Using Mind Mapping Technique to Improve Reading Comprehension Ability of Thai EFL University Students

Panatda Siriphanich[1] Asst. Prof. Dr. Chonlada Laohawiriyanon[2]
1. Department of Languages and Linguistics Faculty of Liberal Arts Prince of Songkla University Hat Yai, Songkhla, Thailand
2. Department of Languages and Linguistics Faculty of Liberal Arts Prince of Songkla University Hat Yai, Songkhla, Thailand

ABSTRACT

Mind maps are visual frameworks such as figures, diagrams, or charts used to present structural knowledge spatially with the intention of empowering comprehension and learning. Mind maps are effective in terms of helping communicate information because they can clarify complex concepts into simple, meaningful displays so that learners can develop a holistic understanding of the content to be learnt. Teachers may use mind mapping technique at different stages of instruction for example during instruction to prepare students to approach new information and clarify complex ideas, or after instruction to assess and reinforce learning and instruction. This article reports on an investigation into the use of mind mapping technique whether it can improve reading comprehension ability and the students' opinions towards the use of mind mapping technique. The research design used in this study was one-group pre test-post test design. The study employed both quantitative and qualitative data analyses from pre-and post-tests, a questionnaire, and an interview. The participants of the study were 35 first-year students enrolling in a compulsory reading course called Communication and Reading Skills at a university south of Thailand. Fifteen students (5 highly successful, 5 who did not show any improvement, and 5 unsuccessful) were selected for retrospective interviews. The results suggested that 1) The English reading comprehension post test mean score of students was higher than the pre test mean score at the 0.05 level of significance; 2) most students were satisfied with their own reading comprehension ability; 3) they enjoyed working in group and agreed that mind mapping technique was a useful technique and can be applied to non- English subjects. Findings and implications for further research are discussion.

Key words: mind mapping technique, reading comprehension, Thai EFL learners

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BACKGROUND AND SIGNIFICANCE OF THE PROBLEM

Reading is an essential skill for further learning, especially for students who have to read in order to get information from text books, research, reports, etc. Moreover, higher level learners have to read more various and complicated texts.

(Nupong, 1998). Poor readers cannot understand the meaning of certain texts; cannot catch the main idea, nor remember the story they have read in the previous part. The problems related to reading comprehension occur not only in Thai language which is the L1 but we also found this problem in English that is the foreign language for Thai documents. However, a large number of Thai students still have poor reading comprehension. The problem occurs not only at the elementary level but at the high school education and the higher education also. The students who have low ability in reading comprehension cannot reorganize the information learned from the text and cannot connect their own knowledge to the new information received from the reading text, and most Thai students lack motivation to read. (Singtui, 2008)

At Rajabhat University, Songkhla, the problem in reading comprehension is one of the problems in learning English that the students have had. The record of the scores in English for Communication and Reading Skill-- a compulsory subject for 1st year students-- from 2007 – 2008 shows a decline of the students' reading ability. Table 1 summarises the test results.

Table1: The score of English for Communication and Reading Skill
from 2007-2008

score	academic year			
	1/2007	2/2007	1/2008	2/2008
A	1.2%	1%	0.2%	0%
B+	1.6%	2.8%	0.8%	3.3%
B	15.2%	12%	9.5%	7.1%
C+	11.2%	9.6%	9%	8.9%
C	*32.6%*	23.8%	25.1 %	25.1%
D+	14.4%	18.1%	15.5%	16.3%
D	23.3%	*30%*	*34.1%*	*29.2%*
E	0.1%	2.2%	5.4%	9.8%

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From Table 1, it shows that in academic year 2007 to 2008, the percentage of the students who got A is decreasing continuously. On the other hand, the percentage of the students who got E is increasing in every semester. After interviewing some of the students the following obstacles in reading comprehension were discovered; the students can not understand the text because they don't know the meaning of vocabularies, they can not conclude the story, the teacher focuses on grammar rather than comprehension and they lack motivation to read etc. The result of an informal interview with previous reading instructors and the study from the previous research can conclude that the main problems in reading comprehension for the students are (1) poor readers have undeveloped story structure. (2) the students can not connect the new information received from the text to their individual experience, and (3) the students lack motivation to read.

Many studies have attempted to incorporate the use of mind mapping techniques to improve learners' reading comprehension ability at different levels ranging from elementary to high school. For example, a study (Singtui, 2008) employed mind mapping techniques to develop reading comprehension skills in English for communication of Mattayomsuksa 3 students and found that there were 40 students of which 86.96% passed the prescribed criterion of 75%. A study (Deesri, 2002) conducted with Mathayomasuksa 1 students discovered that the English reading comprehension post-test mean score of students who were taught by mind mapping techniques was significantly higher than those of the pre-test. The students' attitude towards the mind mapping techniques also increased. Maestas & Croll (1985) carried out a study on the effects of training in story mapping procedures on the reading comprehension of poor readers. It was found that there was an increase on the students' ability to answer comprehension questions and increased tendency to maintain story mapping component in their story recall. The results of the aforementioned studies indicate that mind mapping technique can help improve students' reading comprehension ability, especially poor readers. The present work, thus, adopts the use of mind mapping techniques to improve the poor readers' reading ability at Rajabhat University, Songkhla. In addition, an effort is made to investigate the students' attitude towards the use of mind mapping techniques to enhance their reading ability.

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OBJECTIVES

The purpose of the present study is to examine whether the use of mind mapping technique can improve pre-intermediate Thai EFL students' reading comprehension abilities. It also investigates the students' attitude towards the use of mind mapping technique.

DEFINITION OF TERMS

(1) **Mind mapping technique** refers to teaching technique using mind mapping as a tool to represent students' understanding by using words, picture with color and symbols in a hierarchical or tree branch format.

(2) **Reading comprehension ability** refers to the ability to comprehend a reading passage which can be measured by reading test scores.

FRAMEWORK OF THE STUDY

To explore the effective technique for teaching reading comprehension, this study adopted mind mapping technique (1970) developed by Tony Buzan as a tool to represent the students' understanding. Mind mapping is a graphical method of taking note by using words, pictures with color, and symbols which take a hierarchical or tree branch format with idea branching into their subsections. It can help poor readers to read more effectively because the format can show the relative importance of individual points and the way in which facts relate to one another as shown below:
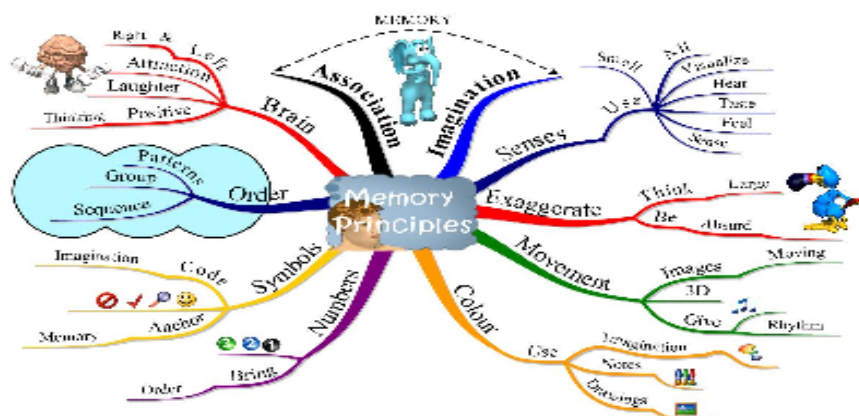
Mind map is a tool for enhancing learning and thinking. It provides a structure to reveal various aspects of a story such as the sequence of events, the key points, the cause and effect, the relation of ideas and so on. Students can use mind maps for revising and clarifying thoughts so as to get the deep meaning of a story. (Marton & Booth, 1997)

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Based on Constructivism theory, in order to construct mind maps, the students have to work in groups and exchange their knowledge with peers in order to help construct their own knowledge (Kanselaar, 2002) To motivate the students and prepare them to be ready before reading, this study used schema theory; a mental structure that represents one's understanding of the world to organize current knowledge and provide a framework for future understanding to activate the students' vocabularies and background information related to the text because in reading comprehension the more the readers have schema related to the reading text the more they get understanding.

In this study the three of main theories were used in teaching procedure as shown in Table 2.

Table 2: Three main theories using in teaching procedure

Theories	Teaching procedure
1.Mind mapping	- Teaching vocabularies in pre- reading stage - Represent understanding in reading comprehension in post- reading stage
2. Constructivism	- Brain storming to activate vocabularies schema in pre-reading stage - Working in groups to answer comprehension questions during while reading stage - Constructing mind maps and present it to class.
3. Schema theory	- Activate vocabularies' schema in pre-reading stage

Table 2 shows that in pre- reading stage the teacher asked the students to construct mind maps to present their background knowledge about vocabularies related to the reading topic. For example, if the students are going to read about hobbies, they have to work in group for brain storming the vocabularies related to the hobbies such as the hobbies which can be done indoors and outdoors or hobbies that can be done alone or with others. Then the students have to construct mind maps showing the relation of each vocabulary under the topic of hobbies

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In while- reading stage, constructivism theory was used because after reading each section the students had to work in group to answer comprehension questions asked by the teacher.

In post- reading stage mind mapping technique and constructivism theory were used because after answering comprehension questions, the students had to work in groups to construct the mind maps to show the relation of each part of a reading passage.

RESEARCH METHODOLOGY

Participants

Prior to data collection, 35 1st year students at Songkhla Rajabhat University, Muang Songkhla who were learning "English for communication and reading skills" as a compulsory subject were asked to do pre- test in order to check the students' reading ability before the treatment and their mean score on the pre-test were 11.17. After the explanation of writing mind mapping, they were taught by the lesson plans for mind mapping technique for 4 plans and were asked to do post- test to assess their reading progress and their post-test mean score were 12.25. The questionnaires were launched after the post- test and followed by oral interview.

Reading Materials

The material used in this study derived from the context in *Get Ready to Read* which is the reading text for *English for Communication and Reading Skills;* a compulsory subject for the first year students at Rajabhat University, Songkhla. It composes of 4 chapters and each chapter was divided into 3 main parts. There are pre- reading, while- reading and post-reading stages. In pre- reading stage, it focused on reading strategies which was the main strategy of the chapter. In this part, the students practiced their reading strategies, followed by "words to watch" or vocabularies used in the main reading text. The post- reading stage, commited of comprehension questions, post- reading activities and exercises on grammatical points.

Pre- and Post-Tests

To assess the progress of reading comprehension the pre- and post- test were used. The tests were designed to assess understanding or reading comprehension rather than

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vocabularies. They test composed of 30 items with 4 multiple choices. The tests lasted 1.30 hours.

Questionnaire

The questionnaire was conducted to gain the information about teaching reading comprehension using mind mapping technique in various aspects. There were 16 questions asking about the satisfaction of reading ability both in speed and accuracy, the enthusiasm for group work activities, the importance of mind mapping technique in practicing post reading activities, the problems that the students had from constructing mind maps, the mind mapping teaching process, and the application of mind maps in other subjects. There were open ended questions inquiring about the skills the students thought they had developed and the problems they had while constructing mind maps.

Interview

To obtain in-depth information, The researcher conducted oral interviews with representative of the students from 3 groups. There were the students who received higher score, lower score, and the students who received the same score.(Table 4). Five students in each group were asked 7 questions which are presented as follows:

1. How did you use mind mapping technique in reading comprehension?
2. Do you understand the concept of mind mapping?
3. What contribution did you make while doing group work activities ?
4. Were there any changes in your behavior when completing the pre-test to post-test?
5. Were there any differences between pre- and post- test scores?
6. What problems did you have while reading ?
7. Were there any physical and mental factors which may have effected you while you were taking the test?

Procedures

Data Collection

The experiment was carried out with one class of 1st year students at Songkhla Rajabhat University. During the experiment, the students received a total of 24 periods (50 minutes for each) of *English for Communication and Reading Skills*. The teaching process

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was conducted by the researcher. The course focus was on reading comprehension. The overall data collection procedure consisted of the following (1) administration of the pre- test, (2) administration of post- test (3) questionnaire and (4) oral interview.

Data Analysis

The data on the pre- and post- test were collected, and analyzed with the SPSS program. Percentages and mean scores on the pre- and post- test were calculated to identify the progress in reading comprehension. T- test for dependent samples was utilized to determine significant differences between the mean scores on the pre- and post- test. The data from questionnaire were analyzed by categorizing and using frequencies and percentages. The data from the oral interviews were categorized.

FINDINGS

The results of the study, shown in Table 3, reveals that after teaching by mind mapping technique the students' English reading comprehension pre- test mean score was 11.12, S.D. was 2.69 while the post- test mean score was 12.25 and S.D. was 2.99. The result from t –test was 2.365 which was higher than t-test of the 0.05 level of significance. In the other words, the English reading comprehension post- test mean score of the students was higher than that of the pre- test at the 0.05 level of significance.

Table 3: Score of reading comprehension before and after using mind mapping technique

Test	N	Mean Full score	S.D.	t	Maximum	Minimum
Pre-test	30	11.17	2.69	2.365*	17	7
Post-test	30	12.25	2.99		21	7

*0.05 level of significance   (t = 1.692)

The scores were further delineated to divide the students into 3 groups in order to further investigate in what way the use of mind mapping technique had an effect on the students' reading comprehension abilities and attitudes. The results are presented Table 4.

Table 4: Groups of students divided by score getting before and after the treatment

Groups of students	Percentage

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Students who got higher score	60
Students who got lower score	22.8
Students who got the same score	17.2

As shown, more than half of the group (60%) received higher scores, almost a quarter (22.8%) received lower scores and 17.2% of all students maintained the same scores. It can be seen that the percentage of the students who had not improved is 40%, which motivated the researcher to explore why mind mapping technique did not yield a satisfactory outcome. Therefore, fifteen students (5 from each group) were selected for retrospective interviews.

The results suggested that the students who got a higher score did not have any problems in using mind mapping technique in reading comprehension and three groups of the students understood (quite well) the concept of writing mind maps. Moreover, all of the students had a chance to practice finding main idea from the text but at different levels. Interestingly, the problems that the students in the 3 groups had in common was unknown vocabularies. However, for the students who received a higher score, their behavior differed from pre to post-test because in post- test they took more time to think carefully before selecting the options. Finally, the students who received a higher score and students who received the same score were not affected by physical and mental factors.

To inquire whether the students found mind mapping technique helpful, the questionnaire was launched after the completion of the experiment. The result is shown in Table 5.

Table 5: The learners' satisfaction on reading comprehension after using mind mapping technique

Questions	Strongly agree Percentage	Agree Percentage	Disagree Percentage	Strongly disagree Percentage
The satisfaction of reading ability both in speed and accuracy	13.3	**72.4**	14.3	0
Enthusiasm for group work activities.	41	**45.7**	11.4	1.9
The importance of mind mapping in practicing post reading activities.	34.3	**57.1**	8.6	0

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The problems that the students had from writing mind mapping	8.6	40	**42.9**	8.6
The mind mapping teaching process was clear and helpful for mind mapping writing process	36.4	**60**	3.6	0
The application of mind mapping for other subjects	26.7	**54.3**	18.1	1

As revealed in Table 5, the majority (72.4%) of the students were satisfied with their reading ability both in speed and accuracy, while 60% of them agreed that the mind mapping teaching process was clear and helped them to construct a mind map. Also, slightly more than half (57.1%) found mind mapping was a useful post reading activity. As for working in groups, almost half (45.7%) agreed that they were enthusiastic to work in groups, and 42.9% had no problems in writing mind mapping.

CONCLUSION, DISCUSSION RECOMMENDATIONS

The results from the study shows that, after teaching mind mapping techniques, the majority of the students improved their reading ability and their post-test mean score was 12.15 compared to the pre-test mean score which was 11.17. The post-test mean score was higher than pre-test mean score at the 0.05 level of significance. Most students were satisfied with their own reading comprehension ability (72.4%) and enjoyed to work in groups (45.7%). However, a large number of the students had problems about vocabularies and could not construct sentences to complete the mind maps by themselves (42.9%).

The results of this study are in agreement with those seen from previous research which demonstrated that mind mapping technique can enhance the students' reading ability. (Maestas & Croll, 1985; Deesri, 2002; Singtui, 2008). However, the fact that only 60% of the students in this study could improve their reading comprehension ability and 22.8% did not improve made it interesting to unfold why it was the case. It can be argued that due to their poor reading ability, it was rather difficult for them to deal with the reading at a higher level

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such as summarizing reading passages. The students' inadequacy in many areas such as vocabularies, grammatical knowledge, finding main ideas can all cause problems.

The problem of unknown vocabularies is one of the most significant problem for the students because the results from the interview and the questionnaire show that teaching vocabularies in pre- reading stage was necessary and helped them during while reading activity. However, the students still had problems about unknown vocabularies because of insufficiency of content schema. To solve this problem, in pre- reading stage the teacher should not allow the students to construct mind maps by themselves but guide them with necessary vocabularies.

Another important factor that might affect the students' ability is that mind mapping is not a mere drawing activity. Students must have an understanding of reading passages to a certain extent coupled with extracting main points and then write them down. Poor readers usually have poor writing ability. Therefore, they found that they could not construct their mind maps.

Despite the fact that the teaching process was considered helpful, it can be further improved. Time and the amount of practice, for instance, can be spent more effectively. During pre-reading stage, the teacher should take more time to teach both vocabularies and provide them with activities that they can draw on their prior knowledge to activate the schema. As for extracting main ideas and summarizing stories, the teacher can encourage the students by providing them with shorter reading passages to practice.

Working in groups is another area that needs to be considered. Some students could not help their peers to construct mind maps. One reason might be that they did not have specific roles to perform while working in groups. To solve such a problem, the teacher should assign a specific role for each of them rather than leaving them in groups and doing the task without any clear guidance.

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THE AUTHOR

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Panatda Siriphanich received a Bachelor degree of Arts from Silpakorn University in the field of Japanese Language. Now, she is studying for a Master's Degree in the field of Teaching English as an International language at Prince of Songkla University, Hat Yai campus. At present, she is working as a lecturer in the Faculty of Humanity and Social Science at Rajabhat University, Songkhla**.**

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