

## Using Jigsaw Reading and Semantic Mapping Activities to Develop English Reading and Writing Abilities Among Mathayom Suksa 4 Students<sup>\*</sup>

การใช้กิจกรรมการอ่านแบบต่อชิ้นส่วนและผังความสัมพันธ์ทางความหมายเพื่อพัฒนา  
ความสามารถในการอ่านและการเขียนภาษาอังกฤษของนักเรียนชั้นมัธยมศึกษาปีที่ 4

Jing Zhu<sup>\*\*</sup>

Nitida Adipattaranan<sup>\*\*\*</sup>

### Abstract

The purposes of this study were to compare students' English reading ability before and after learning through jigsaw reading and semantic mapping activities and study students' English writing ability after learning through jigsaw reading and semantic mapping activities. The target group was 20 Mathayom Suksa 4 students who enrolled in Reading and Writing English Course (E30203) in the first semester of the academic year 2015 at Chomthong School, Chiang Mai, Thailand. The research tools were 10 lesson plans based on jigsaw reading and semantic mapping activities, English reading ability test and English summary writing evaluation form. The data obtained were analyzed for mean, standard deviation and percentage. The findings of the study were as follows: 1) The students' English reading ability increased from the passed level to the good level after learning through jigsaw reading and semantic mapping activities; 2) The students' English writing ability passed the pre-set criteria at the good level after learning through jigsaw reading and semantic mapping activities.

**Keywords:** jigsaw reading activity, semantic mapping activity, English reading ability, English writing ability.

<sup>\*</sup> This article is published to fulfill the requirement for the degree of master of education in Curriculum, Teaching and Learning Technology, Chiang Mai University, Thailand.

<sup>\*\*</sup> Graduate student, Jing Zhu, zhujing6589@163.com, Faculty of Education, Chiang Mai University.

<sup>\*\*\*</sup> Assoc. Prof. Dr. Nitida Adipattaranan, nitidaad@gmail.com, Faculty of Education, Chiang Mai University

### Rationale and Significance of the Study

With the development of globalization, learning English is very necessary and important for people in the non-English-speaking countries. Because English has been an essential communication tool in the field of economy, politics, culture, society, education, medical science, internet industry, technology or international exchange and cooperation among different countries in the world. And English is the official language of many international organizations such as the United Nations, the European Union, World Trade Organization and Association of Southeast Asian Nations.

According to the plan of ASEAN Socio-cultural Community blueprint, all the members of ASEAN are encouraged to use English to communicate and cooperate with each other. Thailand as one member of ASEAN can't exclude from the significant trend. English is quite important and essential for Thailand. First, English is the official language to communicate and cooperate with other countries in politics, economy and culture. Second, English plays a very important role in tourism industry, which is a common language used to communicate with tourists around the world. Third, with the development of economic globalization, fluent English can create a job opportunity for Thais in the international companies or foreign-funded enterprises.

Most Thais have realized that it is high time to strengthen English education in order to improve their English proficiency. Therefore, English has been defined as the entire basic education core curriculum in foreign language. In 2008, the newest basic education core curriculum stated that English was taught as one of the foreign language subjects, which aimed at enabling learners to acquire a favorable attitude towards English and the ability to use English for communicating in various situations, seeking knowledge, engaging in a livelihood and pursuing further education at higher levels. Learners would thus have knowledge and understanding of stories and cultural diversity of the world community, and would be able to convey Thai concepts and culture to the global society creatively (Ministry of Education, 2008). Until now, the curriculum is still very practical and efficient, which encourages students to improve listening, speaking, reading and writing skills together to communicate effectively.

But many studies have indicated that the students have the difficulties in English reading and writing in Thailand. This phenomenon exists not only in elementary school but also in secondary school even in higher education (Wiriachitra, 2002). There are various reasons to explain why the phenomenon occurs. First, the difference between English and their native language affects their English acquisition (Darasawang, 2007). Second, most of Thai students don't spend much time to read and write. They are interested in television programs,

computer games and Facebook rather than in reading materials like textbooks, magazines and newspapers. They are not interested in reading and writing of Thai materials, let alone English reading and writing (Sratongnium, 2007). Third, limited knowledge of vocabulary, grammar and sentence structure are regarded as the main hindrance for students to read and write effectively (Gunning, 2002). Fourth, the students are lacking of background knowledge of reading and writing texts. Fifth, traditional teaching methods like the Grammar Translation Method and Audio-lingual Method discourage students to acquire skimming, scanning, intensive and extensive reading strategies and writing skills to integrate information and develop transition, unity and cohesion (Darasawang, 2007).

Based on the fact above, it is very necessary to find out a way to improve English reading and writing together immediately. In the past, reading and writing are considered as two separated skills. In fact, reading and writing are inseparable and interdependent, which means the students should write about what they are reading and read about what they are writing. Teaching reading and writing together is very important for developing students' English proficiency. Regarding the situation, Cooperative Language Learning is quite suitable for students to learn English reading and writing together. It is developed from Cooperative Learning which is group learning activity organized so that learning is dependent on the socially structured exchange of information between learners in groups and in which each learner is held accountable for his or her own learning and is motivated to increase the learning of others (Olsen & Kagan, 1992). The goals of Cooperative Language Learning are to provide opportunities for naturalistic second language acquisition through the use of interactive pair and group activities, enhance learners' motivation, reduce learners' stress and create a positive affective classroom atmosphere as well as to obtain learning achievement.

One of the effective models of Cooperative Language Learning that promotes reading ability is jigsaw reading activity, which is believed to reduce conflict among students, improve students' motivation, promote students' learning quality and increase students' enjoyment in the learning process (Slavin, 1995). In jigsaw reading activity, students are divided into several home groups that there are 4 or 5 students in each group, and students who get the same part of the reading text form the expert groups. They work in the expert group to comprehend their own reading text, then return to the home group to share what they have learned in the expert group effectively so that other members can understand each part of the reading text. Each student takes responsibility for completing and understanding one part of the whole. In addition, many researches indicated semantic mapping activity also could improve reading ability. Semantic mapping activity is a kind of graphic organizer to correlate

the relationship between words or concepts in particular text to improve students' reading comprehension by drawing a map of information from the text (Heimlich & Pittleman, 1986). Students can understand the structure and ideas of reading texts better through semantic map. It is an effective way to represent and analyze the information of reading texts. Shiri (2012) referred that semantic mapping activity improved reading comprehension of Iranian EFL learners.

In fact, semantic mapping activity is also a type of pre-writing activities, which allows the students to explore many ideas as well as the relationship among them. Like brainstorming, the students can collect more information about writing topic with semantic map and make out the outline for writing through semantic map (Lowman, 1984). Semantic map displayed the main idea, supporting ideas, links among certain objects through diagrams visually and clearly (Fisher, 1995). Octaria (2012) claimed semantic mapping activity could improve students' achievement in writing summary of text.

According to the information above, the combination of jigsaw reading activity and semantic mapping activity not only can improve reading ability but also can improve writing ability. First, students apply jigsaw reading activity to explore the information of the reading text. Then, students represent and analyze the information of the reading text by a semantic map with key words or short sentences. As a result, students can get good reading comprehension. After getting the good understanding, students can write a summary clearly according to the outline of the semantic map, which is a good access to inspect students' reading comprehension and improve students' writing ability. During the whole process of jigsaw reading and semantic mapping activities, students can cooperate and interact with others actively in the group. Although students have different background knowledge or experiences about the reading text and different English proficiency, they can help each other to achieve the goal better. Cooperation is a good access to reduce stress and anxiety of students especially for poor readers and writers. The researcher believes that jigsaw reading and semantic mapping activities may be effective to solve the problems of English reading and writing for Thai students.

### Research Questions

1. Does students' English reading ability increase after learning through jigsaw reading and semantic mapping activities?
2. Does students' English writing ability pass the pre-set criteria after learning through jigsaw reading and semantic mapping activities?

### Purposes of the study

1. To compare students' English reading ability before and after learning through jigsaw reading and semantic mapping activities.
2. To study students' English writing ability after learning through jigsaw reading and semantic mapping activities.

### Research Hypothesis

The hypothesis is that students' English reading ability increases after learning through jigsaw reading and semantic mapping activities.

### Target Group

The target group was 20 students from Mathayom Suksa 4 at Chomthong School, Chiang Mai, Thailand. They enrolled in the English Reading and Writing Course (E30203) in the first semester of the academic year 2015.

During the process of jigsaw reading and semantic mapping activities, students were divided into 4 or 5 home groups. Each home group was composed of 4 or 5 students who represented a cross-section of the class in terms of academic performance, gender, and race or ethnicity. Each home group should have a high performer, a low performer and two or three average performers. Students of each home group were assigned randomly to the expert group, ensuring that there were high, average and low achievers in each expert group.

### Variables

1. The independent variables were jigsaw reading and semantic mapping activities.
2. The dependent variables were English reading and writing abilities.

### Definitions of Terms

1. **Jigsaw reading and semantic mapping activities** refer to the combination of jigsaw reading activity and semantic mapping activity, which encourage students to read English texts in the group, complete or draw the graphic organizers of the reading texts and write a summary individually. These teaching activities include pre-reading (students make a brainstorm to activate their prior knowledge, learn new vocabulary and phrases and make a prediction), while-reading (students read and discuss the text in expert group, retell and discuss the text in home group, make a conclusion in home group), post-reading (students complete the reading ability test, complete the semantic map and write a summary).

2. **English reading ability** refers to the ability to read the English texts and answer four types of questions (remembering, understanding, applying and analyzing) based on the revised version of Bloom's Taxonomy. The English reading ability was evaluated by 40 multiple-choice questions.

3. **English writing ability** refers to the ability to summarize the English reading texts. The English writing ability was evaluated by the criteria of summary writing (Gillam, 2004) including main idea, supporting details, using own words, grammar and mechanics.

### Research Instruments

#### 1. Experimental Instrument

The experimental instrument included ten lesson plans, which was designed according to the theories and principles of jigsaw reading and semantic mapping activities and the requirements of English Reading and Writing Course (E30203) at Chomthong School. Each lesson plan was conducted in two periods. There were 20 periods in total. Each period took 50 minutes. The class met four times a week.

#### 2. Data Collecting Instruments

##### 1) English reading ability test

English reading ability test consisted of 40 multiple choices, which was based on Bloom's revised Taxonomy. The test related to four levels of reading comprehension like remembering, understanding, applying and analyzing as follows:

| Levels of Reading Comprehension | Items   | Total |
|---------------------------------|---|-------|
| Remembering                     | 2, 3, 10, 12, 14, 15, 25, 32                              | 8     |
| Understanding                   | 1, 4, 7, 8, 9, 16, 17, 22, 23, 24, 26, 28, 33, 34, 35, 36 | 16    |
| Applying                        | 6, 13, 20, 21, 27, 31, 38, 39                             | 8     |
| Analyzing                       | 5, 11, 18, 19, 29, 30, 37, 40                             | 8     |

The scores of English reading ability were analyzed for mean, standard deviation and percentage. They were compared with the criteria of Bureau of Academic Affairs and Educational Standards (2008) for the quality as follows:

| The Range of the Scores | Levels of Quality |
|-------------------------|-------------------|
| 80-100                  | Excellent         |
| 65-79                   | Good              |
| 50-64                   | Passed            |
| 0-49                    | Failed            |

## 2) English summary writing evaluation form.

Students wrote one summary after each two lesson plans. In total, there were five pieces of summary writing for each student. Their summaries were evaluated with the adapted Gillam's criteria. It included five aspects: main idea, supporting details, use own words, grammar and mechanics.

The scores of English writing ability were analyzed for mean, standard deviation and percentage. The full scores of each summary were 20 points. The total scores of summary writing were 100 points. According to the requirement of the course (E30203), the scores of English summary writing ability must pass the pre-set criteria of 50% or at the passed level. They were compared with criteria of Bureau of Academic Affairs and Educational Standards (2008) for the quality as follows:

| The Range of the Scores | Levels of Quality |
|-------------------------|-------------------|
| 80-100                  | Excellent         |
| 65-79                   | Good              |
| 50-64                   | Passed            |
| 0-49                    | Failed            |

## Data Collection

The experimental and data collecting procedures for the research were as follows:

- 1) The researcher introduced the learning purpose and procedures of jigsaw reading and semantic mapping activities, English summary writing and assessment for the target group.
- 2) The target group took one and half an hour to do pre-test of English reading ability on September 11, 2015.
- 3) Students were taught with 10 lesson plans based on jigsaw reading and semantic mapping activities from September 14 to October 16, 2015.
- 4) Students' summary writings were collected from lesson plan 2, lesson plan 4, lesson plan 6, lesson plan 8 and lesson plan 10.
- 5) After completing all the experimental instrument, the target group took the post-test of English reading ability on October 19, 2015.
- 6) Collect and analyze all the data from English reading ability test and English summary writing evaluation form.

## Data Analysis

The data analysis was divided into two categories as follows: 1) Reliability of English reading ability test was analyzed by Kuder-Richardson Formula 21. 2) The scores of English reading ability and English writing ability were analyzed for mean, standard deviation and percentage.

## Research Results

### Result 1. The students' English reading ability

**Table 1** Mean, standard deviation, percentage and quality level of the scores of the students' English reading ability

| Test      | Mean (40) | Standard Deviation | Percentage | Level of Quality |
|-----------|-----------|--------------------|------------|------------------|
| Pre-test  | 21.5      | 2.12               | 53.75      | Passed           |
| Post-test | 27        | 1.41               | 67.50      | Good             |

Table 1 shows the mean score of the students' English reading ability from the pre-test was 21.5, the standard deviation was 2.12 and the percentage was 53.75, which was at the passed level. But the mean score of the students' English reading ability from the post-test was 27, the standard deviation was 1.41 and the percentage was 67.50, which was at the good level. It can be concluded that after learning through jigsaw reading and semantic mapping activities, the students' English reading ability increased according to the research hypothesis.

### Result 2. The students' English writing ability

**Table 2** Mean, standard deviation, percentage and quality level of the scores of the students' English writing ability

| Summary | Mean (20) | Standard Deviation | Percentage | Levels of Quality |
|---------|-----------|--------------------|------------|-------------------|
| 1       | 11        | 2.83               | 55.00      | Passed            |
| 2       | 12        | 2.83               | 60.00      | Passed            |
| 3       | 13.5      | 2.12               | 67.50      | Good              |
| 4       | 15        | 1.41               | 75.00      | Good              |
| 5       | 15.5      | 2.12               | 77.50      | Good              |
| Average | 13.4      | 2.26               | 67.00      | Good              |

Table 2 shows that the mean score of the students' English summary writing ability was 13.4, the standard deviation was 2.26 and percentage was 67.00, which passed the pre-set criteria of 50%. The quality of the students' English writing ability was at the good level. From summary 1 to summary 5, the mean score increased gradually from 11 to 15.5, the standard deviation changed from 2.83 to 2.12 and the percentage increased from 55.00 to 77.50. For the students' English summary writing ability, they were at the passed level in summary 1 and summary 2, at the good level in summary 3, summary 4 and summary 5. It can be concluded that after learning through jigsaw reading and semantic mapping activities, the students' English summary writing ability passed the pre-set criteria.

## Discussions

1. The students' English reading ability increased after learning through jigsaw reading and semantic mapping activities according to the following reasons:

During the two activities, students cooperated and interacted with peers in the group to share the information, solve the problem, complete the task and evaluate the acquisition. They were the center of teaching and learning. Even if there were some difficulties in the learning process, they would solve them with the help from others in the group. These findings reflected the positive interdependence of Cooperative Language Learning, which encouraged and facilitated the students to achieve the group goals through cooperation. In addition, the positive interdependence also supported social interdependence theory. When individuals shared common goals, each individual's outcomes were affected by the actions of others (Johnson, 1989). When they took part in the activities, their anxiety and stress decreased. They were more willing to carry out the reading tasks.

In jigsaw reading activity, the reading text was divided into several parts in order to reduce the reading task of the students. Every student had to take the responsibility for their own reading task and group goal. When they worked in the expert group and the home group, they interacted with peers face to face. Through face-to-face interaction, they could understand what the peers wanted to express better, learn how to build trust, how to manage conflict, how to make an evaluation, which was beneficial to finding out the information and ideas of the reading text accurately.

During the whole process to achieve reading comprehension, the students got schema about the reading topic through brainstorming in pre-reading activity. Then, they got new information from the reading text and group discussion. Next, they classified objects and ideas on complex levels, and used outlines or analogies to figure out the relationship between

new materials and already acquired knowledge through semantic map. These findings were consistent with Piaget's cognitive development and the Zone of Proximal Development, which indicated how the students acquired reading comprehension and what they could do with the assistance of others more than what they could do alone.

The combination of jigsaw reading activity and semantic mapping activity made a contribution for the students to get information, process information and reorganize information. At first, jigsaw reading activity facilitated students to complete reading process and explore the main idea of the reading text. Then semantic mapping activity represented the information and structure of the reading text with a visual map. Through two activities, readers could remember, recall and analyze the reading text better so that they acquired reading comprehension exactly. At last, the students wrote a summary to retell the main idea and key points of the reading text. A good summary indicated that the students achieve a good reading comprehension.

Moreover, the team competition among the home groups in the learning process also stimulated students to make their own efforts to complete the reading tasks and achieve the group goal correctly and effectively, which encouraged them to cooperate with others better in the group. Then, good cooperation resulted in good comprehension.

2. The students' English writing ability passed the pre-set criteria after learning through jigsaw reading and semantic mapping activities according to the following reasons:

As a result of the experiment, the students activated their prior knowledge or experiences about the reading text through brainstorming in pre-reading activity just like they had the schema already. Then, in jigsaw reading activity, they worked in the expert group and the home group to explore new information from the reading text such as main idea, supporting ideas, patterns or phrases, grammar knowledge and writing formats through cooperation and interaction. Next, semantic mapping activity reviewed and represented the information of the reading text with key words or phrases in a visual map. The students could grasp the main idea, supporting details and their connections through the semantic map clearly. Finally, the students could reorganize the information of the reading text and write a summary according to the semantic map, which was just like the metacognitive theory mentioned the learners managed and processed their input and storage, searched and retrieved the contents of memory.

Although the semantic map is a good outline for students to write the summary. At the beginning of the experiment, they still faced a problem that they preferred to copy sentences from the reading text rather than using own words in the summary. In order to solve

the problem, the researcher advised students to retell or explain what they had learned from the reading text with their own words in the group discussion. They could use synonyms to paraphrase the key sentences in the summary. Finally, with the increase of writing times, they wrote the summary better.

### Suggestions

According to the study, students' English reading and writing abilities improved by learning through jigsaw reading and semantic mapping activities. In the future, teachers can apply the activities into their own teaching. But there are some suggestions should be considered by the teachers as follows: 1) Choosing interesting topics about reading and writing, which are close to students' daily life. 2) Good readers and poor readers should be mixed together in the group. 3) Considering the limited time is available for every student to complete the tasks. 4) The teacher should have assistants to evaluate students' English summary writing together so that every student can get fair score to prevent personal bias.

This study only focused on English reading and writing ability in a short teaching instruction. The further study should be conducted to explore whether jigsaw reading and semantic mapping activities are effective to improve English reading and writing abilities with students in a longer instructional plan. And the further study may try to apply jigsaw reading and semantic mapping activities into other English skills like listening and speaking or other subjects like Chinese, French, Japanese and Thai.

### References

Aronson, Eliot. (1978). *The Jigsaw Classroom*. Beverly Hills, CA: Sage Publications.

Anderson, L. & Sosniak. L. (1994). Bloom's taxonomy: A forty-year retrospective. Chicago, Illinois: The University of Chicago Press.

Ceolho, E. (1992). Cooperative learning: Foundation for a communicative curriculum. In C. Kessler (Ed.) *Cooperative language learning: A teacher's resource book*. Eaglewood Cliffs, NJ: Prentice-Hall. pp. 31-49.

Chaiyos Paiwithayasiritham. (2014). Factor Analysis of the 21<sup>st</sup> Century Learning and Innovation Skills of the Teaching Professional Students. *Veridian E-Journal Silpakorn University*, Vol 7, No 5 (2014), International (July-December 2014). PP. 27-35.

Darasawang, P. (2007). English in Southeast Asia: Varieties, Literacies and Literatures, Chapter: English Language Teaching and Education in Thailand: A Decade of Change, Publisher: Cambridge Scholars Publishing, Editors: D. Prescott, pp. 187-204.

Gunning, T. G. (2002). *Assessing and correcting reading and writing difficulties*. Boston: Allyn & Bacon A Pearson Education Company.

Heimlich, J. E. & Pittelman, S. V. (1986). *Semantic Mapping: Classroom Applications*. Newark, DE: International Reading Association Embroke Publishers Limited.

Krathwohl, D., Bloom, B. & Masia. B. (1964). *Taxonomy of educational objectives: Handbook II: Affective domain*. London: Longman.

Ministry of Education. (2008). *The Basic Education Core Curriculum 2008*. Bangkok: Kurusapa Ladprao Publishing.

Panadda, P. & Krich, R. (2014). Exploring current situations and corporate needs of English language usage in workplace: Thai professionals' voices to Tertiary Education. *Veridian E-Journal Silpakorn University, Vol 7, No 4 (2014), International (January-June 2014)*. PP. 28-47.

Slavin, R.E. (1995). *Cooperative learning: Theory, research, and practice* (2nd ed.). Boston: Allyn & Bacon.

Singhanat, Nomnian. (2014). English as the ASEAN lingua franca in Thai Higher Education. *Veridian E-Journal Silpakorn University, Vol 7, No 4 (2014), International (January-June 2014)*. PP. 75-84.

Wiriachitra, A. (2002). English Language Teaching and Learning in Thailand in this Decade. *Thai TESOL Focus 15(1)*: 4-9.

Zaid, M. A. (1995). Semantic mapping in communicative language teaching. *Forum, 33(3)*, 6-16. Retrieved December 23, 2006, from <http://exchanges.go.com>