2. Before the experiment was conducted, students in both groups received a pretest constructed by the investigator in order to differentiate students' English reading ability.

3. Both randomly selected groups were comparable on the basis of English reading ability.

4. Both groups were matched at two abilities levels: high and low according to the pretest scores. The criteria are illustrated in the following figure:

The Scoring Criteria

Ability Level	Test Scores
High	23-31
Low	22-11

5. The two groups were assigned randomly to be the control group and the experimental group. Each group consisted of 30 students as shown in the following figure.

Ability Levels	Control Group	Experimental Group
High	16	16
Low	14	14
Total	30	30

II. THE METHOD

A. THE RESEARCH DESIGN

The control and experimental groups were both instructed by the investigator in the second semester. Both groups used the same materials but received different teaching techniques. The semantic mapping technique was used with the experimental group, while the conventional technique was used with the control group. In addition, questionnaires concerning the students' attitude towards the semantic mapping technique was administered to the experimental group at the end of the semester. The research design can be illustrated as follows:

Group	Teacher	Teaching Technique	Attitude towards teaching technique
Control Group	The investigator	conventional technique	-
Experimental Group	The investigator	semantic mapping technique	A rating-scale questionnaire

B. INSTRUMENTS

The following instruments were used in the study.

i. The Pretest and Posttest

The pretest and posttest constructed by the investigator was used for both sample groups.

The pretest and posttest consisted of 4 reading texts with different subject matters. It was composed of 40 multiple-choice items, each with 4 choices. A multiple choice type of test was used because it can be scored quickly and consistently. The first three reading passages measure the students' reading comprehension at all levels of the cognitive domain: memory, translation, interpretation, application, analysis, synthesis and evaluation since comprehension was classified into 7 levels (Sanders: 1966). The last reading passage is a cloze test because it was sensitive to differences in the reading ability of individuals (Wilson:1953). This cloze test has 4 multiple choices in order to facilitate scoring and to make

scoring objective.

Test construction and pilot study

The procedures for construction of the English reading proficiency test were as follows:

1. Three textbooks were used as guidelines before construction of the test.

- Testing English As A Second Language by Harris (1969)
- The Curriculum Connection by Kevin Crouse Mervyn and Everall Clare Henderson (1963)
- Modern Language Testing by Valette R.M. (1976)

2. Six reading texts of suitable difficulty and interest for the first year nursing students containing about 200-350 words were chosen. They were:

Text I: "About losing weight", extracted from New Body (July, 1991)

Text II: "Extended-Wear Lenses :Use with care", extracted from Reading Faster by Edward Fry (1980)

Text III: "Malaria", extracted from Reading Faster by Edward Fry (1980)

Text IV: "About the calories women need during their pregnancies", extracted from Bangkok Post daily newspaper

Text V: "Pain - It's all in the mind", extracted from Intermediate Language Skills Reading by Frank Heyworth (1982)

Text VI: "How to Stop Bleeding" extracted from

Science Readings by Kenneth Croft and Billye Walker Brown (1966)

3. The test for the pilot study was constructed, as shown in the following table:

CONSTRUCTION OF THE TEST

Text	Level Questions							
	Memory	Translation	Interpretation	Application	Analysis	Synthesis	Evaluation	Total
1	2	1	1	1	1	2	1	9
2	2	1	1	1	1	1	1	8
3	3	3	1	1	1	1	1	11
4	2	2	1	1	3	1	1	11
5	2	1	1	1	1	1	1	8
6								12
Total	11	8	5	5	7	6	5	59

4. The test for the pilot study consisted of 5 reading texts. It was composed of 59 multiple choice items, each with 4 choices. The first five reading passages measure the students' reading comprehension at 7 levels of cognitive domain: memory, translation, interpretation, application, analysis, synthesis and evaluation since reading comprehension was classified into 7 levels (Sanders: 1966). The last reading passage is a cloze test because it was sensitive to differences in the reading ability of individuals (Wilson : 1953).

5. A pilot study was done with 55 first year students at Mahidol University. After the pilot study, an item analysis was done to examine the difficulty of the test (F) and the discrimination power of the test (r).

The criteria used for choosing the appropriate test items are as follows:

a) The level of difficulty (F) was between 20-80 (Nuttal and Skurnik:1969). The items with the level of difficulty (F) if more than 60 percent err on the easy side and those with the level of difficulty of less than 40 percent err on the too difficulty side (Macintosh, 1969: 66).

b) The discrimination power (r) was equal to or greater than .20 (Nuttal and Skurnik:1969). Items with the discrimination power of more than or equal to 0.40 are very good: between 0.30 and 0.39 are reasonable: between 0.20 and 0.29 are marginal and usually require substantial revision: below 0.20 the items must be rejected as being completely unsuitable (Macintosh, 1969:66).

The requirements outlined above may be seen more clearly in the following table:

Discrimination Power (r)	Level of Difficulty (F)		
	Below 40%	40-60%	Above 60%
Above 0.40	Difficult*	Acceptable*	Easy*
0.30 - 0.39	Difficult	Improvable	Easy
0.20 - 0.29	Difficult	Marginal	Easy
Below 0.20	Rejected	Rejected	Rejected

(Macintosh, 1969:67)

The items which fall into the categories marked with an asterisk (*) would normally be acceptable items

for the test. Test items whose level of difficulty (F) was not between 20 - 80 or whose discrimination power (r) was not equal to or more than 0.20 were revised. Finally, only 40 items of the right level of difficulty (F) and discrimination power (r) were kept to be included in the test to be used as the experimental instrument.

6. After the item analysis was carried out, the reliability of the test was calculated using the Saupe method. Its reliability was .72. According to Valette (1967), Harris (1969) and Harrison (1983), .70 is acceptable for a teacher-made test.

ii. Lesson Plans

Lesson plans for the control and the experimental groups were constructed by the investigator (see appendix)

In addition, 10 topics from the first year nursing students' reading textbooks, Critical Reading , were studied.

Topic 1: Choosing a Child's Sex
Topic 2: Surrogate Mothers
Topic 3: Asian Women
Topic 4: How Well Do You Eat?
Topic 5: Youth Crime
Topic 6: Aids
Topic 7: What Are Drugs?
Topic 8: Why Not Take Drugs?
Topic 9: Love Me, Love My Diploma
Topic10: Nurse Nida And The Doctor Who Wouldn't come

Lesson Plan for the Control Group

1. Presentation

- Have students do pre-reading activities in the book and teach the difficult vocabulary necessary to comprehend the text.

2. Practice

- Have students read silently.
- Use clues (discourse connectors) and translation to clarify some difficult parts in the reading passage.

3. Evaluation

- Have students answer written questions and check their answers together in class.

Lesson Plan for the Experimental Group

1. Presentation

- Have students express ideas or some background information relevant to the topic on a semantic map.

2. Practice

- Have students read silently and then develop a semantic map individually/ in

pairs/ in groups/ as a whole class with the teacher.

Topic	The Map Format
Choosing A Child' sex	The Thematic or Descriptive Map
Surrogate Mothers	The Thematic or Descriptive Map
Asian Women	The Combined Map
How Well Do You Eat?	The Combined Map
Youth Crime	The Descending Ladder Map
Aids	The Spider Map
What Are Drugs?	Students create their own map.
Why Not Take Drugs?	The Descending Ladder Map
Love Me, Love My diploma	The Spider Map
Nurse Nida And The Doctor Who Wouldn't Come	The Spider Map

3. Evaluation

- Have students compare the semantic maps they developed before and after reading to distinguish between the known and the new knowledge they have just learned from the reading passage.
- Have students answer written questions.

iii. Teaching Materials

The teaching materials were taken from the textbook named Critical Reading whose course objective are to develop students' ability to read and think critically and to express their opinions on what they have read, with reference to both medical and societal matters.

10 topics from this textbook selected to teach the first year nursing students are as follows:

Topic 1: Choosing a Child's sex
Topic 2: Surrogate Mothers
Topic 3: Asian Women
Topic 4: How Well Do You Eat
Topic 5: Youth Crime
Topic 6: Aids
Topic 7: What Are Drugs?
Topic 8: Why Not Take Drugs?
Topic 9: Love Me, Love My Diploma
Topic10: Nurse Nida And The Doctor Who Wouldn't Come

iv. A Questionnaire

A rating-scale questionnaire was constructed to elicit the students' attitude towards learning through the semantic mapping technique and have them self-evaluate their reading comprehension with regard to each topic studied through the semantic mapping technique.

The procedures for construction and development of the questionnaire were as follows:

1. Compile the strength, the limitations and the suggestions for the semantic mapping technique found in professinal journals.
2. Study the form of a questionnire.
3. Construct the questionnaire using the issues such as the strength, the limitations and the suggestions for this technique derived from the semantic mapping theory found in professional journals.
4. Consult with a thesis advisor.
5. Check any amibiguous wordings with a thesis advisor.
6. Undertake a pilot study to check any ambiguous wordings.
7. Revise the questionnaire.

The questionnaire was composed of 3 parts.

A) The first part investigated students' personal data. This part has 5 items with multiple choices.

B) The second part examined the strengths, the the limitations and the suggestions for the semantic mapping technique found in professional journals. This part has 32 items and used four-point Likert scales in rating students' attitudes.

Four-point rating scales were as follows:

4	3	2	1
4: strongly agree		3: agree	
2: disagree		1: strongly disagree	

C) The last part elicits the students' level of reading comprehension towards each Topic through the semantic mapping technique. This part has 10 items using five-point Likert scale in rating the students' level of reading comprehension. The criteria used were as follows:

5 4 3 2 1

5: Totally understand 4: Mostly understand
3: Moderately understand 2: Slightly understand
1: Do not understand

Reliability of the Questionnaire

The reliability of the questionnaire was calculated by using the Hoyt method. Its reliability was .825 which is acceptable.

C. PROCEDURES

1. Prior to instruction, both groups, the control and the experimental groups, received the same pretest.

2. During the instruction, both groups were under the supervision of the investigator. The control group was taught with the conventional technique while the experimental group was taught with the semantic mapping technique.

3. After the instruction, two groups received the same posttest. Only the experimental group received the questionnaire to self-evaluate their

attitudes and their reading comprehension towards learning through the semantic mapping technique.

The experimental procedure is shown in the following figure.

EXPERIMENTAL DESIGN

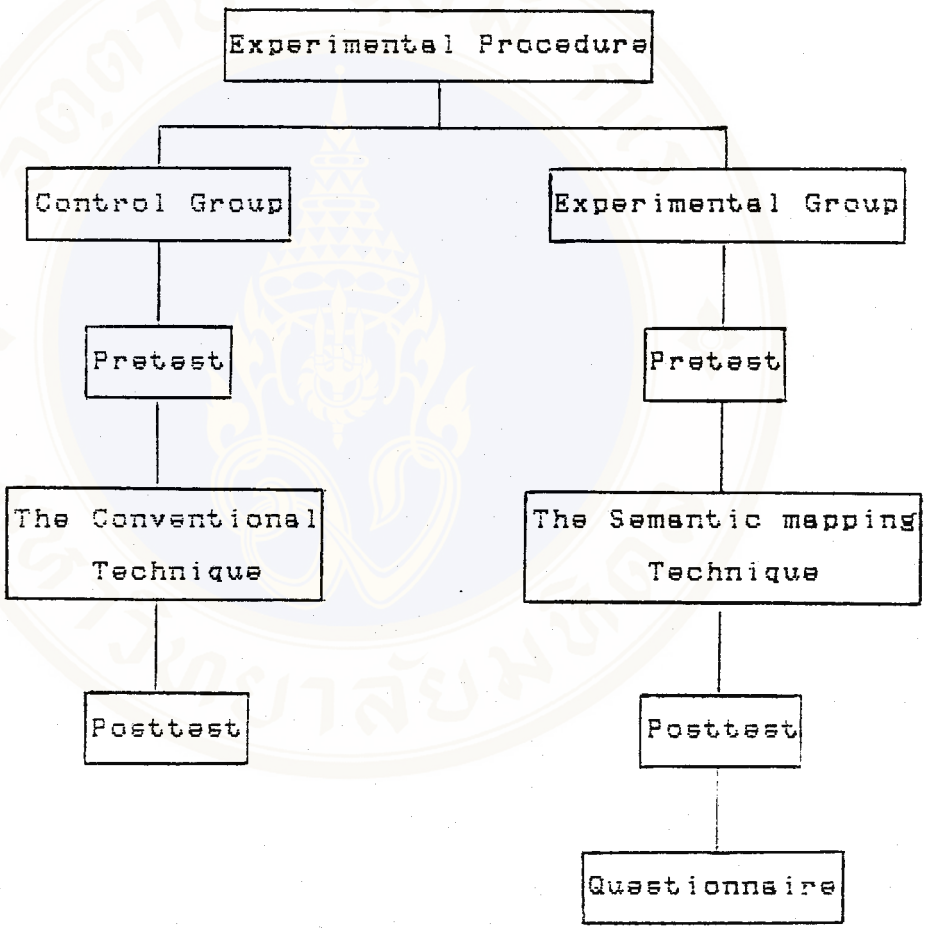


Figure 17

iii. STATISTICAL DEVICES

The statistical devices used in this study were as follows:

1. Hoyt Method

Hoyt method was used to determine the reliabilty of questionnaires.

2. Item Analysis

An item analysis was used to examine the level of difficulty (F) and discrimination power (r) of the pretest and posttest constructed by the investigator.

3. Saupe Method

The Saupe method was employed to determine the reliability of the pretest and posttest constructed by the investigator.

4. Arithmetic means

The arithmetic means were used to examine the average scores of the control and the experimental groups including the average extent of students' attitude towards the semantic mapping technique.

5. T-test

The T-test was used for the comparison of two means, the mean of the English reading proficiency test of the control group and that of the experimental group, to determine whether they were significantly different.

6. Frequency count and Percentage

Frequency count and percentage was employed to interpret the data obtained from the questionnaire eliciting students' attitude towards the

semantic mapping technique and their self-evaluation of this technique.

CHAPTER IV
FINDINGS

Chapter Four presents the findings of the study. The findings are based upon the results computed and analysed from the data obtained from the students' pretest and posttest scores and the questionnaire eliciting students' attitudes toward the semantic mapping technique. The findings are presented within the framework of the purpose of the study spelled out in Chapter One.

The presentation of the findings is organized as follows:

1. The English reading achievement of students taught through the conventional technique
2. The English reading achievement of students taught through the semantic mapping technique
3. A comparison between the English reading achievement of students taught through the conventional technique and those taught through the semantic mapping technique
4. A comparison of the English reading achievement among students of different English reading ability - high and low - in both groups after learning
5. Students' attitudes toward learning through the semantic mapping technique

1. The English reading achievement of students taught through the conventional technique

To find out whether the students made any progress in English reading ability after being taught through the conventional technique, a pretest and a posttest were administered to a group of students in a control group. The scores obtained were then computed and analyzed to determine the English reading progress of students after instruction. The subjects' mean scores and the t-value calculated from the test results are presented in Table 1.

TABLE 1

A COMPARISON OF THE CONTROL GROUP'S SCORES OBTAINED FROM THE PRETEST AND POSTTEST

Tests	Mean	S.D.	t-Value	Two-tail Prob
Pretest	22.50	4.20	6.58	< .001
Posttest	25.47	4.34		

n=30

The resulting t-test score (t = 6.58) indicates a statistical difference (at .001) between the mean score obtained from the pretest and that obtained from the posttest.

Finding One

It can be seen from the Table 1 that the mean score gained from the posttest is higher than that of the pretest and it is statistically significant. This indicates that the conventional technique can facilitate students' comprehension in reading.

2. The English reading achievement of students taught through the semantic mapping technique

To determine whether students improve their English reading after being taught through the semantic mapping technique, a pretest and a posttest were administered to an experimental group of students. The scores from the pretest and the posttest were computed and analyzed to determine the progress after learning. The data analysis is illustrated in Table 2.

TABLE 2

A COMPARISON OF THE EXPERIMENTAL GROUP'S SCORES GAINED FROM THE PRETEST AND POSTTEST

Tests	Mean	S.D.	t-value	Two-tail Prob
Pretest	22.57	3.62	14.21	<.001
Posttest	27.17	4.29		

It is clear from Table 2 that the mean score gained from the pretest and the posttest is significantly different at level 0.001.

Finding Two

From the data presented in Table 2, the mean score of the posttest is significantly higher than that of the pretest at level 0.001. This means that students improved their English reading ability after they were taught through the semantic mapping technique.

3. A comparison between the English reading achievement of students taught through the conventional technique and those taught through the semantic mapping technique

In order to find out which of the two techniques - the conventional technique and the semantic mapping technique - resulted in greater improvement in students' reading ability, the different mean scores gained from the pretest and the posttest of the control and the experimental groups were compared by a t-test. The results are shown in Table 3.

TABLE 3

A COMPARISON OF THE ENGLISH ACHIEVEMENT OF THE CONTROL AND THE EXPERIMENTAL GROUP

Groups	Mean	S.D.	t-value	Two-tail Prob
Control	2.97	2.47	2.94	<.01
Experimental	4.60	1.77		

n = 30 (in each group)

The result shown in Table 3 reveals that there was a statistically significant difference between the mean score of the control group and that of the experimental group at 0.01 level.

Finding Three

With regard to the analyzed data in Table 3, the mean scores of the experimental and the control groups were significantly different at 0.01 level. The students in the experimental group could score significantly higher than those in the control group. This means that the students taught through the semantic mapping technique outperform those taught through the conventional technique.

4. A comparison of the English reading achievement among students of different reading ability - high and low - in both groups after learning

In order to find out if the students with high and low reading ability in the experimental group performed differently from those in the control group, each pair of mean scores and a t-test were calculated. The results are presented in Table 4.

TABLE 4

A COMPARISON OF THE ENGLISH READING ACHIEVEMENT OF THE STUDENTS OF DIFFERENT ENGLISH READING ABILITY IN BOTH GROUPS AFTER LEARNING

Reading Ability	Control		Experimental		t-value	Two-tail Prob
	Mean	S.D.	Mean	S.D.		
High	3.21	2.83	3.86	1.75	0.72	>.05
Low	2.75	2.18	5.25	1.57	3.73	< .001

n = 16, 14 (for high and low reading ability)

The data in Table 4 reveals that high reading-ability students in the experimental group scored higher than those in the control group but the difference between the mean scores of those two groups was not significant($p>.05$). However the mean scores of the week reading-ability students in the experimental group were significantly different from those in the control group at a .001 level.

Finding Four

From the data exhibited in Table 4, the improvement of high reading-ability students in both the control and the experimental groups showed no significant difference in achievement scores from each other. On the other hand, the low reading-ability students in the experimental group had significanly higher scores than those in the control group.

This means that the semantic mapping technique helps low reading-ability students increase their English achievement to a greater extent than high reading-ability students.

5. Students' attitude toward learning through the semantic mapping technique

To investigate the opinion of the students to the semantic mapping technique, a questionnaire was administered to the students in the experimental group at the end of the experiment. The questionnaire has 3 parts. They are : a) students' personal data, b) students' attitude toward the semantic mapping technique and c) students' self evaluation of reading passages they had studied. The results of each part were presented separately in the tabular form except the first part which served as personal data of students in the experimental group (see the appendix). To analyze the data obtained from the questionnaires, frequency count and percentage were employed.

In the second part of the questionnaire, students were required to express how they feel about the semantic mapping technique from four possibilities:

4 : strongly agree
3 : agree
2 : disagree
1 : strongly disagree

Here are the list of items in the second part.

- **In your opinion, the semantic mapping technique is a technique _ _ _ _ _ _**
  1. with which students are satisfied after learning.
  2. which enhances reading comprehension.
  3. of which the duration for practice should be increased.
  4. in which prior knowledge enhances reading comprehension.
  5. which guides students to the theme of the passage to be read.
  6. which motivates students over reading.
  7. which enables students to know the meaning of vocabulary related to the topic before reading.
  8. which helps students understand the relationship of the contents.
  9. which is too difficult for students to practise more by themselves.
  10. which enables students to take notes effectively.

11. which enables students to become more acquainted with one another.
12. in which students can practise expressing their opinions.
13. which activates students to think more.
14. with which grammar should be taught additionally.
15. which helps students know what is the new knowledge acquired from reading.
16. in which English should be used as one of the teaching medis.
17. which causes conflicts among students while discussing.
18. which helps students think systematically.
19. in which some difficult English parts should be translated into Thai.
20. which should be confined to extrovert students.
21. which is too difficult for students to practise in class.
22. which students should practise in groups.
23. which students should practise in pairs.
24. which the whole class should practise at the same time with teacher.
25. which students should practise individually.
26. which enables students to have an accurate memory about the content.
27. which promotes students' participation in the class.
28. with which Thai should be used as one of the teaching medis.
29. with which both English and Thai should be

used as parts of teaching media.

30. with which audio-visual aids in teaching should be used.

The results are presented in Table 5.

TABLE 5

PERCENTAGE OF STUDENTS' RESPONSE TO GENERAL ASPECTS OF THE SEMANTIC MAPPING TECHNIQUE

Item No.	SA 4	A 3	D 2	SD 1
1.	13.33	76.67	6.67	3.33
2.	43.33	53.33	0.00	3.33
3.	33.3	53.33	10.00	3.33
4.	26.7	66.67	6.67	0.00
5.	36.67	63.00	0.00	0.00
6.	10.00	76.67	13.33	0.00
7.	20.00	70.00	10.00	0.00
8.	46.67	53.33	0.00	0.00
*9.	3.33	43.33	53.33	0.00
10.	33.33	63.33	3.33	0.00
11.	6.67	50.00	40.00	3.33
12.	36.67	56.67	6.67	0.00
13.	33.33	66.67	0.00	0.00
14.	46.67	50.00	3.33	0.00
15.	26.67	66.67	6.67	0.00
*17.	0.00	0.00	80.00	20.00
18.	26.67	73.33	0.00	0.00
*20.	0.00	6.67	73.33	20.00
*21.	0.00	16.67	76.67	6.67

TABLE 5

PERCENTAGE OF STUDENTS' RESPONSE TO GENERAL ASPECTS OF THE SEMANTIC MAPPING TECHNIQUE

Item No.	SA 4	A 3	D 2	SD 1
26.	30.00	70.00	0.00	0.00
27.	30.00	70.00	0.00	0.00

N = 30 *Negative Questions

SA : Strongly Agree A : Agree

D : Disagree SD : Strongly Disagree

TABLE 6

PERCENTAGE OF STUDENTS' RESPONSE TO PREFERABLE MEDIA AND KIND OF ACTIVITIES OF THE SEMANTIC TECHNIQUE

Item No.	SA 4	A 3	D 2	SD 1
16.	10.00	56.67	13.33	0.00
18.	70.00	25.00	5.00	0.00
22.	6.67	70.00	23.33	0.00
23.	10.00	46.67	43.33	0.00
24.	30.00	33.333	33.33	3.33
25.	0.00	10.00	66.67	23.33
28.	10.00	50.00	36.67	3.33
29.	63.33	36.67	0.00	0.00
30.	26.67	66.67	6.67	0.00

From the data presented in Table 5 and 6, students' attitude toward the semantic mapping technique can be recategorized into students' agreement and disagreement toward the semantic mapping technique as shown in Table 7 and 8.

TABLE 7

PERCENTAGE OF STUDENT' AGREEMENT AND DISAGREEMENT TOWARD GENERAL ASPECTS OF THE SEMANTIC MAPPING TECHNIQUE

Items	Positive %	Negative %
1	90.00	10.00
2	96.66	3.33
3	86.66	13.33
4	93.34	6.67
5	99.67	0.00
6	86.67	13.33
7	90.00	10.00
8	100.00	0.00
*9	46.66	53.33
10	96.66	3.33
11	56.67	43.33
12	93.34	6.67
13	100.00	0.00
14	96.67	3.33
15	93.34	6.67
*17	0.00	100.00
18	100.00	0.00
*20	6.67	93.33
*21	15.67	83.34

*Negative Questions

TABLE 7

PERCENATAGE OF STUDENTS' AGREEMENT AND DISAGREEMENT TOWARD GENERAL ASPECTS OF THE SEMANTIC MAPPING TECHNIQUE

Items	Positive %	Negative %
26	100.00	0.00
27	100.00	0.00

The result of Table 7 showed that students generally held a positive attitude toward the semantic mapping technique.

TABLE 8

PERCENTAGE OF STUDENTS' AGREEMENT AND DISAGREEMENT TOWARD PREFERABLE MEDIA AND KIND OF ACTIVITIES

Items	Positive %	Negative %
16	76.67	23.33
19	95.00	5.00
22	76.67	23.33
23	56.67	43.33
24	63.33	36.66
25	10.00	90.00
28	60.00	40.00
29	100.00	0.00
30	93.34	6.67

The result of Table 8 showed that students like to do the pair work most when learning through the semantic mapping technique and all of them agreed that both English and Thai should be used as parts of teaching media.

In the last part of the questionnaire, students were required to self-evaluate their level of reading comprehension after learning through the semantic mapping technique. The rating - scale questionnaire uses the following criteria:

5 : totally understand
4 : mostly understand
3 : moderately understand
2 : slightly understand
1 : do not understand

Here are the list of items in the third part concerning the passages students learned:

1. Choosing a Child' s Sex
2. Surrogate Mothers
3. Asian Women
4. How Well Do You Eat?
5. Youth Crime
6. Aids
7. What are Drugs?
8. Why not Take Drugs?
9. Love Me, Love My Diploma
10. Nurse Nida and The Doctor Who Wouldn't Come

Frequency count and percentage were employed to analyze the questionnaire results obtained from students' evaluation of their reading comprehension. The results are shown in Table 9.

TABLE 9

PERCENTAGE OF STUDENTS' EVALUATION OF READING PASSAGES TAUGHT THROUGH THE SEMANTIC MAPPING TECHNIQUE TO EACH TOPIC

Item No.	TU 5	MU 4	ModU 3	SU 2	DU 1
1	10.00	56.67	26.67	6.67	0.00
2	3.33	76.67	13.33	6.67	0.00
3	3.33	26.67	50.00	20.00	0.00
4	6.67	33.33	36.67	20.00	3.33
5	3.33	23.33	46.67	23.33	3.33
6	6.67	46.67	40.00	6.67	0.00
7	3.33	26.67	50.00	20.00	0.00
8	6.67	33.33	36.67	23.33	0.00
9	10.00	33.33	33.33	20.00	3.33
10	20.00	30.00	30.00	10.00	10.00

N=30 TU : Totally Understand, MU : Mostly Understand ModU : Moderately Understand, SU : Slightly Understand DU : Do Not Understand

The results from Table 9 are recategorized into Table 10.

TABLE 10

MEAN SCORES OF STUDENTS' EVALUATION OF READING PASSAGES TAUGHT THROUGH THE SEMANTIC MAPPING TECHNIQUE TO EACH TOPIC

Item No.	Mean	S.D.	Variance
1	3.70	.75	.56
2	3.77	.63	.39
3	3.13	.78	.60
4	3.20	.96	.92
5	3.00	.87	.76
6	3.53	.73	.53
7	3.13	.78	.60
8	3.23	.90	.81
9	3.27	1.10	1.03
10	3.40	1.22	1.49

From the data presented in Table 10, students' evaluation of each topic can be recategorized into students' evaluation of ten topics as shown in Table 11.

TABLE 11

MEAN SCORES OF STUDENTS' EVALUATION OF READING PASSAGES TAUGHT THROUGH THE SEMANTIC MAPPING TECHNIQUE TO TEN TOPICS

Mean	S.D.	Variance
3.34	0.06	0.00

The mean scores of students' response were analyzed by using the following criteria:

4.5	-	5.0	:	totally understand
3.6	-	4.5	:	mostly understand
2.6	-	3.5	:	moderately understand
1.6	-	2.5	:	slightly understand
0.06	-	1.5	:	do not understand

(Teo, 1986 in Aumpayub, 1990:146)

Table 9 showed that the students self-evaluate their understanding of the reading passages at the moderate level. This finding support the finding of Carrell, Pharis and Liberto (1987:655) who noted that the semantic mapping technique enhances students' reading comprehension. They added that in prereading activity vocabulary words related to the topic elicited from the students can help them learn the key vocabulary necessary for comprehension and to activate their prior knowledge bases of that topic. Also Johnson (1982:503) proposed that the background knowledge of the topic and vocabulary development influence reading comprehension.

Finding Five

From the data in Table 7, it was revealed that most students (96.66%) expressed that the semantic mapping technique enabled them to enhance their reading comprehension. 90% are satisfied with this technique. Only few students (16.67%) said that this technique is too difficult for them to practise in class. For practising by themselves, some (46.66%) reported that it is too difficult for them to practise.

However, most students (86.67%) felt that this technique motivates them to reading. And 90% accepted that this technique enables them to know the meaning of vocabulary related to the topic before reading. All students (100%) agreed that this technique help them understand the relationship of the contents.

About using background knowledge to facilitate reading comprehension, 93.34% stated that prior knowledge enhances their reading comprehension; 99.67% said that this technique guides them to the theme of the passage to be read; and 93.34% expressed that this technique helps them know what new knowledge is to be acquired from the reading.

With regards to participation in the classroom, all students (100%) agreed that this technique promotes students ' participation in class. Some (56.67%) said that this technique enables them to become more acquainted with one another. In addition, all students (100%) disagreed that this technique causes conflicts among

students while discussion. Only 6.67% stated that this technique should be confined to extrovert students.

In terms of thinking, most students (93.34%) said that they can practise expressing their opinions. And 100% agreed that this technique helps them think systematically, activates them to think more and enables them to have an accurate memory about the content. Besides most of them (96.66%) reported that this technique enables them to take notes effectively.

As for recommendations in the questionnaires, almost all of the students (96.67%) recommended that grammar should be taught additionally in the reading class. But for translation, most students (70%) expressed that only some difficult English parts should be translatated into Thai. Most students (86.66%) suggested that the duration of time should be increased.

In addition, the data in Table 8 about the preferable kind of activities and teaching media, it was revealed that concerning various kinds of activity, most students (76.67%) stated they should practise in groups when learning through the semantic mapping technique. Some reported that they should practise learning to read the passages through the semantic mapping technique in pairs (56.67 %), at the same time with the teacher (53.33 %), and individually (10%).

Regarding the teaching media, all students (100 %), stated that both English and Thai should be used as parts of teaching media. 76.67 % expressed that English

should be used one of the teaching media. Some 60 % said that Thai should be used as one of the teaching media. Furthermore, most of them (95 %) proposed that some difficult English parts should be translated into Thai. And 93.34 % recommended that audio-visual aids should be used in teaching.

Apart from a concern for students' attitudes toward the semantic mapping technique, students' self evaluation of comprehension with respect to each topic learned was also collected by questionnaires. The results, as shown in Table 9 revealed that most students (56.67%) said that they mostly understand the first passage. And 76.67% reported that they mostly understood the second passage. While most students (50%), (36.67%) and (46.67%) said that they understood the third, fourth and fifth passages at the moderate level respectively. Also most students (46.67%) reported that they mostly understood the sixth passage. In addition, most students (50%) and (36.67%) understood the seventh and eighth passages at the moderate level respectively. For the ninth and the tenth passages, most students (33.33%) and (30%) stated that they both mostly and moderately understand the ninth and the tenth passages respectively. Besides, the data from Table 11, it revealed that students think the semantic mapping technique helped them to comprehend ten topics they read at the moderate level.

In conclusion, students taught through the semantic mapping technique outperform those taught the conventional technique. The semantic mapping technique

also helps students of low reading-ability increase their English reading achievement better than those of high-reading ability. Moreover, students generally expressed a favorable attitude toward this technique.

CHAPTER V

SUMMARY, DISCUSSION, IMPLICATIONS AND RECOMMENDATIONS FOR FURTHER STUDIES

Chapter Five deals with a summary of the present study, a discussion of the findings, implications for teaching and learning as well as recommendations for further studies.

Summary of the Study

Reading comprehension is a complex activity, and many Thai university students have trouble with this skill. It has been found that the reading ability of Thai university level students is unsatisfactory (Manasunton : 1975).

Since reading is a skill needed for their studies and career, many Thai university students have suffered from inadequate reading abilities for university level reading and learning. Anderson, Pichert and Shirey (Simons, 1989 : 420) stated that background knowledge and knowledge of text orgsnization are important factor influencing comprehension. For students to gain the most from reading, teachers must guide them to think about what they already know about key concepts in the text and help them link that prior knowledge with new information they will encounter (Simons, 1989:420).

The semantic mapping technique requires students to recall background knowledge, link it to new ideas,

and use a graphic overview (a visual representation of the text organization) as they read. It is evident that the semantic mapping technique can strengthen reading comprehension (Heimlich and Pittelman:1986). Stahl and Vancil(1986:64-66) pointed out that the semantic mapping technique is effective because it allows students to tie new information to students' already existing knowledge structures through the use of the map. They also added that in active discussion the teacher is able to assess students' prior knowledge and adjust instruction to it.

Nevertheless, in the Thai context at the university level there has been no proper research undertaken to investigate the effectiveness of the semantic mapping technique on reading comprehension. It was thus reasonable for this study to investigate to what extent the semantic mapping technique can affect and enhance first-year nursing students' reading comprehension .

The sample population for this experimental study was 60 first- year nursing students at Mahidol University: thirty students in the control group and another thirty in the experimental group.

Before the experiment, the control and the experimental groups were administered a pretest in order to assess their English reading ability. The control group learned to read English passages using the conventional technique. The experimental group, on the other hand, learned to read English passages using the semantic mapping technique.

At the end of the experiment, a posttest was administered to both groups to investigate the influence of two techniques - the conventional and the semantic mapping techniques - on the reading achievement of students in both groups. Moreover, a questionnaire eliciting students' attitudes toward the semantic mapping technique was provided to the students in the experimental groups.

Summary of the Findings

1. There was a significant difference between the mean scores obtained from the posttest and those obtained from the pretest ($p < .001$) for students in the control group. Hence, it can be concluded that in teaching reading, the conventional technique can increase students' English reading achievement.

2. An equally significant difference was found between the mean scores of the posttest and pretest ($p < .001$) for students in the experimental group. Thus, it can be inferred that in teaching reading, the semantic mapping technique is able to help students increase their English reading achievement.

3. There was a significant difference between the mean scores of the experimental and the control groups ($p < .01$). The students in the experimental group achieved higher mean scores than those in the control group. This implies that the semantic mapping technique is more effective for the development of the English reading achievement than the conventional

technique.

4. High reading - ability students in the experimental group scored higher than those in the control groups but the difference between the mean scores of those two groups was not significant ($p > .05$). Whereas low reading- ability students in the experimental group, their mean scores were significantly different form those in the control group at a .001 level.

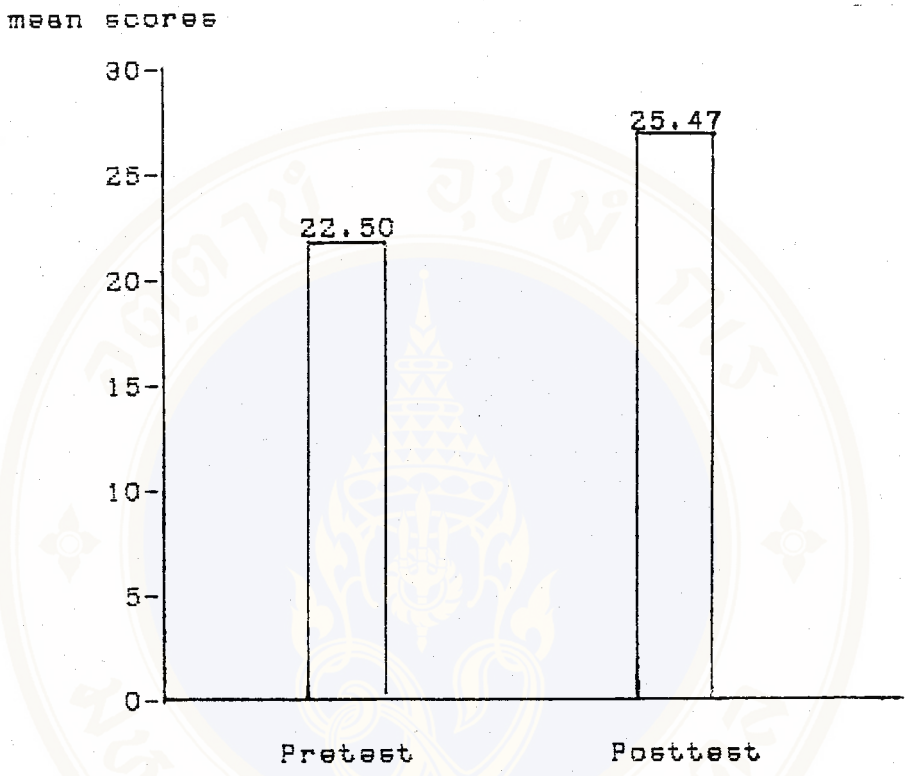
5. Students in the experimental group reported a favorable attitude toward the semantic mapping technique. And students evaluated themselves that they were able to comprehend the reading passages at the moderate level.

Discussion of the Findings

1. Finding I of the study indicates that students in the control group greatly improve their English reading achievement significantly after being taught through the conventional technique (See Graph 1).

GRAPH 1

A COMPARISON OF THE CONTROL GROUP'S MEAN SCORES OBTAINED FROM THE PRETEST AND POSTTEST



Pretest and Posttest Means Scores of the Control Group

The development of mean scores in Finding One results from the conventional technique. This probably results from the value of using translation and discourse connectors as clues facilitating reading comprehension which are called here the conventional technique.

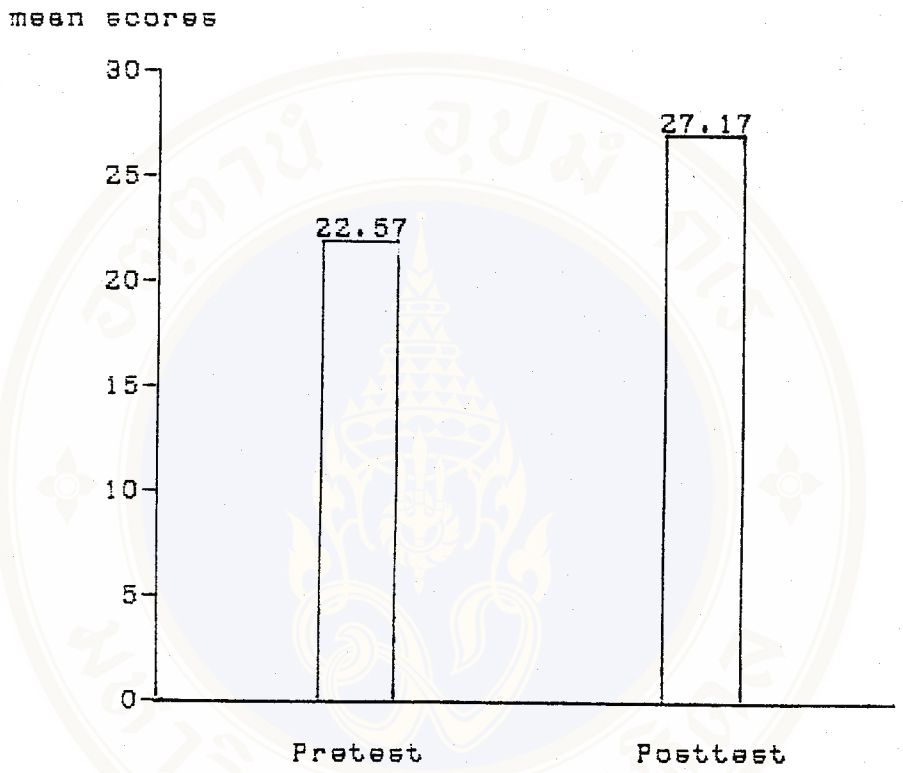
This finding further sustained Urgese's (1987 :40) statement that translation can be utilized as an effective tool in teaching reading comprehension.

This conventional technique is also dealt with using clues, i.e. discourse connectors as an aid facilitating students to understand what they read. According to Pierce (1975:253), ESL students need some guidelines for differentiating ideas and determining their relationships, so one approach is to teach them to look for clues within the written information. In addition, Norris (1971:2) pointed that more direct means than word analysis for determining the meaning of a word is to look for clues to the meaning elsewhere in the sentence or in adjacent sentence.

2. Finding II of the study reveals that students in the experimental group showed improvement in their reading ability after being taught through the semantic mapping technique (See Graph 2).

GRAPH 2

A COMPAIRSON OF THE EXPERIMENTAL GROUP'S MEAN SCORES OBTAINED FROM THE PRETEST AND THE POSTTEST



Pretest & Posttest Mean Scores of the Experimental Group

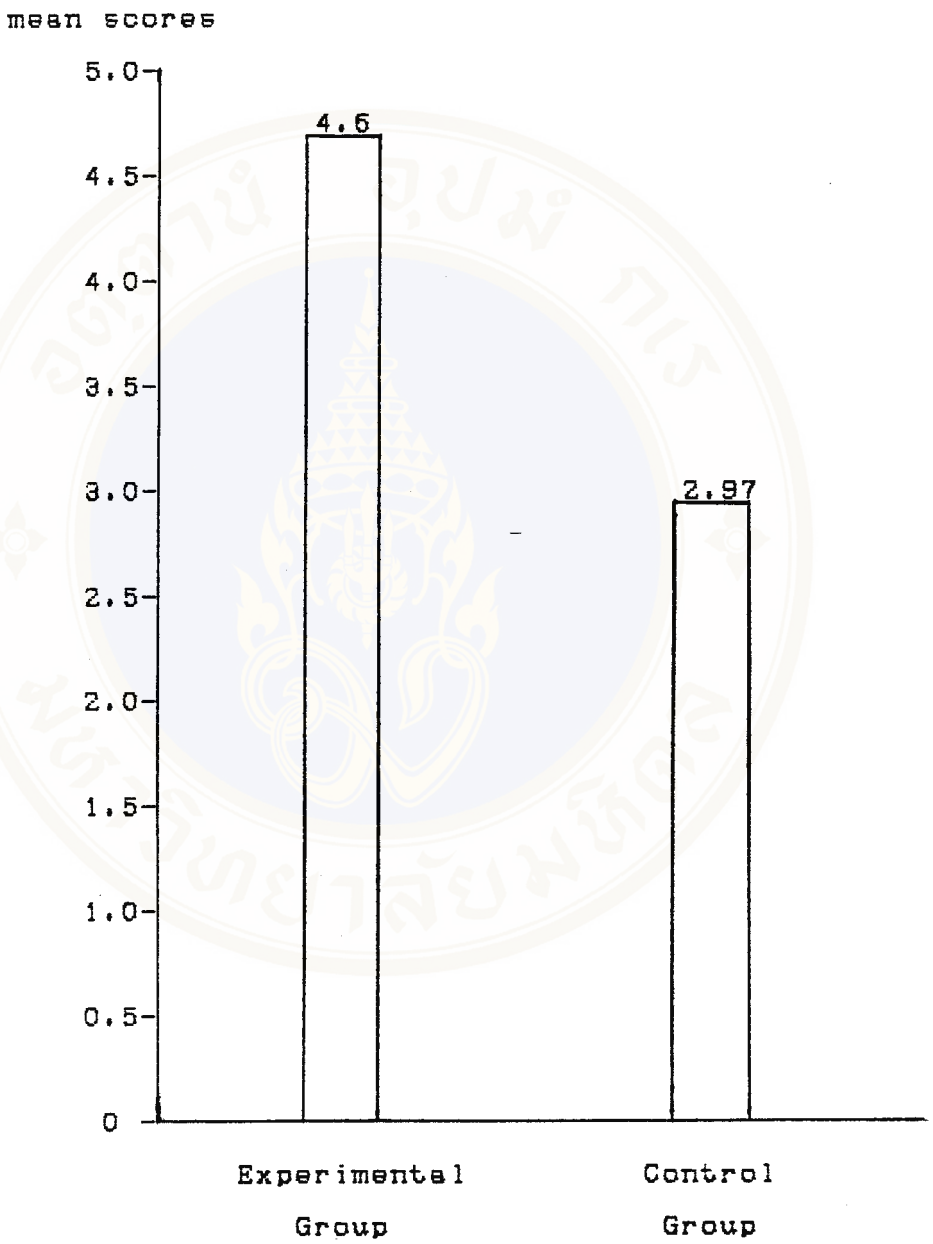
This finding shows an advantage of teaching English reading through the semantic mapping technique. This may be due to the fact that, as Sinatra, Gemake and Berg (1982:22)pointed out the semantic mapping technique improves children's reading comprehension by showing them not only how vocabulary items are related to each other in some conceptual hierachy, but also how the ideas in texts are organized in associative ways.

Similarlly, it has been argued by Stahl and Vancil's (1986: 64-66) that the semantic mapping technique is effective because it allows students to tie new information to students' already existing knowledge structures through the use of the map and in active discussion, the teacher is able to assess students' prior knowledge and adjust instruction to it.

3. Finding III of the study shows that students taught through the semantic mapping technique achieved higher mean scores than those taught through the conventional technique (See Graph 3).

GRAPH 3

A COMPARISON OF THE ENGLISH READING ACHIEVEMENT OF THE EXPERIMENTAL AND THE CONTROL GROUP



The Experimental Group & The Control Group Mean Scores

This finding supports the findings of research by Carrell, Pharis and Liberto (1989 : 555-599). In their research, they examined the effectiveness of 3 techniques in teaching reading comprehension. The subjects consisted of 25 ESL students. Students in Group I received the semantic mapping training. Students in Group II received the ETR (Experience - Text - Relationship) training. And students in Groups III, and IV received the conventiontal training. From their research, the results show that the semantic mapping and the ETR groups had significant gain scores between their pre- and posttests, whereas the control group did not have significant gain scores between their pre- and posttests.

Carrell, Pharis and Liberto (1987 : 555) noted that the semantic mapping technique enhance ESL students' reading comprehension in that in prereading activity vocabulary words related to the topic elicited from the students can help them learn the key vocabulary necessary for comprehension and to activate their prior knowledge bases of that topic.

The students in the experimental group have the opportunity to discuss what they know about the topic to be read. An idea or fact from one student seems to trigger ideas from other students in a chain reaction thought process. Learning through the semantic mapping technique, students learned about the topic both through reading and discussion. During the discussion, students' learning cannot be passive; they must be actively involved in the mapping process. In this way,

the semantic mapping technique appears to motivate students and to involve them actively in the thinking reading process. According to Heimlich and Pittelman (1986:44) students' confidence in their own knowledge base from the initial brainstorming activity seemed to create a desire to learn more.

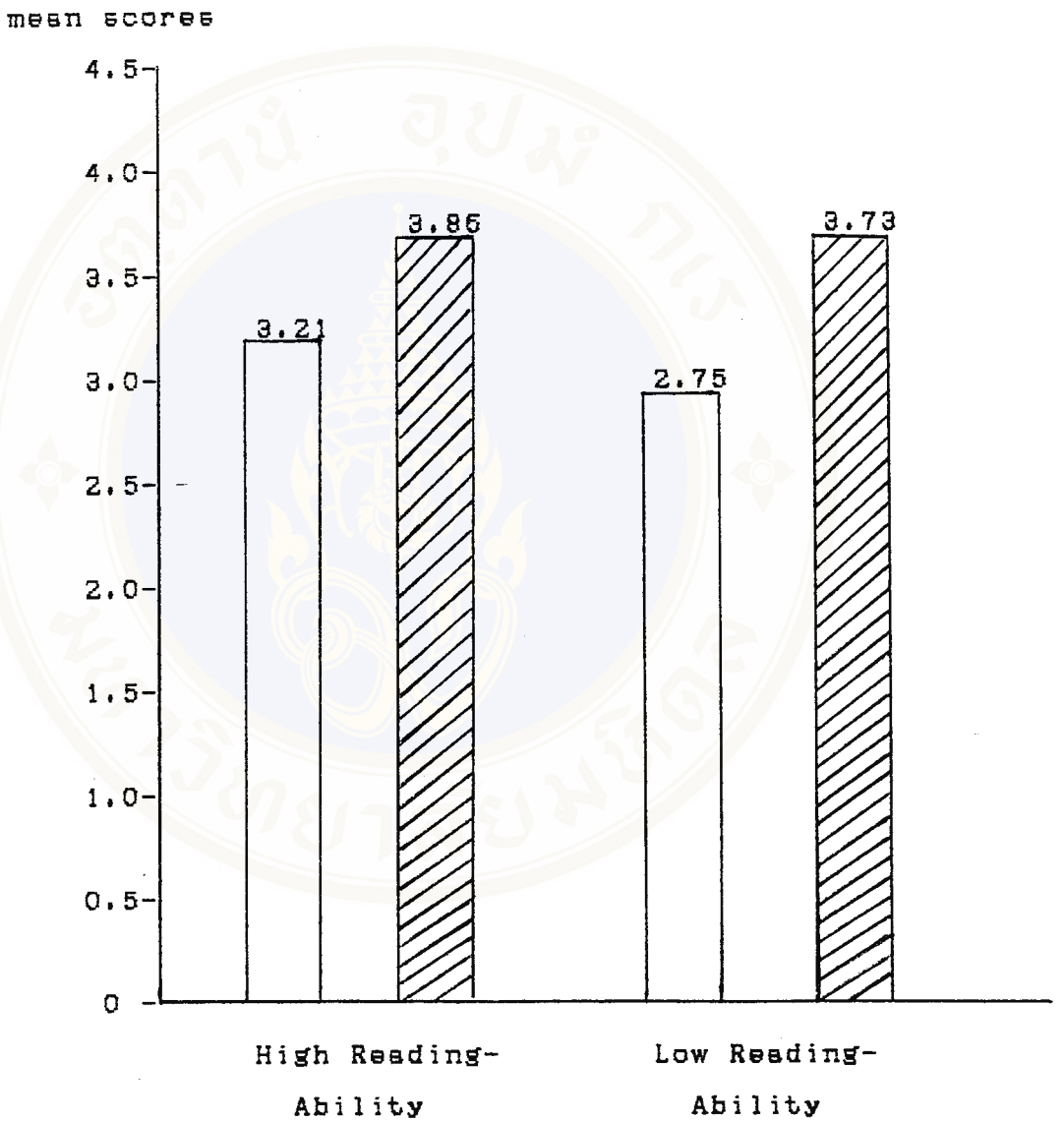
On the other hand, the students in the control group are passive in their learning:they just listen to what the teacher said and take notes the meanings of the difficult vocabulary in Thai. The atmosphere of teaching and learning is rather boring because it is teacher-centered not student-centered. The control students lacked the opportunity to take part in the discussions, and exchanges of ideas. They were not challenged to think what about the information to be read even though reading involves thinking (Harris and Smith, 1976:255).

Therefore, it might be concluded that the students in the experimental group could score significantly higher than those in the control group because of the effectiveness of the semantic mapping technique itself and the teaching/learning atmosphere it entails.

4. From finding IV, it was found that high reading-ability students in the experimental group could not gain significantly higher scores than those in the control group. But low reading-ability students in the experimental group could gain significantly higher scores than those in the control group (See Graph 4).

GRAPH 4

A COMPARISON OF THE ENGLISH READING ACHIEVEMENT BETWEEN HIGH AND LOW READING-ABILITY STUDENTS IN THE CONTROL AND THE EXPERIMENTAL GROUPS



The Mean Scores of High and Loww Reading-Ability Students in The Control and The Experimental Groups

□ = The control group

▨ = The experimental group

Until now there has been no research supporting this finding. But the present researcher speculates that this finding may be due to two factors:

Firstly, the learning strategies of high reading-ability students may be different from that of low reading-ability students. They may think while reading and use background knowledge relevant to the passage they read to enhance their reading comprehension, although the teacher has not activated them to use. For this reason, they slightly profited from the semantic mapping technique.

Secondly, the semantic mapping technique may lead low reading-ability students to an active learning style. And it is possible that low reading-ability students have never used their background knowledge to facilitate reading comprehension. After the experiment, these students realize the importance of relating their prior knowledge to the new information they read. So they can comprehend what they read better.

According to Sinatra, Gemake and Berg (1982 :28), the advantage of the semantic mapping:

> The association may remain in the 'mind's eye' helping poor readers organize new content as it is being read. During silent reading, if a students fails to recall new vocabulary, s/he may recall the node in which the word appeared on the map. Thus, the graphic overview of the selection's organization would appear to integrate the verbal, which tends to be recalled poorly, with the nonverbal, a strength in mental functioning for many disabled readers.

5. The data for Finding Five indicates that the students have a favorable attitude toward the semantic mapping technique. The questions in questionnaires after the experiment, most students responded that the semantic mapping technique could enhance their comprehension. They felt that when learning through the semantic mapping technique, they understood the lessons.

Implications for Teaching and Learning

This experimental study was designed to investigate the effectiveness of the semantic mapping technique for the teaching of English reading. One group was taught through the conventional technique whereas the other was taught through the semantic mapping technique.

On the basis of the findings of this study and other related studies, the following suggestions made by the present investigator might be taken into consideration to improve teaching of English reading.

1. From the findings, it can be concluded that the semantic mapping technique is useful and practical to the teaching of reading. To understand what is read, background knowledge plays an important role. The knowledge of grammatical points and the meaning of vocabulary is not enough for students to comprehend the text. So, when teaching reading comprehension, the teacher should realize the importance of background knowledge related to the topic to be read to facilitate

students' reading comprehension.

2. The results gained from the questionnaire indicated that although the semantic mapping technique has many advantages in teaching reading comprehension to students, it has some disadvantages. That is to say, most students (96.67%) learning through the semantic mapping technique remarked that grammar should be taught additionally and some difficult English parts should be translated into Thai. Thus, the teacher of English reading should apply this knowledge to the semantic mapping technique or combine 2 techniques - the conventional technique and the semantic mapping technique - in teaching English reading comprehension to Thai students.

3. The findings in this study indicate that low reading-ability students greatly benefited from the semantic mapping technique while there is no significant difference in the English reading development among high reading-ability students of the experimental and the control groups, although the former group gained higher scores than the latter group. Hence, it is worthwhile to train low reading-ability students to use background knowledge integrated with text information to create new knowledge because background knowledge about a topic is a better predictor of text comprehension than is any measure of reading ability or achievement (Johnson & Pearson, 1982; Johnson, 1984).

To sum up, learning to read English passages through the semantic mapping technique has been shown to have advantages over learning through the conventional technique. Consequently, this semantic mapping technique should be taken in consideration as a teaching technique in teaching English to Thai students.

Recommendations for Further Study

On the basis of this study, the following suggestions for the improvement of the English teaching /learning situation are proposed:

1. This research dealt with the first-year nursing students at Mahidol University. It would be useful to investigate the effectiveness of the semantic mapping technique on reading comprehension with different subjects, and different texts. This is because these might produce different results which would help to increase our understanding of the whole issue of teaching English reading comprehension.

2. The combination of these two techniques, the conventional technique and the semantic mapping technique, should be examined to find a better teaching technique.

3. Further studies comparing the semantic mapping technique with other teaching techniques should be conducted. Since the semantic mapping technique was found more effective in the development of the English

reading achievement than the conventional technique; it would be interesting to find out if other teaching techniques are even more useful and practical in teaching reading to Thai students.

4. The research involved only 18 hours within 4 months. It would be useful to replicate this research study to find out whether a longer program of study could effect significant differences of scores.

5. The findings indicate that low reading-ability students are helped more than the high reading-ability students. Replication of the study should be done to determine whether this result can be generalized for any Thai students.

6. Further studies should be extended to other skills (writing and listening) in order to see if the results obtained are similar to these found in reading. This may be useful for the development of techniques in other skill areas.

7. To validate finding of this research, there should be the comparison of the posttest scores and the final examination scores.

8. Further studies comparing the students' attitudes towards the semantic mapping technique and the conventional technique should be investigated.

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APPENDIX A

Lesson Plans

Lesson Plan (The Experimental Group)

Content: Unit 1 Choosing A Child's Sex

Objective: To practise reading for comprehension and note-taking.

Topic: Choosing A Child's Sex

<table>
<tr><th>Stage/
Kind of
activities</th><th>Procedure</th><th>Time</th></tr>
<tr><td>Presentation
A Whole Class
With The
Teacher</td><td>1. T writes 'Choice of A Child's Sex on the board.
2. T asks students to discuss about this topic and develop the map.</td><td>15 mins</td></tr>
<tr><td>Practice
Individual</td><td>1. T shows the diagram below to students to guide them what they will read next.
Choosing A Child's Sex
<table><tr><th></th><th>Method 1</th><th>Method 2</th><th>Method 3</th></tr><tr><td>Name of scientist</td><td></td><td></td><td></td></tr><tr><td>Nationality</td><td></td><td></td><td></td></tr><tr><td>Basic Theory</td><td></td><td></td><td></td></tr><tr><td>Technique Use</td><td></td><td></td><td></td></tr><tr><td>Result</td><td></td><td></td><td></td></tr><tr><td>Steps</td><td></td><td></td><td></td></tr></table></td><td>25 mins</td></tr>
</table>

Stage/ Kind of activities	Procedure	Time
	2. T asks students to read the passage.	
Evaluation A Whole Class With The Teacher	1. T asks students to fill in the diagram. 2. T asks students how much additional information they have learned about this topic through reading.	20 mins

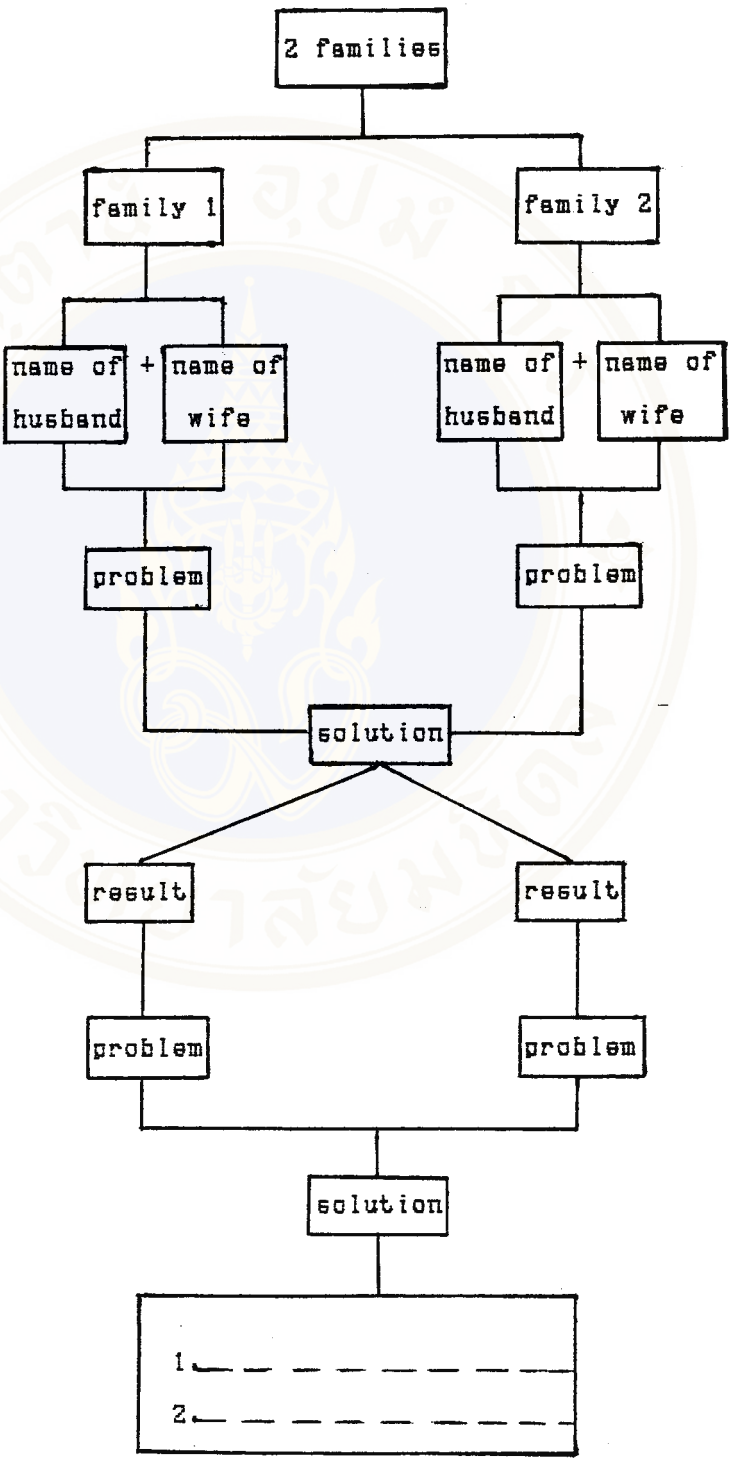
Lesson Plan (The Experimental Group)

Content: Unit 2 Surrogate Mothers

Objective: To practise reading for comprehension and note-taking.

Topic: Surrogate Mothers

Stage/ Kind of activities	Procedure	Time
Presentation A Whole Class With The Teacher	1. T writes 'Surrogate Mothers' on the board. 2. T asks students to discuss about this topic and develop the map.	15 mins
Practice Individual	1. T shows students the diagram below to guide them what they will read next.	25 mins

Stage/ Kind of activities	Procedure	Time
		

Stage/ Kind of activities	Procedure	Time
	2. T asks students to read the passage.	
Evaluation A Whole Class With The Teacher	1. T asks students to fill in the diagram. 2. T asks students how much additional information they have learned about the topic through reading.	20 mins

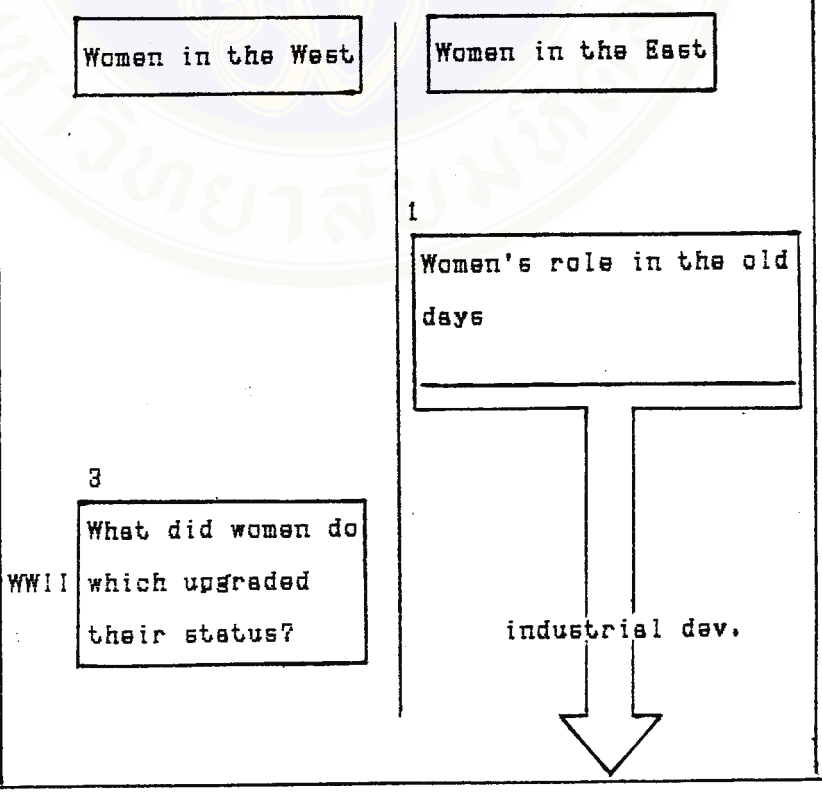
Lesson Plan (The Experimental Group)

Content: Unit 3 Asian Women and Taboos

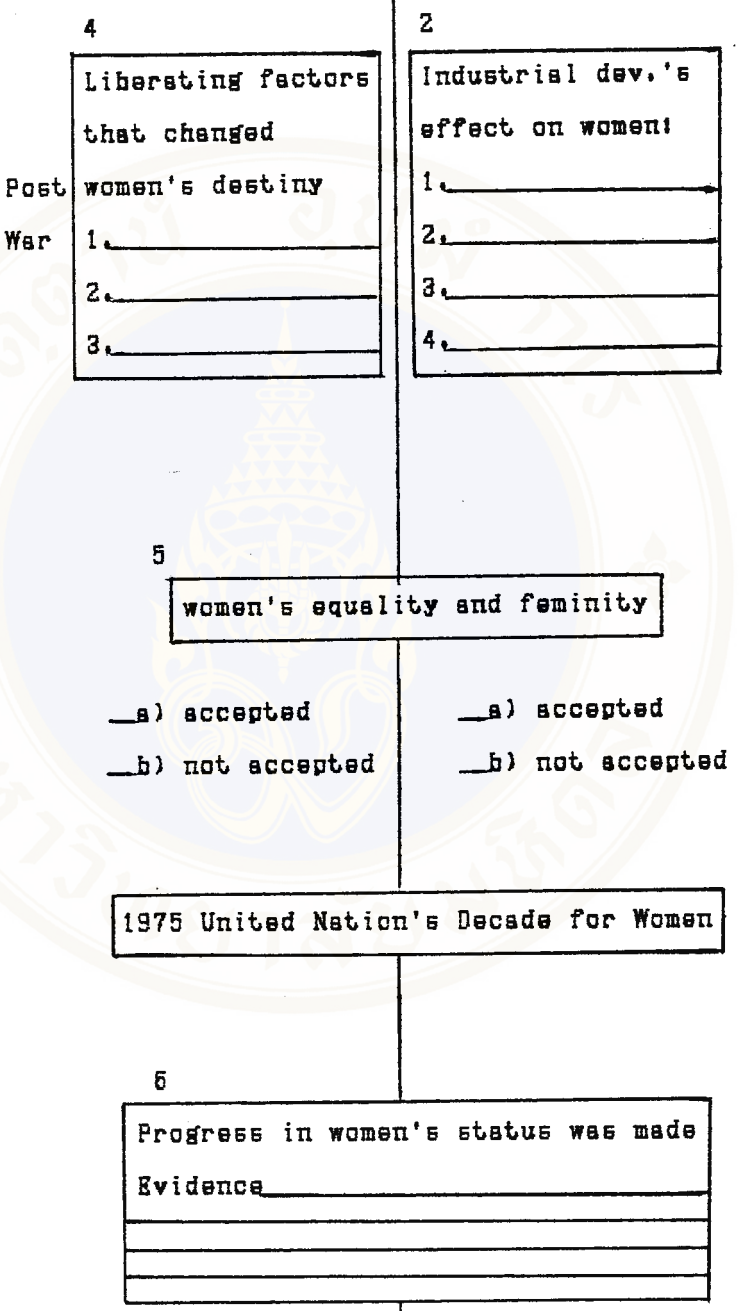
Objective: To practise reading for comprehension and note-taking.

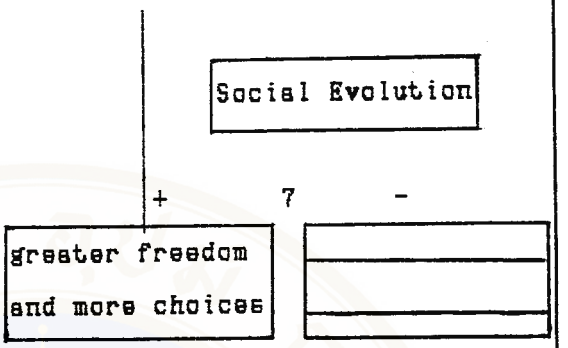
Topic: Asian Women

Stage/ Kind of activities	Procedure	Time
Presentation Groups	1. T writes the words 'Asian Women' on the board. 2. T asks students to discuss about this topic and develop maps.	15 mins
Practice Individual	1. T shows students the diagram below to guide them what they will read next.	25 mins



Stage/ Kind of activities	Procedure	Time



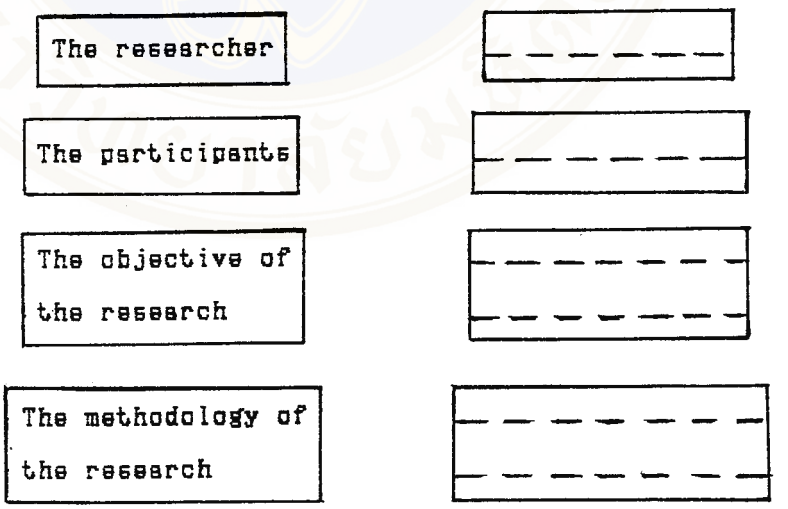
Stage/ Kind of activities	Procedure	Time
	 2. T asks students to read the passage.	
Evaluation Groups	1. T asks students to fill in the diagram. 2. T asks students what is the new knowledge they have learned from the passage.	20 mins

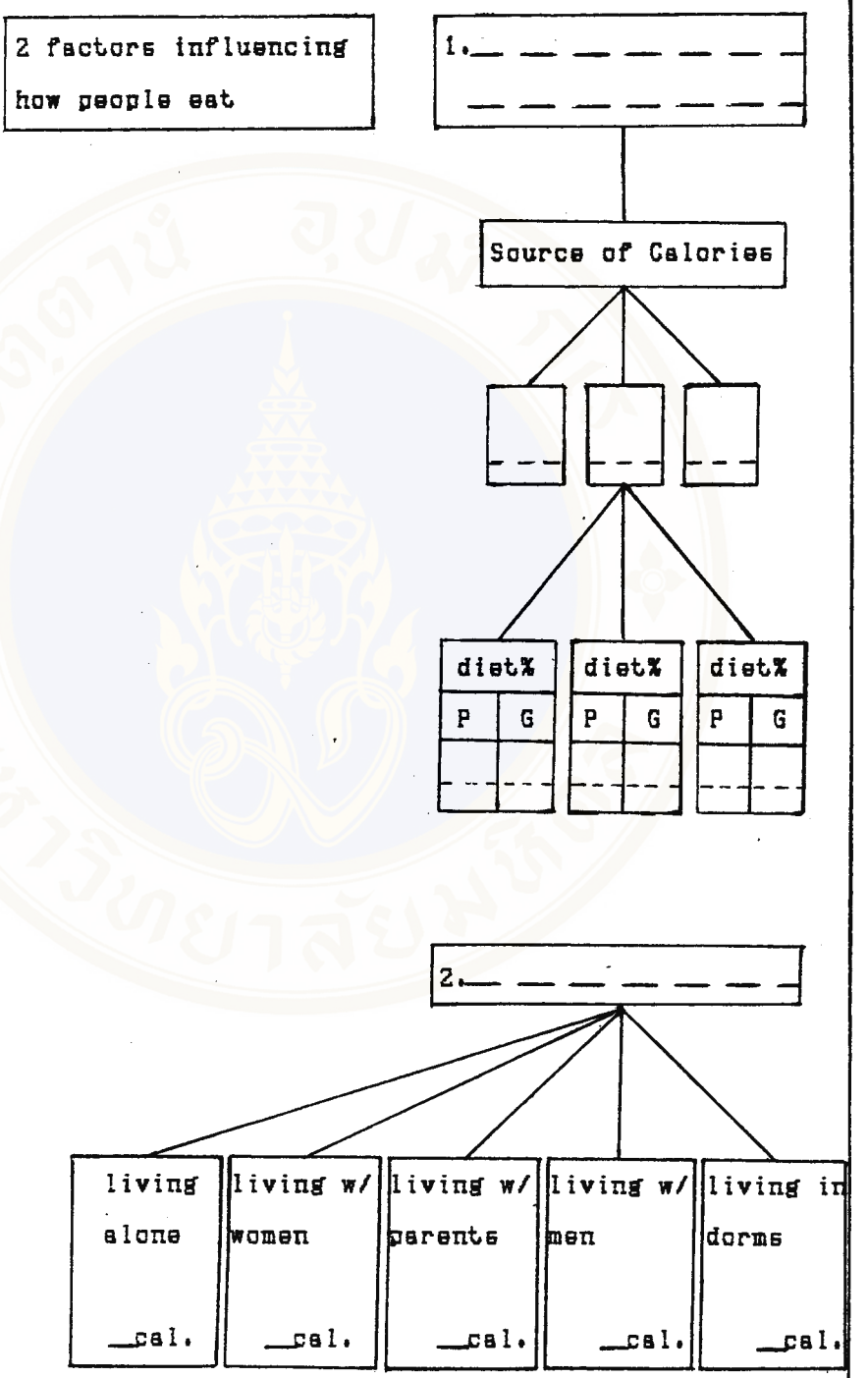
Lesson Plan (The Experimental Group)

Content: Unit 4 Food and Health

Objective: To practise reading for comprehension and note-taking.

Topic: How Well Do You Eat?

Stage/ Kind of activities	Procedure	Time
Presentation Groups	1. T writes 'How Well Do You Eat?' on the board. 2. T asks students to discuss about this topic and develop maps.	15 mins
Practice Individual	1. T shows the diagram below to students to guide them what they will read next. 	25 mins

Stage/ Kind of activities	Procedure	Time
		

P = Participants G = Dietary Goals cal. = calories

Stage/ Kind of activities	Procedure	Time
	Research implications: 1. _____ 2. _____ Dr. Stare's suggestion: _____ Goldberg's suggestion: _____ 2. T asks students to read the passage.	
Evaluation Groups	1. T asks students to fill in the diagram. 2. T asks students what is the new knowledge they have gained from reading.	20 mins

Lesson Plan (THe Experimental Group)

Content: Unit 5 Youth Crime

Objective: To practise reading for comprehension and note-taking.

Topic: Youth Crime

<table>
<tr><th>Stage/
Kind of
activities</th><th>Procedure</th><th>Time</th></tr>
<tr><td>Presentation
Pairs</td><td>1. T writes 'Youth Crime' on the board.
2. T asks students to discuss about the topic and develop the map.</td><td>15 mins</td></tr>
<tr><td>Practice
Individual</td><td>1. T shows students the diagram below to guide them what they will read next.
<table><tr><th></th><th>Cooper</th><th>Pinkerton</th><th>Roach</th></tr><tr><td>How old was s/he when s/he committed the crime?</td><td></td><td></td><td></td></tr><tr><td>What type of crime did s/he commit?</td><td></td><td></td><td></td></tr><tr><td>What kind of weapon did s/he use?</td><td></td><td></td><td></td></tr><tr><td>Who was the victim?</td><td></td><td></td><td></td></tr></table></td><td>25 mins</td></tr>
</table>

<table>
<tr><td>Stage/
Kind of
activities</td><td>Procedure</td><td>Time</td></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>Cooper</td><td>Pinkerton</td><td>Roach</td></tr>
<tr><td>Where did the crime take place?</td><td></td><td></td><td></td></tr>
<tr><td>When did the crime take place?</td><td></td><td></td><td></td></tr>
<tr><td>What was the possible cause?</td><td></td><td></td><td></td></tr>
<tr><td>What penalty did s/he get?</td><td></td><td></td><td></td></tr>
</table>
2. T asks students A to read the passage on page 61 and students B to read the passage on page 63.
</td><td></td></tr>
<tr><td>Evaluation
Pairs</td><td>1. T asks students A to fill in 'Cooper' column and students B to fill in 'Pinkergon and Roach' columns.
2. T asks students what is the new knowledge they have learned from the passage.
_____</td><td></td></tr>
</table>

Lesson Plan (The Experimental Group)

Content: Unit 6 The Deadly Enemy

Objective: To practise reading for comprehension.

Topic: Aids

Stage/ Kind of activities	Procedure	Time
Presentation Class With The Teacher	1. T writes the word: 'Aids' on the transparency sheet with a blue marker. 2. T asks students to skim the passage to find subtopics printed in the passage. 3. T writes the subtopics - symptoms, development, statistics, transmission, treatment, and precautions - on the transparency sheet with a black marker. 4. T asks students to discuss what they already know about these subtopics. 5. T adds the information students tell to the map with a red marker under each subtopic.	20 mins
Practice Individual	1. T asks students to read the passage paragraph by paragraph.	25 mins
Evaluation A Whole Class With The Teacher	1. T asks students to stop reading at the end of each paragraph to share facts they have learned through reading.	15 mins

Stage/ Kind of activities	Procedure	Time
	2. T adds new information students tell to the map under each subtopic with a green marker. 3. T uses the color map to help students distinguish among prior knowledge and newly acquired information.	

Lesson Plan (The Experimental Group)

Content: Unit 7 Drugs and Addiction

Objective: To practise reading for comprehension and note-taking.

Topic: What Are Drugs?

Stage/ Kind of activities	Procedure	Time
Presentation Individual	1. T writes 'What Are Drugs?' on the board. 2. T asks students to use their background knowledge about this topic to create their own map.	10 mins
Practice Individual	1. T asks students to read the passage	10 mins
Evaluation Individual	1. T asks students to identify and correct wrong ideas presented on the original map. 2. T asks students how much new information they have learned about this topic through reading.	10 mins

Lesson Plan (The Experimental Group)

Content: Unit 7 Drugs and Addiction

Objective: To practise reading for comprehension.

Topic: Why Not Take Drugs?

<table>
<tr><th>Stage/
Kind of
activities</th><th>Procedure</th><th>Time</th></tr>
<tr><td>Presentation
Individual</td><td>1. T writes 'Why Not Take Drugs? on the board.
2. T asks students to fill in the diagram below by using their prior knowledge.

Why Not Take Drugs?

Negative Effects of Long-Term Drug Use

<table><tr><th>Drug</th><th>Effects</th></tr><tr><td>tobacco</td><td></td></tr><tr><td>amphetamines</td><td></td></tr><tr><td>barbiturates</td><td></td></tr><tr><td>cocaine</td><td></td></tr><tr><td>hallucinogens</td><td></td></tr></table></td><td>10 mins</td></tr>
</table>

Stage/ Kind of activities	Procedure	Time
Practice Individual	1. T asks students to read the passage.	10 mins
Evaluation A Whole Class With The Teacher	1. T asks students to identify and correct misinformation written on the diagram. 2. T asks students how much additional information they have learned about this topic throught reading.	10 mins

Lesson Plan (The Experimental Group)

Content: Unit 9 Finding A Suitable Sweetheart

Objective: To practise reading for comprehension.

Topic: Love Me, Love My Diploma

Stage/ Kind of activities	Procedure	Time
Presentation A Whole Class With The Teacher	1. T writes 'Love Me, Love My Diploma' on the transparency sheet with a blue marker. 2. T asks students to skim the passage to find all subtopics printed in the passage. 3. T writes all subtopics - Population Problem in Singapore, Cause of the Problem, and Solutions to the Problem - on the transparency sheet with a black marker. 4. T asks students to discuss what they already know about these subtopics. 5. T adds the information students tell to the map with a red marker under each subtopic.	20 mins
Practice Individual	1. T asks students to read the passage paragraph by paragraph.	25 mins
Evaluation A Whole Class With	1. T asks students to stop reading at the end of each paragraph to share facts they have learned through reading.	15 mins

Stage/ Kind of activities	Procedure	Time
The Teacher	2. T adds new information students tell to the map under each subtopic with a green marker. 3. T uses the color map to help students distinguish among prior knowledge and newly acquired information.	

Lesson Plan (The Experimental Group)

Content: Unit 10 The Practical of Nursing: Principles, Problems and Potential

Objective: To practise reading for comprehension.

Topic: Nurse Nida And The Doctor Who Wouldn't Come

Stage/ Kind of activities	Procedure	Time
Presentation A Whole Class With The Teacher	1. T writes ' Nurse Nida And The Doctor Who Wouldn't Come' on the board with blue chalk. 2. T tells students that the passage they are going to read dealing with a diabetic patient' s near respiratory arrest in a pediatric unit of a hospital and asks students the following question: what should a nurse do if she thinks a doctor makes a mistake? 3. T adds the information students tell to the map with green chalk.	20 mins
Practice Individual	1. T asks students to read the passage.	25 mins
Evaluation A Whole Class With The Teacher	1. T asks students to identify what nurse Nida did. 2. T adds new information students tell to the map with red chalk.	15 mins

Stage/ Kind of activities	Procedure	Time
	3. T uses the color map to help students distinguish among prior knowledge and newly acquired information.	

Lesson Plan (The Control Group)

Content: Unit 1 Choosing A Child's Sex

Objective: To practise reading for comprehension.

Stage/ Kind of activities	Procedure	Time
Presentation Individual	1. T prepares Ss to read the text by using pre-reading activities in exercises 3, 4 and 5. 2. T teaches the meanings of difficult vocabulary necessary to comprehend the text such as *chromosome, fertilize, semen, ovum, artificial insemination.*	20 mins
Practice Individual	1. Ss read the English text paragraph by paragraph. 2. T asks Ss questions to clarify the text. 3. T translates some difficult English sentences into Thai. 4. T uses discourse connectors and referent terms as clues to facilitate students ' understanding of the reading passage.	25 mins

Stage/ Kind of activities	Procedure	Time
Evaluation Individual	1. Ss do the exercise in their books. 2. T shows the correct answers on the overhead projector.	15 mins

Lesson Plan (The Control Group)

Content: Unit 2 Surrogate Mothers

Objective: To practise reading for comprehension.

Stage/ Kind of activities	Procedure	Time
Presentation Individual	1. T prepares Ss to read the text by using pre-reading activities in exercises 2 and 3. 2. T teaches the meanings of vocabulary necessary to comprehend the text such as *surrogate mother, custody, attachment, trial, testify.*	20 mins
Practice Individual	1. Ss skim the passage to find its main idea. 2. Ss scan the story to answer the questions in exercise 4. 3. Ss read the English text paragraph by paragraph. 4. T asks Ss questions to clarify the text. 5. T translates some difficult English sentences into Thai. 6. T uses discourse connectors and referent terms as clues to facilitate students'	30 mins

Stage/ Kind of activities	Procedure	Time
Evaluation Individual	understanding of the reading passage. 1. Ss do exercise 5. 2. T writes the correct answer on the blackboard.	10 mins

Lesson Plan (The Control Group)

Content: Unit 3 Asian Women

Objective: To practise reading for comprehension

Stage/ Kind of activities	Procedure	Time
Presentation Individual	1. T prepares Ss to read the text by teaching them pre-reading activity in exercise 7. 2. T teaches the meanings of vocabulary necessary to comprehend the text such as *liberate, discrepency, obstacle constitutional right, emancipation, independence.*	15 mins
Practice Individual	1. Ss read the English text paragraph by paragraph. 2. T asks Ss questions to clarify the text. 3. T translates some difficult English sentences into Thai. 4. T uses discourse connectors and referent terms as clues to facilitate students' understanding of the reading passage.	30 mins

Stage/ Kind of activities	Procedure	Time
Evaluation Individual	1. Ss do the exercise 8. 2. T shows the correct answers on the overhead projector.	15 mins

Lesson Plan (The Control Group)

Content: Unit 4 Food and Health

Objective: To practise reading for comprehension

Stage/ Kind of activities	Procedure	Time
Presentation Individual	1. T prepares Ss to read the text by using pre-reading activity on page 40-41. 2. T teaches the meanings of vocabulary necessary to comprehend the text such as *nutrient, squeeze, crucial, consume, surpassed, vegetarian, advocated.*	15 mins
Practice Individual	1. Ss scan the text to answer the questions. 2. Ss read the English text paragraph by paragraph. 3. T asks Ss questions to clarify the text. 4. T translates some difficult English sentences into Thai. 5. T uses discourse connectors and referent terms as clues to facilitate students' understanding of the reading	25 mins

Stage/ Kind of activities	Procedure	Time
Evaluation	passage. 1. Ss do the exercises 2, 3, and 4. 2. T writes the correct answers on the blackboard.	20 mins

Lesson Plan (The Control Group)

Content: Unit 5 Teenage Killers

Objective: To practise reading for comprehension

Stage/ Kind of activities	Procedure	Time
Presentation Individual	1. T prepares Ss to read the text by teaching them pre-reading activity in exercise 4. 2. T teaches the meanings of vocabulary necessary to comprehend the text such as *death penalty, juvenile, capital punishment, execute, rehabilitate, commit crime, sentence to death.*	15 mins
Practice Pairs	1. Ss read the passage in pairs (Ss A read the passage on page 55-56 and Ss B read the passage on page 57-58). 2. T asks Ss A questions to clarify the text on page 55-56 paragraph by paragraph. 3. T translates some difficult English sentences into Thai. 4. T uses discourse connectors and referent terms as clues	30 mins

Stage/ Kind of activities	Procedure	Time
	to facilitate students' understanding of the reading passage.	
Evaluation	1. Ss share the information with their partners to complete the table in the exercise at the end of the passage. 2. T shows the correct answers on the overhead projector.	15 mins

Lesson Plan (The Control Group)

Content: Unit 6 The Deadly Enemy

Objective: To practise reading for comprehension

Stage/ Kind of activities	Procedure	Time
Presentation Individual	1. T prepares Ss to read the text by using exercises 1 and 3 as pre-reading activities. 2. T teaches the meanings of vocabulary necessary to comprehend the text such as *symptom, transmission, thrush, treatment, infection, latent, mortality, lymp nodes, chronic, numbness, deteriorate.*	20 mins
Practice Individual	1. Ss skim the text to choose the best title for the passage. 2. Ss scan the text to answer these three questions in exercise 4. 3. Ss read the English text paragraph by paragraph. 4. T asks Ss questions to clarify the text. 5. T translates some difficult English sentences into Thai.	30 mins

Stage/ Kind of activities	Procedure	Time
	6. T uses discourse connectors and referent terms as clues to facilitate students' understanding of the reading passage.	
Evaluation Individual	1. Ss do the exercises 5 and 6. 2. T shows the correct answers on the overhead projector.	10 mins

Lesson Plan (The Control Group)

Content: Unit 7 What Are Drugs?

Objective: To practise reading for comprehension.

Stage/ Kind of activities	Procedure	Time
Presentation Individual	1. T prepares Ss to read the text by using the pictures in exercise 1 and ask them to decide what kind of drug people in the picture are taking. 2. Ss write down the drugs that the people in each of the pictures are using.	10 mins
Practice Individual	1. Ss read the English text. 2. T asks Ss questions to clarify the text. 3. T translates some difficult English sentences into Thai. 4. T uses discourse connectors and referent terms as clues to facilitate students' understanding of the reading passage.	20 mins
Evaluation	1. Ss do the exercise written on the transparency.	10 mins

Lesson Plan (The Control Group)

Content: Unit 7 Why Not Take Drugs?

Objective: To practise reading for comprehension.

Stage/ Kind of activities	Procedure	Time
Presentation Individual	1. T prepares Ss to read the text by teaching them the meanings of vocabulary necessary to comprehend the text such as *irritation, negative effect, positive effect, sniff, double vision, ulceration.*	10 mins
Practice Individual	1. Ss read the English text. 2. T asks Ss questions to clarify the text. 3. T translates some difficult English sentences into Thai. 4. T uses discourse connectors and referent terms as clues to facilitate students' understanding of the reading passage.	20 mins
Evaluation Individual	1. Ss complete the table below the text. 2. T shows the correct answers on the overhead projector.	10 mins

Lesson Plan (The Control Group)

Content: Unit 8 Love Me, Love My Diploma

Objective: To practise reading for comprehension.

Stage/ Kind of activities	Procedure	Time
Presentation Individual	1. T prepares Ss to read the text by teaching them the pre-reading activity in exercise 2. 2. T teaches the meanings of difficult vocabulary necessary to comprehend the text such as *spouse, illiterate, dismay, opt, cream, cruise, matchmaker.*	15 mins
Practice Individual	1. Ss read the English text paragraph by paragraph. 2. T asks Ss questions to clarify the text. 3. T translates some difficult English sentences into Thai. 4. T uses discourse connectors and referent terms as clues to facilitate students' understanding of the reading passage.	30 mins
Evaluation	1. Ss do the exercises 3 and 4	15 mins

Stage/ Kind of activities	Procedure	Time
Individual	2. T writes the correct answers on the blackboard.	

Lesson Plan (The Control Group)

Content: Unit 10 Nurse Nida And The Doctor Who Wouldn't Come.

Objective: To practise reading for comprehension.

Stage/ Kind of activities	Procedure	Time
Presentation Individual	1. T prepares Ss to read the text by using exercise 2 asking Ss's point of views about being a nurse. 2. T teaches the meanings of vocabulary necessary to comprehend the text such as *respiratory arrest, convince, life-threatening, persistent, diabetic resident, hostile.*	15 mins
Practice Individual	1. Ss read the English text paragraph by paragraph. 2. T asks Ss questions to guide comprehension. 3. T translates some difficult English sentences into Thai. 4. T uses discourse connectors and referent terms as clues to facilitate students'	25 mins

Stage/ Kind of activities	Procedure	Time
Evaluation Individual	understanding of the reading passage. 1. Ss do the exercise 3. 2. T writes the correct answers on the blackboard.	20 mins

APPENDIX B

The Pretest & Posttest

แบบทดสอบความเข้าใจในการอ่าน

<u>คำชี้แจง</u>

1. ข้อสอบฉบับนี้มี 4 passages รวม 40 ข้อ
2. ข้อสอบฉบับนี้มีทั้งหมด 2 ชุด ชุดคำถามมี 10 หน้า ชุดอ่านpassageมี 8 หน้า
3. ให้นักศึกษากาเครื่องหมาย x ลงบนคำตอบที่เห็นว่าถูกต้องในข้อสอบชุดคำถาม
4. ให้เวลาทำข้อสอบ 2 ชั่วโมง
5. กรุณาเขียนชื่อ นามสกุลและเลขประจำตัวนักศึกษาลงในข้อสอบชุดคำถาม

ขอขอบพระคุณในความร่วมมือ

Read the following passages and then choose the best answer provided in the other paper.

Passage One

Scientists have learned a great deal about the malaria-carrying mosquitoes. The only importance of the male is the part he plays in helping to produce young mosquitoes. He is the smaller and weaker sex; he feeds not on blood but on plant liquid and lives only about a week. The average lifetime of the female is about a month, during which she has a love-life of about fifteen seconds. The eggs go through four changes, until finally the small mosquitoes appear. They wait only for their wings to be strong enough before they fly off in search of food.

The discoveries made attacks possible on the places where mosquitoes laid eggs. Not until 1940, however, did the wiping out of malaria from the world finally become possible. A Swiss scientist discovered a drug, popularly known as D.D.T., which killed most insects that touched it.

D.D.T. and other sprays made it possible for W.H.O. to declare total war on mosquitoes. Most of these insects bite human beings while indoors. Having fed herself on blood, a female can fly only a short distance before resting and usually lands on a wall or on objects in a room not very high up. If the area she touches has been sprayed with one of the long-lasting sprays like D.D.T., the poison enters her system and she soon dies.

Even if the person she fed upon suffered from malaria, she will be dead long before the end of the ten to fifteen days required to make her able to infect another person.

If all mosquitoes that have fed on the blood of malaria-victims die before they can make people ill, malaria ends. The disease seldom if ever remains in the human blood for more than three years. A nationwide programme of spraying every inside wall of every house in every place where mosquitoes can breed should, over a period of four or five years, result in the end of malaria.

Such spraying is a huge task. It requires good organization, to say nothing of money. Nevertheless several nationwide programmes have been successfully carried out, and others are now in progress. The largest yet attempted is in Mexico.

We watched a sprayman work on a two-room house. He finished quickly, not forgetting to wet the bottom of the coal stove. He sprayed the places under the roof of the house, where mosquitoes might rest on their way in; then he did the chairs, the bottom of the bed, the table boards. The spraying completed, he drew an x through a number he had written on the door.

Passage Two

Do pregnant women really need as many as extra calories during their pregnancies as the prevailing theories seem to indicate?

Data obtained by Mahidol university's researchers would seem to say no.

During the past 40 years or so, calculations by the World Health Organization have stated that during the ninth month of pregnancy, women need about 80,000 extra calories because of the expansion of body tissues and the uterus.

However, nutritionists have been questioning this calculation and wondering whether women really need those extra calories, which have a tendency to stay on in the form of excess weight after birth.

From 1981-1985 with the support of the Nestle Foundation, nutritionists in five countries namely the Phillipines, Gambia, Scotland, Holland and Thailand, had a chance to conduct field research on the issue.

Before this research began, representatives from five countries were sent the Glasglow for training on how to approach the matter get the best results.

"We all use the same standard method in doing our research; we were all asked to use the same protocol, the same approach," said Assit Prof Dr Kallaya Thongprasert of Ramathibodi's Research Center.

After the training session in Glasglow, Dr Kallaya got down to her work in 18 villages in Ubon Ratchathani

Province where 44 pregnant women villagers had volunteered to take part.

"Our officials would follow them the whole day for five consecutive days at a time. We would be there six or seven times during their nine months of pregnancy," said Dr Kallaya.

During the five days testing periods, all volunteers would be attached to testing equipment, no matter what they were doing.

"Generally they worked in the fields, and our officials would be there to test the amount of energy required for their activity. We weigh everything before cooking and after they ate," explained Dr Kallaya

The results of the four years of research showed that pregnant women's bodies adapt metabolically, and do not need as many as 80,000 extra calories during the pregnancy period.

"The fat accumulation is also less than expected."

The first test was given when the women were 10 weeks pregnant, and the subsequent ones were performed every six weeks.

The test included checks on BMR or basal metabolic rate and skinfold thickness.

"In the BMR test, we would see how much oxygen they needed to utilise energy in their bodies during their field work, and in the skinfold thickness test we measured their biceps, triceps, subscapular and suprailiac. We also did a time-motion study," explained Dr Kallaya.

Actually, the pregnant women in Thailand required only about 60 per cent of the number of calories predicted by WHO.

Passage Three

Pain — It's all in the mind

Pain is easier to endure if you know you can end it. Speakers at a session on pain at the British Association's psychology section have new evidence to support this idea for two common experiences of pain: in childbirth and at the dentist's. On the other side of the coin, their inability to control pain may explain why some people with chronic pain have psychological problems as well.

Dr J. Robinson, a psycholigist at University College in Cardiff, found out about the phenomenon of self-controlled pain almost by accident. He was studying the effects of analgestics used to control pain during childbirth and as part of the experiment made it possible for women having their child to press a button which gave an automatic interjection- instead of having all injections made by the doctor. Afterwards these women did not say that they had less pain than other women in childbirth, but they did use considerably less of the drug.

J. Atkins, a dental surgeon, has observed a similar

phenomenon. As part of their efforts to make dentistry painless. Atkins and researchers at Aston University in Birmingham offered patients a switch they could flip to turn off the dentist's drill whenever they chose. But, after trying the switch on 50 patients Atkins gave up! none of the patients had ever flipped the switch.

Perhaps the extra endurance was because the Aston team also use other methods to make dentistry painless. Apparently few other dentists are so considerate. The end result is, according to the Birmingham survey, is that British people avoid going to the dentist, with the consequence that almost 30% of people in England and Wales have lost all their teeth, and more than seven out of ten have lost at least six teeth. Less than half of the public pay regular visits to the dentist. To find out why, Atkins and psychologist W. G. Cumberbatch interviewed a sample of patients attending a dental hospital. The most common reason people gave for not having dental check-ups were fear and pain.

By using a little care and taking time to explain what will happen, Atkins feels, dentists could overcome these fears. There are techniques for giving injections without pain, and a 'calm unhurried approach' to drilling can make that painless, too.

Sadly, few dentists seem to take much trouble with their patients. '*I am not nervous when I go to the dentist, and I do not have any pronounced sympathy for those who are,*' said one dentist. '*I tend to take the point of view that they are being unreasonable at my expense.*'

Passage Four

How to Stop Bleeding

The aims of First Aid for bleeding are to stop bleeding quickly and to send the casualty to hospital without delay. If blood is lost from the body in other than small amounts, the blood must be replaced by transfusion soon. This can usually be done only in a hospital.

Bleeding ceases naturally when blood stops flowing and ___30___ a clot. First-aid treatment should therefore aim to stop blood ___31___ by

1 pressing on the place where the blood is coming ___32___

2 elevating limbs, that is ___33___ up arms and legs

and 3 aiding clot formation by rest, because movement breaks up the blood clot

If you find a casualty who is bleeding from a wound:

1. Tell him to ___34___ down.

2. Press firmly over and around the wound. Use a wound dressing or other item of ___35___ linen. If nothing else is available, press with your bare hand and fingers. You can always stops bleeding by pressing on the bleeding spot ___36___ by keeping the pressure on.

3. If the bleeding is from an arm or leg, ___37___ you have tied a firm dressing in place, lift up the arm or leg. This makes the bleeding ___38___ severe.

4. If the bleeding continues through the ____39____ you have applied, put another one over the one which is already there and tie it on even more firmly. Never remove dressings which are already in place - this disturbs any blood clot and can easily make bleeding ____40____ .

5. Reassure the casualty that bleeding has stopped. A casualty who is worried will not lie still and will therefore tend to bleed more severely.

6. Send the casualty to hospital soon.

Name: _____ Student Number: _____

Choose the best answer by marking X on the letter A, B, C or D.

Passage One

1. What is the main idea?
   a. The knowledge about mosquitoes and the discovery of D.D.T. made it possible to end malaria.
   b. The disadvantages of D.D.T. and other sprays
   c. The life cycle of mosquitoes: female and male
   d. Malaria has spread all over the world.

2. Which statement is true according to this passage?
   a. Neither male nor female mosquitoes take blood from victims.
   b. Male mosquitoes live a longer life than female ones.
   c. Not only female but also male mosquitoes take blood only during the night.
   d. Male mosquitoes do not take blood.

3. Which statement is false according to this passage?
   a. The lifetime of male mosquitoes is about 7 days.
   b. Female mosquitoes are stronger than the male ones.
   c. D.D.T. was discovered in 1939.
   d. Female mosquitoes do not bite human beings.

4. How long do female mosquitoes usually live?

   a. fifteen seconds

   b. twenty-eight days

   c. a week

   d. fifteen days

5. What does the word 'wiping out' mean?

   a. finding

   b. spreading

   c. resulting

   d. getting rid of

6. How long does malaria usually remain in a victim?

   a. for three years

   b. depending on the age of the victim

   c. for five years

   d. for life

7. How can a mosquito spread malaria?

   a. by producing infected baby mosquitoes

   b. by infecting the water supply

   c. by spreading the disease among mosquitoes while mating

   d. by feeding on a person infected with malaria, then on a healthy person.

8. What must you do to get rid of malaria from a country?

   a. give drugs to everyone with malaria.

   b. use mosquitoes nets in every building.

   c. kill mosquitoes

   d. give better medical services

9. Why may the program of spraying not work?

   a. Because it needs good organisation and a lot of money.

   b. Because people are not co-operative.

   c. Because female mosquitoes know how to protect themselves from D.D.T.

   d. Because the drugs developed are not good enough.

10. How long should the spraying period last?

   a. less than three years

   b. be longer than the life of a mosquito

   c. depending on a budget

   d. a year or two longer than the period malaria remaining in a human body

11. How successful are the countrywide programmes to get rid of malaria?

   a. in many countries

   b. only in Asia

   c. in Mexico and Switzerland

   d. only in Thailand

Passage Two

12. What would be a good title for this passage?
    a. Do pregnent women really need as many as extra calories during their pregnancies?
    b. The amount of energy required by pregnant women
    c. BMR test in pregnant women
    d. The reason why pregnant women gain weight after pregnancy

13. What was the purpose of the research?
    a. To determine whether pregnant women really need about 80,000 extra calories during their pregnancies.
    b. To examine the calculations made by W.H.O.
    c. To survey needed information for Nestle Foundation.
    d. To educate pregnant women about kinds of food they need.

14. What does the word 'prevailing' mean?
    a. special
    b. common
    c. important
    d. good

15. What does the word 'consecutive' mean?

    a. chosen randomly

    b. comparative

    c. total

    d. following continuously

16. When did WHO reveal the result of the calculations of the amount of calories in pregnant women?

    a. during the past 40 years

    b. from 1981-1985

    c. in 1990

    d. in 1981

17. Where did the experiment take place?

    a. in Glasglow and Thailand

    b. only in Thailand

    c. only in Glasglow

    d. in Thailand, the Philippines, Gambia, Scotland and Holland

18. Which statement is <u>false</u> according to this story?

    a. The women were given the second test during the sixteenth week of pregnancy.

    b. The pregnant women underwent 2 tests.

    c. After the second test, the pregnant women were still given other tests.

    d. The women were given the third test during the 22nd

week of pregnancy.

19. 'The pregnant women in Thailand required only about 60% of the number of calories predicted by WHO' From the above sentence, how many extra calories do pregnant women in Thailand require?
    a. about 80,000 calories
    b. about 48,000 calories
    c. about 50,000 calories
    d. about 52,000 calories

20. If the pregnant women did not consume about 80,000 calories, _____ .
    a. They would not gain weight after giving birth.
    b. They would have an unhealthy child.
    c. They would be healthier after giving birth.
    d. They would lack essential food nutrients.

21. What was the author's purpose for writing this article?
    a. to explain why pregnant women gain weight after giving birth.
    b. to let pregnant women know the problems of gaining weight.
    c. to let people especially Thai people know what researchers at Mahidol university did.
    d. to inform the readers how many calories the pregnant women really need.

Passage Three

22. Where does the passage come from?
    a. Journal for Pregnant Women
    b. Textbook in Dentistry
    c. Textbook in Pharmacology
    d. Journal in Medicine

23. What does 'on the other side of the coin' mean?
    a. in many cases
    b. in addition
    c. in opposite to
    d. at the same time

24. What are the two common experiences of pain according to the passage?
    a. headaches and stomachache
    b. broken bones and cartilages
    c. when a woman gives birth to a child and when having your teeth pulled out
    d. when given injections and drugs

25. Which statement is <u>true</u> according to this passage?
    a. Women having their child to press a button which gave an automatic injection feel less pain than other women at childbirth.
    b. All people with chronic pain also have

psychological problems.

c. Dr. J. Robinson intended to study about self-controlled pain during childbirth.

d. Women at childbirth take more of the drug than women having their child to press a button which gave an automatic injection.

26. According to the passage, why did people give up seeing their dentists?

a. They cannot endure pain and fear.

b. Dentists charge their patients too expensive.

c. They have no problems with their teeth at all.

d. They do not want to put their dentists into trouble.

27. If you are afraid of going to the dentists' which of the following dentists you <u>should not</u> go to see?

a. The dentist who allows you to raise your hand when you are pain.

b. The dentist who turns on the radio for you to listen to when he is filling your teeth.

c. The dentist who has little care of patients' feeling.

d. The dentist who makes you feel easy when being treated.

28. What was the author's purpose?

a. to suggest that the mind has the power to reduce pain.

b. to introduce new drugs to dentists.

c. to tell the readers not to be afraid when going to the dentist's.

d. to tell the doctors the feeling of the patients when going to the hospital.

29. In what way is this article useful?

a. It encourges people to have regular dental check-ups.

b. It makes a suggestion to dentists to give up drilling.

c. It educates dentists about psychological aspect of pain reduction.

d. It persuades readers to attend a dental hospital instead of a clinic.

Passage Four

30. a. creates b. gets
c. arranges d. forms

31. a. coming b. flowing
c. clotting d. pressing

32. a. away b. into
c. in d. from

33. a. rising b. turning
c. lifting d. pushing

34. a. lie b. lay
c. fall d. sleep

35. a. thick b. soft
c. clean d. white

36. a. then b. but
c. as d. and

37. a. after b. while
c. until d. first

38. a. little b. less
c. not d. more

39. a. cotton b. dressing
c. materials d. pad

40. a. worse b. less
c. stop d. better

APPENDIX C

Thai Questionnaire

แบบสอบถาม

ตอนที่ 1 ให้นักศึกษาตอบข้อความต่อไปนี้ตามความเป็นจริงโดยทำเครื่องหมาย x หน้าข้อความที่ตรงกับข้อมูลของนักศึกษา

1. นักศึกษาเริ่มเรียนภาษาอังกฤษตั้งแต่ระดับชั้นใด

☐ อนุบาล ☐ ประถมศึกษาตอนต้น
☐ ประถมศึกษาตอนปลาย ☐ มัธยมศึกษา

2. ในการเรียนภาษาอังกฤษนักศึกษาชอบเรียนทักษะใดมากที่สุด

☐ ฟัง ☐ พูด
☐ อ่าน ☐ เขียน

3. นักศึกษาเคยเรียนการอ่านภาษาอังกฤษด้วยวิธีสร้างแผนผังสรุปโยงเรื่องก่อนอ่านและหลังอ่าน (semantic mapping) หรือไม่

☐ เคย ☐ ไม่เคย

4. นักศึกษาเข้าใจวัตถุประสงค์ของการเรียนด้วยวิธีการสร้างแผนผังสรุปโยงเรื่องก่อนและหลังการอ่าน (semantic mapping) หรือไม่

☐ เข้าใจ ☐ ไม่เข้าใจ

5. นักศึกษาคิดว่าวิธีการสอนการอ่านโดยใช้แผนผังสรุปโยงเรื่องก่อนและหลังการอ่าน (semantic mapping) ช่วยให้นักศึกษาเข้าใจเนื้อหาที่อ่านหรือไม่

☐ เข้าใจ ☐ ไม่เข้าใจ

ตอนที่ 2 ให้นักศึกษาแสดงความคิดเห็นที่มีต่อเทคนิคการสอนอ่านภาษาอังกฤษด้วยวิธีการทำแผนผังสรุปโยงเรื่องก่อนและหลังการอ่าน (semantic mapping) โดยทำเครื่องหมาย x ลงในช่องที่ตรงกับความคิดเห็นของนักศึกษาโดยใช้เกณฑ์ดังต่อไปนี้

4	หมายถึง	เห็นด้วยอย่างยิ่ง
3	"	เห็นด้วย
2	"	ไม่เห็นด้วย
1	"	ไม่เห็นด้วยอย่างยิ่ง

ความเห็นของนักศึกษาที่มีต่อวิธีการฝึกทักษะการอ่านภาษาอังกฤษด้วยวิธีการสร้างแผนผังสรุปโยงเรื่องก่อนและหลังการอ่าน (semantic mapping)ว่าเป็นวิธีที่

	หัวข้อที่ประเมิน	4	3	2	1
1.	เรียนแล้วรู้สึกชอบ				
2.	ช่วยให้เข้าใจเนื้อเรื่องที่อ่าน				
3.	ควรเพิ่มระยะเวลาในการฝึก				
4.	ได้ใช้ความรู้เดิมมาช่วยในการอ่าน				
5.	ทำให้ทราบแนวทางของเรื่องก่อนอ่าน				
6.	ทำให้มีความกระตือรือร้นในการอ่าน				
7.	ทำให้ทราบความหมายของคำศัพท์ที่เกี่ยวพันกับเรื่องก่อนการอ่าน				
8.	ทำให้เห็นความสัมพันธ์ของเนื้อเรื่องที่อ่าน				
9.	ยากต่อการนำไปปฏิบัติด้วยตนเอง				
10.	ทำให้เขียนย่อความจากเรื่องที่อ่านเป็น				
11.	ทำให้นักศึกษารู้จักกันมากขึ้น				
12.	ได้ฝึกแสดงความคิดเห็น				
13.	กระตุ้นให้นักศึกษาได้ใช้ความคิดมากขึ้น				
14.	ควรจะมีการสอนไวยากรณ์เพิ่มเติมด้วย				

	หัวข้อที่ประเมิน	4	3	2	1
15.	ทำให้ทราบว่าได้รับความรู้ใดเพิ่มเติมหลังการอ่าน				
16.	ครูควรใช้ภาษาอังกฤษเป็นสื่อในการสอน				
17.	ทำให้เกิดความขัดแย้งกับเพื่อนขณะทำงานร่วมกัน				
18.	ช่วยให้คิดเป็นระบบ				
19.	ควรจะมีการแปลเนื้อหาบางตอนเป็นภาษาไทย				
20.	ควรใช้กับนักศึกษาที่กล้าแสดงออกเท่านั้น				
21.	ยากเกินไปสำหรับการเขียนแผนผังสรุปโยงเรื่อง				
22.	การสร้างแผนผังสรุปโยงเรื่องควรจะทำเป็นกลุ่ม				
23.	การสร้างแผนผังสรุปโยงเรื่องควรจะทำเป็นคู่				
24.	การสร้างแผนผังสรุปโยงเรื่องควรจะทำพร้อมกันทั้งชั้น				
25.	การสร้างแผนผังสรุปโยงเรื่องควรจะต่างคนต่างทำ				
26.	ทำให้จำเนื้อหาได้แม่นยำยิ่งขึ้น				
27.	ทำให้มีส่วนร่วมในการเรียนการสอน				
28.	ครูควรใช้ภาษาไทยเป็นสื่อในการสอน				
29.	ครูควรใช้ทั้งภาษาไทยและภาษาอังกฤษเป็นสื่อในการสอน				
30.	ควรใช้อุปกรณ์โสตทัศนูปกรณ์เพิ่มเติมในการสอน				
31.	อื่น ๆ (โปรดระบุ)_____				

ตอนที่ 3 ให้นักศึกษาประเมินความเข้าใจจากการอ่าน Reading Passages ในหนังสือ Critical Reading โดยใช้เกณฑ์ดังต่อไปนี้

5	หมายถึง	เข้าใจทั้งหมด
4	"	เข้าใจเป็นส่วนใหญ่
3	"	เข้าใจพอประมาณ
2	"	เข้าใจเล็กน้อย
1	"	ไม่เข้าใจเลย

Passages	5	4	3	2	1
Choosing a Child's Sex					
Surrogate Mothers					
Asian Women					
How Well Do You Eat?					
Youth Crime					
Aids					
What are Drugs?					
Why not Take Drugs?					
Love Me, Love My Diplome					
Nurse Nida And The Doctor Who Wouldn't Come					

APPENDIX D

English Questionnaire (Translated)

APPENDIX

QUESTIONNAIRE

Part I Instruction: Indicate your opinion towards the following items by putting x in front of the data that most represent your opinion.

1. At what level did you start learning English?

☐ kindergarten ☐ lower primary
☐ upper primary ☐ secondary

2. What skill do you like to learn most?

☐ listening ☐ speaking
☐ reading ☐ writing

3. Have you ever learned reading taught with the semantic mapping technique?

☐ Yes ☐ No

4. Do you understand the purpose of learning to read English taught with the semantic mapping technique?

☐ understand ☐ not understand

5. In your opinion, does the semantic mapping technique help you understand the content in the reading passage?

☐ understand ☐ not understand

Part II Instructions: Indicate the extent of your agreement or disagreement towards the semantic mapping technique. Put x in the space corresponding to your opinion by using the following criteria:

4	refers to	strongly agree
3	"	agree
2	"	disagree
1	"	strongly disagree

In your opinion, the semantic mapping technique is a technique _ _ _ _ _ _ _

Aspects to be evaluated	4	3	2	1
1 with which students are satisfied after learning.				
2 which enhances reading comprehension.				
3 of which the duration for practice should be increased.				
4 in which prior knowledge enhances reading comprehension.				
5 which guides students to the theme of the passage to be read.				
6 which motivates students over reading.				
7 which enables students to know the meaning of vocabulary related to the topic before reading.				
8 which helps students understand the relationship of the contents.				
9 which is too difficult for students to practise more by themselves.				

Aspects to be evaluated	4	3	2	1
10 which enables students to take notes effectively.				
11 which enables students to become more acquainted with one another.				
12 in which students can practise expressing their opinions.				
13 which activats students to think more.				
14 with which grammar should be taught additionally.				
15 which helps students know what is the new knowledge acquired from reading.				
16 in which English should be used as one of the teaching medis.				
17 which causes conflicts among students while discussing.				
18 which helps students think systematically.				
19 in which some difficult English parts should be translated into Thai.				
20 which should be confined to extrovert students.				
21 which is too difficult for students to practise in class.				
22 which students should practise in groups.				

Aspects to be evaluated	4	3	2	1
23 which students should practise in pairs.				
24 which the whole class should practise at the same time with teacher.				
25 which students should practise individually.				
26 which enables students to have an accurate memory about the content.				
27 which promotes students' participation in the class.				
28 with which Thai should be used as one of the teaching media.				
29 with which both English and Thai should be used as parts of teaching media.				
30 with which audio-visual aids in teaching should be used.				
31 Others, please specify _____ _____ _____				

Part III Instructions: Indicate your level of reading comprehension towards each unit in the book named Critical Reading taught with the semantic mapping technique by using the following criteria:

5 refers to totally understand
4 " mostly understand
3 " moderately understand
2 " slightly understand
1 " do not understand

Passages	5	4	3	2	1
Choosing a Child's Sex					
Surrogate Mothers					
Asian Women					
How Well Do You Eat?					
Youth Crime					
Aids					
What are Drugs?					
Why not Take Drugs?					
Love Me, Love My Diploma					
Nurse Nida And The Doctor Who Wouldn't Come					

APPENDIX E

Students' Scores

NO.	THE CONTROL GROUP		THE EXPERIMENTAL GROUP	
	SCORES		SCORES	
	PRETEST	POSTTEST	PRETEST	POSTTEST
1	30	32	31	35
2	29	32	30	34
3	29	30	26	33
4	28	29	26	30
5	27	29	26	29
6	26	28	25	33
7	25	28	24	31
8	24	30	24	31
9	24	29	24	30
10	24	26	24	29
11	24	25	24	28
12	24	24	24	27
13	24	24	23	30
14	23	30	23	28
15	23	29	23	28
16	23	26	23	27
17	22	23	22	27
18	22	25	22	27
19	22	29	22	26
20	22	24	22	25
21	22	23	22	24
22	21	22	21	24
23	20	22	20	24
24	19	28	20	23
25	18	25	20	22

NO.	THE CONTROL GROUP		THE EXPERIMENTAL GROUP	
	SCORES		SCORES	
	PRETEST	POSTTEST	PRETEST	POSTTEST
26	18	18	20	21
27	18	18	19	26
28	17	22	18	25
29	16	19	16	20
30	11	15	13	17