CHAPTER 2

LITERATURE REVIEW

In order to understand the thesis better, this chapter will introduce the literature review as the following aspects: jigsaw reading and semantic mapping activities, English reading ability and English writing ability.

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1. Jigsaw Reading and Semantic Mapping Activities

1.1 Background and Definition of Jigsaw Reading Activity

The original jigsaw activity is the jigsaw classroom that is invented and developed in the early 1970s by social psychologist Aronson and his students at the University of Texas and the University of California. At that time the integrated schools were filled with racial discrimination and conflict. In 1971, Aronson was hired to solve the problem in an Austin, Texas school. In order to decrease the discrimination from different ethnicity and the competitive atmosphere, Aronson created the group assignments for students. It made the students recognize that everyone was essential in the group and they needed to cooperate with each other. No matter who was absent, it would be impossible for the team to complete the assignment. Jigsaw classroom not only reduced racial conflict among students, but also promoted better performance of learning, increased students' motivation, increased enjoyment of the learning experiences and reduced the absenteeism.

Later, the jigsaw classroom was applied into fifth grade students by Blaney, Stephan, Rosenfield, Aronson and Sikes in 1977. They divided students into control group and experimental group. Both groups used the same syllabus. By comparison, students in the experimental group were forced to cooperate with others. They shared information with others and helped each other. It increased the contact among students. In 1986, Slavin adapted Aronson's jigsaw activity to be more practical. Jigsaw activity allowed students to work together in a small group to achieve their own and group learning (Slavin, 1995). As time flows, more researchers began to use jigsaw activity in different areas. Jigsaw was used in an undergraduate statics course (Perkins, 2001). Students were quite positive during learning. Group work not only provided the chance for them to help each other but also saved the time to complete the task. Soon, jigsaw was applied into 12th-grade physics class (Hanze & Berger, 2007). Students became more interested in the learning topics and performed actively. At present, more researchers recognize the importance and effectiveness of cooperative learning. They are trying to apply jigsaw technique into various subjects teaching. For this study, the researcher is interested in applying jigsaw activity into English reading course to improve students' reading ability.

Jigsaw is a cooperative learning activity first described by Aronson in 1978 (Goodman, 1990). In jigsaw, students work in a group consisting of five to six group members cooperatively and help each other to learn given materials (Slavin, 1995). Jigsaw reading is a learning process through combining the theory of jigsaw and practice of reading. During the activity, one reading text is divided into several fragments. And students are divided into home groups and expert groups. The students in the home group who get the same fragment of reading text form an expert group. Students in each expert group work together to get deep understanding about their own segment. Then they return to their own home group to share what they have learned in the expert group correctly so that every student can understand each part of the reading text. By the way, every student in the home group is like one piece of jigsaw puzzle. Only when they work together, they can complete the jigsaw puzzle. Each one of them is quite important and indispensable.

1.2 Principles and Theories of Jigsaw Reading Activity

Principles of Jigsaw Reading Activity

Jigsaw reading activity is based on cooperative language learning. Jigsaw reading activity should comply with six principal characteristics of cooperative learning (Slavin, 1995) as follows:

1) Group Goals - Students work in the group to complete group tasks. Group members should feel free to communicate and discuss openly with each other to get understanding and complete tasks. They should maintain good and effective cooperating relationship with each other to achieve their goals.

2) Individual Accountability – Each student must demonstrate mastery of the content from the given reading material. Each student is accountable for their group learning and work. It involves in both individual and group performance.

3) Equal Opportunities for Success - Create equal opportunity for all students to make contribution for their teams. The performance of each student should be assessed frequently. The tasks are given to the individual and the group. The teacher may give an individual test to each student or select one student in the group to give the answer randomly.

4) Team Competition – The students in the class are divided into several groups. The tasks or goals of each group are the same. The purpose of team competition is to figure out which group can complete the tasks or achieve the goals very well and effectively. Team competition encourages the students to join the team cooperation better.

5) Task Specialization – Each member in the group has a particular task assignment. How well he or she can complete the task impacts on the achievement of the group goal directly. The performance of each member should be evaluated and the results given back to the group.

6) Adaptation to Individual Needs - Adapt instruction according to students' individual needs. When the teacher divides the students into group and gives them the tasks, the teacher should consider students personality, language proficiency and diligence. When they encounter difficulties, the teacher should provide appropriate assistance.

In jigsaw reading activity, students work in the group to learn the reading text. They are the center of the activity, while the teacher is just the facilitator. Every student takes responsibility for own particular task and makes own efforts for group achievement. In order to complete their collaborative task, they need to interact with other group members. Cooperative learning is the approach through students work together in small groups to maximize their own and each other's learning (Johnson & Holubec, 1993). Jigsaw reading activity should comply with the following five principles like cooperative language learning:

1) Positive interdependence

Every student is essential and indispensable. They have their own duties in the group. They interact and cooperate with each other. No matter who is absent, it will be impossible to achieve the goal. Everyone needs to make an effort for getting the group success.

2) Individual accountability

When all students are divided into groups, each member of any group has his own task. What they have learned from the reading text refers to the group success directly. Their duties are to ensure that the information they receive from the text and

the expert group is correct, and convey the information to other members in the home group accurately. They have to take responsibility for their own tasks.

3) Face-to-face promotive interaction

Each student gets one part of the reading text. After learning his own reading passage individually, they need to share the information and make a discussion face to face so that they can find out the right understanding. They can support, help, encourage and criticize each other during the whole group discussion.

4) Interpersonal and collaborative skills

During the whole jigsaw reading activity, students need to learn how to communicate, how to build trust, how to manage conflict, how to manage the group, how to cooperate with others and how to make a decision.

5) Group processing

Group members set up group goals. Every member needs to work effectively for achieving the goals. They cooperate together to find out how to obtain the goals. Students foster the group working relation through the collaboration.

Theories of Jigsaw Reading Activity

1. Cognitive Theory

Cognitive theory is a learning theory of psychology that attempts to explain human behavior by understanding the thought processes. Cognitive theory explains that learning takes place in the mind, not in the behavior, which focuses on the use of memory, thinking and reflection (Yang, 2014). Piaget (1920) proposed the theory of cognitive development which defined cognitive development as thinking, problem solving, concept understanding, information processing and overall intelligence. Piaget believed that cognitive development was the direct result of maturation and environment, and children played an active role in their cognitive development.

There are three basic components of Piaget's cognitive theory: schema, adaptation processes and stages of development. Schema is the mental structure that gives child model for what happens when he or she does something. The adaptation processes include assimilation (the process of using existing schemas to make sense of new and more complex schemas), accommodation (the process of changing existing schemas to make sense of new and more complex schemas) and equilibration (the

process of combining existing schemas into new and more complex schemas then reach a balance). The stages of cognitive development include the sensorimotor stage, the preoperational stage, the concrete operational stage and the formal operational stage (Piaget, 1920). The focus of each stage is as follows:

Stages	Age Range	Description of Stage	Developmental Phenomena
sensorimotor	birth-2	experiencing the world through senses and actions	object permanence imitation stranger anxiety
preoperational	2-7	representing things with words and images	pretend play egocentrism intuition language development
concrete operational	7-11	thinking logically about concrete events and grasping concrete analogies	conservation mathematical transformation
formal operational	11 onward	thinking about hypothetical scenarios and processing abstract thoughts	abstract logic potential for mature moral and reasoning

According to jigsaw reading, the brainstorming in pre-reading activity activates the students' prior knowledge or experiences about the reading texts so that they obtain the schemes of reading topics. When the students work in the home group and the expert group, they get new information from the reading texts and group discussion, get the opportunities to classify objects and ideas on complex levels, use outlines and analogies to figure out the relationship between new material and already acquired knowledge and use logical and analytical thinking to solve the problem. The whole process of jigsaw reading activity just reflects Piaget's cognitive development and shows how the students get reading comprehension.

2. Social Interdependence Theory

Social interdependence exists when individuals share common goals and each individual's outcomes are affected by the actions of others (Johnson, 1989). There are two kinds of social interdependence: positive interdependence (cooperation) and negative interdependence (competition). Johnson (1995) states positive interdependence exists when individuals perceive that they can reach their goals relating to other individuals who cooperate with them also reach their goals and promote each other's efforts to achieve the goals. Positive interdependence results in promotive interaction, which consists of mutual help and assistance, exchange of resources, effective communication, mutual influence, trust and constructive management of conflict. Positive interdependence encourage and facilitate individuals to complete tasks and reach the group goals through cooperation. Negative interdependence exists when individuals perceive that they can obtain their goals, while other individuals fail to obtain their goals. In the competition, they obstruct each other's efforts to achieve the goals. Negative interdependence results in oppositional interaction.

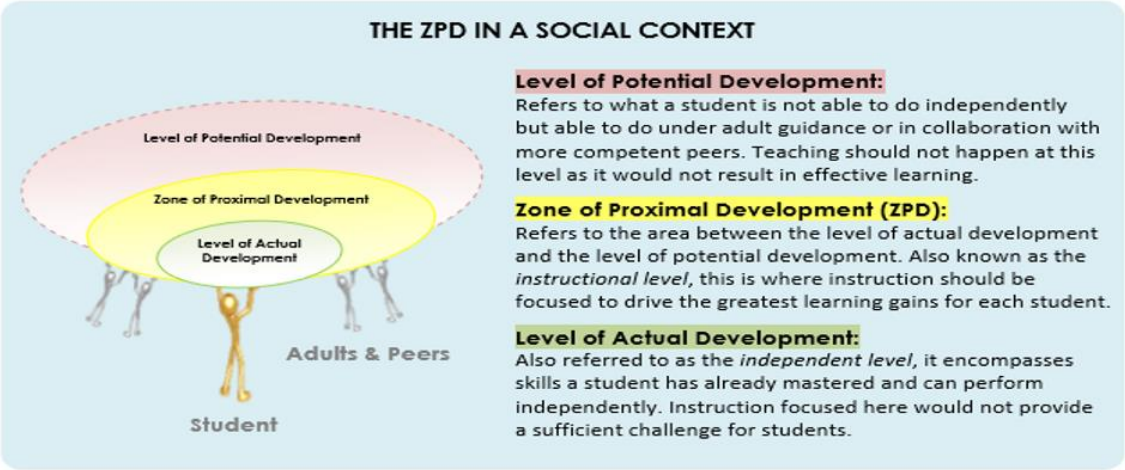
In jigsaw reading activity, each student of the group gets a particular reading material. At first, they work individually in the expert group to get the information from the reading text. Then, they share and discuss with other individuals in the expert group to reach the agreement of the understanding of the reading text. Finally, they go back to the home group to share and exchange the information with others in order to achieve their common goal. Actually, positive interdependence is what the students need in the group work of jigsaw reading activity.

3. Social constructivism

Social constructivism was developed by a cognitivist Vygotsky. Social constructivism emphasizes learning is a social process influenced by culture and social context. The knowledge of learners is constructed through social interaction and collaboration not just individual experiences (Vygotsky, 1978). Learning occurs during the active integration of meaning and knowledge construction rather than receiving passively. Learners produce the knowledge through the involvement of new information and previous knowledge or experiences. Fortunately, jigsaw reading activity requires students to develop collaborative skill in group and the area of potential development to improve individual learning ability in order to achieve the success of group goal. During

the activity, students take part in cooperation actively with peers, share information, make a discussion and evaluate the results of their group work together. Jigsaw reading activity reflects social constructivism exactly.

Vygotsky (1978) proposes learning is concerned with social events and interaction with people, objects and environment. This phenomena is called the Zone of Proximal Development (ZPD), which is the difference between what a learner can do independently and what a learner can do with the help from others. Vygotsky describes it as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978). In other words, The ZPD is a metaphorical location in which learners construct knowledge in collaboration with other people. Learning occurs in this zone. What a learner can do with the assistance of others is much more than what they can do alone. What a learner can perform today with assistance they will be able to perform tomorrow independently.



(Chaiklin, 2003, p. 63)

The principle of the Zone of Proximal Development is reflected in jigsaw reading activity. When the students read the text in expert group and home group with the cooperation and interaction with peers, they share information from the text and own prior knowledge or experiences about the text. They understand the reading text better with the help from peers.

1.3 Procedures of Jigsaw Reading Activity

The teaching procedures of jigsaw reading activity adapted from Refai's implementation of using jigsaw strategy to improve reading comprehension (Refai, 2011) are as follows:

1. Choose the reading material.

The content of the reading passage consists of four or five paragraphs. The length of each paragraph had better be similar.

2. Divide students into jigsaw home groups.

The number of home groups is determined by the number of students and the length of reading passage. When dividing the group, ethnicity, gender, race and learning ability should be considered. Normally, students are divided into 4 or 5 home groups. Each group need to appoint one student to be the group leader. This student should manage the whole group

3. Divide students into jigsaw expert groups.

The reading passage is divided into 4 or 5 fragments. Every student in the home groups gets one fragment. Students who get the same fragment from different home groups form the expert groups. Then students choose one member to be the leader in the expert group by themselves.

4. Give the reading topic and share students' prior knowledge about reading topic.

5. Study new vocabulary, phrases and expressions.

6. Students work in their expert groups.

They are only responsible for their own part. Students have the chance to read their fragments at least twice so that they are familiar with the content. Then the leader should organize students to share what they have learned such as the main idea, understanding of phrases or sentences. Finally, students should reach a consensus about the understanding of this fragment through discussion.

7. Students in expert groups go back to their jigsaw home groups.

Students retell what they have learned in the expert group to help other members connect and understand the whole reading passage. They should explain the important and difficult part for others.

8. Students make a conclusion of the reading passage in home groups.

9. The teacher needs to observe and instruct the reading process.

The key task is in charge of students. Group work needs the group leader to control. But the teacher should help the students when they have trouble. The teacher should provide the right clues for the students to finish the task.

10. Give the quiz to check the reading comprehension of students.

1.4 Background and Definition of Semantic Mapping Activity

As we all know that reading will be easy when readers know the background information of reading materials. In 1963, Ausubel put forward prior knowledge was a condition to understand new concepts and vocabulary. In the 1960s, Novak at Cornell University developed the concept mapping activity basing on Ausubel's theory. Later, Hanf (1971) proposed semantic mapping that is a visual picture of ideas which are organized and symbolized by the reader. It is a tool to represent the information of reading. Researchers found that reading comprehension process built a bridge between the existing knowledge and unknown knowledge (Pearson & Johnson, 1978). Semantic mapping is a graphic arrangement to classify the main idea and supporting ideas in a written assignment (Sinatra, 1986). It classifies the reading text into different strands with key words or phrases. Writers can arrange their written work according to the outline of the map.

Semantic mapping is one kind of graphic organizer. It shows the connection among key words or concepts through the visual graph. It is the extension of knowledge through core question or concept, strands and supports. Core question or concept refers to the key of the map. It can be short words or phrases. Strands relates to the subordinate ideas that contribute to interpret the main concept. Supports are the supporting ideas or inferences of each strand. Supports can help students distinguish one strand from another one strand clearly. Semantic mapping not only helps students learn new knowledge but also reviews their prior knowledge. It is a very practical learning strategy. It encourages more and more students to join the learning activity.

1.5 Theories of Semantic Mapping Activity

1. Schema theory

Schema was first introduced by Piaget in 1926. It is a mental framework humans use to represent, organize and interpret information. Schema theory states that all knowledge is organized into units. The information is stored in these units. Schemata represents knowledge about concepts: objects and the relationships that they connect with other objects, situations, events, sequences of events, actions, and sequences of actions. Later, the schema theory was developed by Bartlett and Anderson in 1932. They mentioned that the schema theory referred to how to acquire knowledge and how to organize knowledge. It displayed the process to get knowledge. There are four key elements of a schema as follows: 1) An individual can memorize and use a schema without even realizing of doing so; 2) Once a schema is developed, it tends to be stable over a long period of time; 3) Human mind uses schemata to organize, retrieve, and encode chunks of important information; 4) Schemata are accumulated over time and through different experiences.

Rumelhart (1984) referred that schemata includes content schema, formal and linguistic schema. Readers can get the basic knowledge through content schema. Formal schema can helps readers to understand the organizational forms and writing structures of text. Linguistic schema can help readers to analyze the words, phrases and sentences. When students read a text, they can get comprehension with the help of content schemata, formal and linguistic schema. Fortunately, semantic map displays the schema with a visual graph and short words or phrases. If readers can complete the semantic map very well, which means they acquire the information of the reading text through schema theory. They even can reorganize the ideas to summarize the reading text. So, schema theory can support why semantic mapping activity can enhance reading comprehension and improve writing ability.

2. Metacognitive theory

Metacognition is often defined as “Thinking about thinking”. Metacognition was put forward by Flavell at Stanford University. In 1971, Flavell used the term metamemory to study how people manage and monitor the input, storage, and search and retrieval the contents of memory. He defined

metacognition as follows: "In any kind of cognitive transaction with the human or non-human environment, a variety of information processing activities may go on. Metacognition refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in service of some concrete goal or objective." (Flavell, 1976).

Flavell thought that metacognition could be used in many areas such as language acquisition like speaking, reading and writing, memory, social interaction, personality development and self-instruction. In 1979, Flavell proposed that metacognitive theory referred to four parts as the following: 1) metacognitive knowledge; 2) metacognitive experiences; 3) tasks and goals; 4) strategies or actions.

Metacognitive knowledge is one's knowledge or beliefs about the factors that affect cognitive activities. Metacognitive experience is a consciousness process solving current cognitive problem with the help of earlier information, memories and experiences. Metacognitive goals and tasks include understanding, committing facts to memory, or producing something. Metacognitive strategies or actions are used to monitor cognitive progress to achieve the goal such as getting the reading comprehension and solving the problem.

Metacognitive theory is just reflected during the process to complete the semantic map. In order to draw the semantic map, students should comprehend the reading text better with their own prior knowledge or experience and the new information from the text. They should think about main idea and supporting ideas and their relationships. Meanwhile, they should use simple words or short phrases to represent the ideas and connections of the reading text through semantic map.

1.6 Types of Semantic Map

A semantic mapping is a type of graphic organizer. Its purpose is to organize and show the relationships between the main concept and strands of information. The types of semantic mapping are as following:

1. Spider map

Spider map is a visual graph to show the main idea and sub ideas or branches. It starts with a central idea, topic or theme and associates with a variety of different elements or details surrounding the main idea. It is very useful to make a brainstorming for what you know about a topic or to organize information what you have learned clearly and logically. Normally, in the center of the spider map is the central topic, people, places or vocabulary word. Then the branches just like the legs of the spider to show the details or examples relating to the main topic. Spider map has been used in classroom by all kinds of students. It is a great way to analyze or organize the information. No matter how many details there are, the diagram is still neat and organized. For example:

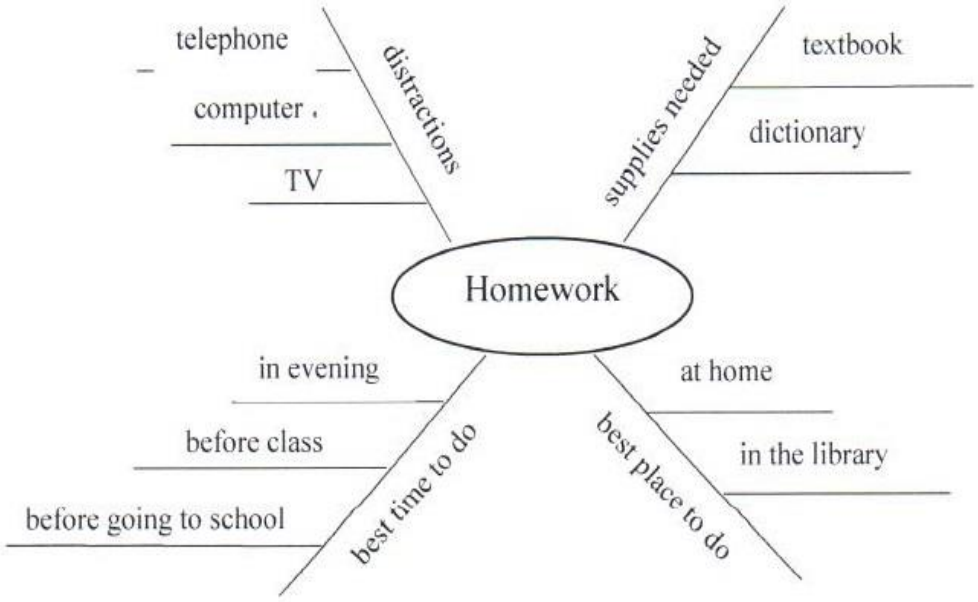


Figure 1 Homework (Bellanca, 2007)

2. Matrix map

Matrix map is used to compare or contrast similarities and differences between two things. It is very concise way to show the data for the readers. It is very easy to find the similarities and differences. For example:

Animal	Place to live	Breeding	Characteristics
Whale	in the water	live birth	have fins have scales can swim
Fish	in the water	lay eggs	have fins can swim

Figure 2 Whale and Fish (Bellanca, 2007)

3. Linear map

Linear map can be used to show stages, procedures or degrees. It can be used to describe the series of events chain or a story. It also can be the outline of problem and solution, which starts with a problem and then show the solution step by step. For example:

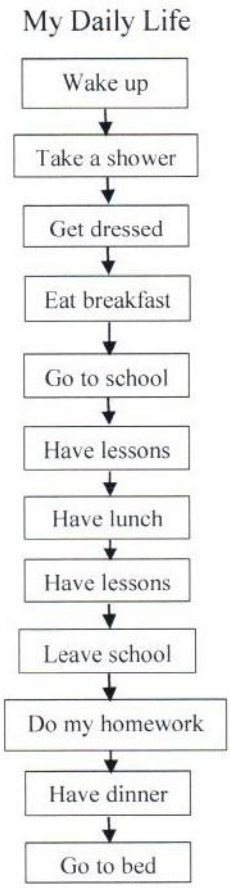


Figure 3 My Daily Life (Bellanca, 2007)

4. Network tree map

The structure of network tree map is similar to family tree. It is used to explain casual events, hierarchies, classifications and branches. They may have the same central topic, but their development may be different. For example:

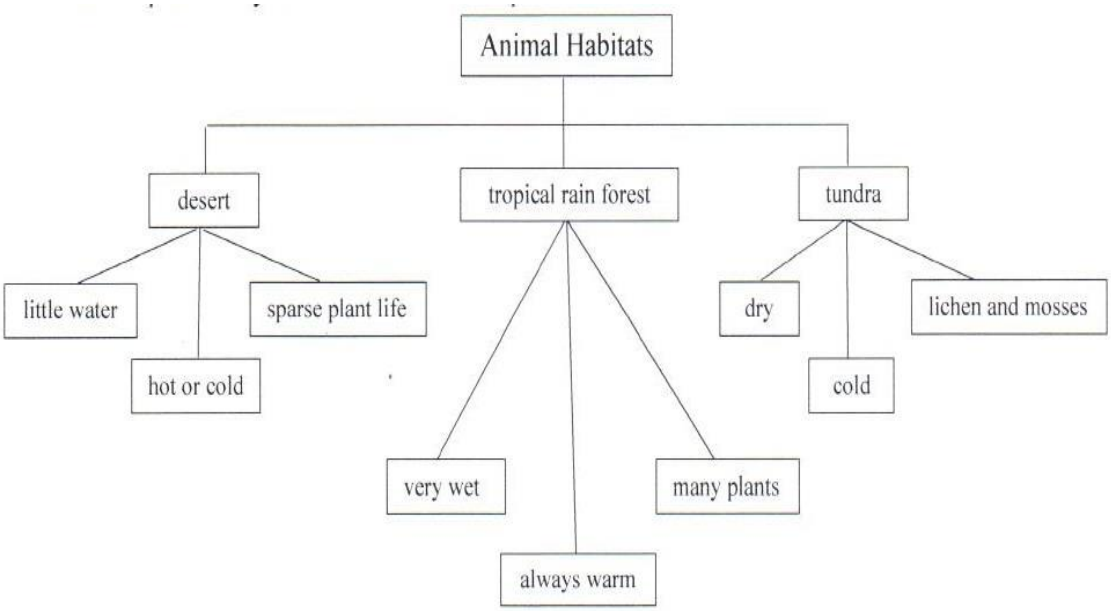


Figure 4 Animal Habitats (Bellanca, 2007)

1.7 Procedures of Semantic Mapping Activity

Normally, the teacher will provide some words or phrases associating with concept, event, character or theme to help students to complete the semantic map so that they can get reading comprehension. In the study, students can work with group members to find out core question or concept, strands and supports (Aprillianto, 2009).

In order to draw the semantic map, students need to:

1. Read the passage through jigsaw reading activity.

2. Make a discussion of reading materials in home group.

3. Write down the key words about main topic or theme.

4. Write down the key words about strands and supporting ideas.

5. Make a connection between the main ideas to the subtopics to show relationships.

1.8 The Combination of Jigsaw Reading Activity and Semantic Mapping Activity

Jigsaw reading and semantic mapping activities are the combination of jigsaw reading activity and semantic mapping activity. When combining jigsaw reading activity with semantic mapping activity together, the teaching procedures are divided into pre-reading, while-reading and post-reading. During pre-reading process, the procedures are as follows: 1) Greet students; 2) Give the reading topic to students and make a brainstorm to activate the prior knowledge around the topic; 3) Teach the new vocabulary and phrases from the reading text through definitions, pictures and context sentences; 4) Students make a prediction about the content of reading text. During while-reading process, the procedures are as follows: 1) Divide students into home group and expert group. The students are divided into 4 or 5 home groups based on the length of reading text. The students who get the same segment of reading text form the expert group; 2) Students read and understand their passage individually in the expert group; 3) Students discuss and understand their passage together in the expert group; 4) Each student go back to home group to share what they have learnt in the expert group; 5) Students make a conclusion about the whole reading text in home group to ensure every student can get the ideas of the reading text. During post-reading process, the procedures are as follows: 1) Students complete the reading comprehension test of reading text by themselves; 2) The teacher announces the scores of the students and gives the rewards or bonus points to the students; 3) Complete the semantic map in home group according to the main idea and supporting ideas from the reading text; 4) Present their semantic maps in front of the class; 5) Each student writes a summary of reading text individually based on the information from semantic map.

1.9 Advantages of Jigsaw Reading and Semantic Mapping Activities and Related Researches

Jigsaw reading and semantic mapping activities integrate reading and writing have changed the traditional way of teaching English reading and writing separately. The students are the center of learning and teaching during the whole process of two activities. However, the teacher is only the facilitator. Both two activities are carried out

in small groups. Each student gets more opportunities to cooperate with peers. Although everyone has different levels about vocabulary, grammar, background knowledge and experience. They can learn from each other and help each other in the group. Group work reduces the learning anxiety and stress of students. They can be more active to participate in reading and writing. It may make a contribution to increase students' self-esteem and self-confidence. Except for the change of teaching method and learning atmosphere, jigsaw reading and semantic mapping activities are effective to improve students' English reading and writing abilities. First of all, jigsaw reading activity makes the reading process more interesting with cooperation and interaction to improve reading comprehension. In the second place, semantic mapping activity consolidates students' reading comprehension following jigsaw reading activity closely. Last but not the least, semantic map provides the guidelines or clues for writing especially for summary writing.

For jigsaw reading activity, the process of individual reading, group reading, cooperation and communication, which makes reading more interesting. Each student only gets one part of the reading text. They have to take responsibility for their own tasks. After they analyze and interpret the existing information. They may have the desire to know the other parts of the reading text. It is quite useful to stimulate the motivation of reading. Students get reading comprehension better through group discussion with different background knowledge, experience and ideas. Jigsaw activity was also used to improve students' communicative ability in the Thai context (Meteetum, 2001). The target group was 9 sophomore English major students. The findings showed that jigsaw activity encouraged students to communicate with peers better. And the quality of language input, output and context had positive influence on their language acquisition. Jigsaw activity was proved to be effective to improve students' reading comprehension of second grade students at SMP Nejeri 1Cianjur (Kuntjaraningrat, 2003). Jigsaw activity had a positive effect on EFL students' reading ability and motivation among a private school students in Lebanon (Ghina, 2005). Jigsaw reading activity was an effective way to train various language skills such as listening, speaking, reading, writing and translating (Bafile, 2008). Jigsaw activity could be applied to improve the 11th students' reading comprehension and motivation at MA Muhammadiyah Metro (Refai, 2011). Jigsaw reading activity not only could improve

reading comprehension but also could improve students' speaking and listening skills (Rachmawaty, 2011). When students worked in the group, they shared their understanding of the reading text and made a critical assessment in terms of the result of discussion. It was quite a good chance to improve listening, speaking and thinking skills. Jigsaw reading could improve students' reading comprehension at the eighth grade of SMP Negeri 2 Jetis Ponorogo in 2012-2013 academic year (Dewi, 2012). Implementing the jigsaw reading could improve reading comprehension in ESP classroom (Kardaleska, 2013).

For semantic mapping activity, it is beneficial to show the understanding of a concept or topic graphically. Semantic map is a graph between concept and contents. It is a visible portraiture of information (Antonnaci, 1991). If students can use semantic mapping very well, their reading comprehension, vocabulary development and written expression can be improved (Zaid, 1995). Zaid believes that using semantic mapping can activate students' prior knowledge or experience and guide students to finish reading effectively. They can record what they are learning through brainstorming. When they are reading, they can write down the new information from reading text and modify the map in pre-reading activity. After reading, students need to discuss and analyze what they have learned from the reading. Then students revise the final semantic mapping so that it is a visual representation of the content from the reading. Through semantic mapping, relationships among the main concepts and the supporting ideas can be found easily. It can activate learners' background knowledge, enhance learners' critical thinking skills, reinforce learners' deep understanding, and improve learners' interest and motivation. It also makes the reading process more interesting. Semantic mapping has been proved to be an effective activity to improve the teaching of study skills (Heimlich & Pittleman, 1986). Semantic mapping made a contribution to build vocabulary and improved reading comprehension. It could be used before, during, or after reading activity. When it was used in pre-reading activity, it could be used to introduce the main point of the reading material or make a brainstorming of students' prior knowledge. In while-reading activity, it could help students to find the structure of the text and organize the information. In post-reading activity, it could help students review their understanding and reorganize the information (Johnson & Pittleman, 1986).

Semantic mapping is a very valuable teaching tool. It can be used flexibly and widely. Semantic mapping not only can show students' thinking process, but also can show students' strengths and weaknesses of understanding. It shows different aspects of the topic with the help of a picture. It is a good choice for all kinds of learners including English language readers. Because most of semantic maps use short words or phrases, it is helpful for readers to remember and understand the information from the reading. For example, tree maps were used to display classifications, structures, brainstorming and examples (Harvey, 2000).

Except for reading, it is quite necessary to apply into writing especially for pre-writing. Writers can make a clear outline about writing topic through drawing a semantic map before writing. Then, writers can write the main idea and supporting ideas clearly and logically. Kuo (2002) designed three semantic mapping approaches including map correction, scaffold fading and map generalization to study their effects on readers' comprehension and summarization. Basing on the experiment on 126 students in fifth grade, researchers found map correction could improve both reading comprehension and summarization, and scaffold fading could advance summarization. Darayseh (2003) combined semantic mapping with brainstorming strategy to explore the effects on the first scientific secondary students' English reading and writing abilities. The result found the significant differences of the mean scores of students between experimental group and control group. Researcher suggested that teachers had better apply semantic mapping to make a brainstorming for students to collect writing materials in pre-writing activity.

2. English Reading Ability

2.1 Definitions of English Reading Ability

Reading ability is one of English skills besides listening, speaking and writing. "Reading is the cognitive process of inferring meaning from the visual symbol commonly called print. Reading can assume many forms and serve a diversity of personal and social process. Reading is more closely tied thought and language that to motor or perceptual process. Training the mind, not eyes or hand learning reading" (Geoffrion, 1985). "Reading is a transaction between the text and the reader" (Byrnes, 1998).

Reading is a cognitive process of decoding symbols to derive meaning from the written text. It is a result of interaction between the writer's mind and the reader's mind (Nuttal, 2000). It is a way of communication, sharing information and ideas and language acquisition. Reading is a complex process in order to get understanding. Because the result of reading is affected by many factors from readers such as readers' interest, attitude, motivation, background knowledge, experiences, language proficiency. Reading includes two basic processes: word recognition and comprehension (Pang, 2003). Word recognition means the interpretation of words and sentences. Comprehension means the understanding associating the literal meaning of the text with readers' prior knowledge, experiences and critical thinking.

According to the information above, reading ability can be defined as the ability to decode, remember, comprehend, apply and analyze the content of English reading text. It means readers interact with the written message and try to get the literal meaning. Then analyze the meaning combining with background knowledge and experiences to get deep understanding. Finally, readers reorganize the whole information from what they have learned like their own knowledge. They achieve the ability to explain the text for others.

2.2 Levels of English Reading Ability

Reading ability refers to the degree to achieve reading comprehension. Reading comprehension is the understanding of what readers have read. Good reading comprehension requires readers to acquire literal reading, inferential reading, critical reading and creative reading (Burns, 1984).

1. Literal reading

Literal reading involves finding what the author has stated in the reading texts directly such as facts, details, the main idea and the sequence of events. The reader just gets the surface understanding to answer who, what, when and where questions.

2. Inferential reading

Inferential reading relates to read between the lines to determine what the author wants to express through what the author writes. Readers must make an inference according to their prior knowledge or experience and new information from

the reading text. The information is not directly stated. It is useful for the reader to deduce the author's mood, attitude and view. Readers need to answer some open-ended and thought-provoking questions like why, what if and how questions.

3. Critical reading

Critical reading depends on literal reading and inferential reading. Readers need to use the criteria from their own knowledge or experiences to make an evaluation of the writing such as the quality, the value, the author's opinion, logic and solution of the problem. Critical reading not only evaluates the reading materials but also compares the ideas discovered from the reading materials.

4. Creative reading

Creative reading goes beyond the reading text. It is based on the readers' own feelings or imagination towards the context, people and material. In this level, readers can show their own opinions about the reading material.

Bloom (1956) created a taxonomy to categorize educational objectives into levels of complexity and specificity. It is a hierarchical system of ordering thinking skills from lower to higher. It can be used to distinguish students' reading ability. The framework of Bloom's Taxonomy consisted of six levels: knowledge, comprehension, application, analysis, synthesis and evaluation. But Anderson and Krathwohl (2001) identified cognitive processes that clarified the scope of the six categories to be: remembering, understanding, applying, analyzing, evaluating and creating. Students' reading ability can be divided into six levels according to the revised Bloom's Taxonomy as follows:

Remembering	**Understanding**	**Applying**	**Analyzing**	**Evaluating**	**Creating**
Recognizing	Interpreting	Executing	Differentiating	Checking	Generating
. identifying	. clarifying	. carrying out	. discriminating	.coordinati	.
Recalling	. paraphrasing	Implementing	. distinguishing	ng	hypothesizing
. retrieving	. representing	. using	. focusing	. detecting	Planning
	. translating		. selecting	.	. designing
	Exemplifying		Organizing	monitoring	Producing
	. illustrating		. finding	. testing	.
	. instantiating		coherence	Critiquing	constructing
	Classifying		. integrating	. judging	
	. categorizing		. outlining		
	. subsuming		. parsing		
	Summarizing		. structuring		
	. abstracting		Attributing		
	. generalizing		. deconstructing		

Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
	Inferring . concluding . extrapolating . interpolating . predicting Comparing . contrasting . mapping . matching Explaining . constructing models				

(Anderson and Krathwohl, 2001, pp.67-68.)

1) Remembering – Recalling and remembering the information from the reading text

2) Understanding- Interpreting and explaining ideas and concepts from the reading text

3) Applying – Using information in another familiar situation

4) Analyzing – Breaking information into parts to explore understanding and relationship

5) Evaluating – Justifying a decision or action

6) Creating – Generating new ideas, products or ways of viewing things

2.3 How Jigsaw Reading and Semantic Mapping Activities Promote English Reading Ability

Jigsaw reading and semantic mapping activities encourage the students to participate into the reading in the group. In the pre-reading activities, the teacher makes a brainstorm to activate students' prior knowledge and experiences about the reading topic. It is very necessary for students to understand the reading text. Then, the students are divided into home groups and expert groups to complete the reading process. Jigsaw reading activity provides a chance for students to interact with peers. They cooperate with group members and share the knowledge with each other. Good readers can help poor readers. They get deep understanding of the reading text through discussion. Group work makes the whole reading process more interesting through cooperation and interaction. Students can decrease anxiety and stress during the process. After jigsaw reading activity, using semantic mapping activity to represent or recall the information from the reading text to check student's reading comprehension. Students complete a semantic map with short words, phrases or sentences to show the main idea and supporting ideas and their connections about the reading text. Students can remember the information and analyze the structure of reading text easily with the clues from the semantic map. It is good for students to get deeper understanding of the reading text. Therefore, the combination of jigsaw reading activity and semantic mapping activity can improve students' reading abilities effectively.

2.4 Evaluating English Reading Ability

A person may read to get information, verify existing knowledge, enhance knowledge, get access to the literature or just for enjoyment. Reading comprehension test can help readers to improve vocabulary, grammar and logical thinking skill. There are many types of reading comprehension test such as multiple choice questions, short answer questions, true or false questions. Reading ability is very difficult to assess accurately. Normally, answering the questions and multiple choice test can be used to evaluate students' reading ability. Anderson and Krathwohl (2001) proposed a revised version of Bloom's thinking skills taxonomy. It will be used to evaluate reading comprehension in the study.

Psychologist Bloom created Bloom's Taxonomy to promote higher forms of thinking in education in 1956. It not only can remember facts but also can analyze and evaluate concepts, processes, procedures and principles. There are six categories about Bloom's Taxonomy as following: knowledge, comprehension, application, analysis, synthesis and evaluation. Later, Anderson, a former student of Bloom, and Krathwohl revised the domains to be remembering, understanding, applying, analyzing, evaluating and creating as follows: 1) Remembering - Remember the information from the text or recall facts, terms and concepts; 2) Understanding - Comprehend the idea, meaning, translation and interpretation. Readers can state the main idea and supporting ideas, make a comparison and give a description. Readers can retell the reading materials by their own words; 3) Applying - Apply knowledge they have learned from the reading material into a new situation to solve the problem; 4) Analyzing - Divide reading material into several parts to analyze elements, causes, relationships and structures. Readers need to distinguish what are facts and what are inferences; 5) Evaluating - Make a judgment about the concept or ideas of reading material through internal and external criteria; 6) Creating - Create a new meaning or structure based on the various information from the reading material.

Although there are six domains of evaluation, only four domains (remembering, understanding, applying and analyzing) are used to evaluate students' English reading ability according to standards and indicators of Mathayom Suksa 4 students at Chomthong School. The English Reading and Writing Course (E30203) requires the students can identify the main idea and supporting ideas, analyze the essence, interpret

and express opinions from reading texts, as well as provide justifications and examples for illustration.

3. English Writing Ability

3.1 Definitions of English Writing Ability

Writing ability is one of English skills besides listening, speaking and reading. Writing skill is specific ability that helps writers put their thoughts into written words in a meaningful form (Lamb, 1999). Writing is a semantically visible and permanent representation of the auditory and transient phenomena of speech (Michael, 1981). Writing makes thoughts or ideas visible and concrete. Nystrad (1998) states that writing is a matter of elaborating text in accordance with what the writer can reasonably assume that the reader knows and expects. And writing is a process of expressing information, feelings, experiences, ideas or opinions, which is an important medium for self-expression, communication and the discovery of meaning.

From the definitions above, writing is a way to product language that comes from writers' thoughts, which is written on paper or computer to share information, feelings, experiences and opinions. It is influenced both by personal attitudes and social experiences. Writing is a complex process. Heaton (1988) states four requirements for writing as follows: 1) Use words, patterns, phrases or sentences with correct grammar; 2) Use suitable linguistic and tonal style; 3) Use capitalization and punctuation properly; 4) Choose proper manner, select and organize appropriate information based on the purpose.

In the study, the students need to write a summary after reading the text. According to the Cambridge English Dictionary, summary is a short and clear description that gives the main facts or ideas about something. A summary is an overview of content but does not focus on specific details. A summary can describe the key information of a book, a story, an article, a speech or a project. A summary is a shortened version of a text with the most important points. The purpose of a summary is to provide an accurate, objective representation of what the text refers to. But the writer can't express his own ideas or interpretations in the summary (Clee, 1999).

3.2 How Jigsaw Reading and Semantic Mapping Activities Promote English Writing Ability

Jigsaw reading and semantic mapping activities are effective to improve students' writing ability. The reasons are as follows: 1) Traditional writing assignment is boring and difficult, but jigsaw reading and semantic activities give students the chance to work in the group. They can communicate and interact with peers through cooperation. They help each other and learn from each other. The writing assignment is going to be more interesting and easier; 2) The brainstorm in pre-reading activity activates students' prior knowledge and experiences provides more writing materials for the students; 3) Reading through jigsaw and semantic mapping activities helps students get deeper understanding of the reading text. Students explore the information from the reading text through jigsaw reading activity. Then, students represent and review the information from the reading text through semantic mapping activity. Students can get the main idea, supporting ideas, writing formats, language knowledge about the text very well through two activities; 4) Students can work out the stylistics of the text and the structure or organization of reading text clearly. Then they can make an outline to reorganize the reading material through semantic map; 5) Students can use their own words to write a summary for the reading with the help of the semantic map. Therefore, jigsaw reading and semantic mapping activities not only provide various writing materials but also give a visual outline for students' summary writing.

3.3 Criteria for Evaluating English Writing Ability

Tribble (1996) said writing was not easy to evaluate. The writing assessment should consider the complex of different skills and knowledge. Content, organization, vocabulary, language and mechanics should be evaluated.

1) Content – the clear main idea and supporting ideas.

2) Organization – effective connecting or transitional words and conclusion.

3) Vocabulary – appropriate and correct words

4) Language – sentence variety, sentence structure and complete sentence

5) Mechanics – spelling, capitalization and punctuation

Hyland (2002) claimed writing ability required five areas of writing language as follows:

1) Content knowledge - It is the information about topics, concepts and ideas.

2) System knowledge deals with syntax, lexis and conventions of language forms.

3) Process knowledge refers to how to write the passage step by step and how to connect them together better.

4) Genre knowledge involves the stylistics of context such as narrative composition, descriptive composition, expositive composition and argumentative composition. The correct stylistics can help writers to obtain the writing purpose better.

5) Context knowledge includes the background knowledge of the writing passage, author's opinion and readers' expectations.

Yankton (2014) proposed that there were six factors should be considered in order to evaluate writing:

1) Idea or content

Writing is clear, complete and coherent. Main idea is supported by facts or details. Conclusion involves personal understanding and summary. Idea should be something important to the author and the audience.

2) Organization

Good organization should have a clear beginning, middle and end. Using a strong beginning hooks readers. Make sure the ideas connect to each other so that readers follow the information from the beginning to the end logically. Writers should consider sequence, description, cause and effect, compare and contrast, problem and solution, and cohesion.

3) Voice

Voice are created by attitude, tone and personal style. It is a combination of syntax, diction, punctuation, character development and dialogue.

4) Sentence fluency

Writing is consistently smooth with various sentence structures. Simple, compound and complex sentences are used flexibly.

5) Word choice

Choose the words according to the audience. Writer should choose precise, colorful words and use them correctly.

6) Conventions

Spelling is correct in the whole paper. All proper nouns and initial words in sentences should be capitalized. Punctuation of sentences should be right. Writer can use correct grammar.

The information above refers to the criteria for evaluating general English writing ability. However, there are some differences in terms of English summary writing. The purpose of a summary is to give the main idea and key points of a text to the readers. Reid (2003) listed the following characteristics of a summary: 1) Cite the author and the title of the text; 2) Indicate the main idea of the text; 3) Use direct quotations of key words, phrases or sentences; 4) Include author tags; 5) Avoid summarizing specific examples or data; 6) Report the main idea as objectively as possible.

Bean and Chappell (2004) mentioned that writers needed to follow the following steps in order to write a good summary. 1) Read the text to find the main idea; 2) Reread the text carefully to write the outline; 3) Write down the theme of the text; 4) Find out the text's major divisions or chunks and supporting ideas; 5) Summarize each part in short sentences; 6) Use your own words to combine each part in a coherent order and express the main idea of the text.

Summary writing is a good way to check what the readers have read from a text. It not only improves students' reading comprehension but also encourages students to use their own words in the writing. According to the characteristics and steps of summary writing, Gillam (2004) provided the criteria to evaluate summary writing as follows:

1) Have a main idea or concept

2) Include important facts and details

3) Use writer's own words.

4) Reflect underlying meaning.

5) Introduce details logically.

6) Use correct grammar.

7) Use correct words and mechanics.

According to the requirements of the English Reading and Writing Course (E30203), the students should write to present data, information, concepts and views and summarize the main idea identified from analysis about matters read. The criteria for evaluating English summary writing ability was adapted from Gillam's criteria, which included five aspects: main idea, supporting details, use own words, grammar and mechanics. The details of the rubric was mentioned in Chapter 3.