

## IC-004

### The Development of English Reading Comprehension Ability using Schema Theory and Mind Mapping of Undergraduate Students

Supaweena Luksup

Faculty of Social Sciences and Humanities, Northeastern University, Khon Kaen, Thailand

\*Corresponding author's email: supaweena.luk@neu.ac.th

#### ABSTRACT

The purposes of this research were to study and compare the English reading ability before and after using schema theory and mind mapping of undergraduate students. The samples consisted 36 undergraduate students from Northeastern University, Muang, Khon Kaen, in the second semester of the 2023 academic year. They were selected by cluster random sampling. The design of this research was a one group pretest-posttest design. The research instruments included 8 lesson plans. The experiment lasted 8 weeks, 2 hours a week, or 16 hours in total. Statistics used in the study were mean, percentage, standard deviation, one-sample t-test and t-test for dependent samples.

The findings of the research were the students' pretest and posttest scores on the English reading ability test were 16.36 or 40.90 percent and 26.89 or 67.22 percent respectively and their posttest score for reading ability was higher than their pretest.

**Keywords:** English Reading Comprehension Ability, Schema Theory and Mind mapping

#### Introduction

Foreign language learning is important and essential in daily life because it is the important instrument for communication. English has been one of the most important languages in the world since people all over the world use English to communicate with others from foreign countries. In some countries, people use English as an official language and while others do not, it is still useful for communication.

The use of English as a language of communication is therefore the use of a foreign language for the exchange of information, news, expressing feelings, opinions, interpretations. However, the key tool and learning skill of other skills is reading skills, in line with Carrell, Devine and Eskey (1988: 121-133) that said, reading is important and essential to everyone in every profession, all ages. Reading helps us to be well-rounded, intelligent, keep up with the world. As Nuttall (2005: 127) adds: Reading comprehension skills in English are important skills and are needed more than any other skill, especially for learners learning English as a foreign language. In addition to that, Ruddell (2006: 81) says: Reading skills are very important and useful in acquiring knowledge because if a learner has to read books, textbooks, or English texts in order to have a thorough and insightful knowledge of their field of study. For businessmen or civil servants, they must use English for the sake of their advancement. Hedge (2007: 205) adds that the reading process that enables readers to read effectively is: The reader must interact with the reading by reading a variety of readings. There is an appropriate application of reading styles based on skimming and scanning, as well as the use of prior knowledge in interpreting various readings. Teaching and learning English courses, especially English reading comprehension skills, is one of the major problems of Thai students. The reader's failure to read English is due to the student's lack of prior knowledge about vocabulary, and sentence structure, the content about the subject that they read makes it difficult to understand. Therefore, in teaching and learning that aims to enable learners to learn. Therefore, the instructor should act on the basis of the learner's prior knowledge and experience. Before teaching and learning, instructors should have students discuss or discuss to demonstrate their previous knowledge or experience about the topic they will be studying or studying further. To allow learners to assess their knowledge so that the instructor knows how to proceed with the learning activity.

In addition, Eskey (1988: 97) states that readers who learn English as a second or foreign language (ESL/EFL Readers) will struggle to read the text because they do not know the meaning of the words. Therefore, a good reader must be able to interpret the reading from the words and guess the reading from the words in the story. Also, Drucker (2003: 23) states that reading problems are partly due to the reader's lack of familiarity with the text, which makes it difficult to read. They may assign topics for students to discuss together.

Based on this problem, the researcher researched various research papers that can be used to teach to increase the ability to develop reading ability. The researcher found that teaching English reading comprehension emphasizes the utilization of prior knowledge and trains students to use the thought process. It can help students advance in the reading process and develop their reading abilities to understand what they read. A teaching method that is likely to solve problems and improve English reading comprehension is the Schema theory developed by Carrell and Eisterhold (1983: 553-573). English reading can be developed for learners' understanding effectively because learners need to use prior knowledge to help in the reading process, with interaction between reading and prior knowledge, and stimulation of prior knowledge to help learners think about connecting new knowledge harmoniously fit into prior knowledge. It requires knowledge from one's previous experience to help interpret what is read. Reading comprehension is due to the interaction between the reader and the subject being read, and requires the ability to relate what is read to the structure of the reader's prior knowledge.

In addition, linking previous knowledge with the reading can be used to write a summary of the read passage. We studied the use of concept maps to teach reading comprehension in English. It has been found that it is a teaching activity that can be used to help develop students' reading comprehension abilities to help learners gain an understanding of the subject read by Buzan (1991: 106-107) who said: Mind mapping are an effective tool to help organize ideas by using images, colors, lines, and links instead of traditional line notes, they build skills in analyzing and synthesizing information that are fundamental to learning. This is in line with Buzan (1996:24) and Buzan and Buzan (1997: 57), who have defined it as: It is a technique of visual expression, words, and is an expression of radiant thinking that is a natural behavior of both hemispheres of the human brain. It makes for clearer ideas. In addition, Brown (2001: 299) adds: Mind mapping are used in reading skills in mind management and are used in prior knowledge theories to emphasize the reader's understanding of the core of the passage being read even if the reader does not understand the whole story. Therefore, teaching and learning using Mind mapping is a link of knowledge from reading, allowing learners to come up with ideas for systematization, sequence and tie content relationships together through concept maps.

According to the test scores of undergraduate students enrolled in a Basic Reading and Writing in English course is quite low. Students have some problems with vocabulary, sentence structure and how to read for comprehension in the content that make reading skill difficult. Thus they need to improve their English reading for comprehension ability.

The researcher has considered that solving students' English reading for comprehension problems using schema theory and mind mapping may help students with difficulties in their reading English. Therefore, the researcher would like to employ teaching English reading for comprehension using schema theory and mind mapping and adapt the reading activities to be suitable with undergraduate students from Northeastern University to determine whether this method can improve their reading for comprehension ability. Additionally, the research findings may be guidelines for teaching English reading for comprehension in Thailand in the future.

### **Purposes**

1) To study and compare the English reading comprehension ability of undergraduate students using schema theory and mind mapping before and after studying.

### **Research Methodology**

#### **Population and Sample**

##### **1. Population**

The population in this study was 116 undergraduate students who enrolled in a Basic Reading and Writing in English Course (GE10303) in 3 classrooms at Northeastern University, Muang, Khon Kaen.

## 2. Sample

The sample in this study was 36 undergraduate students studying in a Basic Reading and Writing in English course (GE10303) in the second semester of the 2023 academic year at Northeastern University, Muang, Khon Kaen. They were selected by cluster random sampling using the section as a sampling unit.

### Research Instruments

1. Lesson plans for teaching English reading comprehension using schema theory and mind mapping consisted of 8 units for 2 hours a unit. Eight lesson plans were developed to teach English reading comprehension using schema theory and mind mapping based on choosing contents from teaching publication of Reading and Writing in English course.

2. An English reading comprehension ability test was developed by the researcher which is multiple choice of 40 items to test the English reading comprehension ability before and after studying.

### Data Collection

The researcher collected the data in the second semester of the 2023 academic year. The details of data collection are as follows:

1.1 The pretest was done using the English reading ability test before teaching using schema theory and mind mapping.

1.2 The teaching program was conducted according using the eight lesson plans.

1.3 The posttest was done using the English reading comprehension ability test which was the same as the pretest after the teaching process was completed.

1.4 The data from the pretest and the posttest was analyzed.

### Data Analysis

1. Undergraduate students English reading comprehension ability using mean ( $\bar{X}$ ), percentage, and standard deviation (S.D.)

2. The differences of the pretest and posttest English reading comprehension ability results were compared using t-test for Dependent Samples.

## Results

The findings of the research were as follows:

1. The students' average English reading comprehension ability pretest and posttest scores were 16.36 or 40.90 percent and 26.89 or 67.22 percent, respectively and the students' posttest score reading comprehension ability was higher than their pretest score.

## Discussion

This study was experimental research with a one group pretest - posttest design. It aimed to study and compare students' English reading comprehension ability before and after using schema theory and mind mapping. The research findings can be summarized as follows:

According to the study and comparison of undergraduate students English reading comprehension ability before and after using schema theory and mind mapping, it was found that students' average pretest and posttest scores were 16.36 or 40.90 percent and 26.89 or 67.22 percent, respectively. These findings support the hypothesis. The students' posttest score on English reading comprehension ability was significantly higher, at the .01 level. It was found that schema theory and mind mapping promoted undergraduate students' English reading comprehension ability. Conclusion is presented as follows:

1. From the students' pre-study scores, it can be seen that the basic knowledge of the pre-research sample was low. This is because students lack basic knowledge of reading comprehension in English. That is to say, lack of prior knowledge about the subject being read, inability to grasp and summarize the reading subject, as well as lack of knowledge of vocabulary, sentence structure, and reading tactics. As a result, students have a low level of basic reading comprehension in English, i.e. they are unable to interpret, interpret and analyze but after students have learned to teach English reading comprehension using Schema theory, structure, prior knowledge and concept maps, students have the ability to interpret, interpret and analyze and summarize the essence of the

readable story and be able to answer the questions after reading correctly. This is because students practice reading using prior knowledge to do stimulating activities and validating previous knowledge. This enables students to think and relate to previous knowledge, resulting in students developing their English reading comprehension abilities.

The findings are consistent with the ideas of Carrell and Eisterhold (1985: 218), who suggested that Schema theory are reading strategies that stimulate students' previous knowledge, set reading goals, and anticipate reading content by transferring new knowledge to previous knowledge. In addition, using Mind mapping reading also helps students learn vocabulary by putting the subject line in the middle and then having students brainstorm vocabulary ideas from the reading chapter and allowing students to summarize key points from the entire reading without wasting time reading the entire passage. This is in line with the ideas of Buzan and Buzan (1997: 57), which has said: Mind mapping is a visual expression technique. Radiant Thinking is a natural behavior of both hemispheres of the human brain. This creates an idea that includes group collaboration practices. This allows students to participate in thinking out a summary of the story they read before writing it out in the form of a Mind mapping., presented work and collaborated on inservice badges in class. Therefore, it can be said that teaching English reading comprehension using Schema theory and Mind mapping can improve students' reading comprehension ability.

2. Comparison of English reading comprehension abilities of students studying with Schema theory and Mind mapping. It was found that the post-test English reading comprehension proficiency score was statistically significantly higher than that of the pre-test at the .01 level. The reason for this is because:

First, teaching English reading comprehension using Schema theory and Mind mapping can help develop reading comprehension abilities in English because it is student-centered, allowing students to practice reading comprehension skills using a variety of activities. It gives students the ability to interpret, interpret, analyze, and summarize. In addition, teaching using the Schema theory is based on the theoretical concepts of Carrell and Eisterhold (1983: 239), which examines the student's prior knowledge. This allows students to comment on what they already have prior knowledge about the subject to be read, and predict the passage they will continue to read. Stimulation of prior knowledge allows students to experience knowledge and understand the main concepts of the reading. This allows students to enrich their knowledge. Knowledge is adjusted, new knowledge is created, and new knowledge is transferred to prior knowledge. This allows students to make comparisons between new and prior knowledge, which is in line with McPhee's (2008:89) concept. Teaching and learning that can relate to students' prior knowledge or experience must bring about new learning. Based on pre-existing knowledge in the reader. In addition, students are trained to use the thought process and sequence of knowledge gained from reading out in the form of mind mapping. Give students an overview of what they read, understand the relationship of the plot. Prioritize the thoughts of the subject they read, increasing students' reading comprehension. This is in line with the idea of Gomez and King (2014: 78) that writing a mind mapping on paper will make it easy for students to understand the main idea. It saves time and money as well. Teaching and learning using mind mapping, therefore, connects the relationship of the content in the reading with each other through mind mapping. Therefore, teaching English reading comprehension using Schema theory, and mind mapping can make students have a better understanding of reading English. It also trains students to think systematically and be creative as well.

The research also found that the use of mind mapping activities can be used to improve students' English reading comprehension abilities to help learners gain understanding of the subject they read by systematically linking the information obtained from reading. The elements of the story are considered in their entirety, sequencing what will be recorded in memory. Simulate brain activity on paper, reflecting the shadows of thoughts. By presenting the main idea in the center of the page and spreading the idea from the middle point over and over again, using symbolic colors, dimensional visualization helps to determine the relationship of information, this is in line with Katayama's (2000) research that looked at the effect of graphic mapping techniques on the persistence of learning. The experiment was conducted in which

6 groups of students took notes after reading according to the model obtained, the scores obtained from the test of students using graphic charts were higher than those of students who used brief summaries.



Second, in teaching English reading comprehension using Schema theory and mind mapping. There are procedures to promote and develop English reading comprehension clearly and systematically. It uses activities to examine prior knowledge based on the theoretical concepts of Carrell and Eisterhold (1983: 239-255). Using Buzan's (1996: 97) mind mapping, which the researcher integrated with Williams' (1994: 37-40) conceptual reading comprehension instruction, which is supervised by a teacher and guides learners at every step to effectively improve their English reading comprehension abilities as follows

Pre-reading Activities are stages where teachers check students' previous knowledge. Teachers encourage students by asking questions to comment on what they already have about the subject to read. This allows students to make predictions from the passage they will continue reading. Subsequently, the teacher stimulates the student's prior knowledge. Activating background knowledge of students when students lack prior knowledge. What encourages prior knowledge is to teach students vocabulary as before reading. Teaching to experience knowledge and understanding the core concepts of reading is in line with Anderson and Pearson (1984: 259) who stated: All previous knowledge and experience acquired will be fused together into a body of knowledge stored in a conceptual framework. When it must be drawn, it will determine what knowledge or experience will be drawn. If the reader can identify or characterize the reading, it will give a good understanding of the subject being read. By expanding students' knowledge by replenishing knowledge and adjusting knowledge and creating new knowledge. Transferring new knowledge to background knowledge is the act of transferring new knowledge to what students already know, making it possible to compare the connection between new knowledge and previous knowledge. The teacher teaches the creation of a concept map and demonstrates how to connect previous knowledge with new knowledge by writing titles, secondary topics, and breaking down small topics which are details of the expected content in the reading. Subsequently, the teacher has the students do vocabulary exercises. in worksheets to connect previous knowledge with new knowledge.

While-reading is when students read a text assigned by a teacher and try to understand it by using skimming techniques to find the main idea or scanning for specific information, in line with Anderson's (1999: 52) idea: In the interactive model, readers must quickly memorize the characters and get used to the script so that they can read quickly, skimming to find the main idea, and scanning to find specific details. And post-reading is where the teacher checks the understanding of how well the student understands the reading. Students are asked to answer questions that begin with Wh and H, then the teacher and students discuss the reading, and students summarize the content from the reading with oral responses. To summarize the material read on the worksheet and then present it in front of the class. The teacher provides feedback for students to improve, and then the teacher and students work together to summarize the content of the lesson.

Consequently, it can be stated that schema theory and mind mapping facilitated and motivated students to use the language to read for comprehension effectively. After studying by schema theory and mind mapping , the students' reading posttest scores were higher. Therefore, it can be concluded that using schema theory and mind mapping can enhance students English reading for comprehension.

## Conclusions

The result of this study is a comparison of English reading comprehension ability using Schema theory and mind mapping before and after. The research summary is as follows:

Students' average percentage of English reading comprehension ability scores before and after studying the average percentage were 40.90 percent and 67.22 percent. When examining the difference in averages, it was found that the ability to read English for comprehension after studying was higher than before studying.

## Recommendations

### 1. Recommendations from the study

1.1 In order to make use of this study, the researcher proposes that it is from the research results, the students' posttest score writing ability was higher than the pretest score. The reason might be that schema theory and mind mapping could facilitate and motivate students to use the language in reading effectively. Therefore, schema theory and mind mapping should be promoted in teaching English comprehension.

1.2 From the research it was found that students have better improved in organizing and associating the content. It arises from the concept of mind mapping that students use as a tool to organize and illustrate the relationship between ideas. As a result, students are able to write better links to content.

## 2. Recommendations for further study

Some suggested for further productive research include:

2.1 Researchers should implement process reading comprehension approach to develop reading comprehension skill with other English language skills together, for instance, writing skill and listening skill.

2.2 Researchers should investigate teaching English reading comprehension using schema theory and mind mapping at other educational levels of students.

## References

- Anderson, N. J. (1999). *Exploring second language reading: Issues and strategies*. London: Heinle & Heinle.
- Anderson, R., & Pearson, D. (1984). *A Schema-theoretic view of basic process in reading comprehension in interactive approaches to second language reading*. Cambridge: Cambridge University Press.
- Brown, H. D. (2001). *Teaching for principles: An interactive approach to language pedagogy*. Second Edition. New York: Pearson Education.
- Buzan, T. (1991). *Use both side of your brain*. Cambridge: Cambridge University Press.
- Buzan, T. *The mind mapping-book: How to use radiant thinking to maximize your brain's untapped potential*. London: BBC Book.
- Buzan, T., & Buzan, B. (1996). *The mind map book: How to use radiant thinking to maximize your brain's untapped potential*. New York: Plume.
- Buzan, T., & Buzan, B. (1997). *The mind map book: Radiant thinking*. London: BBC Books.
- Carrell, P. L., & Eisterhold, J. C. (1983). Schema theory and ESL reading pedagogy. *TESOL Quarterly*, 17(4), 553-573.
- Carrell, P. L., & Eisterhold, J. C. (1985). Facilitating ESL reading by teaching text structure. *TESOL Quarterly*, 19(4), 727-752)
- Carrell, P. L., Devine, J., & ESkey, D. E. (Eds.) (1988). *Interactive approaches to second language reading*. Cambridge: Cambridge University Press.
- Drucker, M. J. (2003). What reading teachers should know about ESL learners. *The Reading Teacher*, 57(1), 22-29
- Eskey, D. E. (1988). Holding in the bottom: An interactive approach to the language problems of second language readers. In P. L. Carrell, J. Devine & D. E. Eskey (Eds.) *Interactive Approaches to Second Language Reading*, (p. 93-100). New York: Cambridge University Press.
- Gomes, M., & King, G. (2014). Using mind mapping as a method to help ESL/EFL students connect vocabulary and concepts in different contexts, *TRILOGIA. Ciencia, Tecnologia Scoledad*, 10, 69-85.
- Hedge, T. (2007). *Teaching and learning in the language classroom*. 4<sup>th</sup> ed. New York: Oxford University Press.
- Katayama, A. D. (2000). Getting student partially involved in note-taking graphic organizers. *The Journal of Experimental Education*, 68(2), 119-123.
- McPhee, N. F. (2008). *A Schema theory analysis of mutation size biases in genetic programming with linear representations*. Berlin: Springer.
- Nuttall, C. (2005). *Teaching reading skill in a foreign language*. Oxford: McMillan Education.
- Williams, E. (1994). *Reading in the language classroom*. 8<sup>th</sup> ed. London: Macmillan.