The Effects of Cooperative Learning Techniques on Thai Secondary School Students'
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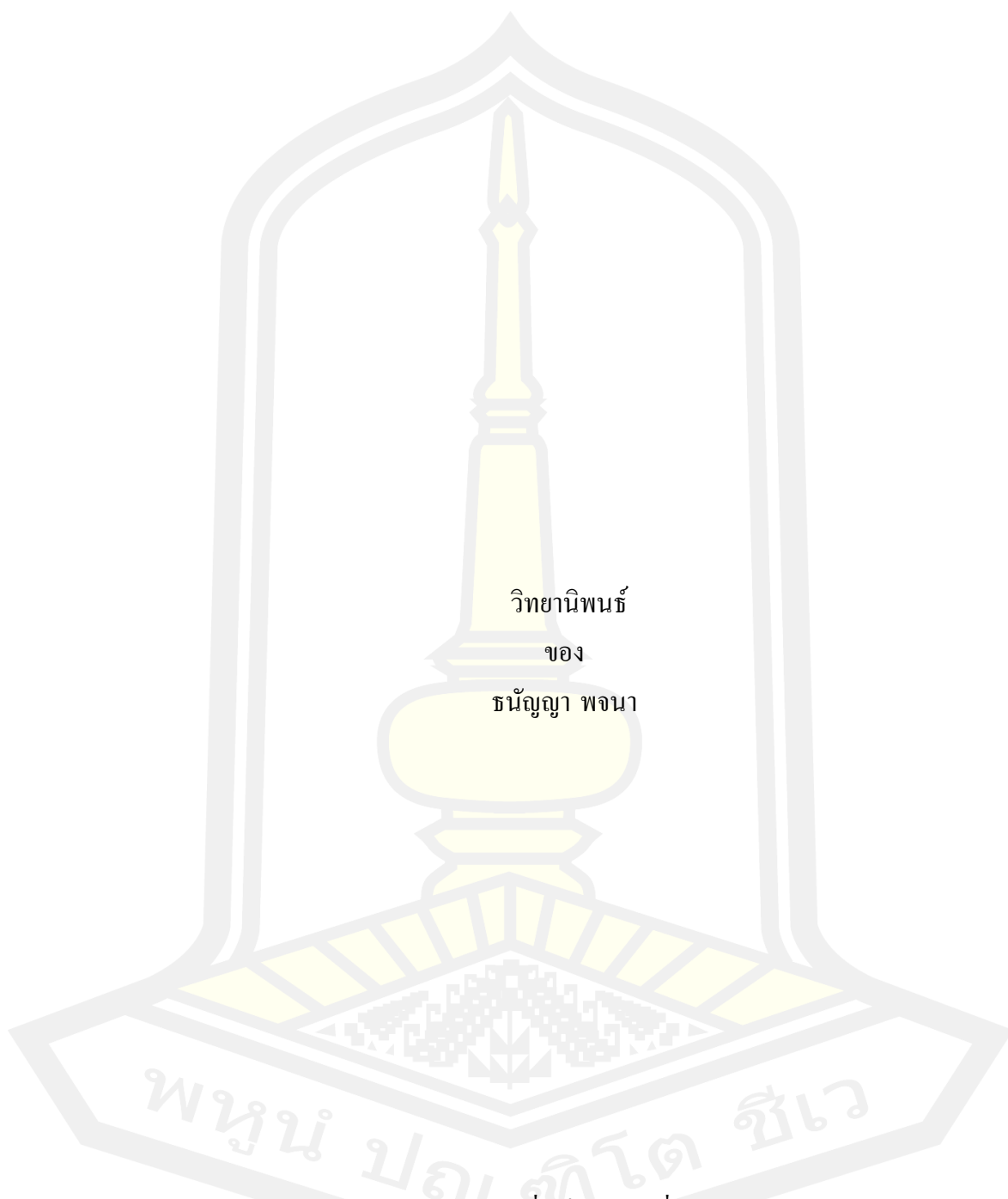
Thananya Pochana

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The Effects of Cooperative Learning Techniques on Thai Secondary School Students'
Reading Comprehension

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ABSTRACT

Cooperative learning (CL) is a teaching strategy where small groups, individually with students of varying ability levels, use various learning activities to enhance their understanding of a subject. This study examined the effect of cooperative learning on reading comprehension and sought to explore participants' attitudes toward the CL method. Ninety Thai EFL secondary students were divided into the control group (n=30) and the experimental group (n=60). Their age ranged between 13 and 14 years old. They had studied English for more than seven years, and none of them had studied English in an English-speaking country. Three research instruments were employed to collect the data: a reading comprehension test, a questionnaire, and a semi-structured interview. The quantitative data were analyzed using *t*-test, standard deviation, mean, and percentage. The results showed that the CL method could lead to gains in reading comprehension among Thai secondary school students. Participants in the group control scored 10.76 at T1 and 10.90 at T2. However, it must be noted that, in the current study, the CL and control groups had significantly different levels of reading comprehension before the investigation, which limits the conclusions of this study. And the overall means of the self-ratings from the attitude questionnaire was 3.45. Nevertheless, the qualitative findings supported the benefits of the CL method and the positive attitudes toward the CL approach. Overall, the current results support the benefits of cooperative learning on reading comprehension, and CL also developed secondary students' attitudes toward reading comprehension.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

List of Tables

List of Figures

CHAPTER I
INTRODUCTION

This chapter provides the background, research purposes, questions and scope of the study. It also offers study significance and the operationalized definitions of terms used in the study.

1.1 Background of the study

Reading comprehension, the creation of meaning from texts provides the basis for a substantial amount of learning for young children during their school years (Mason, 2004; Spörer, Brunstein, & Kieschke, 2009). Moreover, reading comprehension lays the foundation for the acquisition of knowledge in different subjects taught at elementary and secondary schools and constitutes an essential prerequisite for lifelong learning in adulthood (Alvermann & Earle, 2003). Over the decades, a good deal of educational research on reading comprehension has been concerned with the development of instructional curricula designed to promote the early acquisition of reading skills in elementary schools. One significant viewpoint of this research is that secondary-level students should be prevented from prolonged lack of skilled reading.

However, it was documented that a large portion of the English Proficiency Index (EF EPI) revealed that Thailand was 89th of 100 countries. Moreover, the National Institute of Educational Testing Service (NIETS) of the Ministry of Education (2020), operating the Ordinary National Educational Test (O-NET) in the English language, found that 9th-grade students' overall English test performance was below 50 percent, equivalent to 33.75. These findings have indicated that the English proficiency levels of Thais are below the international average of literacy skills in the English language, with a nonage of considerably below age-appropriate levels, especially in the field of reading.

The cooperative learning (CL) approach is the widely-known pedagogical method designed to improve students' reading comprehension skills is a cooperative learning (CL) approach (Jalilifar, 2010). According to Slavin (1982), CL is an instructional approach in which students of all levels of performance work together in a small group towards a shared goal which incorporates instructional techniques, such as

Student Team-Achievement Divisions (STAD), Cooperative Integrated Reading and Composition (CIRC), Jigsaw, Team- Game-Tournaments (TGT), Learning Together, Team-Assisted Individualization (TAI), Group Investigation (G.I.), and group discussion. As such, CL contains the theories of cognitive development, behavioural, and social interdependence (Johnson, Johnson, & Smith, 1998).

Research has shown that CL is an essential tool to help students learn comprehension strategies while encouraging positive interactions among peers. For example, Marzban & Akbarnejad (2012) investigated the effect of cooperative reading strategies on improving the reading comprehension of Iranian university students. Sixty male university students were randomly assigned to the experimental group using cooperative reading strategies and the control group using a traditional method of instructions. Their result showed that cooperative reading strategies were effective in improving reading comprehension among students. Another study examined the effect of cooperative learning in university learners, suggesting that the cooperative learning group of participants outperformed the control group (Pan & Wu, 2013). Indeed, cooperative reading strategies were effective in improving the reading comprehension of Iranian university students. Research also showed that students had a positive attitude toward cooperative learning, which, in turn, increased learner motivation (Farzaneh & Nejadansri, 2014; Liao, 2014).

In the literature, cooperative learning techniques facilitate secondary school students' reading comprehension (Ghaith & Malak, 2004; Gillies & Ashman, 2000). Specifically, CL techniques allowed students to work in small groups, which provided learners with opportunities to communicate with peers. Such activities, including Jigsaw, Team-Assisted Individualization (TAI), increased group members' communication and reduced learning anxiety, thus encouraging reading comprehension development. For example, one study investigated the difference in 63 students' reading comprehension ability using Student-Teacher Actively Reading Text (START) and TAI models (Slavin, 2008). The findings indicated both START and TAI were effective in improving students' reading comprehension; however, TAI was significantly lower than START (Sihombing & Katemba, 2019).

In the Thai context, the Department of Curriculum and Instruction Development (2010) argued that the cooperative learning approach promotes student-student interactions through working in small groups to reach their shared goal and maximize their learning achievements. Indeed, CL emphasizes cooperation in helping each other to acquire knowledge and increases opportunities to construct or transform the knowledge among students actively. Numerous studies have also shown that cooperative learning produced higher achievement and more positive relationships among students (Jatupan & Sanukul, 2017; Murtono, 2015; Scaglion, 1992; Yotayut, 2012). However, these studies mainly focus on the effects of CL and its relationships among university students. For example, Jatupan & Sanukul (2017) investigated the benefits of CL and the satisfaction level in Pharmacy students and found that CL supported learning conditions. Still, it was doubtful whether learning achievement was fostered.

To the best of the researcher's knowledge, a few studies in Thailand have been done on high school students. One study compared the achievement of the science of year-3 students between the implementation of the cooperative learning-based approach and conventional methods (Yotayut, 2012). The findings suggested that the cooperative learning-based approach significantly outperformed the conventional one. Another study investigated the effect of word spelling skills using the CL and found that the word spelling achievement of students was significantly higher (Thippawan, 2002). Students also showed a positive attitude to the CL technique. Accordingly, the current study seeks to examine whether the CL method focusing on Think-Pair-Share (TPS) in the present study effectively promotes students' English reading comprehension in secondary education.

The small-group discussion method is one type of CL activities. It involves a series of meetings between the teacher and students or amongst students under the teacher's direction and guidance that allows for a free exchange of ideas on a particular topic (Garcia, 1989). In addition, it can be said that small group discussion helps participate freely and actively. It includes special activities or formats that help interest and engage people. Furthermore, when conducted prudently, the small group discussion method provides for the actual experience of speaking, vicarious experience of

observing a group mate, and boosts one's perception of one's ability. Hence, the small group discussion method/approach where English is used as a medium of communication/discussion may be a vehicle to improve reading comprehension.

1.2 Purposes of the study

The present study determined whether cooperative learning (CL) effectively promotes Thai secondary school students' overall reading comprehension performance by using small-group discussion tasks and activities. It also sought to explore participants' attitudes toward a small-group discussion. As such, two research questions were formulated, as follows:

1. Do Thai secondary school students improve their English reading comprehension through cooperative learning?
2. What are Thai secondary school students' attitudes toward cooperative learning?

1.3 Scope of the study

The current study sought to foster secondary school students' reading comprehension in a specific Thai EFL context. It also aimed to explore participants' attitudes toward the concept of cooperative learning, a small-group discussion activity, in particular. Moreover, the participants of the study were selected based on the convenience sampling technique. As such, the findings were not generalizable to other contexts.

1.4 Significance of the study

The current study sought to help improve secondary school students' reading comprehension by using the underlying concept of cooperative learning. Notably, this study employed a small-group discussion to increase students' reading comprehension. Therefore, this study gave a clearer picture of the role of cooperative learning, particularly small-group discussion tasks. First, the findings of this study provided concrete guidelines for practitioners concerning reading pedagogy in the EFL context. The results of this study also were used as parameters or guides to develop learning tasks or activities for classroom practice.

1.5 Definitions of key terms

The terms that are considered to be necessary for this study are:

"**Reading comprehension**" is the ability to understand and interpret the meaning of the texts precisely and correctly according to the author's intention.

"**Cooperative learning** (**CL**)" is a teaching model by which students learn in small groups of three to five members to achieve their goals cooperatively.

"**Small-Group Discussion** (**SGS**)" refers to a group that includes three to five student members for learning activities with a shared aim and combined effort to attain their set goal. SGS is operationalized under the conceptual framework of cooperative learning (CL).

The next chapter will provide the readers with the conceptual frameworks of the study and explain the literature review.
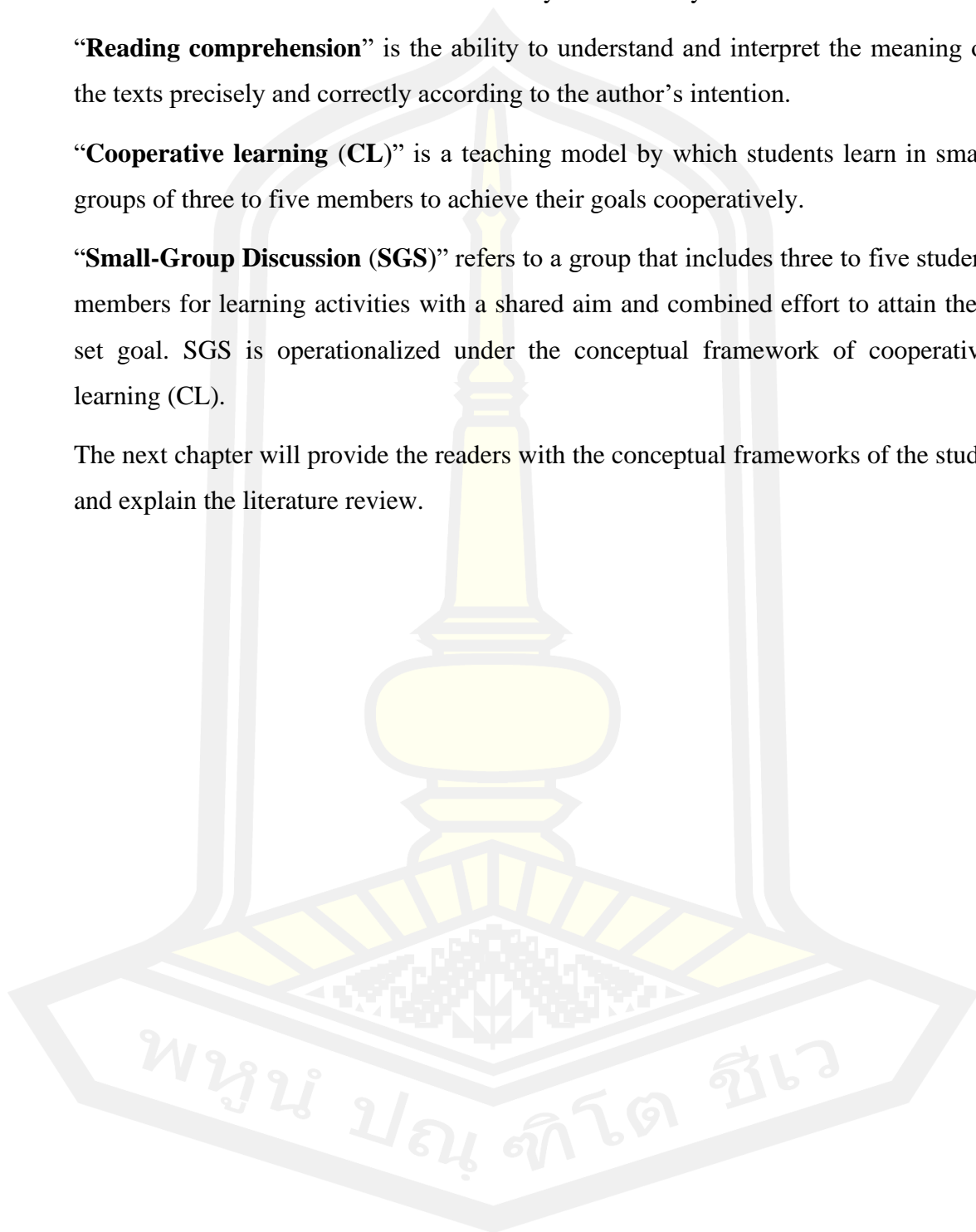
CHAPTER II
LITERATURE REVIEW

This chapter outlines the constructs of the study and literature review. It provides readers with conceptual frameworks, followed by reading comprehension models. The chapter ends with a review of previous studies to identify the gaps for the current study.

2.1 Reading construct

Reading is a receptive and productive skill in which the reader receives the writer's message and tries to recreate the writer's message (Chastain, 1988, p. 216). Reading aims to acquire meaning or interpret the writer's hidden purpose. Therefore, reading ability has always been viewed as critical to academic success. There are two reading categories (Smith & Dechant, 1961; Dechant, 1982): (1) reading as a method of decoding where students are trained to pronounce the printed words, and (2) reading to seek for meaning where the focus of reading is for comprehension. There are many different definitions of reading, but most teachers agree that the reading process involves: (1) letter and word recognition, (2) understanding the texts, and (3) the integration of the new text with the readers own knowledge or comprehension (Hamra & Syatriana, 2010). Overall, reading can be broadly viewed as a way to decode meaning and understand the written text.

Nuttal (2000) described reading as the interaction between the writer and the reader through the written text, during which the reader attempts to decode meaning and understand the writer's written message. Reading has also been described as a process where readers synthesize information from the text with their background knowledge to build meaning (Nunan, 2003). Similarly, Kirby (2007) defined reading as a process of understanding a text, including its aim and why it is relevant or important. Finally, Kridalaksana (2009) defined reading as acquiring information from literature, either in text form, a drawing or chart, or both. These definitions indicate that reading is a skill to distinguish and understand written language in graphic symbol sequences that have meaning in the form of silent comprehension or outloud pronunciation. Importantly, reading is a process, it is strategic, and it is interactive. According to Al-

Isa (2006), reading is a multilevel and interactive process in which readers construct a meaningful representation of text using their schemata. Indeed, schemata have a significant impact on reading comprehension.

Overall, reading is a psychological activity that relies on readers' perceptions of meaningful words through the sense organs and the interpretation of the written texts. Researchers agree that reading is the main language ability, and it is not an inherently natural procedure like talking and listening (Van de Guchte, Braaksma, Rijlaarsdam & Bimmel, 2017). Instead, reading needs to be fostered in educational and instructional settings. In conclusion, reading is a significant important skill for a learner's academic success. It is a process that involves combining one's prior knowledge and experiences about the use of language and other strategies to build the meaning of the texts they have read and, thus, make reading comprehension.

2.1.1 Reading comprehension

Reading comprehension is an interactive process between the readers, the texts and the contexts (Gunning, 2003). The reader needs to use their cognitive abilities to comprehend the meaning of a text and the author's objectives since different reading materials convey distinct types of information. To improve reading comprehension skills, readers must possess the background knowledge relevant to what they are reading. Indeed, the reading process relies on the reader's prior knowledge, the strategies they use, and their attitudes toward reading.

According to Urquhart and Weir (1998), reading comprehension is the process by which readers utilize their cognitive abilities to help them understand a written text. These cognitive abilities comprise language comprehension and language decoding, which involves pronouncing the written words correctly and quickly. When readers encounter frequently used words, they become familiar with them, and word decoding is developed during this process. The ability to decode a written text also involves guessing unfamiliar words from their context (Hirsch, 2003; Wren, 2001).

To summarise, reading comprehension is a process that makes readers understand a text and involves two cognitive skills: language comprehension and language

decoding. In order to decode meaning from written texts, readers need to guess the meaning of unknown words. On the other hand, to comprehend the meaning of a text, a reader needs to possess prior knowledge of the text, appropriate reading strategies, and motivation to read.

2.1.2 Comprehension Skills

Comprehension is the ability to acquire the meaning of something that cannot be observed or measured directly (Rubin, 1993). Comprehension involves thinking, and as there are various levels in the hierarchy of thinking, so are there multiple levels of comprehension. Smith (1969) explained that comprehension skills involve literal comprehension, interpretation, critical reading, and creative reading. Barrett (1993) has categorized reading comprehension into four levels: literal comprehension, inferential comprehension, evaluation, and appreciation. Literal comprehension requires low-level thinking and includes skills such as "recognition of recall of main ideas". However, other skills, including finding the main idea of a paragraph, would not be included under the literal level of comprehension. Indeed, finding the main idea of a paragraph is not easy, even if the concept is directly stated in the paragraph, and students must do more than use a low-level type of thinking to determine that something stated in the paragraph is the main idea. In other words, any time a student interprets what they are reading, the student is required to perform some reasoning beyond merely recalling what is in the text.

Interpretation demands a higher level of thinking ability because it demands answers that are not directly stated in the text but are instead suggested or implied. To answer questions at the interpretive level, readers must have problem-solving abilities and work at various levels of abstraction. The interpretive level also requires inference. Inference can be described as the acquisition of information derived by reasoning, understanding something that is not directly stated but suggested in the statement, a logical conclusion drawn from accounts, a deduction and an induction. In this regard, it is clear that inference is a broad reasoning skill involving analysis and synthesis, and there are many different kinds of inferences. All of the reading skills at the interpretation level rely on the reader's ability to "infer" the answer in one way or another.

Critical reading is a higher level of comprehension than literal and interpretation levels. It involves evaluation, including making a personal judgment on the accuracy, value, and truthfulness of what is read. To make judgments, a reader must be able to collect, interpret, apply, analyze, and synthesize the information. In addition, critical reading includes skills such as the ability to differentiate between fact and opinion, the ability to distinguish between fantasy and reality, and the ability to discern propaganda techniques. Finally, creative reading uses divergent thinking skills to go beyond literal comprehension, interpretation, and critical reading levels. In creative reading, the reader tries to produce new or alternative solutions to those presented by the writer.

Creative Reading is different from literal comprehension, interpretation and critical reading. In very simple terms, a teacher can immediately see the difference between this kind of reading, and the other kinds. Creative reading in its higher form starts with a question or an inquiry which arises in the mind of the reader, personally. It is usually carried forward with high motivation, often a sense of urgency. A higher type of creative reading cannot happen in the classroom very often, unless the teacher does something to develop it. Since inquiry is the starting point of creative reading, the teacher may ask questions which cause children to go beyond direct implications gathered from the text, at least calling for creative thinking; and she can encourage children, themselves, to ask questions. Once she develops the process of inquiry within children themselves, creative reading is apt to follow, and when it does follow it should be praised highly.

2.1.3 Factors affecting reading comprehension

Reading requires several supporting skills for successful progress. For instance, reading comprehension relies on vocabulary knowledge, background knowledge, knowledge of grammar, metacognitive awareness, syntactic knowledge, and reading strategies (García-Madruga et al., 2013). Reading has been described as the process of looking at a written or printed symbol and translating it into an appropriate sound (Dwi Lestari, 2014). This process enables students to read to acquire an explicit or implicit message or general information from the printed page. Students must be able to recognize the words to make reasonable conclusions, read critically and creatively,

and evaluate the ideas written by the author. As such, teachers need to equip students with the necessary skills to achieve an appropriate reading comprehension level. Studies in the US suggest that the teaching experience can affect student achievement (Azam & Kingdon, 2015). Specifically, teachers should know the most effective method to deliver the materials to the students, and this ability can be improved over years of teaching experience. Teaching reading skills can be a particularly complex process, and English teachers should receive supervised practice to deliver reading materials (Edward & Aproach, 1963).

2.2 Approaches to teaching reading

Reading is a compound skill that requires careful transposition of many different components. To develop students' reading effectively, teachers should appreciate the complexity of the reading process. More specifically, teachers must understand the importance of reading models to obtain a more comprehensive view of reading and employ these models to improve learners' reading skills. In an attempt to understand the complex reading process and the various components that impact a reader's mind during the process, several experts have studied the connections between the reading process and how reading should be taught. Chandavimol (1998) stated that teachers should study a theory of reading comprehension to facilitate more effective reading programs that improve students' understanding. Reading comprehension has classified the reading process into three key models: the bottom-up model, the top-down model, and the interactive model.

2.2.1 Bottom-up reading model

The bottom-up reading model emphasizes a single-direction, part-to-whole processing of a text. This reading process model is aware of the smaller units in language organizations such as letters, words, phrases, and sentences. Moreover, according to Gough (1972) proposes a phonics-based or bottom-up model of the reading process which portrays processing in reading as proceeding in serial fashion, in the progression. In this model, the students read the texts and study the text's organization without connecting to their schema or background knowledge to construct meaning from the text. That is, the bottom-up model pays little attention to the reader's related background knowledge. Typically, teaching reading skills through a bottom-up model

requires teachers to instruct students to concentrate on the reading material's words, sentence patterns, and grammatical structures. In this model, readers take reading materials as information input, starting from decoding the smallest units such as phonemes, grapheme, letters, and word recognition, and then integrating information continuously to accomplish the reading activity. Readers do not, therefore, become active in the reading process. This model's weakness is that the readers understand that what they have read is the result of their own constructions, not the result of transmission in the reading process.

COMPREHENSION

Knowledge of individual sounds, letter, and words
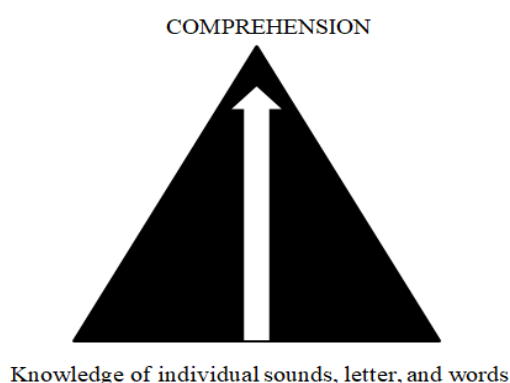
Figure 1: Bottom-up reading model based on Goodman, 1970)

2.2.2 Top-down reading model

The top-down approach uses concept theory as a basis for teaching the reading process. Goodman (1970) was the first to present this model. He argued that readers should apply their background knowledge, that is, what they already know, to connect with a text, read and relate these schemata to new information in the text to help their comprehension. According to the theory, readers predict reading materials according to previous syntax and semantic constructions and confirm or modify these predictions during the reading process. This model emphasizes guessing the meaning of the word or phases, and the readers do not need to read every word. The reading activity begins from whole to part, where readers are more aware of understanding the main ideas of content than understanding every word. Comprehending the reading material is the key in this model, and teaching reading skills through a top-down model requires teachers to focus more on students' implicit knowledge and means to expose it. The top-down reading model encourages students to focus more on recognizing the main ideas of a text rather than understanding every word. It does not

focus on phoneme instruction but instead allows students to read complete sentences, paragraphs, and books. In addition, the top-down model encourages readers to apply their own knowledge and use context clues to understand new concepts or words. Using the top-down model, readers proceed from the largest element, use their background knowledge, and then identify words to construct their comprehension of what is being read.

Reading begins with reader background knowledge
of learners, places, events, and activities

COMPREHENSION
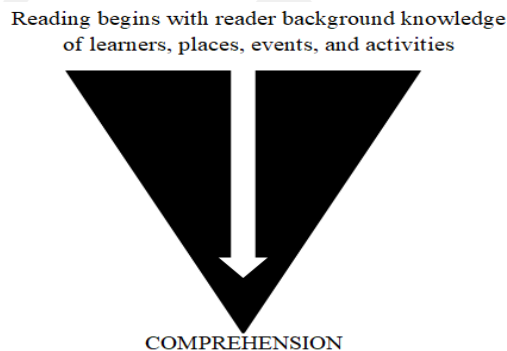
Figure 2: Top-down reading model based on Goodman, 1970)

2.2.3 Interactive reading model

In an attempt to account for what actually occurs during the reading process, theorists developed the third and latest reading model: the interactive reading model. Rumelhart (1977) defined this model as a "combination of top-down and bottom-up processing" and proposes it as a model in which the processes of both data-driven sensory information and non-sensory information co-occur. Bilokuoglu (2012) argued that, in the interactive model, "readers are expected to go through both bottom-up and top-down processing before eventually settling upon an interpretation of a text topic." This model neglects neither the textual information nor the reader's prior knowledge and stresses what has already been printed or written and what the reader may bring to the text.

TOP-DOWN READING INSTRUCTION

Reading begins with reader background knowledge of learners, places. events. and activities

COMPREHENSION

Knowledge of individual sounds, letters, and words

BOTTOM-UP READING INSTRUCTION
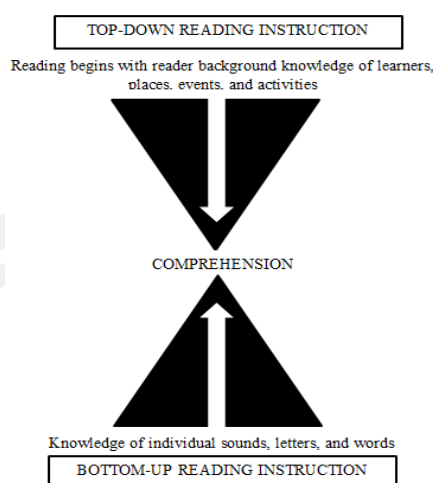
Figure 3: Interactive reading model

According to Rumelhart (1989), this instruction should begin with the reader looking at a place in their mind where all the words and their corresponding spelling are kept, which Rumelhart (1989) calls a "visual information store." Then, the reader should extract characteristic features of those words and place them in the pattern synthesizer. Finally, the reader arrives at the meaning using syntactic, semantic, orthographic, and lexical knowledge.

2.2.4 Schemata and the reading process

Background knowledge consists of "our assimilated direct experiences of life and its manifold activities, and our assimilated verbal experiences and encounters" (Swales, 1990). Psychological studies on comprehension show that our understanding of something results from our past experience or background knowledge, also known as *schema* (Barlett, 1932, Rumelhart & Ortony, 1977; Rumellhart, 1980, quoted in Patricia, 1983). A schema organizes ones' prior knowledge and helps to interpret new experiences. The primary function of a schema is to summarise our previous experience by abstracting out essential and stable elements. Each reader has different background knowledge, and this schema knowledge supports readers when they are reading a text in their mother tongue. Schemata are viewed as interlocking mental structures representing readers' knowledge of ordinary events (Anderson & Pearson, 1988).

Much evidence has shown that a reader's background knowledge or schema plays a critical role in constructing meaning from a text (Anderson & Pearson, 1984). Spencer

and Sadoski (1988) studied the differential effects of pre-reading activities among ESL learners of different cultural backgrounds. They found learners with a cultural experience related to the given text performed better in reading comprehension. Indeed, reading problems can arise from various causes, especially poor prior knowledge of texts. According to Carrel (1988b), reading difficulties are likely due to a deficiency in background knowledge or inappropriately activated schemata.

Moreover, Clark and Silberstein (1977, quoted in Brown 2001) note that the interpretation of information is primarily derived from the readers' schema, not from the printed words. Taken together, these studies provide clear evidence that understanding a text depends on the extent to which the reader's schema is activated while reading. Other studies have investigated ways to activate schema. For example, Armbruster (1996) advocates the use of analogies or comparisons to activate the students' existing schemata. The cultural inferences appearing in the text should also connect with the readers' existing schemata. Moreover, the features and design of textbooks should be carefully organized to correspond to the conventional structure with which the students are familiar.

In the reading process, readers integrated the new information from the text into their preexisting schemata. Wallace (2001) stated that only after the schema is activated can one see or hear because it fits into patterns that one already knows. The notion of the schema is related to the organization of information in long-term memory. A schema is a singular form that refers to one "chunk" of knowledge and consists of subordinate parts called nodes. Anderson and Pearson (1984) developed the notion of schema in regards to language reading. They argued that a reader's schemata, or knowledge already stored in memory, are critical for interpreting new information and allowing it to enter and become a part of the knowledge structure. The schemata are also structured in the sense that they represent the relationship among components.

In the present study, readers were allowed to read a theme or topic they are interested in. This means that the readers possibly have some prior knowledge of the topic. Thus, they can interpret or predict the meaning of the texts with less effort. Moreover, the reading experience of the first text, which becomes a new schema, is reinforced by later texts under the same topic. In this manner, the schema is gradually strengthened

while reading the related texts, thereby advocating incidental vocabulary learning and facilitating reading comprehension for further reading on the same or related topics. In addition, to enjoy reading, new information or input must be understandable to the reader. This can help learners naturally acquire a second language. This is one of the five key hypotheses that Krashen (2004) proposes for second language acquisition. Comprehensible input is defined as one step beyond the learner's initial knowledge (i +1). The current study simplified the reading texts using the Range program to facilitate the reading process and ensure that the input was comprehensible.

2.2.5 Applying schemata theory to reading comprehension

Teaching reading comprehension strategies should be a priority for teachers in every content subject area (Wise, 2009). Specifically, teachers should be able to activate and build schemata. The first task is to select texts relevant to the students' needs, preferences, individual differences, and cultures. Next, the goal is to provide meaningful texts, so the students understand the message, which entails activating existing schemata and helping build new schemata. Fortunately, a vast body of research offers suggestions on how this can be accomplished (Carrell, Devine, & Eskey 1988). For example, after selecting a text, the following three stages of activities are usually implemented to activate and scaffold students' schemata: pre-reading, while reading and post-reading steps.

In the pre-reading stage, the teacher should ensure that students have background knowledge or schemata for understanding the text. This stage will allow students to think, write and discuss everything they know about the topic. In the pre-reading stage, teaching techniques, including visual aids and photos, are recommended. Specifically, the primary purpose of the pre-reading activities is to activate existing knowledge, build new knowledge and provide information to the teacher regarding students' previous knowledge about the topic. Goodman (1988) suggests three pre-reading activities: prediction, previewing and semantic mapping. In the forecast, students' prior knowledge of locations and situations of written texts enables them to predict when they read and, therefore, comprehend, experience, and enjoy what they are reading. Previewing involves activities where students look at titles, headings and pictures and read the first or last few paragraphs of the texts. These activities enable

students to comprehend what the text is about by activating their background knowledge and making them familiar with the topic before reading. Semantic mapping is another pre-reading activity that allows students to brainstorm about the reading topic by illustrating details or information on a graphic map. Specifically, when students draw connections, the map links a summary of the concept and vocabulary used in the reading. As such, selecting the reading materials becomes an essential component of pre-reading activities.

The reading stage offers interactions between the students and the text and requires the teacher to guide and monitor these interactions. Activities during this stage may include note-taking and highlighting keywords. These techniques allow students to compile new words, essential information and details, and draw a conclusion from the text. Finally, the post-reading stage offers the teacher a chance to evaluate the students' comprehension of a text. This stage often includes a wide range of questions that allow for different interpretations and comprehension of the text. These reading stages are summarized in Figure 4.
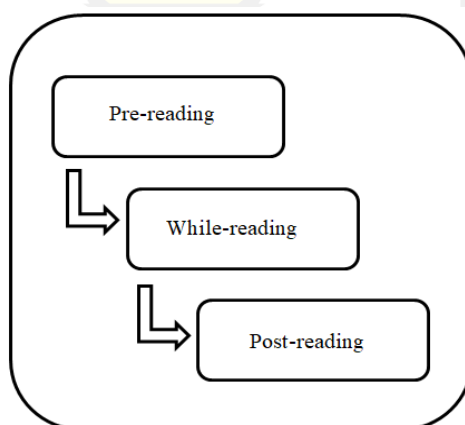
Figure 4: Stages of Reading

2.3 Cooperative learning

Numerous definitions of cooperative learning have been proposed. The most widely used in higher education is that of David and Roger Johnson. In the Johnson & Johnson (1998) model, Cooperative Learning (CL) is a model that involves students working in teams to complete a common goal under conditions that include several elements. The first element is positive interdependence, wherein team members are grateful to rely on one another to achieve the objective. If any team members do not

pass to do their part, everyone suffers consequences. The second is individual accountability, where all learners in a group are held responsible for doing their share of the work and mastering the material to be studied. CL should also involve face-to-face learning, which promotes interaction. While some of the group work may be parcelled out and complete individually, some must be complete interactively, with group members providing one another with feedback, challenging reasoning, making collective conclusions and, perhaps most importantly, teaching and supporting one another. Another element is the appropriate use of collaborative skills where the learners are encouraged and assisted in developing and practicing trust-building, communication, leadership, decision-making, and conflict management skills. Group processing is also encouraged where the team members set goals, periodically evaluate what they are doing well as a team, and classify changes people will make to function more effectively in the future (Felder & Brent, 2007). Finally, CL is an organized group studying activity where learning is dependent on the socially constructed exchange of information between learners in groups. Each student is held accountable for their own learning and is motivated to increase others' understanding (Ghorbani & Nezamoshari'e, 2012).

CL is an effective teaching strategy for both teachers and students and provides environments that encourage students to communicate and express their ideas in a foreign language (Jacobs & McCafferty, 2006; Slavin,1995). Furthermore, CL is a creative and effective teaching model that focuses on interaction or group work and motivates students to participate in activities (Ximing, 2003) and helps students develop their social skills (Johnson et al., 1990). Indeed, CL allows students to learn to share ideas by listening to each other and assisting each other to solve problems (Johnson & Johnson, 2003; Slavin, 1995; Cohen, 1994). Learning in a cooperative environment allows students to exchange information within the group, thus encouraging communication (Olsen & Kagan, 1992; Slavin, 1983). Such interactions will also foster supportive relationships between students and a welcoming environment (McCulloch, 1985). Moreover, when students work towards a group's goal, the learning and the achievement will become valued by peers (Slavin, 1987). However, the size of the group is crucial. The ideal size of the group depends on the objectives of the lesson, the ages of students and their experience with group work,

the available equipment and materials, and the time limitation for each lesson (Johnson & Johnson, 1994).

Lavasani, Afzali & Afzali (2011) argued that, in a cooperative learning approach, the students obtain social skills by participating in group activities. The group is where the students learn how to listen when others are speaking. Also, in a group, they practice self-control. They learn when to start talking and not to interrupt others. They learn to speak slowly and make eye contact with others. They also learn to listen to others' views and respect them. They are taught to criticize their opinions and not those who develop them and to view the problems from others' viewpoints. They are taught to accept the criticisms and tolerate the opponents' views. All of the skills mentioned earlier are taught and practiced in groups and are gradually internalized in individuals. A cooperative classroom should also not be teacher-centred, and "ideally, teachers are trained to take their existing lessons and restructure them to be cooperative as cooperative learning is the instructional use of small groups so that learners work together to maximize their own and each other's learning" (Johnson & Johnson, 2008; Marashi & Dibah, 2013).

In conclusion, CL is a teaching strategy that has benefits for both teachers and students. Using this strategy, students exchange information within groups and help each other to solve problems. Individual accountability, the group is accountable for achieving its goals, and each member must be responsible for contributing a resonable share of the work toward the group goal. There is no one can "hitchhike" on the work of others. The performance of each individual must be evaluated and the results given back to the group. Positive interdependence means the group has a straightforward task or goal so everyone knows they walk together. The efforts of each person benefit everyone in the group. Every member of the group are the key to success. Interpersonal skills and group work as part of the team. This is the basic team work skills. Team members know how to motivate for effective leadership decisions to build trust in communication and manage conflict. Group processing, Group members have to feel free to communicate openly with each other to reveal concerns as well as to celebrate accomplishments. They should confabulate how well they are achieving their goals and maintaining effective working relationships. Lastly, promotive

interaction, students share their own informations. They assist, support, encourage, and admire each other's efforts to learn. The five elements of CL are shown in Figure 5.
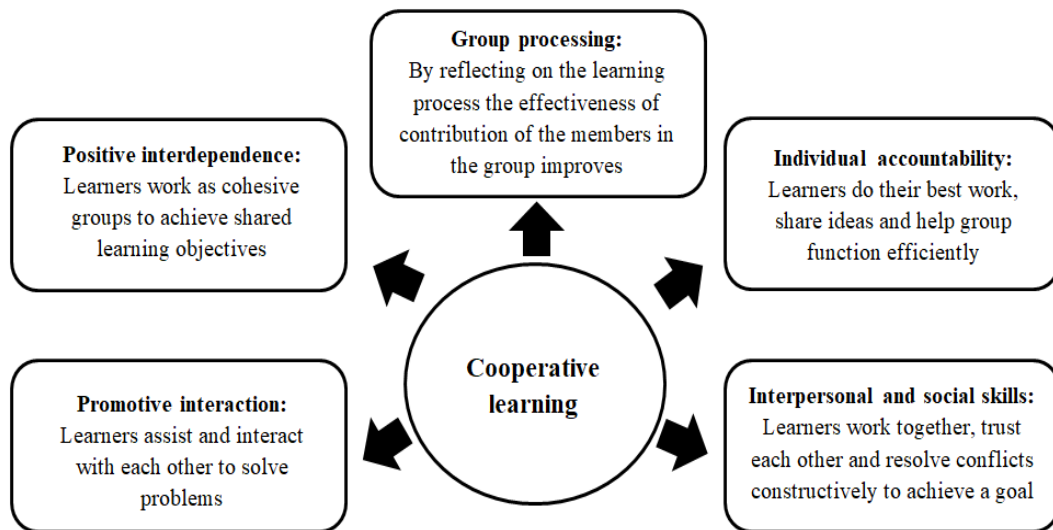
Figure 5: Basic Elements of Cooperative Learning (Johnson, D.W., Johnson, R., & Smith, K., 1998)

Several CL models have been developed to promote reading comprehension. Huetinck and Munshin (2000) proposed four models of cooperative learning lessons. These included think–pair–share, team learning, random selection and collaborative learning. Think–pair–share is employed in solving non-routine and open-ended problems. Learners are provided with the opportunity to apply mathematical reasoning and various tools to tackle problems utilizing several one-on-one interactions within a group. This model ensures high involvement and participation of every group member. Team learning (within a group of three to five students) involves group self-assessment after members complete different tasks or roles. The random selection model is designed to promote mastery of specific skills. In this case, a group of four learners works cooperatively to work on exercises, anticipating that the teacher can call upon any member to explain the task's answer. Finally, collaborative learning is designed to allow students to work in small groups on a common task. Students correct their homework at the beginning of a class so that they have the opportunity to receive help from group members.

A collaborative learning strategy where students work with each other to solve a problem or answer a question about an assigned reading is described Think-Pair-Share (TPS). This strategy demands students to (1) think individually about a topic or answer a question; and (2) share ideas with classmates. Discussing with a partner maximizes participation, focuses attention, and engages students in comprehending the reading material. Figure 6 illustrates the model of Think-Pair-Share:

| Round 1-Think | Round 2-Pair | Round 3-Share |
| Have students think or write about a discussion questions. | Allow students to turn to a partner and discuss their response | Start a group discussion by having each pair share their response with |
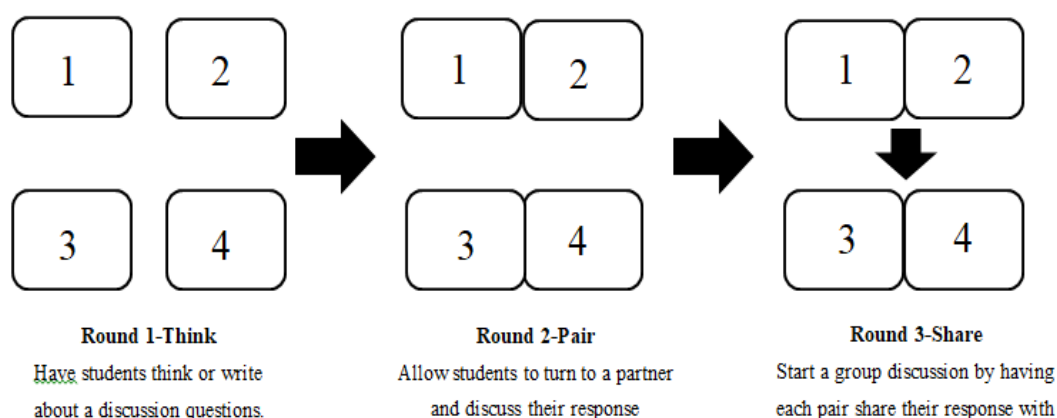
Figure 6: Think-Pair-Share Models

However, teachers must also include other activities to overcome collaborative learning limitations. Indeed, CL decreases individual accountability and may not ensure student understanding. Teachers also have to be aware that it provides less room for individual reflection. There are two basic approaches to forming cooperative learning groups, "structured" and "random selection" approaches. In the first approach, a heterogeneous group of four students – one high achieving, two average achievings, and one low achieving – are set up by the teacher prior to instruction. In each instructional session, group members are assigned distinctly new roles in such a way that high achieving students are not dominating. In the second approach, cooperative learning groups are set up without any criteria. The risk of having an overabundance of high achieving, average achieving, or low achieving students is apparent. Several studies have reported the effectiveness of heterogeneous cooperative learning grouping (e.g. Slavin, 1987; Lincheviski and Kutscher, 1998; Artzt, 1999).

It is well established that active learning strategies increase student motivation to learn. Such strategies provide students with the opportunity to see and learn alternative problem-solving methods. Small-group cooperative learning strategies promote active student learning. The benefits of small-group cooperative learning strategies have been extensively discussed (e.g. Felder and Brent, 2002; Hopkins, 2002; Huetinck and Munshin, 2000; Marsh, 2004; Renga and Dalla, 1993). Under individual learning settings, students may get stuck when confronted with perplexing or challenging problems. By contrast, in cooperative learning settings, students are motivated to keep working within the group, and students' understanding can increase when they teach their peers or learn from their peers (Cathcart et al., 2001). In small-group cooperative learning settings, representing, talking, listening, writing, and reading are used fully. Indeed, "small-group is a forum in which students ask questions, discuss ideas, make mistakes, learn to listen to others ideas", offer constructive criticism, and summarize their discoveries in writing" (National Council of Teachers of Mathematics [NCTM], 1989).

Small groups also prompt participants to discuss a topic amongst their participants with specific guidelines that allow participants to contribute as many ideas as they have under the direction of a presenter (Brewer, 1997). The small group discussion method involves a series of meetings between the teacher and students or amongst students under the direction and guidance of a teacher that allows for a free exchange of ideas on a particular topic (Garcia, 1989). When conducted prudently, this method offers opportunities for speaking, observing classmates, and boosting self-perception of one's ability. Hence, the small group discussion method where English is used as a communication medium may be a vehicle to improve one's oral English self-efficacy. For these reasons, the current study will implement small-group cooperative learning strategies to improve students' reading comprehension. This current study adapted Think Pair Share that was under the umbrella of CL with Read-Show and Discuss model and the procedure looked similar of Small Group Discussion.

2.4 Benefits of Cooperative learning in reading comprehension

Many studies have demonstrated the benefits of collaborative learning strategies (Schroeder et al., 2007), including increasing motivation (Bartle, Dook, & Mocerino, 2011) and confidence, as well as responsibility-building (Caulfield & Persell, 2006; Dingel et al., 2013). However, it should be noted that while CL supports collaboration and morale between students, it is possible that group members can become competitive, resulting in the increase of grudges, jealousy, and enmity among the students (Keramati,2005; Lavasani, Afzali & Afzali, 2011). Cooperative learning may be especially effective with students from diverse cultural backgrounds, students with limited English proficiency, and students with disabilities (Cartledge & Kourea, 2008) because it makes instruction relevant and responsive to students' experiences, cultural perspectives, language backgrounds, and developmental levels (Diaz-Rico & Weed, 2010; Gollnick & Chinn, 2009; Nunnery, Chappell, Arnold, 2013). Indeed, CL methods engage teachers in structuring their classrooms to provide a learning context that is social, interactive, and highly engaging. This structure has been proven effective in enhancing motivation as well as cognitive and affective constructs that contribute to learning in a range of diverse students (e.g., Barbato, 2000; Johnson & Johnson, 2009; Reid, 1992; Slavin & Karweit, 1985; Slavin, Lake & Groff, 2009; Slavin, Madden, & Leavey, 1984; Suyanto, 1998; Zakaria, Lu Chung & Daud, 2010; Nunnery, Chappell, Arnold, 2013). In particular, this structure can empower learners to work together to learn a language. The students learn multiple ways to solve language problems and tackle a language challenge as a group. These structures also support a happy environment for learners and students, so they do not feel tired (Mohammad davoudi & Mahinpo, 2012). Indeed, learning is most effective in situations that encourage active participation and cooperation among the class members and where students can easily adapt.

Ensuring group member cooperation requires a complex and slow process that involves the teacher's involvement to guide students, form the groups, structure the learning task, and evaluate the collaborative learning. Andrusyk et al. (2003) reported that the teacher's role in a CL lesson entails several components, such as placing the students into groups, planning the lesson, explaining the academic task, monitoring the groups as they progress through the task, and evaluating the quality of the work

produced. Similarly, Erdal et al. (2003) argued that teachers need to observe the individuals' or groups' progress and provide appropriate assistance when required. Teachers using CL methods also become a stimulator, a guide, who supports, but not the one who teaches (Ransdellp, 2003). Instead, the teacher is seen as a helper and coach, and motivates students to be creative, engage in critical thinking, and solve problems (Brandt, 2002). Yahya et al. (2002) stated that teachers take several roles in the CL approach. First, the teachers make pre-instructional decisions about grouping students and then assigning appropriate tasks to students. Second, teachers must explain both the academic assignment and the cooperative structure to learners and then monitor it when necessary. The teachers are also responsible for assessing students, the learning, and the effectiveness of each group's work. Fourth, teachers must create groups that participate as much as they can and use multiple-ability strategies. Teachers also need to convince students that different intellectual abilities are required in CL and that no one learner has all the skills necessary to solve the task.

Dohrn (2002) proposed helpful guidelines for teachers to follow when creating cooperative groups. For instance, groups should be limited to 4-6 members, teams need to be diverse, and students should start with activities that allow them to get to know each other. This will create a team identity to encourage group cohesiveness. The teacher also needs to define rules, expectations, behavior clearly and establish regulations that will enable students to work well together and remind students of the rules each time the groups change. They should also clearly state the consequences for breaking the rules and verify that students understand the rules and tasks to ensure equal opportunities for all students. Teachers must also circulate and monitor the behaviour and watch for unwanted conflicts and resolve them quickly. Overall, the teacher's role is to teach the students how to form cooperative groups and take the time to introduce the task and guide the students when necessary.

There are various methods for implementing CL techniques into classes of all subject areas and grade levels (Slavin, 1994). Briefly, the teacher must define the learning objectives for the activity, assign students to groups, make sure that the groups are typically heterogeneous, and pay attention to the skills needed for completing the task. Then, roles must be assigned to the students, and the assessment criteria should be

explained (Johnson et al., 2014). Next, teachers should monitor the group work, evaluate group and individual performance, and encourage groups to give their best and use their unique potential to achieve the goal.

Another benefit of CL is the face-to-face, which allows students to discuss and explain assignment topics with each other. This fosters positive interdependence as they feel that they are 'in this together and that each member's effort will help the entire group. Students learn the subject matter and interpersonal skills such as communication, leadership, conflict management, and teamwork using collaborative skills. During the activities, they also use reciprocal questioning to accomplish the task. Each team member is responsible, thus creating an atmosphere of achievement. The ultimate success is based on a single and crucial principle: students must be taught how to participate in a group situation.

2.5 Previous studies on cooperative learning

In this section, some previous studies and their findings concerning the effectiveness of CL and the perceptions of students and teachers toward this teaching method in English courses are reviewed to identify suitable research methodology and instruments. Small group discussion is one of many types of cooperative learning method.

Several studies have also been conducted to assess the effect of CL on English language learners' speaking proficiency. For example, Talebi and Sobhani (2012) assessed the ability of 40 students (male and female) enrolled in a speaking course at an IELTS Center in Mashhad, Iran, and found that CL significantly improved the students' performance in oral interviews compared to a control condition. Similarly, Ning (2011) found that students in CL classrooms had superior English vocabulary and better speaking, listening, and reading skills than students in non-CL classrooms. Ning and Hornby (2010) also studied the effects of CL on Chinese EFL learners' competencies in listening, speaking, reading, writing, and vocabulary. The participants were first-year college English learners from China in the North of China. The findings revealed that the CL approach improved listening, speaking, and reading competencies, but no significant differences were found between the CL approach and a control condition in writing and vocabulary.

In Thailand, Triwattananthongchai (2000) compared the impact of an instructional method based on the CL technique 'STAD' versus a teacher's manual approach on Mathayomsuksa students' reading comprehension and responsibility in Thai. Participants were 72 MathayomSuksa II students at Pathumthanee "Nunthamuneebumrung" school, Amphoe Muang, Pathumthanee Province in the first semester of the 1990 academic year. They were randomly assigned to an experimental group and a control group. The same content was taught for both groups over sixteen weeks, with each session lasting 50 minutes. The research design was a randomized control group, pre-test and post-test design, and a reading comprehension test and responsibility questionnaire were used to gather the data. The results revealed that students' reading comprehension in the STAD was better than students in the control group. Similarly, students in the STAD group also reported more responsibility in their learning than students in the control group.

Siriratana (1999) investigated the English reading comprehension and writing abilities of 80 Mathayomsuksa 5 students in the first semester of the 1999 academic year of Debsirin School, Bangkok. This study showed that Cooperative Learning activities using Top-Level Structure (TLS) with CIRC improved students' reading comprehension compared to a control group taught with the teacher's manual.

Chomsiri (2009) also examined the effect of the CL technique 'Student Team Assisted Individualization (TAI)' on students' reading comprehension skills in primary school level 4. The study was carried out for sixteen periods, and the experimental design included one group pre-test and post-test. The research instruments had the sixteen lesson plans, the English reading comprehension test, the Cooperative Learning Behavioral Observation Tool, and a questionnaire that surveyed the students' opinions of Student Team Assisted Individualization (TAI). The results showed that the English reading comprehension ability of the students significantly increased after using the CL technique, Student Team Assisted Individualization (TAI). In addition, the students' Cooperative Learning Behaviors also gradually developed. Indeed, their Cooperative Behaviors were unsatisfactory during the initial stage, but these behaviours progressed throughout the implementation. Finally, students reported positive opinions towards the Student Team Assisted

Individualization (TAI) technique. Interestingly, Pinkeaw (1993) also studied students' views on interaction and learning achievement through the CL method in upper–secondary English classes and found that while students' listening and speaking achievements were satisfactory, the moderate achievers' views towards the CL method decreased significantly after teaching.

Sittilert (1994) examined the effect of Cooperative Integrated Reading and Composition (CIRC) on English reading comprehension and the opinions of students' towards this method. The participants were 106 Mathayomsuksa 5 students who were taking English Reading 3 (English 033) at YuparajWittayalai school, Chiangmai, during the 1994 academic year. The results showed that the CIRC helped low achievement students improve their ability, and students reported favourable views of this method. Interestingly, a similar result was also reported in a study conducted with college business students. Indeed, lower-achieving students improved after CL than their higher-achieving peers (Hampton & Grundnitski,1996). By contrast, others have shown no difference in the reading achievement and cooperation scores of low, medium and high achievers using the STAD technique (Thupapong, 1996).

Tang (2000) investigated the use of the concept mapping skill to teach ESL reading in students from India, South Korea, Hong Kong, Croatia, and Taiwan at a secondary school in Canada. It was found that concept mapping could improve reading comprehension and communication skills.

Meteetum (2001) assessed CL using the jigsaw technique with nine second-year English major students at Naresuan University. The purposes were to 1) investigate the students' linguistic use in their discourse, 2) examine the improvement in students' grammar and competence, 3) investigate the input, output, and context quality of language in CL, and 4) study the attitudes of students towards the CL method. The results showed that there were 39 language functions and three social language functions used in learning sessions. The findings also revealed that students had positive attitudes towards Cooperative Learning regarding oral competence, academic achievement, social skills, personal development, collaborative skills, thinking skills, and learning atmosphere.

Moryadee (2001) studied the Student Team-Achievement Divisions (STAD) technique on self-efficacy and the English learning achievement of Prathomsuksa 5 students. After reviewing the STAD technique, the results indicated that students had a higher self-efficacy and learning achievement. Another study compared the critical thinking skills of learners who studied Business English I at Chiangrai Commercial School using the CL method with students using the traditional group work method and surveyed students' opinions toward the Cooperative Learning method (Somapee, 2002). The results indicated that students' critical thinking skills in the experimental group were higher than those in the control group. Moreover, the results of the questionnaire revealed that students' opinions were moderately positive towards CL.

Seetape (2003) investigated the use of CL on English reading achievement and the student's behaviour towards this learning method in the English classroom. The participants were 29 Mathayomsuksa 3 students in Kanchanaphisekwittayalai Uthaithani School selected using purposive sampling. The instruments were an observation sheet in an English reading achievement test, a Cooperative Learning, and lesson plans using the cooperative learning technique. The results showed that the post-test scores were higher than the pre-test scores after learning English reading using the CL method. It was also shown that most students displayed excellent cooperative behavior during their tasks, indicating that this skill had been significantly developed.

Researchers showed the benefits of the CL methods in a variety of teaching contexts. For example, Huttapanom (2002) found the benefits of the CL method in teaching Mathematics. Rossoongnoen (2005) compared MatthayomSuksa 2 students' abilities in English reading comprehension before and after using the Student Teams-Achievement Divisions (STAD) Cooperative Learning technique. The sample consisted of 40 MatthayomSuksa 2 students studying in the first semester of the 2004 academic year at BuddhajakWittaya School. The study was carried out for eighteen fifty-minute periods, and the experimental design included one group pretest and posttest. The instruments were seven lesson plans based on STAD, an English reading comprehension test, the Cooperative Learning behavioural observation tool, and a questionnaire that surveyed the students' opinions towards STAD. The results showed

that after using the STAD technique, the English reading comprehension of MatthayomSuksa 2 students significantly increased. Furthermore, the students' Cooperative Learning behaviours were also gradually developed across the implementation of STAD, and, finally, the students' opinions towards STAD for English learning were positive.

Thipkeg (2004) compared students' achievement, group behaviour and opinions on a vocational electric power program based on the CL approach for first-year students. Two comparable classes were selected as samples of the study and assigned to an experimental and control group. The research instruments used were lesson plans and achievement tests, a group work behaviour test and an opinion questionnaire. The results showed that the experimental group, who studied by applying the Cooperative Learning approach, showed higher performance on the achievement test than the control group, who used the conventional method. Furthermore, the group behaviour of the experimental group was also at a higher level than the control group. Finally, students who studied using the CL approach also reported positive views towards this approach.

Pamungkas, S.R. (2016) found 57% agree that Small Group Discussion used to understand the reading-material. This study aimed to understand the idea of text that it is read by students. Then mean score of post-test (18.46) is higher than mean score of pre-test (70.76) therefore t-score was 6.47 at the degree of freedom of 29. Dumaris E. Silalahi (2017) conducted an experimental study to investigate the effect of Small Group Discussion (SGD) on the students' reading comprehension at English Department Students at FKIP UHN Pematangsiantar. The objective was to find out the effect of Small Group Discussion (SGD) on students' reading comprehension. The results revealed that the students in experimental group made the better one than the students of control group. The total range of experimental class is 535 and the total range of control class is 365. This study showed effectively to extend the students' ability in reading comprehension and the students who were taught by using small group discussion showed the better improvement.

Mestika (2019) conducted experimental study to find out the difference in the implementation of Small Group Discussion method in teaching reading comprehension to tenth grade students at SMAN 3 Aceh. The participants of This study involved 46 people and they divided into two classes; experimental and control class. The using independent t-test was used in this study that revealed SGD method effectively improved students' reading comprehension. Based on the analysis of the questionnaire, most of the students provided positive response to SGD method.

2.6 Summary of the chapter

Numerous studies of small group discussion that under umbrella of cooperative learning (CL) show a wide range of learning benefits from this approach. In addition, the results of experimental studies have provided empirical evidence to support the use of this approach for language development. Specifically, small group discussion that under umbrella of CL can help develop reading abilities, reading comprehension, and allow students to increase their vocabulary knowledge and enhance positive attitudes toward reading. Moreover, there was a study that showed the result to understand the lesson, encourage to be more active and creative in the class, and in group participants got more information.
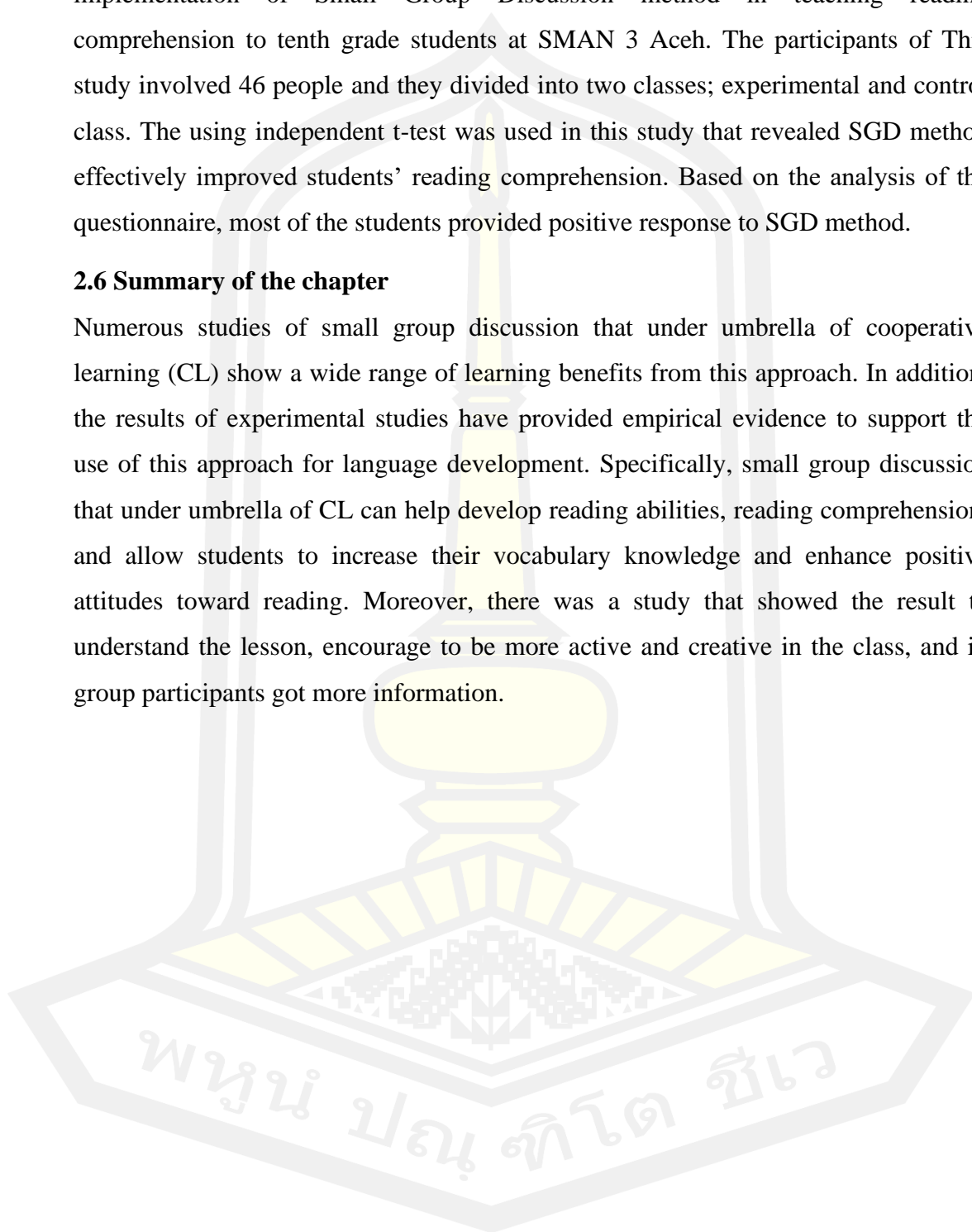
CHAPTER III
RESEARCH METHODS

This chapter outlines the research methodology for the study. This study aims to determine whether the cooperative learning technique effectively promotes Thai secondary school students' overall reading comprehension performance by small group discussion.

3.1 Participants and setting

The participants in this study included 90 students in Thai secondary in 8th grade. All the participants were Thai, and their age was between 13 and 14 years old. Basically, the participants had studied English for more than seven years, and none of them had studied English in an English-speaking country. Based on the national curriculum, the participants regularly received an average of four hours of English instruction per week. In addition, all participants had been enrolled in English as a foreign language (EFL) classes for at least seven years as compulsory subjects.

The socioeconomic background of their family was relatively low since most of their parents were farmers, and a few of them were government officers. The number of students was limited; therefore, the convenience sampling technique was used to separate participants into two groups. Indeed, one intact class was in the control group, and the other was assigned to the experimental group. It was assumed that both groups of participants are homogenous, and their language proficiency was similar. However, the experimental group received the cooperative teaching approach, a group work discussion, whereas the control group received a grammar-translation approach, a traditional teaching approach at a secondary school. Overall, the current study lasted for ten weeks.

3.2 Research instruments

Reading comprehension test

A reading comprehension test was used to assess participants' reading comprehension both before and after the experiment. The reading comprehension test comprised four sections presented in the form of multiple-choice, gap-filling, true/false and matching formats. Each of the sections contained 15 test items with a total of 60 items. The

content validity of the test items was evaluated by three experts in the field of language testing. The experts asked to rate each item, whether it was congruent with the objectives and the literal level of comprehension by utilizing the evaluation constructed by the researcher. The reading comprehension test was developed based on the topics or themes relevant to the national curriculum. Moreover, the test items were validated and piloted before the main study, with a different group of participants, none of whom were excluded from the main study.

Questionnaire

The questionnaire used in the current study to assess Thai high school students' attitudes toward cooperative learning technique. The questionnaire involved participants' attitudes toward the cooperative learning technique with small group discussion designed using a five-point Likert scale. The questionnaire was developed and validated before the main study with five experts in the field of English language teaching. The participants were asked to tick (/) the number that was the most suitable to them:

Strongly disagree	1	point
Disagree	2	points
Neutral	3	points
Agree	4	points
Strongly agree	5	points

The questionnaire was designed in both English and Thai. Still, the Thai version was distributed to participants to ensure that the respondents understood the items in the questionnaire.

Interview

A total of 12 participants was purposively selected for the interview based on their reading comprehension test scores. Indeed the interview was employed to explore the participants' reading comprehension strategies and attitudes toward cooperative learning, which refers to the small-group discussion activity in this study. The interview was conducted in Thai, the participants' mother tongue to minimize the language barriers. The content of the interview questions was by at least five experts in the field of language learning.

3.3 Data collection procedure

All participants were requested to sign a consent form before the main study. Permission from the school was obtained before the study. The reading comprehension test was given to all participants one week before the study and one week later the experiment. The questionnaire was given to all participants at two different times, the week before and after the study. Before the test and the questionnaire were administered, the instructions and a few illustrations of both test and questionnaire were provided to all participants in their native Thai language.

Selecting the topics for small-group discussion

The topics selected for Read-and-Share Discussion (RSD) activities that under the umbrella of cooperative learning were selected based on the Basic Education Core Curriculum B.E.2551 (A.D.2008), which consisted of animals, environments, foods, beverages, health, technology, climates, and educations. It noted that students' prior knowledge. Each of the reading texts was assumed to include a range of 200 words to 250 words, and Range Program checked the readability of the texts. The Range program was used to check and facilitate the reading process and ensure that the input was comprehensible.

Teaching procedure

1. Teacher provided a title which was discussed. Teacher as a facilitator prepared the material that was discussed and given to students before the class began. Introducing a consent package before participating in the study for them to understand their role.

2. Teacher guided students in forming small group discussion under umbrella of cooperative learning. Teacher helped students choose the members of the group. Students was divided into several group based on small group discussion method rules with three to five students within a group. The teacher made the heterogeneous group includes the characteristics of intelligence, learning motivation, gender, or different ethnic backgrounds.

3. Teacher gave the material and students in each group predict it. Teacher not only provided the material, but also helped students to explain what they did such as after getting the material each student in group had to prediction by

looking at the title of the text first to know what the text about. After they got what the text about, they could discuss their information or knowledge that related with the text.

4. The students discussed a topic in their group and teacher moved around the class. After they finished in discussion, to make sure that their prediction in true or not they read the text together.

5. Then, each group discussed about their discussion result to another group. After getting the discussion between members of the text the representative of each group discusses the result of their discussion to another group. The other members in the group debated, clarify gave opinion, and criticized the result of discussion from another group.

6. The teacher explained about the material. Teacher helped students to explain in details what they have learned and the teacher may give corrections if any.

7. Finally, each student tried to answer the questions that had been prepared in the text. After discussion between group and teacher, each student tried to answer the questions individually based on the tasks that had been provided by the teacher. It was better for the teacher to arrange the class to form the group, gave them instruction of how to start learning until the class ends.

An example of a lesson plan was shown below.

Lesson Plan

Topic	Food Firsts
Level	Secondary
Time	1 hour
Main	Students comprehension reading passage
Objectives	1. Students will be able to identify the main idea and details of the story.
	2. Students will be able to answer the questions from the story.
Materials	1. A reading text **"Food Firsts"**
	2. Worksheet
	3. Group discussion

Table 1: Data collection procedures

Time	Reading stage	Procedures	
		Teacher (T)	**Students (Ss)**
1	Pre-reading (10 minutes)	1. Prediction activating prior knowledge. T asks students to look at the title of "Food Firsts" on the blackboard and asks them to guess what the story is about. - Can you guess what the story is about? T encourages the students to think about what do they do when they are at school. 2. Introducing a consent package before participating in the study for them to understand their role. - T asks the students to make a group that consists of three to five students.	Ss look at the title and talk about it. Ss say something that they guess.
1	While-reading (20 minutes)	Read and Share Discussion (RSD) Read - T gives the paper to each group and tell them to read individual. Share - T observes each group. Discussion - T observes each group.	Ss in each group will select the part of the story and try to comprehend their part. Ss in each group will share the ideas in their part to their small group Representatives in each group will discuss the comprehension of the story from their understanding to the whole class.
1	Post-reading (20 minutes)	T lets the students answer the question after reading. T summarizes the story and tells the correct answer by telling the description.	Ss answer the question by their understanding in their small group. Ss check their answer.

To see the more apparent teaching steps in this study, the steps were illustrated by the flowchart in Figure 7.
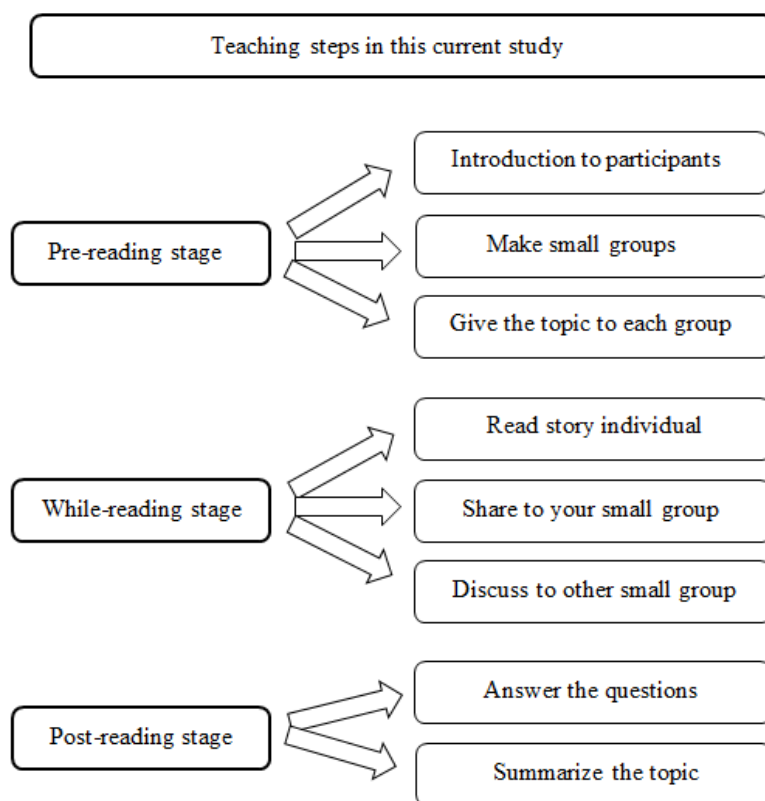
Figure 7: Teaching steps in the current study

3.4 Data analysis

Descriptive and inferential statistics was used to analyze the quantitative data. The means, standard deviations, percentage, t-test statistics were employed to report the study's findings. The data from the interview was analyzed by content analysis. Intercoder reliability was used to avoid bias coding.

3.5 Summary of the research design

This mixed-methods research was designed for the current study. The experimental group was given a small-group discussion under the umbrella of cooperative learning. However, the control group received a traditional teaching method – the grammar-translation approach. Figure 8 illustrates the overall picture of the current study.
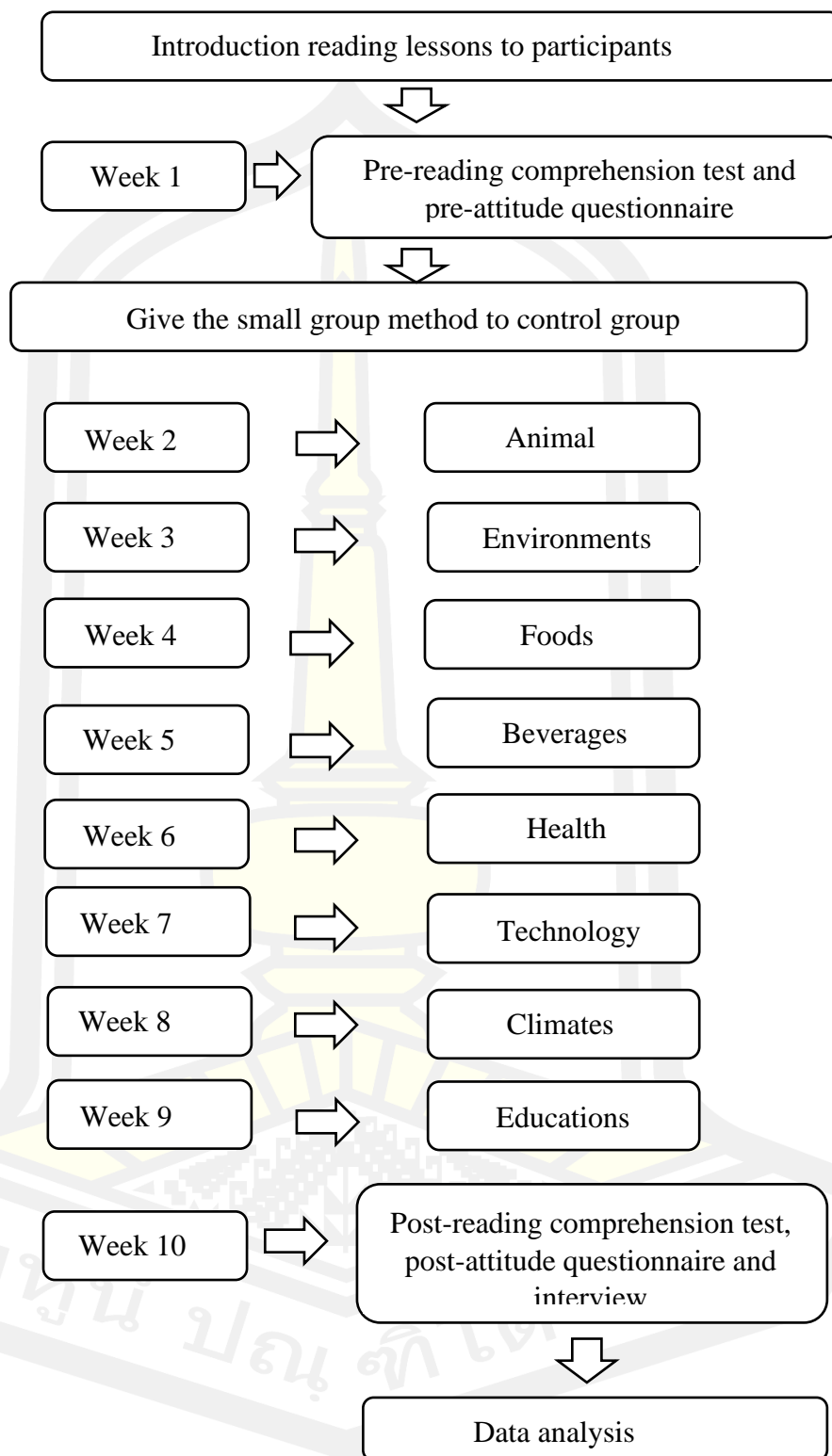
Figure 8: Overall picture of the current study

CHAPTER IV
RESULTS

This chapter presents the results of the current study on the effects of cooperative learning on secondary school students' reading comprehension in a Thai EFL context.

4.1 Thai secondary school students' reading comprehension

The current study investigated the effect of cooperative learning on lower secondary school students' reading comprehension in a Thai EFL context. The quantitative data were collected from a reading comprehension test administered before (T1) and after (T2) the experiment. Table 2 demonstrates overall performance scores on reading comprehension tests among secondary school participants.

Table 2: Students' performance scores on reading comprehension test

Group	Time	Mean (60)	%	SD	t-value	sig
Experimental **N = 60**	T1 T2	15.20 16.73	25.33 27.88	3.502 3.329	2.671	0.01
Control **N = 30**	T1 T2	10.76 10.90	17.93 18.16	5.103 5.215	1.000	0.32

*Significant at the 0.05 level (p<0.05)

The pre-test (T1) mean score of secondary school participants in the experimental group was 15.20 and the post-test score (T2) was 16.73. A dependent-samples *t*-test revealed that this difference between pre and post-test performance was statistically significant. Participants in the group control scored 10.76 at T1 and 10.90 at T2. This difference was not statistically significant. As shown in Table 4.2, an independent-samples *t*-test was also performed to determine if there were any differences in reading comprehension performance between the control and experimental groups. The data analysis revealed a significant difference between the experimental group and the control group at T1 and T2. However, the significant difference between the groups at T2 may not be at all related to the intervention. This is because the significant difference between the groups at T1 already exists. indicate the real effect of cooperative learning. These results are shown in Figure 9.

Table 3: Reading comprehension performance between experimental and control groups

Groups	Time	Mean	SD	*t*-value	Sig
Control	T1	10.77	5.104	4.281	0.001
Experimental		15.20	3.502		
Control	T2	10.90	5.215	5.584	0.000
Experimental		16.73	3.329		

Note: *p*-value is significant at α=0.05
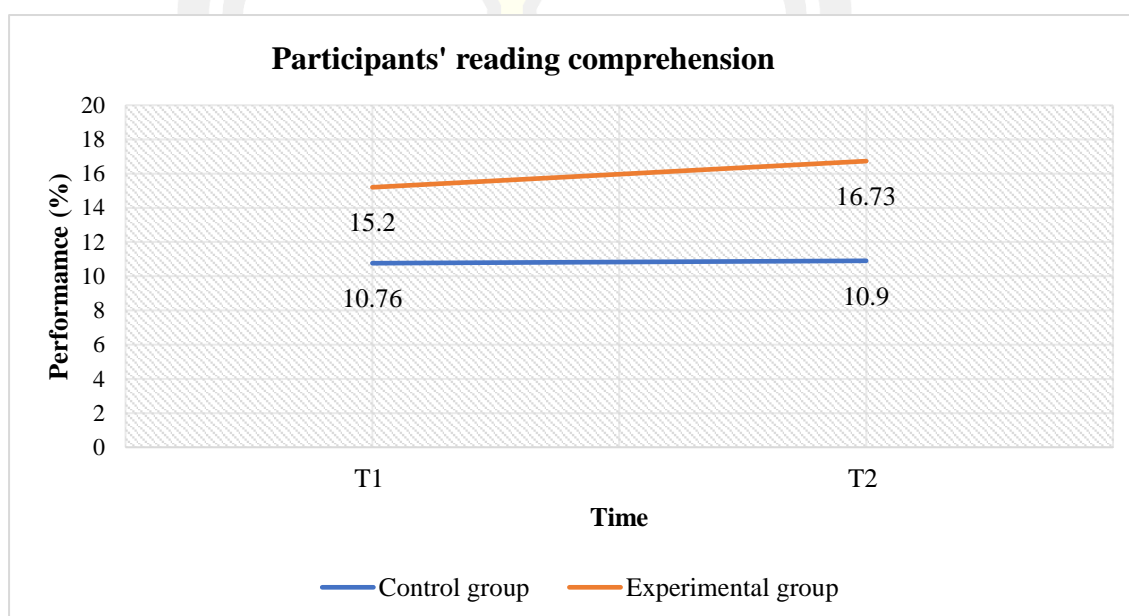
Figure 9: Participants' reading comprehension performance

The results showed the experimental participants' reading comprehension performance was improved after the intervention, while the t-test versus post-test performance in the control group was not significant. Reading comprehension was significantly enhanced from pre- to post-test in the experimental group but not in the control group. Overall, these findings indicate that cooperative learning facilitates Thai secondary school participants' reading comprehension.

4.2 Students' attitudes toward cooperative learning and reading comprehension

4.2.1 Quantitative findings - Questionnaire

Students were asked to rate a 25-item questionnaire to measure their reading comprehension attitudinal variables. The Likert scale ranged from 'strongly disagree' (1 point), 'disagree' (2 points), 'not sure' (3 points), 'agree' (4 points), to 'strongly agree' (5 points). Table 4 shows the questionnaire scores for various statements on the

reading comprehension questionnaire. A higher score indicates a positive attitude toward cooperative learning. Questions marked with an asterix were negatively scored.

Table 4: Students' attitudes toward cooperative learning on reading comprehension

Statements	Questionnaire	
	Mean	S.D.
1. When we work together, I can share my ideas with my group.	3.70	0.90
2. When I work with other students, the work is divided equally.	3.78	0.84
3. *One student usually makes the decisions in the group.	2.40	1.09
4. Group members can explain what I do not understand.	3.90	0.89
5. I also learn when I explain the assignment to my group members.	3.30	0.88
6. When I work in a group, I do better quality work.	3.60	0.82
7. When we work together, I achieve more content and information.	3.92	0.85
8. When we work together, it enhances work habits.	3.27	0.77
9. When we work together, I can arrange my work.	3.45	0.83
10. When we work together, I can understand the content easily.	3.48	0.77
11. I enjoy content when I work with other members of my group.	3.57	1.07
12. My group members respect my opinions.	3.25	0.91
13. I understand all members of my group.	3.87	0.98
14. I feel I am part of what is going on in the group.	3.67	0.87
15. I like to help other group members to enhance their knowledge.	3.72	0.78
16. Cooperative learning can improve my attitude towards work.	3.55	0.89
17. Group activity enhances good working relationships among members of a group.	3.75	0.83
18. *Group activity does not differ from work alone.	2.85	0.95
19. *Group activity wastes time because other members are telling other work content; it created lousy work.	2.93	1.17
20. It takes less time to complete the assignment when I work with others.	3.35	1.07
21. *I become frustrated when my group members do not understand the material.	2.90	1.06
22. *In a group activity, only one or two students are important, not all members.	2.92	1.21
23. Group activity is mutual profit.	3.92	0.90
24. *In a group activity, group members do not care about my comments.	3.67	1.00
25. When I work in a group, I get the grade I deserve.	3.63	1.00
Total	**3.45**	**0.35**

As shown in Table 4, the overall means of the self-ratings from the attitude questionnaire was 3.45. This suggests that attitude towards cooperative learning tasks was positive after the cooperative learning intervention. Specifically, participants reported that cooperative learning activities benefited language learning, especially their reading comprehension. However, Thai secondary school participants also agreed that cooperative learning could lead to frustration if group members could not understand the materials and that a single group member could influence the group decision.

4.2.2 Qualitative findings – Semi-structured interview

The qualitative findings from the semi-structured interview were also analysed to better understand participants' attitudes toward the effect of cooperative learning on reading comprehension. The qualitative data obtained from the semi-structured interview were coded into descriptive themes based on the cooperative learning concept. As a result, three themes were identified: 1) team, 2) cognition, 3) enjoyment. As shown in Table 5, overall, students felt that cooperative learning strengthened their reading comprehension and the role of the team.

Table 5: Extracts from the semi-structured interviews

Participants	Participants' attitudes
Student 1	"Everyone helps each other. It was better than doing it by herself."
Student 2	"Some tasks were done by myself because other members cannot translate and lazy to try to tell the meaning."
Student 3	"It was good because small group discussion makes harmony and enjoyment with the task."
Student 4	"Cooperative learning increases the knowledge and comprehension."
Student 5	"Some in a group do not have the participation, but others are very cooperative in their investigation."
Student 6	"I think it is a better approach because this activity can search for new words and increasing my reading comprehension knowledge."
Student 7	"Sometimes, members in group delay to distribute the task thus the time is run out."
Student 8	"I like it very much because everyone in the group can tell opinion about the task."
Student 9	"It is better because group activity makes good management." "This approach can manage group activity in which all members in the group know the role of cooperative learning."
Student 10	"I have the opportunity to teach friends in my group; hence it makes a good experience for me." "I can comprehend the task from my group member."
Student 11	"This approach makes everyone do the duty, and it puts the harmony."
Student 12	"Sharing knowledge with friends is a good thing to do. It makes me remember some content that is hard to remember."

4.3 Summary of the chapter

This chapter summarized the results from the current study on the effect of cooperative learning on secondary school participants' reading comprehension as well as the participants' attitudes towards cooperative learning activities. Overall, cooperative learning improved reading comprehension and participants reported positive attitudes towards cooperative learning tasks. The following chapter will discuss the findings in the context of the current literature on cooperative learning.

CHAPTER V
CONCLUSION AND DISCUSSION

This chapter discusses the results of the current study in relation to the underlying cooperative learning approach. The main conclusions and limitations of this study are also presented as well as recommendations for future studies.

5.1 Thai secondary school students' reading comprehension

The current study investigated the effect of cooperative learning (CL) on lower secondary school students' reading comprehension in a Thai EFL context. The quantitative data were obtained from the reading comprehension test administered at two different times, before and after the experiment. The results showed that the secondary school students' reading comprehension increased following CL. This result clearly demonstrates that CL facilitates reading comprehension gains among Thai secondary school participants. This is likely because CL involves students working in teams to achieve shared learning goals. Each member in the group is held responsible for completing their share of the work and mastering the material to be studied. Moreover, CL is also a group studying activity where learning is dependent on the socially constructed exchange of information between group members. That is, while some of the group work may be parcelled out and complete individually, some must be complete interactively, with group members providing one another with feedback, challenging reasons, making collective conclusions and teaching and supporting each other. The current findings align with previous studies showing that CL promotes reading comprehension (Felder & Brent, 2007; Johnson & Johnson, 2008; Lavasani, Afzali, & Afzali, 2011; Marashi & Dibah, 2013).

Reading comprehension is improved because CL provides environments that encourage learners to communicate and express their ideas in the target language. CL activities, such as Small Group Discussion, also allow group members to learn to share ideas by listening to each other and assisting each other to solve a problem. Learners are provided with the opportunity to apply reasoning and various tools to tackle problems using several one-on-one interactions within a group. Such activities ensure high involvement and participation of every group member, thereby increasing their reading comprehension. Indeed, previous studies have also reported that Small

Group Discussion enhances social interactions and skills (Gollnick & Chinn, 2009; Johnson et al., 2014; Nunnery, Chappell, & Arnold, 2013).

The face-to-face interactions among students in CL may also facilitate reading comprehension. These interactions allow participants to discuss and explain assignment topics with each other. This fosters positive interdependence as participants feel that they are 'in the same boat' or 'together' and that each member's attempt will help the entire group. Using teamwork skills, participants learn both the subject matter and interpersonal skills, such as communication, leadership, conflict management and teamwork. During the activity, participants also employ reciprocal questioning to complete the task. Each team member is therefore responsible for creating an atmosphere of achievement. Overall, the current study provides evidence to support previous claims regarding the benefits of CL (Gollnick & Chinn, 2009; Felder & Brent, 2007; Johnson & Johnson, 2008; Johnson et al., 2014; Lavasani, Afzali, & Afzali, 2011; Marashi & Dibah, 2013; Nunnery, Chappell, & Arnold, 2013).

5.2 Thai secondary school students' attitudes toward cooperative learning

The qualitative data analysis revealed that Thai participants had a positive attitude towards CL activities after the experiment. The positive attitudes towards CL activities is likely because they promote classroom interactions between students of diverse abilities and backgrounds. As such, learners work together, assisting and interacting with each other to solve learning problems and achieve ultimate goals (Tsai, 1998; Wei, 1997; Yu, 1995). Indeed, the positive attitudes towards CL may be due to the reliance on teamwork activities (Hue, 2010; Kuuk & Arslan, 2020; Lavasani, Afzali & Afzali, 2011; Marzban & Alinejad, 2014; Priyantin, 2014). In CL activities, the teacher often groups students with different levels of English proficiency and encourages them to work together and benefit from each other by sharing their experiences. For example, Small Group Discussion, one of the CL activities, helps the higher proficient students tutor the weaker ones. Some learners may feel isolated because of their low ability to learn English while completing individual tasks in conventional course instructions. Working in teams may stimulate these students to speak out and feel more comfortable in smaller groups or pairs. This

may also give them a sense of self-confidence. Moreover, while supporting the weaker learners, students with higher proficiency levels can feel proud of themselves, developing positive attitudes towards the learning tasks during the course.

Based on the interview results, most participants reported positive attitudes towards implementing CL activities, such as small group discussion. In addition, participants noted that the activities could encourage them to speak English as each group member has the individual responsibility to finish the group tasks. The following excerpts support these findings:

> "Cooperative learning increases the knowledge and comprehension." (Student 4)

> "This approach makes everyone do the duty, and it puts the harmony." (Student 11)

In relation to the negative aspects of CL activities, students reported being annoyed when a group member was lazy and could not understand the materials or task instructions. The qualitative data analysis also showed that the interpersonal learning styles needed to be adapted to group work. In addition, many students lack the required vocabulary and this sometimes made it difficult for them to contribute to the group. These findings are illustrated in the following excerpts:

> "Some tasks were done by myself because other members cannot translate and lazy to try to tell the meaning." (Student 2)

> "Some in a group do not have the participation, but others are very cooperative in their investigation." (Student 5)

> "Sometimes, members in group delay to distribute the task thus the time is run out." (Student 7)

Overall, the current findings revealed that CL methods could help learners to better understand the learning materials, thus promoting reading comprehension among secondary school learners. Specifically, learners could acquire more knowledge and enhance their vocabulary. In addition, the results also showed that the small group discussion under umbrella of cooperative learning activity helps students to be engaged in learning a target language. These results provide further support for the benefits of the CL method.

5.3 Conclusion

This study investigated the influence of CL on Thai secondary school students' reading comprehension and their attitudes towards CL activities. For Research Question 1, the results showed that the CL method could led to gains in reading comprehension among Thai secondary school students. However, it must be noted that, in the current experiment, the CL and control groups had significantly different levels of reading comprehension before the experiment, which limits the conclusions of this study.

Nevertheless, the present study did show that cooperation or classroom interactions make learning engaging and interactive. In CL activities, students are exposed to a learning environment that supports and encourages personal, academic, and social development. Therefore, CL is a teaching method that may address the diverse needs of students with varying levels of English proficiency in a heterogeneous class. Notably, CL emphasizes active interactions between students of diverse abilities and backgrounds, and allows students to work in teams and engage in classroom activities. Importantly, each student is also given an individual task to accomplish within their group task, which helps to ensure that learners take responsibility in their team. Although some intrapersonal students prefer to work individually, they are encouraged to participate to achieve the team's goals. Moreover, allocating the students to groups or pairs can also help the teacher to effectively manage large classrooms.

Regarding Research Question 2, the current study showed that the teacher could change the students' attitudes towards English language learning in an EFL context by applying CL methods. These positive attitudes can influence and increase students' reading comprehension and motivation to involve more in classes. Positive attitudes may also convince students that learning is valuable.

5.4 Limitations

The small number of participants in the current study may limit the generalizability of these findings to other contexts. In addition, as previously mentioned, the groups differed in their English proficiency before the experiment, which makes it difficult to ascertain whether the CL itself was responsible for better reading comprehension in

the experimental group during the post-test. Finally, future studies may benefit from studying the effect of CL over longer time periods.

5.5 Implications

The results of the present study indicate that allocating students into small groups helps them actively engage in their classwork and interact in the classroom. This is a valuable technique for assisting students in attaining high academic standards. Indeed, from a perspective of second language acquisition, allowing students to work alone may not hinder high learning achievements. Adopting a CL method can also help students in peer tutoring, which will lead to higher learning achievements. Low proficiency students working individually are likely to feel demotivated if the activity or material is too challenging. Socially constructed interactions or learning cooperatively may keep them engaged in their learning as more highly proficient students can explain and clarify ideas and concepts.

5.7 Recommendations for future studies

Overall, the current results suggest that the CL method should be adopted as a standard teaching model in an EFL context to improve student learning and equip students with the knowledge and skills to achieve individual and collective learning goals. The study also recommends that all stakeholders, including teachers, educators, and school directors, help teachers learn CL activities that promote cooperation and social interaction skills via pre-service and in-service programs, such as workshops, seminars, and conferences. Finally, the current study suggests that those involved in policy-making and planning should provide schools with adequate information and technological devices to improve students' understanding and interest in English language courses.

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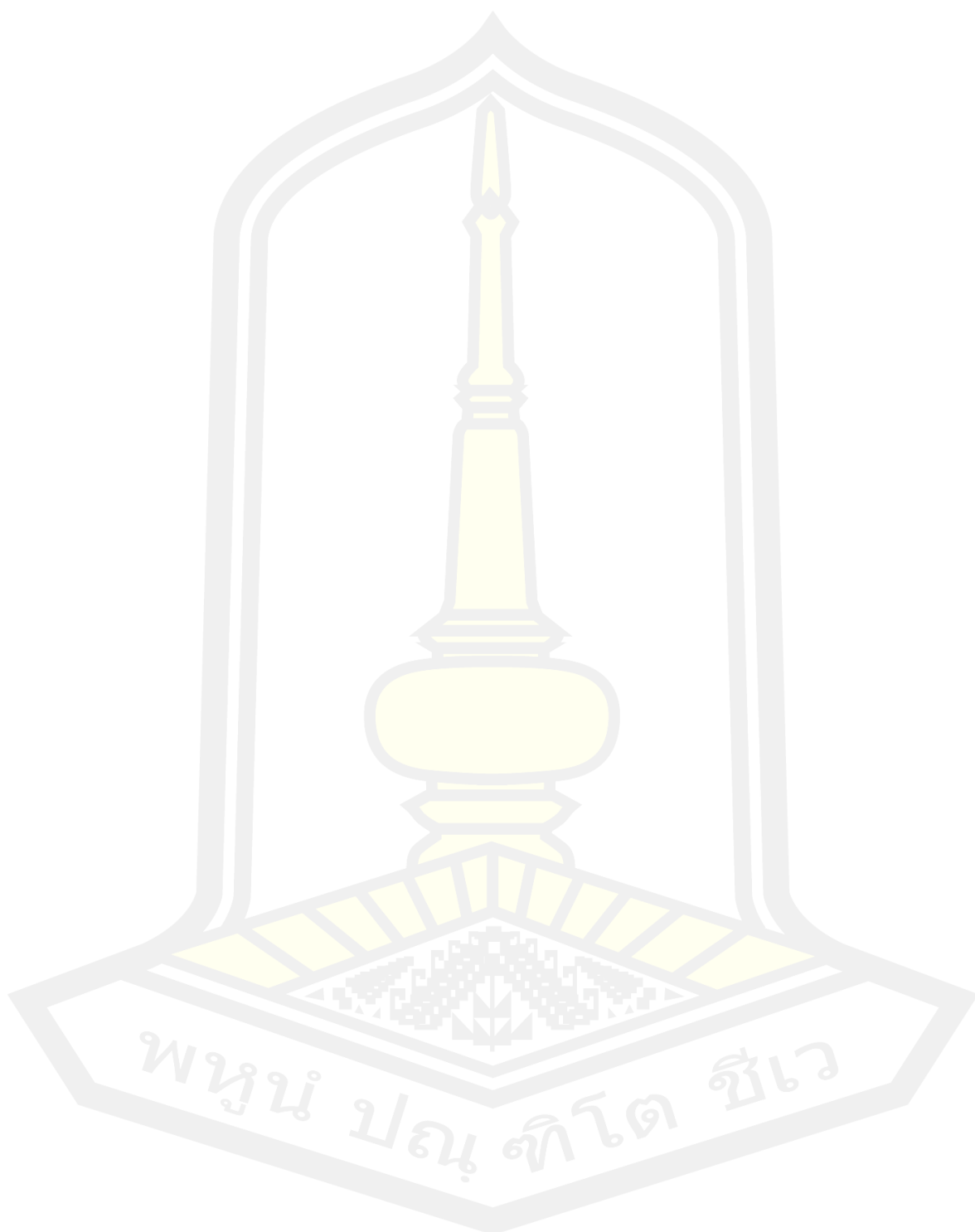
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Appendix A: Reading Comprehension Test

Reading Comprehension Test

Part 1: Item 1-15

Directions: Read the following passages and then choose the most appropriate answer based on the information in the passage.

Hurricane

A hurricane, also called a tropical cyclone, is the most powerful storm that forms on Earth. A hurricane forms over warm ocean water. As it grows in size and intensity, its powerful winds begin rotating around a center like water going down a drain. Because of the physics phenomenon known as the Coriolis Effect, hurricanes that form in the Northern Hemisphere feature winds that move counterclockwise, while those that form in the southern hemisphere feature winds that move clockwise. In the center of a powerful hurricane (called the eye), air may sink rather than rise, which suppresses cloud formation, leading to calm skies and wind. The eye of a hurricane can be up to 240 miles in diameter, but is normally between 20 and 40 miles in diameter. The clouds on the edge of the eye form the eyewall of the hurricane, which typically feature the hurricane's strongest winds, highest clouds, and fiercest precipitation.

By this time, the massive storm is 50,000 feet high and 125 miles across. Winds from the hurricane can extend hundreds of miles from the center or "eye" of the hurricane , which itself may be 30 miles across. The most powerful hurricanes can sustain winds of over 156 miles per hour.

When hurricanes hit land, they cause massive damage, storm surges, major wind damage, rogue waves, and flooding. Once they hit land, however, they quickly weaken as they are longer being powered by warm ocean water.

1. Which is NOT true about a hurricane?

a. Hurricane winds in the Northern Hemisphere rotate clockwise

b. A hurricane is the most powerful storm on Earth

c. The eye of a hurricane usually has calm skies.

d. The eye of a hurricane can be up to 240 miles in diameter

2. The hurricane's most damaging winds and precipitation occur in...

a. the eye

b. the passage doesn't say

c. the outer bands

d. the eyewall

3. What does "suppresses" mean in the following sentence

In the center of a powerful hurricane (called the eye), air may sink rather than rise, which suppresses cloud formation, leading to calm skies and wind.

a. increase

b. heightens

c. hold back

d. circle

4. hen hurricanes hit land...

a. they strengthen

b. they turn into tornadoes

c. they quickly weaken

d. they return to the ocean

5. Which of the following could be considered the THEME of the second paragraph?

a. Flooding caused by hurricanes

b. The power of a hurricane

c. The science behind hurricane formation

d. When tornadoes strikes

6. When do hurricanes receive names?

a. When all of the damage is assessed

b. After they hit land

c. When winds reach 74 miles per hour

d. When winds reach 39 miles per hour

7. How tall of the huge storm?

a. 50,000 feet and 125 miles

b. up to 240 miles

c. between 20 and 40 miles

d. 39 miles

8. Which of the following could be a title for the passage?

a. Why Hurricanes Weaken

b. The Basics About Hurricanes

c. Wind Speeds of Hurriances

d. Hurricane Katrina

9. How does the effect of hurricanes hitting land?

a. flooding

b. sunny

c. rainy

d. highest clouds

10. How many lengths of the hurricane can expand from the center?

a. thirty miles

b. forty miles

c. fifty miles

d. sixty miles

Growing Deserts

There are deserts all over the world. They can be found in Africa, China, South America, and North America. In some places, deserts are growing. This is a serious problem because deserts destroy farmland and ruin land where animals live. When people cannot grow food or find animals to eat, they have to leave their homes.

Sometimes, nature can cause deserts to spread. Wind can move sand away from deserts and onto useful land. When there is no rain for a long time, plants die and deserts grow. However, humans can also cause deserts to grow. This is called desertification, and it happens in many ways. One way is when people cause too much air pollution, which can make an area hotter. Hotter weather can reduce the amount of rain as well. Too many people in one area can also damage the land. In addition, having many animals can harm the land. When large animals like cows walk on soil too much, they turn it into dust. The wind easily blows this dust away. Trees help hold water in the ground. When people cut down too many trees, less water stays in the ground, and the soil is ruined.

All of these things can speed up desertification. To stop deserts from growing, people must think of ways to treat the land better.

Choose the best answer.

11. What is the main idea of the reading?

   a. Where the world's deserts are

   b. How people live in deserts

   c. Why some deserts are growing

   d. How cows can stop deserts from growing

12. Where are deserts found?

   a. Africa and South America

   b. The United States and China

   c. On useful land

   d. All around the world

13. Which is NOT a cause of desert growth?

   a. No wind

   b. Using land too much

   c. No rain

   d. Many animals

14. How do humans cause desert growth?

   a. By causing pollution

   b. By eating only vegetables

   c. By planting trees

   d. By moving sand

15. How can humans stop desert growth

   a. By using bicycles less

   b. By raising more cows

   c. By cutting down trees

   d. By having fewer children

Part 2: Item 16-30

Directions: Reading the following passages and then choose the most appropriate answer based on the information in the passage.

Food Firsts

How much do you know about the history of some of your favorite foods? Do you know when people in England started cooking curry dishes? Do you know in which country pizzas or hamburgers were first made? The facts might surprise you.

Many people think the English found out about curry from people in India in the 1600s. In reality, wealthy English people were eating dishes made with curry spices hundreds of years before British ships traveled to India. Cooks of wealthy English

families during the time of King Richard I were making curry dishes, and in fact, the word "curry' can be found in an English language cookbook as far back as 1377.

As for pizza, this dish was probably first made in Persia (what is now Iran). The Persians were eating round, flat bread with heese in the 500s. That was nearly 1,000 years before pizza caught on in Naples, Italy!

Finally, let's look at the truth behind hamburgers. Many people think hamburgers are an American food. However, according to some stories, hamburgers came from Hamburg, Germany. A German named Otto Kuasw Hamburg, Germany. A German named Otto Kuasw created the first hamburger in 1891. Four years later, German sailors introduced hamburgers to Americans.

Where foods come from isn't nearly as important as how they taste; as long as they are delicious! So, go get some of your favorite food and dig in.

Fill in the blank with words below which is suitable for the sentence.

find out   catch on   dig in   Otto Kuasw   German sailors

Hamburgers   Cheesy Persian bread   Italian pizza   English curry

How to make pizza   How to cook cheese

16. All of the food is ready. ………….. !

17. Did you ……………. what time the movie starts?

18. These days, Latin dancing is ………….…. .

19. The one who introduced hambergers to America is …………….. .

20. The food that was probably made first is ……………… .

21. The thing that people in Naples learn from Persians is …………………… .

Animal Forecasters

Fill in the blank with words below which is suitable for the passage.

predict observed farmers people before earthquake birds nests behaviors

Do you think animals can (22)………. the weather or other natural events? Farmers living in the countryside think so. For hundreds of years, they have (23)………

animals and noticed many things about the way animals act. For example, some (24)………. believe that if they see swans flying into the wind, a hurricane is coming. Or; when cows lie down, a rainstorm is coming. There are many traditional stories connecting animals and natural events. Some scientists are taking another look at animals to see if there is any truth behind these stories and beliefs. They have found some surprising things.

Kiyoshi Shimamura is a Japanese earthquake researcher. He noticed an increase in dog bites a short time before earthquake hit. Then, he did an investigation of twelve public health centters in Kobe, Japan. These health centers treated (25)………. after a big earthquake. Shimamura noticed that the month (26)………. the big (27)……….., treatment for animal bites had increased. In fact, aggressive behavior in dogs, such as biting and barking lounly, jumped 60 percent!

Other animals change their behavior before an earthquake as well. For example, fish in ponds or lakes begin swimming together in large groups only in the middle of the water and not near the edges. Also, (28)………. may fly away from their (29)……….. for many days, leaving their eggs unprotected. These (30)………… suggest that animals may be able to predict natural events, such as earthquakes, better than people.

Part 3: Item 31-45

Directions: Read the following passages and then write the correct answer with the alphabhet in front of each item.

Tiger's Tale

Tiger Woods started playing golf when he was two years old. Now he is one of the most famous professional golfers in the world. Tiger is from the United States. His father is African-American and his mother is Thai. His real name is Eldrick, but everyone knows him as Tiger, the nickname his father gave him.

He started playing golf professionally in 1996, and won all four of the World Golf Championships before of these championships. Although he has played on many great golf courses, one of Tiger's favorite places to play is Pebble Beach.

Tiger became a role model at an early age. People look up to him, so he is very grateful. Because many people helped Tiger as a child, he wants to lend a hand to others now. Some people cannot play golf because of their ethnicity, while others do not have enough money. Occasionally, Tiger himself was prevented from playing golf. Because of this, he created the Tiger Woods Foundation to help make golf open to everyone. He likes to see diversity on the golf course, and he wants all children to play golf if they want to. Tiger is happy that many children now want to play golf because of him.

……… 31) What is the main idea of this reading?	a. Tiger's golf career
……….32) Where is one of Tiger's parents from?	b. Tiger's foundation
……….33) Where does Tiger like to play golf?	c. Pebble Beach
……….34) How old is he to win all four of championship?	d. Twenty five
……….35) How Tiger feel when he see many children want to play golf because of him?	e. happy
……….36) When does Tiger start to play golf?	f. Two
……….37) What is the nominal name of Tiger?	g. Eldrick
……….38) The extra name of him is………	h. Tiger

A Bug's Sleep

Every mammal needs sleep, as do birds and reptiles, such as snakes. But what about insects? Do they need sleep? Scientists have been trying to discover the truth about insect sleep behavior for years. Scientists first thought insects did not need sleep. According to them, the insect brain was not complex enough to need it. Scientists said that some kinds of brain activity, like dreaming, were sleep behaviors. Insects rested, instead.

However, new studies have shown that some insects may actually sleep. There are four types of behavior during sleep. First, sleeping people and animals don't move much. Also, they have a position for sleeping; for example, they lie down.

Additionally, they don't wake up easily when hearing noises or seeing light. Lastly, they are able to come out of sleep quickly in response to some intense stimulant.

Scientists have now seen similar behaviors in fruit flies. For example, fruit flies become still every night for about seven hours. At these times, they sit in a different way, let their antennae drrop, and do not respond to quiet noises. The flies do begin to move around when louder noises are made. Scientists think that some insects may their own uique kind of sleep.

……… 39) …… mammal needs sleep.   a. Whole

……….40) What are the scientists learn in this story?   b. Insects sleep

……….41) How many type of behavior during sleep?   c. Four

……….42) What is the first thought in scientist with   d. They rest.

            insect sleep?

……….43) In new studies, have shown that insects may   e. sleep

……….44) How many hours do the flies sleep   f. Seven

……….45) What are the flies do when the louder noises   g. move around

            happen?

Part 4: Item 45-60

Directions: Read the following passages and then tick ✓ in front of correct sentence and tick X in front of the wrong sentence.

The Ice Hotel

Are you into skiing? Is winter your favorite time of year? If you like snow and ice, maybe you should stay at the Ice Hotel in Quebec, Canada. But, you can only check in to this hotel during the winter. Why? Because this hotel is made entirely of ice and snow!

This amazing hotel is built every December. It has 32 rooms, and 80 people can stay there each night. The hotel has a movie theater, an art gallery, and a church. Of

course, all of these parts of the hotel are made of ice. In fact, all the furniture, art, lights, and even plates and drinking glasses are made of ice.

Because this hotel is so unusual, it has become very popular. People from all over the world come to the Ice Hotel to look at the fantastic ice art, drink and eat from designer ice dishes, and experience the unique atmosphere. Some couples have even gotten married in the hotel's ice church.

However, all the guests keep their winter coasts on! Because of all the ice, the temperature inside the hotel is always between -2 and -5 °C. Surprisingly, sleeping is not a problem in the freezing cold hotel rooms. Every guest gets a special cold-weather sleeping bag and some fur blankets. These keep them cozy and warm until morning.

..............46. The main idea of the reading is what makes the Ice Hotel special.

..............47. We can get married in Ice Hotel.

..............48. The ice plates are the things which you can find in the restaurant.

..............49. The Ice Hotel has a sleeping bag and some fur blankets for sleeping.

..............50. The guests can see a movie in Ice Hotel.

..............51. Ice Hotel will construct in every November.

..............52. There are thirty four rooms in Ice Hotel and ninety people can stay there.

Mona Who?

A young woman without eyebrows is seated in front of a beautiful landscape. Does this sound familiar to you? This is one of the most famous works by Leonardo da Vinci. The Mona Lisa is a beautiful painting. However, it was the mystery behind the painting that intrigued people. Who was the woman and why did da Vinci paint her?

Different theories have been proposed about her identity. Many art and history buffs thought that it was a portrait of da Vinci himself, but as a woan. Others thought it was not any particular person, but the ideal of a woman. They say this is why she was painted with no eyebrows. This gave her face a more unearthly look. Still, others

thought that it was a portrait of an actual woman of the time, the wife of Francesco del Giocondo.

In 2005, historian Armin Schlechter of Heidelberg discovered the answer. While looking through an old manuscript, he found a small note. In this, the woman in the Mona Lisa was positively identified as Lisa del Giocondo. The artist had been paid to do her portrait after the birth of her second child. "Mona," in fact, means "madam" in Italian. As for her unearthly look? Historians say women of this time liked to remove their eyebrows. Apparently, they thought eyebrows were not attractive.

..............53. The main idea of this reading is fashion trends long ago.

..............55. According to the reading, her lack of eyebrows is interesting.

..............56. There is an idea about the identity of the woman in the Mona Lisa.

..............57. The Mona Lisa was painted with no eyebrows.

..............58. Historians said that the women of this time liked to increase the eyebrows.

..............59. The most famous work by Leonardo da Vinci is Mona Lisa.

..............60. The meaning of Mona is madam.

Appendix B: Questionnaire

Questionnaire (Thai version)

PRE-READING ATTITUDE QUESTIONNAIRE

The Effects of Cooperative Learning Techniques on Thai Secondary School Students' Reading Comprehension

คำชี้แจง: ให้นักเรียนทำเครื่องหมาย ✔ ลงในช่องที่ตรงกับความคิดเห็นที่มีต่อการทำงานเป็นกลุ่ม

ข้อความ	ไม่เห็นด้วยอย่างยิ่ง 1	ไม่เห็นด้วย 2	ไม่แน่ใจ 3	เห็นด้วย 4	เห็นด้วยอย่างยิ่ง 5
1. เมื่อฉันทำงานเป็นกลุ่มฉันสามารถแบ่งปันความคิดให้เพื่อนในกลุ่มฟังได้					
2. เมื่อฉันทำงานกับนักเรียนคนอื่น ๆ งานจะถูกแบ่งเท่า ๆ กัน					
3. มีสมาชิกในกลุ่มคนหนึ่งมักจะตัดสินใจคนเดียว					
4. สมาชิกในกลุ่มของฉันช่วยอธิบายในสิ่งที่ฉันไม่เข้าใจ					
5. ฉันมีการเรียนรู้เพิ่มมากขึ้นเมื่อฉันสอนเนื้อหาให้กับสมาชิกในกลุ่มของฉัน					
6. เมื่อฉันทำงานเป็นกลุ่ม ทำให้ฉันมีคุณภาพมากขึ้น					
7. เมื่อฉันทำงานเป็นกลุ่ม ฉันได้เรียนรู้เนื้อหาและข้อมูลเพิ่มเติม					
8. เมื่อฉันทำงานเป็นกลุ่ม นิสัยการทำงานของฉันจะดีขึ้น					
9. เมื่อฉันทำงานเป็นกลุ่ม ฉันจัดการงานของฉันได้ดีขึ้น					
10. เมื่อฉันทำงานเป็นกลุ่ม ฉันเข้าใจเนื้อหาได้ง่ายขึ้น					
11. ฉันมีความสนุกกับเนื้อหาต่างๆมากขึ้นเมื่อฉันทำงานกับนักเรียนคนอื่น ๆ					
12.สมาชิกในกลุ่ม มีความเคารพต่อความคิดเห็นของฉัน					
13. ฉันรู้จักสมาชิกในกลุ่มของฉันดีเพิ่มมากขึ้น					
14. ฉันรู้สึกว่าฉันเป็นส่วนหนึ่งของการทำงานเป็นกลุ่ม					
15. ฉันชอบช่วยเหลือสมาชิกในกลุ่มของฉันให้ได้เรียนรู้เนื้อหาต่าง ๆ เพิ่มมากขึ้น					
16. ฉันมีทัศนคติที่ดีต่อการทำงานเป็นกลุ่ม					
17. การทำงานเป็นกลุ่มช่วยเพิ่มความสัมพันธ์ที่ดีในการทำงานระหว่างกันได้					
18. การทำงานเป็นกลุ่มไม่แตกต่างกันจากการทำงานคนเดียว					

PRE-READING ATTITUDE QUESTIONNAIRE

The Effects of Cooperative Learning Techniques on Thai Secondary School Students'
Reading Comprehension

คำชี้แจง: ให้นักเรียนทำเครื่องหมาย ✔ ลงในช่องที่ตรงกับความคิดเห็นที่มีต่อการทำงานเป็นกลุ่ม

ข้อความ	ไม่เห็นด้วยอย่างยิ่ง 1	ไม่เห็นด้วย 2	ไม่แน่ใจ 3	เห็นด้วย 4	เห็นด้วยอย่างยิ่ง 5
19. การทำงานเป็นกลุ่มทำให้เสียเวลาเนื่องจากสมาชิกในกลุ่มพูดถึงสิ่งอื่นๆทำให้ไม่สามารถบรรลุข้อตกลงใด ๆ ได้					
20. ฉันใช้เวลาสั้น ๆ ในการทำงานให้เสร็จเมื่อฉันทำงานร่วมกันเป็นกลุ่ม					
21. ฉันรู้สึกหงุดหงิดเมื่อสมาชิกในกลุ่มไม่เข้าใจเนื้อหา					
22. ในการทำงานกลุ่มนักเรียนหนึ่งหรือสองคนเท่านั้นที่มีความสำคัญไม่ใช่สมาชิกทั้งหมด					
23. การทำงานเป็นกลุ่มเป็นผลประโยชน์ร่วมกัน					
24. ถ้าฉันทำงานเป็นกลุ่มสมาชิกในกลุ่มจะประเมินความคิดของฉันต่ำเกินไปและพวกเขาก็ไม่สนใจความคิดเห็นของฉัน					
25. คะแนนของฉันดีขึ้นเมื่อฉันทำงานร่วมกับคนอื่น ๆ ในกลุ่ม					

Questionnaire (English version)

PRE-READING ATTITUDE QUESTIONNAIRE

The Effects of Cooperative Learning Techniques on Thai Secondary School Students'
Reading Comprehension

Directions : Please place a ✔ for the most closely corresponds to how you think and feel in
Cooperative Learning Techniques

Statements	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
1. When I work together I can share my ideas with my group.					
2. When I work with other students, the work is divided equally.					
3. One student usually makes the decisions in the group.					
4. Group members can explain what I do not understand.					
5. I also learn when I explain assignment to my group members.					
6. When I work in a group, I do better quality work.					
7. When I work together I achieve more content and information.					
8. When I work together it enhances work habits.					
9. When I work together I can arrange my work.					
10. When I work together I can understand content easily.					
11. I enjoy more many contents when I work with other members of my group.					

PRE-READING ATTITUDE QUESTIONNAIRE

The Effects of Cooperative Learning Techniques on Thai Secondary School Students'
Reading Comprehension

Directions : Please place a ✓ for the most closely corresponds to how you think and feel in
Cooperative Learning Techniques

Statements	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
12. My group members respect my opinion.					
13. I understand all members in my group.					
14. I feel I am part of what is going on in the group.					
15. I like to help other members of my group to enhance their knowledge.					
16. Cooperative learning can improve my attitude towards work.					
17. Group activity enhances good working relationships among members of group.					
18. Group activity does not differ from work alone.					
19. Group activity makes lose time because other members telling other content of work, it made bad work.					
20. It takes less time to complete the assignment, when I work with others.					
21. I become frustrated when my group members do not understand the material.					
22. In group activity, only one or two students is important, not all members.					
23. Group activity is mutual profit.					

PRE-READING ATTITUDE QUESTIONNAIRE

The Effects of Cooperative Learning Techniques on Thai Secondary School Students'
Reading Comprehension

Directions : Please place a ✓ for the most closely corresponds to how you think and feel in
Cooperative Learning Techniques

Statements	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
24. In group activity, group members do not care about my comments.					
25. When I work in a group, I get the grade I deserve.					
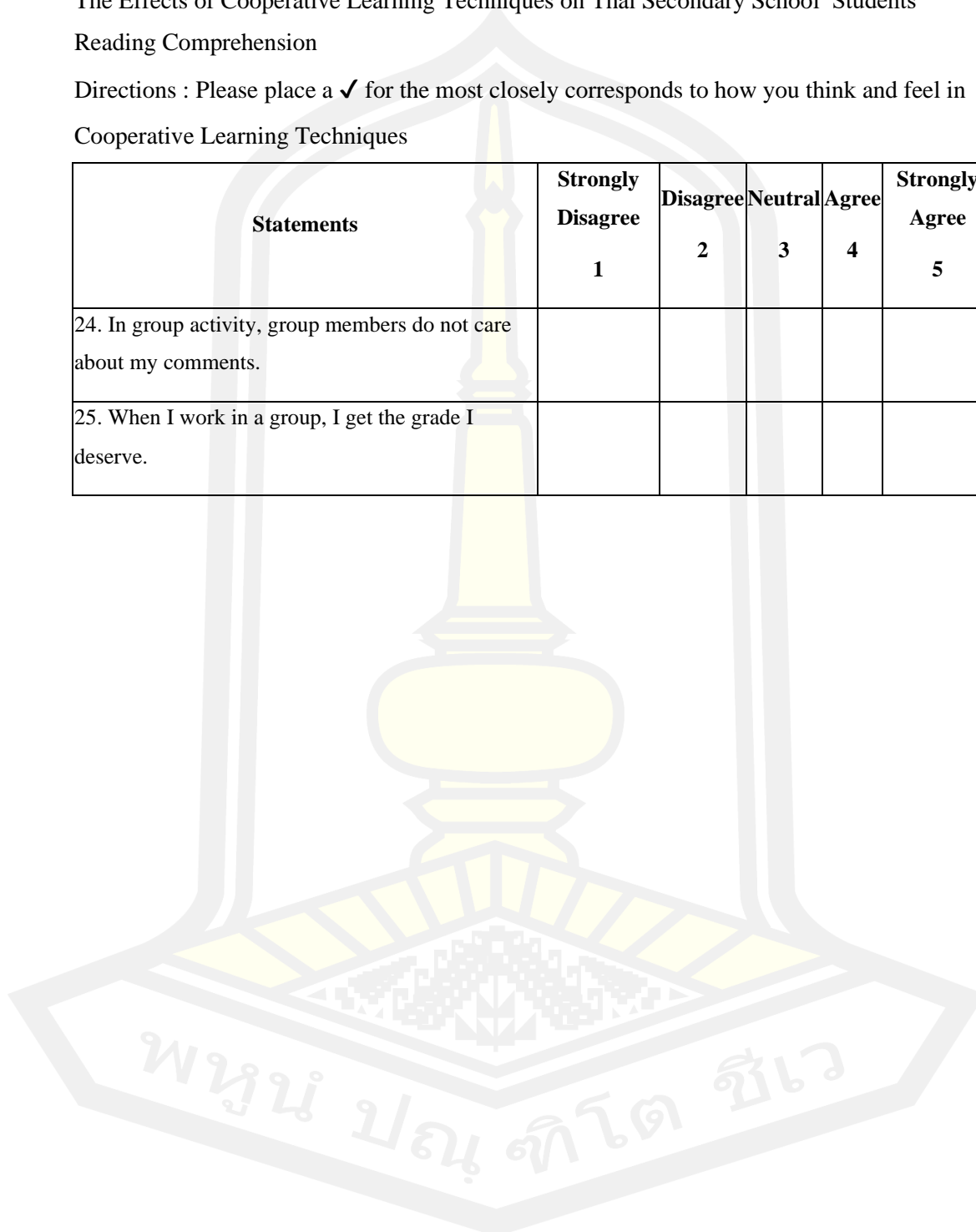
Appendix C: Interview Questions

Interview Questions (Thai version)

1.ในความคิดของคุณอะไรคือส่วนที่ดีที่สุดของการทำงานเป็นกลุ่มย่อย

2.ในความคิดของคุณอะไรคือส่วนที่แย่หรือไม่ดีของการทำงานเป็นกลุ่มย่อย

3.คุณมีทัศนคติอย่างไรต่อการทำงานกลุ่มในห้องเรียน

4.คุณคิดว่าข้อดีของการใช้กลยุทธ์การทำงานเป็นกลุ่มในห้องเรียนคืออะไร? ทำไม

5.คุณคิดว่าข้อเสียของการใช้กลยุทธ์การทำงานเป็นกลุ่มในห้องเรียนคืออะไร? ทำไม

6.การทำงานเป็นกลุ่มในห้องเรียนส่งผลการเรียน/คะแนนนักเรียนดีขึ้นไม่ อย่างไร

7.คุณใช้เวลาในการทำงานเป็นกลุ่มแต่ละครั้งนานกว่าที่คิดไว้หรือไม่ เพราะอะไรที่ทำให้คุณทำงานช้า

หรือเร็วกว่าที่คิดไว้

8.การทำงานเป็นกลุ่มทำให้นักเรียนรัก/ชอบการทำงานแบบกลุ่มมากขึ้นหรือไม่ เพราะอะไร

9.การทำงานเป็นกลุ่มทำให้คุณจัดการงานได้ดีหรือไม่ อย่างไร

10.คุณคิดว่าการทำงานเป็นกลุ่มทำให้มีโอกาสสอนสมาชิกในกลุ่ม และส่งผลให้คุณมีความสามารถ

ด้านอื่นเพิ่มมากขึ้นหรือไม่ อย่างไร

Interview Questions (English version)

1. In your opinion, what is the best part of small group discussion?

2. In your opinion, what is the worst part of small group discussion?

3. What is your attitude through small group discussion?

4. What is the advantage the use of small group discussion in the class? Why?

5. What is the disadvantage the use of small group discussion in the class? Why?

6. Do you think small group discussion impact on grade or score? How?

7. Do you spend more time in each small group? Why do you spend more time or less time?

8. Do you impress with each small group discussion? Why?

9. How does small group discussion make you well organized?

10. Do you think small group discussion will give you more opportunities to teach your group members and improve your abilities?
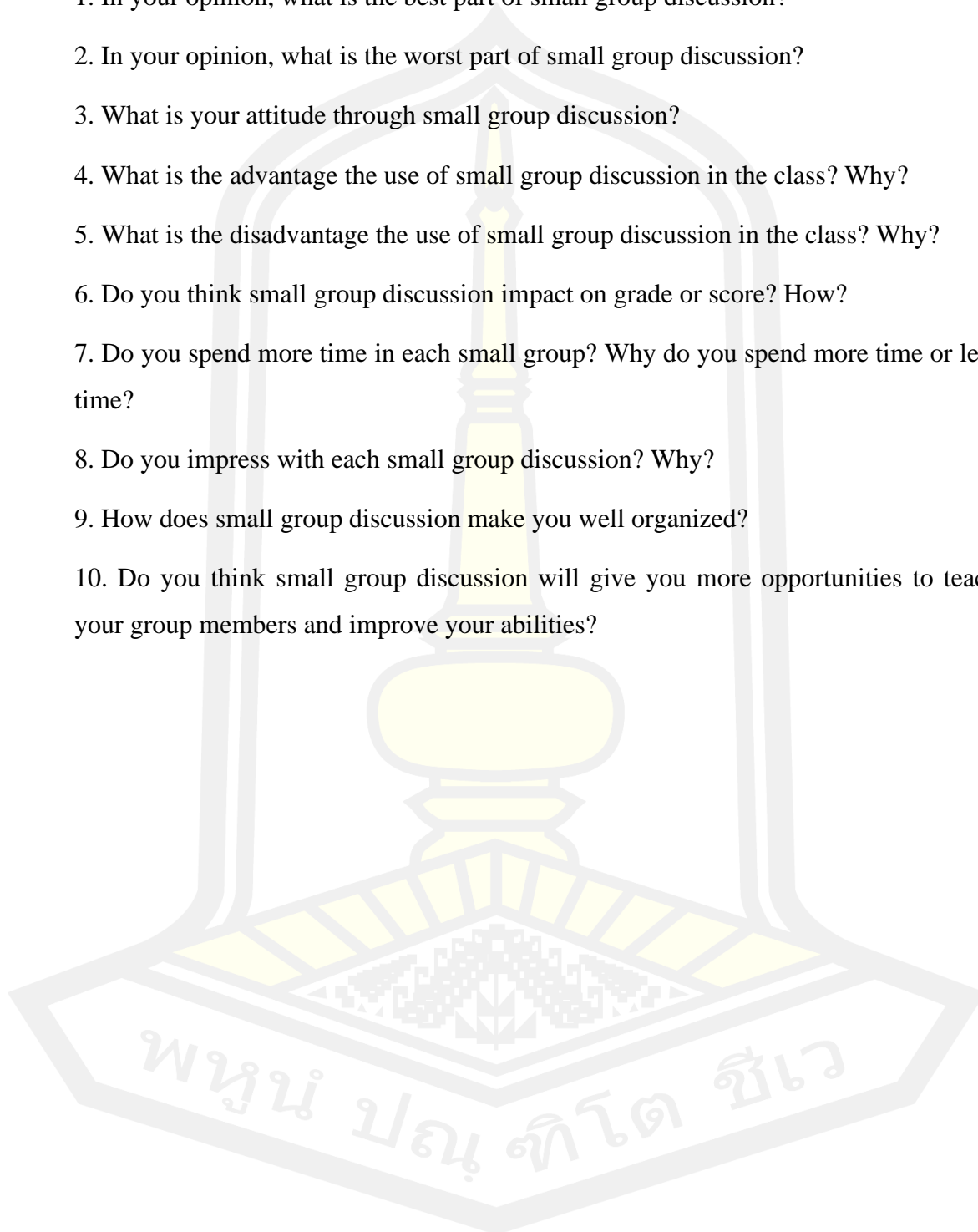
Appendix D: Reading Text

Reading Text 1

Food Firsts

How much do you know about the history of your favorite foods? Do you know when people in England started cooking curry dishes? Do you know in which country pizzas or hamburgers were first made? The facts might surprise you. Many people think the English found out about curry from people in India in the 1600s. In reality, wealthy English people were eating dishes made with curry spices hundreds of years before British ships traveled to India. Cooks of wealthy English families during the time of King Richard I were making curry dishes, and in fact, the word "curry" can be found in an English language cookbook as far back as 1377. As for pizza, this dish was probably first made in Persia (what is now Iran). The Persians were eating round, flat bread with cheese in the 500s. That was nearly 1,000 years before pizza caught on in Naples, Italy! Finally, let's look at the truth behind hamburgers. Many people think hamburgers are an American food. However, according to some stories, hamburgers came from Hamburg, Germany. A German named Otto Kuasw created the first hamburger in 1891. Four years later, German sailors introduced hamburgers to Americans. Where foods come from isn't nearly as important as how they taste; as long as they are delicious! So, go get some of your favourite food and dig in.

Reading Text 2

Rich Dogs

When wealthy people pass away, they usually leave instructions for what to do with the money or property that they leave behind. Often, the money and property go to their heirs. However, in some cases, rich pet owners leave their wealth to their pets after they die. For example, there is a poodle named Toby. When this poodle's owner passed away, she left Toby 15 million pounds (about $25 million). Then there is Flossie, a yellow Lab mutt, who is not only rich but is also famous. In 2001, Flossie made the headlines after she rescued her owner, the actress Drew Barrymore and Drew's husband, from a house fire. To thank Flossie, Drew gave her house to Flossie. Of course, Drew repaired the fire damage first. Now, Flossie is the owner of a beautiful $3million home. It may seem strange for a dog to own such an expensive home, but Flossie is not the only dog like that. Gunther IV, a German Shepherd, bought his home from Madonna and paid over $7 million for the house. However, this was no big deal for him because Gunther IV has about $200 million! This makes him the richest dog in the world. He inherited the money from his father, who was the heir to the fortune of a German countess.
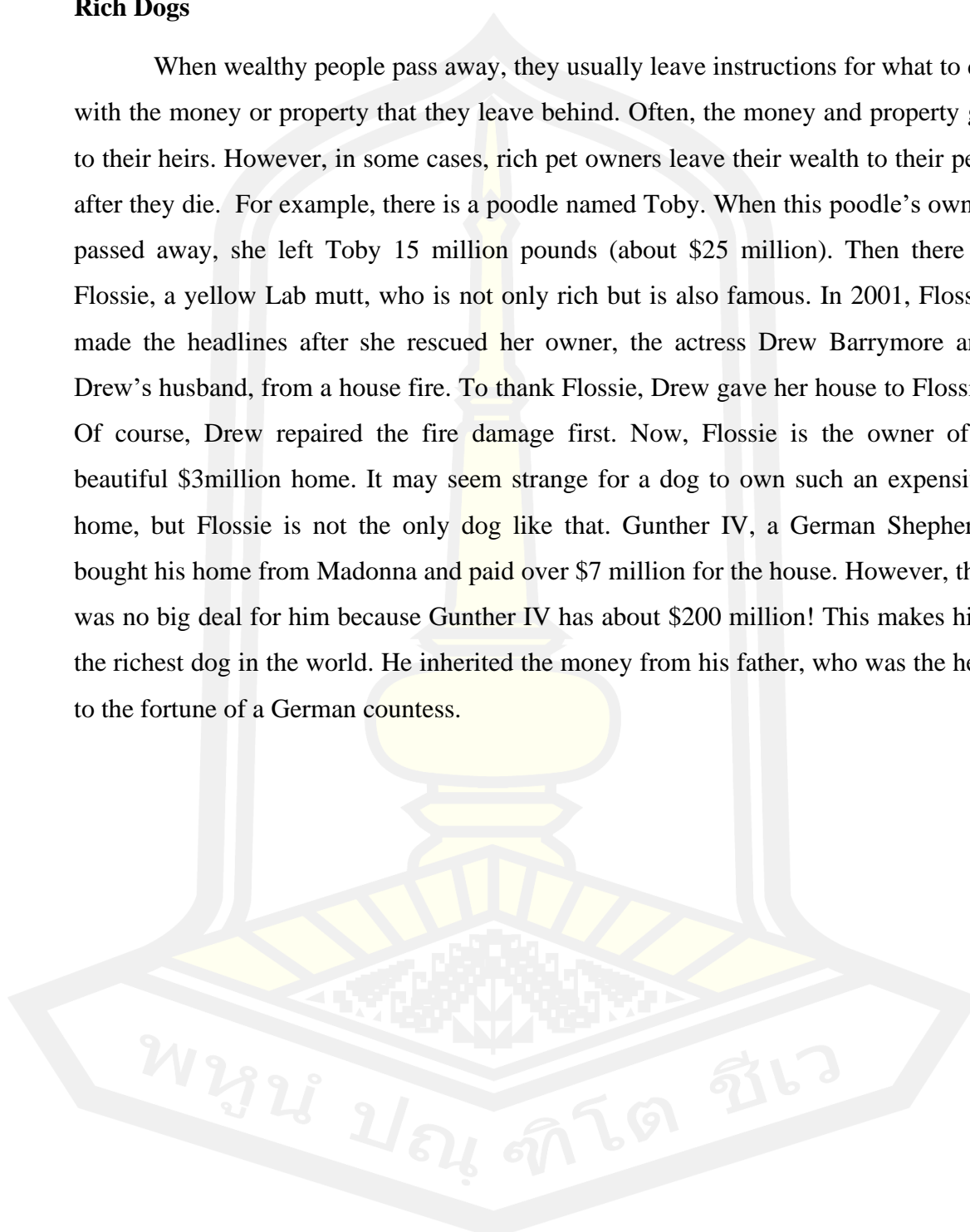
Reading Text 3

The Ring of Fire

The Ring of Fire is and enormous chain of volcanoes all around the Pacific Ocean. The ring goes from New Zealand up to Asia and across the ocean to Alaska. From Alaska, the ring continues southward along the coast of both North and South America. More than seventy-five percent of the world's volcanoes are located in this ring. Scientists are interested in studying the Ring of Fire because they can observe plate tectonics at work there. In 1912, a German scientist, Alfred Wegener, came up with the first theory of land movement. Wegener said continents are made up of lighter rocks resting on heavier material. Similar to the way large things move while floating on water, Weger suggested that the positions of the continents were not fixed, but that they moved slightly. Later, scientists discovered most of Wegener's ideas were right on the mark. They then developed the theory called plate tectonics. According to plate tectonics, the surface of the Earth consists of a number of enormous plates of sections of rock, each about eighty kilometers thick. The plates float and slowly move at speeds between one to ten centimeters every year. That is about the rate your fingernails grow! Within the Ring of Fire, new material for the Earth's plates is constantly being created as hot liquid rock called magma flows from the center of the Earth up to the ocean dloor. All the existing plates on the Earth's surface have to move slightly to make room frot the new material.
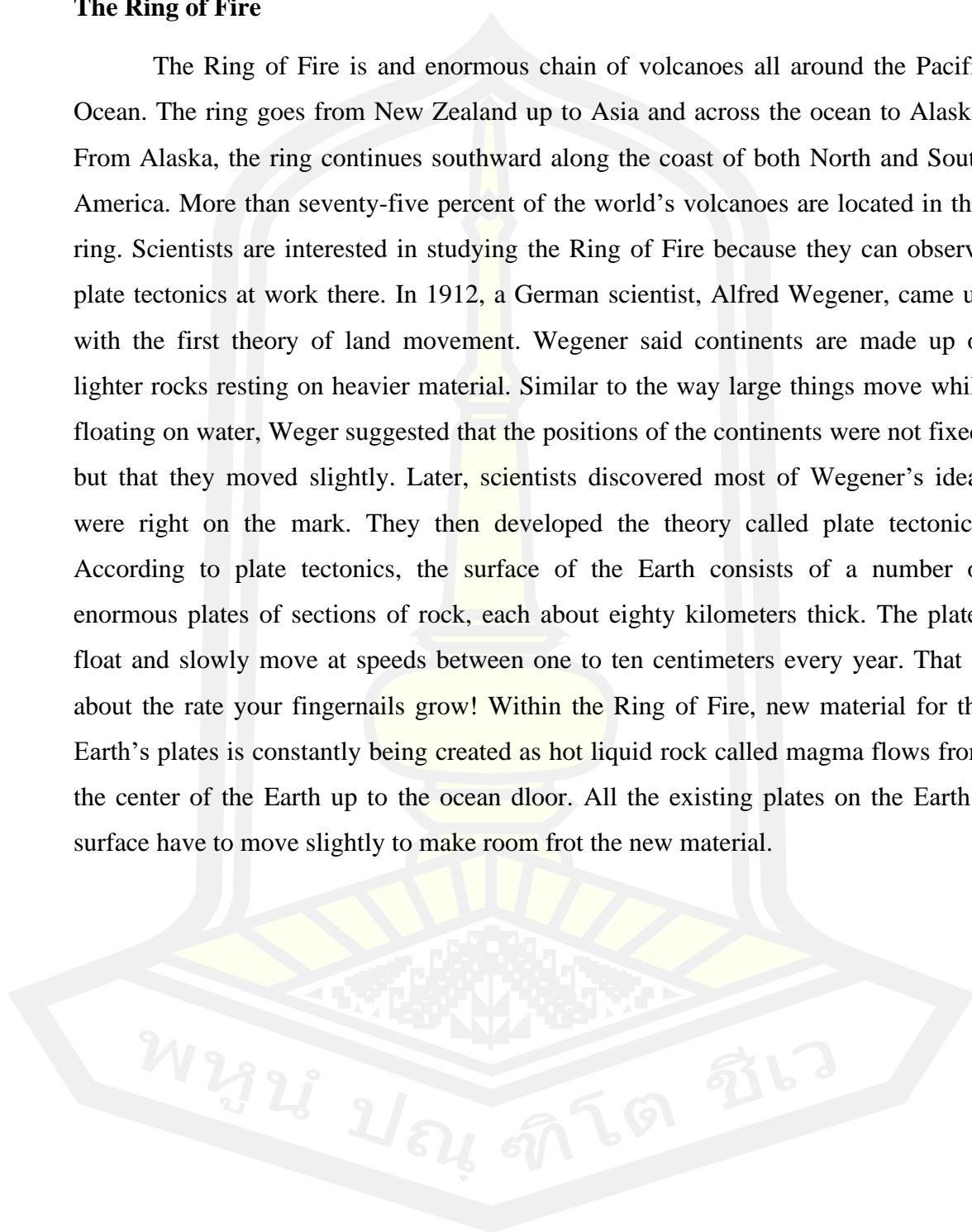
Reading Text 4

Myths About Pimples

Almost everybody has had acne. Acne, also known as pimples or zits, is a normal part of growing up. When kids reach puberty, their bodies experience many changes. As the levels of hormones in teenagers' bodies change, teenagers frequently develop pimples. Addiitonally, many people continue to have pimples after puberty. What can a teenager or an adult do to cure pimples? Unfortunately, many cures people think will work on pimples are really just myths. Many people believe that popping pimples is the best way to get rid of them. Popping a pimple will actually push the germs further under the skin, which can cause more redness and pain, or even turn into an infection. For that reason, doctors who specialize in skin problems normally encourage people not to pop their pimples. Also, do you think that washing your face frequently will help get rid of pimples? Of course, washing your face is a good idea, but washing your face too much could irritate the skin more, making the pimples even worse. Another widely believed myth is that not wearing makdeup can help reduce a person's chance of developing pimples. In fact, some kinds of makeup or face creams actually have special medicine in them to fight pimples. As a result, not all of them are bad for you.
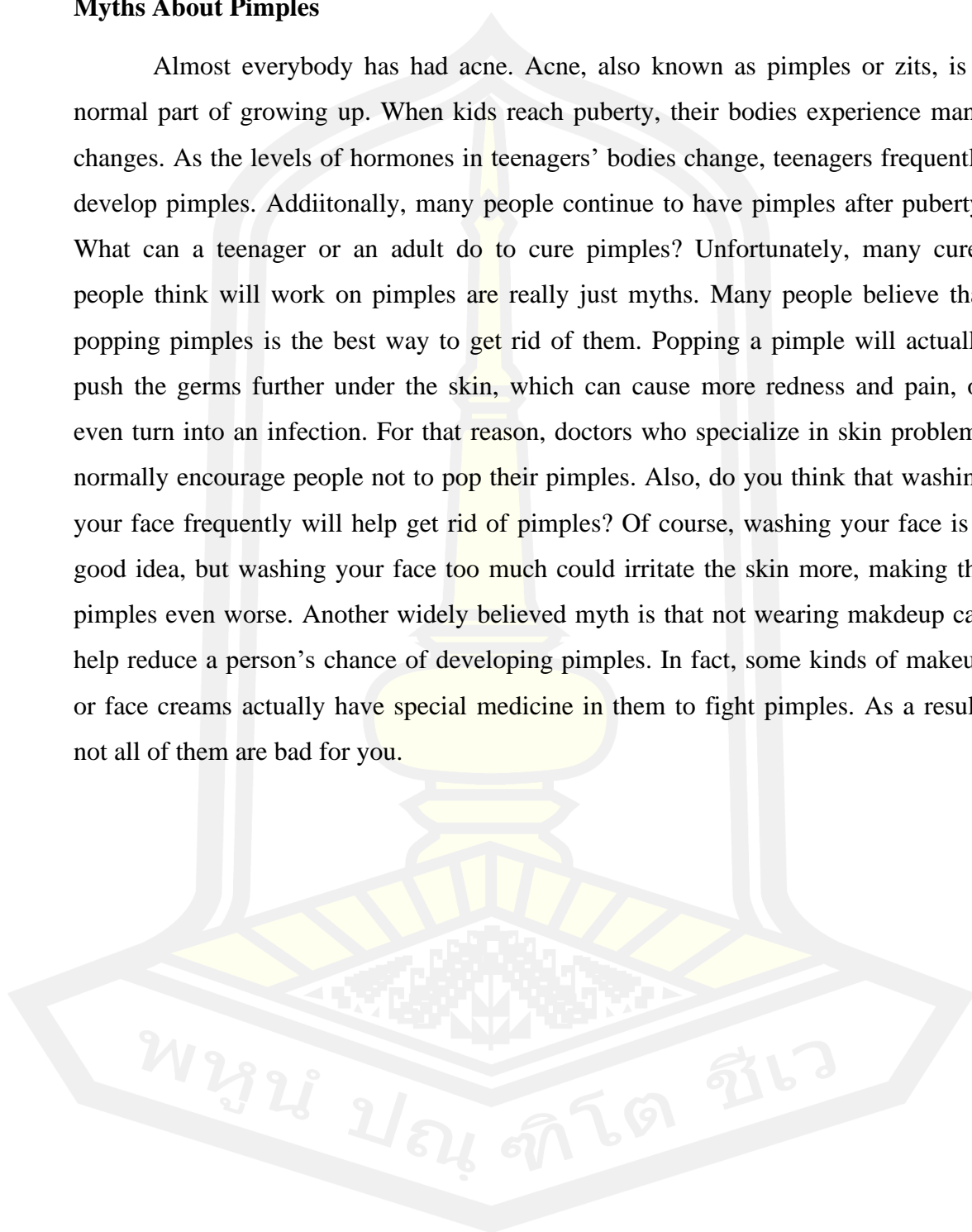
Reading Text 5

Not all hackers are the same

As computer use becomes more common, the need for security is more important than ever. One of the greatest security threats in the online world is computer hacking. Computer hacking is the unauthorized access to a computer or network of computers. Hackers are people who illegally enter systems. They may alter or delete information, steal private information, or spread viruses that can damage or destroy files. But how exactly can a hacker get into a system to do these things? Most hackers use information called protocols that are built into computer software. These protocols allow computers to interact with one another. Protocols are sort of like computer police officers. When a computer connects to another system, the protocols check to see if the access is valid. The protocols can also determine how much information can be shared between the two systems. Hackers can manipulate the protocols to get unlimited access to a computer system. In fact, just the act of entering a computer network is considered hacking. This is commonly called passive hacking. Passive hackers get a rush from just being able to access a challenging system like a bank or military network. Another kind of hacker tries to do damage to a system. After hacking into systems, these hackers release viruses or alter, delete, or take information. Known as active hackers, they are, by far, the ore dangerous of the two.

Reading Text 6

For a quick pickup

It used to be that people would drink coffee or tea in the morning to pick them up and get them going for the day. Then cola drinks hit the market. With lots of caffeine and sugar, these beverages soon came the pick-me-up of choice for many adults and teenagers. Now drink companies are putting out so-called "energy drinks." There is the specific aim of giving tired consumers more energy.

One example of a popular energy drink is Red Bull. The company that puts out this beverage has stated in interviews that Red Bull is not a thirst quencher. Nor is it meant to be a fluid replacement drink for athletes. Instead, the beverage is meant to revitalize a tried consumer's body and mind. In order to do this, the makers of Red Bull, and other energy drinks, typically add vitamins and certain chemicals too their beverages. The vitamins, chemicals, caffeine, and sugar found in these beverages all seem like a sure bet to give a person energy.

Health professionals are not so sure, though. Dr Brent Bauer, on of the directors at the Mayo Clinic in the US, cautions people about believing all the claims energy drink make. He says, "It is plausible if you put these twelve things together, you will get a good result." However, Dr.Bauer adds the mix of ingredients could also have a negative impact on the body. "We just don't know at this point," he says.
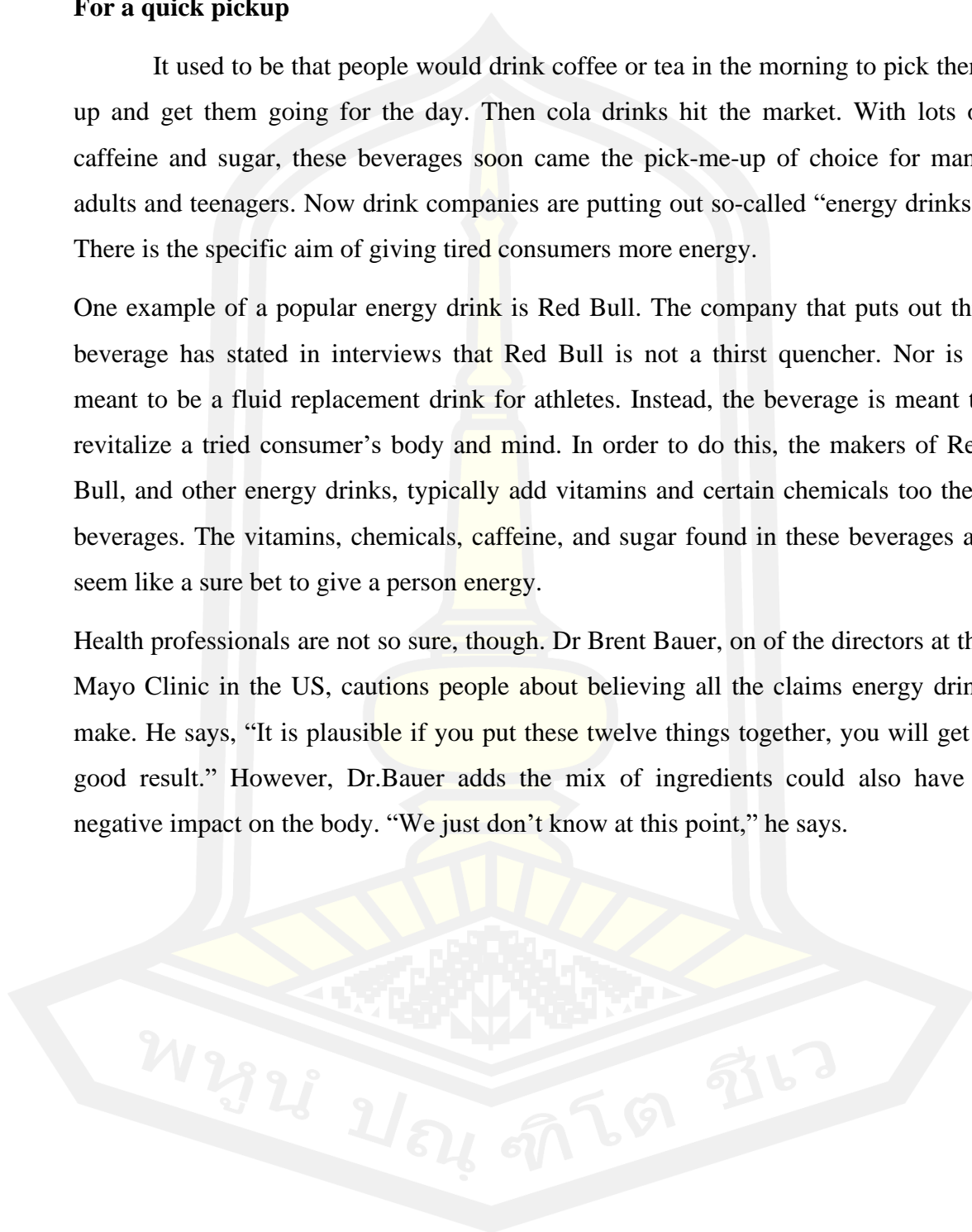
Reading Text 7

Animal Forecasters

Do you think animals can predict the weather or other natural events? Farmers living in the countryside think V so. For hundreds of years, they have observed animals and noticed many things about the way animals act. For example, some farmers believe that if they see swans flying into the wind, a hurricane is coming. Or, when cows lie down, a rainstorm is coming. There are many traditional stories connecting animals and natural events. Some scientists are taking another look at animals to see if there is any truth behind these stories and beliefs. They have found some surprising things. Kiyoshi Shimamura is a Japanese earthquake researcher. He noticed an increase in dog bites a short time before earthquakes hit. Then, he did an investigation of twelve public health centers in Kobe, Japan. These health centers treated people after a big earthquake. Shimamura noticed that the month before the big earthquake, treatment for animal bites had increased. In fact, aggressive behavior in dogs, such as biting and barking loudly, jumped 60 percent! Other animals change their behavior before an earthquake as well. For example, fish in ponds or lakes begin swimming together in large groups only in the middle of the water and not near the edges. Also, birds may fly away from their nests for many days, leaving their eggs unprotected. These behaviors suggest that animals may be able to predict natural events, such as earthquakes, better than people.

Reading Text 8

Smart Exercise

Are you preparing for a big test? If so, you may want to go play some basketball in between hitting the books. Based on information they have collected over the years, researchers have seen an apparent connection between exercise and brain development. Judy Cameron, a researcher at Oregon Health and Science University,studies   brain development. According to her research, it seems that exercise can make blood vessels, including those in the brain, stronger and more fully developed. Cameron claims this allows people who exercise to concentrate better. She says, "While we already know that exercise is good for the heart, exercise can literally cause physical changes in the brain." The effects of exercise on brain development can even be seen in babies. Babies who do things that require a lot of movement and physical activity show greater brain development than babies who are less physically active. With babies, even a little movement can show big results. Margaret barnes, a pediatrician, believes in the importance of exercise. She thinks that many learning diabilities children have in elementary school or high school can be traced back to a lack of movement as babies. "Babis need movement that stimulates their five senses," says Barnes. "They need to establish a connection between motion and memory. In this way, as they get older, children will begin to associate physical activity with higher learning. Researchers at Cornell University studied a group of seniors ranging in age from seventy to seventy-ninie. Their study showed a short-term memory increase of up to forty percent after exercising just three hours a week. The exercise does not have to bevery difficult, but it does have to increase the heart rate.

Appendix E: Lesson Plan

Lesson Plan

Topic	Food Firsts
Level	Secondary
Time	1 hour
Main	Students comprehension reading passage
Objectives	1. Students will be able to identify the main idea and details of the story.
	2. Students will be able to answer the questions from the story.
Materials	1. A reading text **"Food Firsts"**
	2. Worksheet
	3. Group discussion

Teaching Procedures:

Time	Reading stage	Procedures	
		Teacher (T)	**Students (Ss)**
1	Pre-reading (10 minutes)	1. Prediction activating prior knowledge. T asks students to look at the title of " Food Firsts" on the blackboard and asks them to guess what the story is about. Can you guess what the story is about? T encourages the students to think about what do they do when you are at school. 2. Introducing consent package prior to participating in the study in order for them to understand their role. - T asks the students to make group which consists of three to five students.	Ss look at the title and talk about it. Ss say something what they guess.

Time	Reading stage	Procedures	
		Teacher (T)	**Students (Ss)**
1	While-reading (20 minutes)	Read and Share Discussion (RSD) Read - T gives the paper to each group and tell them to read individual. Share - T observes each group. Discussion - T observes each group.	Ss in each group will select the part of story and try to comprehend their part. Ss in each group will share the ideas in their part to their small group Representative in each group will discussion the comprehension of the story from their understanding to whole class.
1	Post-reading (20 minutes)	T lets the students to answer the question after reading. T summarizes the story and tells the correct answer with telling the description.	Ss answer the question by their understanding in their small group. Ss check their answer.

After teaching recommendations and comments

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Thananya Pochana

Teacher

Appendix F: Ethics approval
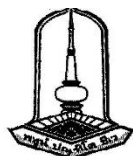
MAHASARAKHAM UNIVERSITY ETHICS COMMITTEE FOR

RESEARCH INVOLVING HUMAN SUBJECTS

Certificate of Approval

Approval number: 164-133/2021

Title : The Effects of Cooperative Learning Techniques on Thai Secondary School Students' Reading Compehension.

Principal Investigator : Miss Thananya Pochana
Responsible Department : Faculty of Humanities and Social Sciences
Research site : Khoksiwittayasan School

Review Method : Expedited Review

Date of Manufacture : 20 May 2021   **expire :** 19 May 2022

    This research application has been reviewed and approved by the Ethics Committee for Research Involving Human Subjects, Mahasarakham University, Thailand. Approval is dependent on local ethical approval having been received. Any subsequent changes to the consent form must be re-submitted to the Committee.

Ratee S.

(Asst. Prof. Ratree Sawangjit)

Chairman

Approval is granted subject to the following conditions: (see back of this Certificate)

ECMSU01-06.02

แบบยินยอมให้ทำการวิจัยสำหรับอาสาสมัครอายุ 7-18 ปี

ข้าพเจ้า (นาย /นาง /นางสาว)...นามสกุล.............................อายุ.............ปี เกี่ยวข้อง
เป็นบิดา/มารดา/ผู้ปกครองของ (ด.ญ./ด.ช./นาย/นางสาว).........................นามสกุล.....................อายุ..........ปี

ขอแสดงความยินยอมให้เด็กในปกครองของข้าพเจ้าเข้าร่วมการวิจัย ในโครงการวิจัยเรื่อง "ผลของเทคนิคการ
เรียนแบบร่วมมือต่อการอ่านเพื่อความเข้าใจของนักเรียนชั้นมัธยมศึกษาชาวไทย

ข้าพเจ้าและเด็กในปกครอง/ในความดูแลของข้าพเจ้า ได้รับทราบรายละเอียดเกี่ยวกับที่มาและวัตถุประสงค์ใน
การทำวิจัย รายละเอียดขั้นตอนต่างๆ ที่จะต้องปฏิบัติหรือได้รับการปฏิบัติ ความเสี่ยง/อันตราย และประโยชน์ซึ่งจะ
เกิดขึ้นจากการวิจัยเรื่องนี้ ข้าพเจ้าได้อ่านรายละเอียดในแบบชี้แจงสำหรับอาสาสมัครหรือผู้มีส่วนร่วมในการวิจัยโดยตลอด
และได้รับคำอธิบายจากผู้วิจัย จนเข้าใจเป็นอย่างดีแล้ว

ตลอดจนการรับรองจากผู้วิจัยที่จะเก็บรักษาข้อมูลของเด็กในปกครองของข้าพเจ้าไว้เป็นความลับ และจะไม่ระบุ
ชื่อหรือข้อมูลส่วนตัวเป็นรายบุคคลต่อสาธารณชน โดยผลการวิจัยจะนำเสนอในลักษณะภาพรวมที่เป็นการสรุป
ผลการวิจัยเพื่อประโยชน์ทางวิชาการเท่านั้น

ข้าพเจ้าจึงสมัครใจให้เด็กในปกครอง/ในความดูแลของข้าพเจ้าเข้าร่วมในโครงการวิจัยนี้ ภายใต้เงื่อนไขที่ระบุไว้
ในแบบชี้แจงอาสาสมัคร โดยข้าพเจ้ายินยอมให้เด็กในปกครอง/ในความดูแลของข้าพเจ้า เข้าร่วมในการวิจัย และเด็กใน
ปกครอง/ในความดูแลของข้าพเจ้าสมัครใจเข้าร่วมการวิจัยนี้ ภายใต้เงื่อนไขที่ระบุไว้ในแบบชี้แจงอาสาสมัคร *เด็กจะต้อง
ได้รับการเรียนแบบ Small Group Discussion ตอบแบบสอบถามจากการเรียน และให้สัมภาษณ์เรื่องการเรียนแบบ
ร่วมมือโดยวิธี Small Group Discussion*

ข้าพเจ้ามีสิทธิให้ผู้ที่อยู่ในปกครอง/ในความดูแลของข้าพเจ้าหรือเป็นความประสงค์ของผู้ที่อยู่ในปกครอง/ใน
ความดูแล ถอนตัวออกจากการวิจัยเมื่อใดก็ได้ โดยไม่ต้องแจ้งเหตุผล ซึ่งการถอนตัวออกจากการวิจัยนั้น จะไม่มีผลกระทบ
ต่อการเรียนหรือในทางใดๆ ต่อผู้ที่อยู่ในปกครอง/ในความดูแลของข้าพเจ้าและตัวข้าพเจ้าทั้งสิ้น

ข้าพเจ้าได้รับคำรับรองว่า ผู้วิจัยจะปฏิบัติต่อผู้ที่อยู่ในปกครอง/ในความดูแลของข้าพเจ้า ตามข้อมูลที่ระบุไว้
ในเอกสารชี้แจงผู้เข้าร่วมการวิจัย และข้อมูลใดๆที่เกี่ยวข้องกับผู้ที่อยู่ในปกครอง/ในความดูแลของข้าพเจ้า ผู้วิจัยจะ
เก็บรักษาเป็นความลับ โดยนำเสนอข้อมูลจากการวิจัยเป็นภาพรวมเท่านั้น ไม่มีข้อมูลใดในการรายงานที่จะนำไปสู่
การระบุตัวผู้ที่อยู่ในปกครอง/ในความดูแลของข้าพเจ้าและตัวข้าพเจ้า

หากข้าพเจ้าและผู้ที่อยู่ในความปกครองของข้าพเจ้ามีข้อข้องใจเกี่ยวกับขั้นตอนของการวิจัย ข้าพเจ้าสามารถ
ติดต่อกับ *นางสาวธนัญญา พฤนา บ้านเลขที่ 290 ม.20 บ.ธาตุพัฒนา อ.วาริชภูมิ จ.สกลนคร 47150 โทรศัพท์
0887403065* ได้ตลอด 24 ชั่วโมง

ข้าพเจ้าและผู้ที่อยู่ในปกครองของข้าพเจ้าเข้าใจข้อความในแบบคำชี้แจงอาสาสมัคร และแบบยินยอมนี้โดย
ตลอดแล้ว จึงลงลายมือชื่อไว้

ลงชื่อ...อาสาสมัคร   ลงชื่อ...ผู้ปกครอง
(   )   (   )
วันที่..........เดือน....................พ.ศ..........   วันที่..........เดือน....................พ.ศ..........

ลงชื่อ...ผู้ให้ข้อมูลและขอความยินยอม
(   )
วันที่..........เดือน....................พ.ศ..........

*หมายเหตุในกรณีที่มีผู้มีส่วนร่วมในการวิจัยอายุระหว่าง 7-18 ปี ต้องลงนามให้ความยินยอมร่วมกับบิดา/มารดาหรือ
ผู้ปกครอง (Assent)*

Questionnaire

READING ATTITUDE QUESTIONNAIRE

The Effects of Cooperative Learning Techniques on Thai Secondary School Students' Reading Comprehension

คำชี้แจง: ให้นักเรียนทำเครื่องหมาย × ลงในช่องที่ตรงกับความคิดเห็นที่มีต่อการทำงานเป็นกลุ่ม

ข้อความ	ไม่เห็นด้วยอย่างยิ่ง 1	ไม่เห็นด้วย 2	ไม่แน่ใจ 3	เห็นด้วย 4	เห็นด้วยอย่างยิ่ง 5
1.เมื่อฉันทำงานเป็นกลุ่มฉันสามารถแบ่งปันความคิดของฉันได้					
2.เมื่อฉันทำงานกับนักเรียนคนอื่น ๆ งานจะถูกแบ่งเท่า ๆ กัน					
3.มีสมาชิกในกลุ่มคนหนึ่งมักจะทำการตัดสินใจในกลุ่ม					
4.สมาชิกในกลุ่มของฉันช่วยอธิบายในสิ่งที่ฉันไม่เข้าใจ					
5.ฉันยังมีการเรียนรู้เพิ่มมากขึ้นเมื่อฉันสอนเนื้อหาให้กับสมาชิกในกลุ่มของฉัน					
6.เมื่อฉันทำงานเป็นกลุ่มฉันจะทำงานที่มีคุณภาพที่ดี					
7.เมื่อฉันทำงานเป็นกลุ่มฉันได้เรียนรู้เนื้อหาของฉันเพิ่มเติม					
8.เมื่อฉันทำงานเป็นกลุ่มนิสัยการทำงานของฉันจะดีขึ้น					
9.เมื่อฉันทำงานเป็นกลุ่ม ฉันจัดการงานของฉันได้ดีขึ้น					
10.เมื่อฉันทำงานเป็นกลุ่ม ฉันสามารถเข้าใจเนื้อหาได้					
11.ฉันมีความสนุกกับเนื้อหาต่างๆมากขึ้นเมื่อฉันทำงานกับนักเรียนคนอื่น ๆ					
12.สมาชิกในกลุ่มของฉันมีความเคารพต่อความคิดเห็นของฉัน					
13.ฉันรู้จักสมาชิกในกลุ่มของฉันดีเพิ่มมากขึ้น					
14.ฉันรู้สึกว่าฉันเป็นส่วนหนึ่งของสิ่งที่เกิดขึ้นในกลุ่ม					
15.ฉันชอบช่วยเหลือสมาชิกในกลุ่มของฉันเรียนรู้เนื้อหาต่างๆเพิ่มมากขึ้น					
16.ฉันมีทัศนคติที่ดีต่อการทำงานเป็นกลุ่ม					
17.การทำงานเป็นกลุ่มช่วยเพิ่มความสัมพันธ์ที่ดีในการทำงานระหว่างกันได้					
18.การทำงานเป็นกลุ่มไม่แตกต่างกันจากการทำงานคนเดียว					
19.การทำงานเป็นกลุ่มทำให้เสียเวลาเนื่องจากสมาชิกในกลุ่มพูดถึงสิ่งอื่นๆทำให้ไม่สามารถบรรลุข้อตกลงใด ๆ ได้					
20.ฉันใช้เวลาสั้น ๆ ในการทำงานให้เสร็จเมื่อฉันทำงานร่วมกันเป็นกลุ่ม					
21.ฉันหงุดหงิดเมื่อสมาชิกในกลุ่มไม่เข้าใจเนื้อหา					
22.ในการทำงานกลุ่มนักเรียนหนึ่งหรือสองคนเท่านั้นที่มีความสำคัญไม่ใช่สมาชิกทั้งหมด					

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ข้อความ	ไม่เห็นด้วยอย่างยิ่ง 1	ไม่เห็นด้วย 2	ไม่แน่ใจ 3	เห็นด้วย 4	เห็นด้วยอย่างยิ่ง 5
23.การทำงานเป็นกลุ่มเป็นผลประโยชน์ร่วมกันของทุกคน					
24.ถ้าฉันทำงานเป็นกลุ่มสมาชิกในกลุ่มจะประเมินความคิดของฉันต่ำเกินไปและพวกเขาก็ไม่สนใจความคิดเห็นของฉัน					
25.คะแนนของฉันดีขึ้นเมื่อฉันทำงานร่วมกับคนอื่นๆ ในกลุ่ม					

Interview Questions

1. ในความคิดของคุณอะไรคือส่วนที่ดีที่สุดของการทำงานเป็นกลุ่มย่อย
2. ในความคิดของคุณอะไรคือส่วนที่แย่หรือไม่ดีของการทำงานเป็นกลุ่มย่อย
3. คุณมีทัศนคติอย่างไรต่อการทำงานกลุ่มในห้องเรียน
4. คุณคิดว่าข้อดีของการใช้กลยุทธ์การทำงานเป็นกลุ่มในห้องเรียนคืออะไร? ทำไม
5. คุณคิดว่าข้อเสียของการใช้กลยุทธ์การทำงานเป็นกลุ่มในห้องเรียนคืออะไร? ทำไม
6. การทำงานเป็นกลุ่มในห้องเรียนส่งผลการเรียน/คะแนนสอบดีขึ้นไม่ อย่างไร
7. คุณใช้เวลาในการทำงานเป็นกลุ่มแต่ละครั้งนานกว่าที่คิดไว้รือไม่ เพราะอะไรที่ทำให้คุณทำงานช้าหรือเร็วกว่าที่คิดไว้
8. การทำงานเป็นกลุ่มทำให้นักเรียนรัก/ชอบการทำงานแบบกลุ่มมากขึ้นหรือไม่ เพราะอะไร
9. การทำงานเป็นกลุ่มทำให้คุณจัดการงานได้ดีหรือไม่ อย่างไร
10. คุณคิดว่าการทำงานเป็นกลุ่มทำให้มีโอกาสสอนสมาชิกในกลุ่ม และส่งผลให้คุณมีความสามารถด้านอื่นเพิ่มมากขึ้นหรือไม่ อย่างไร

Reading Comprehension Test

Part 1 : Item 1-15

Directions: Read the following passages and then choose the most appropriate answer based on the information in the passage.

Hurricane

A hurricane, also called a tropical cyclone, is the most powerful storm that forms on Earth. A hurricane forms over warm ocean water. As it grows in size and intensity, its powerful winds begin rotating around a center like water going down a drain. Because of the physics phenomenon known as the Coriolis Effect, hurricanes that form in the Northern Hemisphere feature winds that move counterclockwise, while those that form in the southern hemisphere feature winds that move clockwise. In the center of a powerful hurricane (called the eye), air may sink rather than rise, which suppresses cloud formation, leading to calm skies and wind. The eye of a hurricane can be up to 240 miles in diameter, but is normally between 20 and 40 miles in diameter. The clouds on the edge of the eye form the eyewall of the hurricane, which typically feature the hurricane's strongest winds, highest clouds, and fiercest precipitation. By this time, the massive storm is 50,000 feet high and 125 miles across. Winds from the hurricane can extend hundreds of miles from the center or "eye" of the hurricane , which itself may be 30 miles across. The most powerful hurricanes can sustain winds of over 156 miles per hour.

When hurricanes hit land, they cause massive damage, storm surges, major wind damage, rogue waves, and flooding. Once they hit land, however, they quickly weaken as they are longer being powered by warm ocean water.

1. Which is NOT true about a hurricane?
a. Hurricane winds in the Northern Hemisphere rotate clockwise
b. A hurricane is the most powerful storm on Earth
c. The eye of a hurricane usually has calm skies.
d. The eye of a hurricane can be up to 240 miles in diameter

2. The hurricane's most damaging winds and precipitation occur in...
a. the eye
b. the passage doesn't say
c. the outer bands
d. the eyewall

3. What does "suppresses" mean in the following sentence

In the center of a powerful hurricane (called the eye), air may sink rather than rise, which suppresses cloud formation, leading to calm skies and wind.

a. increase
b. heightens
c. hold back
d. circle

4. hen hurricanes hit land...

a. they strengthen
b. they turn into tornadoes
c. they quickly weaken
d. they return to the ocean

5. Which of the following could be considered the THEME of the second paragraph?

a. Flooding caused by hurricanes
b. The power of a hurricane
c. The science behind hurricane formation
d. When tornadoes strikes

6. When do hurricanes receive names?

a. When all of the damage is assessed
b. After they hit land
c. When winds reach 74 miles per hour
d. When winds reach 39 miles per hour

7. How tall of the huge storm?

a. 50,000 feet and 125 miles
b. up to 240 miles
c. between 20 and 40 miles
d. 39 miles

8. Which of the following could be a title for the passage?

a. Why Hurricanes Weaken
b. The Basics About Hurricanes
c. Wind Speeds of Hurriances
d. Hurricane Katrina

9. How does the effect of hurricanes hitting land?

a. flooding
b. sunny
c. rainy
d. highest clouds

10. How many lengths of the hurricane can expand from the center?

a. thirty miles

b. forty miles

c. fifty miles

d. sixty miles

Growing Deserts

There are deserts all over the world. They can be found in Africa, China, South America, and North America. In some places, deserts are growing. This is a serious problem because deserts destroy farmland and ruin land where animals live. When people cannot grow food or find animals to eat, they have to leave their homes.

Sometimes, nature can cause deserts to spread. Wind can move sand away from deserts and onto useful land. When there is no rain for a long time, plants die and deserts grow. However, humans can also cause deserts to grow. This is called desertification, and it happens in many ways. One way is when people cause too much air pollution, which can make an area hotter. Hotter weather can reduce the amount of rain as well. Too many people in one area can also damage the land. In addition, having many animals can harm the land. When large animals like cows walk on soil too much, they turn it into dust. The wind easily blows this dust away. Trees help hold water in the ground. When people cut down too many trees, less water stays in the ground, and the soil is ruined.

All of these things can speed up desertification. To stop deserts from growing, people must think of ways to treat the land better.

Choose the best answer.

11. What is the main idea of the reading?

a. Where the world's deserts are

b. How people live in deserts

c. Why some deserts are growing

d. How cows can stop deserts from growing

12. Where are deserts found?

a. Africa and South America

b. The United States and China

c. On useful land

d. All around the world

13. Which is NOT a cause of desert growth?

a. No wind

b. Using land too much

c. No rain

d. Many animals

14. How do humans cause desert growth?
    a. By causing pollution

    b. By eating only vegetables

    c. By planting trees

    d. By moving sand

15. How can humans stop desert growth

    a. By using bicycles less

    b. By raising more cows

    c. By cutting down trees

    d. By having fewer children

Part 2: Item 16-30

Directions: Reading the following passages and then choose the most appropriate answer based on the information in the passage.

Food Firsts

How much do you know about the history of some of your favorite foods? Do you know when people in England started cooking curry dishes? Do you know in which country pizzas or hamburgers were first made? The facts might surprise you.

Many people think the English found out about curry from people in India in the 1600s. In reality, wealthy English people were eating dishes made with curry spices hundreds of years before British ships traveled to India. Cooks of wealthy English families during the time of King Richard I were making curry dishes, and in fact, the word "curry' can be found in an English language cookbook as far back as 1377.

As for pizza, this dish was probably first made in Persia (what is now Iran). The Persians were eating round, flat bread with heese in the 500s. That was nearly 1,000 years before pizza caught on in Naples, Italy!

Finally, let's look at the truth behind hamburgers. Many people think hamburgers are an American food. However, according to some stories, hamburgers came from Hamburg, Germany. A German named Otto Kuasw Hamburg, Germany. A German named Otto Kuasw created the first hamburger in 1891. Four years later, German sailors introduced hamburgers to Americans.

Where foods come from isn't nearly as important as how they taste; as long as they are delicious! So, go get some of your favorite food and dig in.

Fill in the blank with words below which is suitable for the sentence.

find out   catch on   dig in   Otto Kuasw   German sailors

Hamburgers   Cheesy Persian bread   Italian pizza   English curry

How to make pizza   How to cook cheese

16. All of the food is ready. .... !

17. Did you .... what time the movie starts?

18. These days, Latin dancing is ....

19. The one who introduced hambergers to America is ....

20. The food that was probably made first is ....

21. The thing that people in Naples learn from Persians is ....

Animal Forecasters

Fill in the blank with words below which is suitable for the passage.

predict   observed   farmers   people   before   earthquake   birds   nests   behaviors

Do you think animals can (22).......... the weather or other natural events? Farmers living in the countryside think so. For hundreds of years, they have (23).......... animals and noticed many things about the way animals act. For example, some (24).......... believe that if they see swans flying into the wind, a hurricane is coming. Or; when cows lie down, a rainstorm is coming. There are many traditional stories connecting animals and natural events. Some scientists are taking another look at animals to see if there is any truth behind these stories and beliefs. They have found some surprising things.

Kiyoshi Shimamura is a Japanese earthquake researcher. He noticed an increase in dog bites a short time before earthquake hit. Then, he did an investigation of twelve public health centters in Kobe, Japan. These health centers treated (25).......... after a big earthquake. Shimamura noticed that the month (26).......... the big (27)..........., treatment for animal bites had increased. In fact, aggressive behavior in dogs, such as biting and barking lounly, jumped 60 percent!

Other animals change their behavior before an earthquake as well. For example, fish in ponds or lakes begin swimming together in large groups only in the middle of the water and not near the edges. Also, (28).......... may fly away from their (29).......... for many days, leaving their eggs unprotected. These (30)........... suggest that animals may be able to predict natural events, such as earthquakes, better than people.

Part 3: Item 31-45

Directions: Read the following passages and then write the correct answer with the alphabhet in front of each item.

Tiger's Tale

Tiger Woods started playing golf when he was two years old. Now he is one of the most famous professional golfers in the world. Tiger is from the United States. His father is African-American and his mother is Thai. His real name is Eldrick, but everyone knows him as Tiger, the nickname his father gave him.

He started playing golf professionally in 1996, and won all four of the World Golf Championships before of these championships. Although he has played on many great golf courses, one of Tiger's favorite places to play is Pebble Beach.

Tiger became a role model at an early age. People look up to him, so he is very grateful. Because many people helped Tiger as a child, he wants to lend a hand to others now. Some people cannot play golf because of their ethnicity, while others do not have enough money. Occasionally, Tiger himself was prevented from playing golf. Because of this, he created the Tiger Woods Foundation to help make golf open to everyone. He likes to see diversity on the golf course, and he wants all children to play golf if they want to. Tiger is happy that many children now want to play golf because of him.

.... 31) What is the main idea of this reading?	a. Tiger's golf career
..........32) Where is one of Tiger's parents from?	b. Tiger's foundation
..........33) Where does Tiger like to play golf?	c. Pebble Beach
..........34) How old is he to win all four of championship?	d. Twenty five
..........35) How Tiger feel when he see many children want to play golf because of him?	e. happy
..........36) When does Tiger start to play golf?	f. Two
..........37) What is the nominal name of Tiger?	g. Eldrick
..........38) The extra name of him is.........	h. Tiger

A Bug's Sleep

Every mammal needs sleep, as do birds and reptiles, such as snakes. But what about insects? Do they need sleep? Scientists have been trying to discover the truth about insect sleep behavior for years. Scientists first thought insects did not need sleep. According to them, the insect brain was not complex enough to need it. Scientists said

that some kinds of brain activity, like dreaming, were sleep behaviors. Insects rested, instead.

However, new studies have shown that some insects may actually sleep. There are four types of behavior during sleep. First, sleeping people and animals don't move much. Also, they have a position for sleeping; for example, they lie down. Additionally, they don't wake up easily when hearing noises or seeing light. Lastly, they are able to come out of sleep quickly in response to some intense stimulant.

Scientists have now seen similar behaviors in fruit flies. For example, fruit flies become still every night for about seven hours. At these times, they sit in a different way, let their antennae drrop, and do not respond to quiet noises. The flies do begin to move around when louder noises are made. Scientists think that some insects may their own uique kind of sleep.

.... 39) ...... mammal needs sleep.   a. Whole

..........40) What are the scientists learn in this story?   b. Insects sleep

..........41) How many type of behavior during sleep?   c. Four

..........42) What is the first thought in scientist with   d. They rest.

        insect sleep?

..........43) In new studies, have shown that insects may   e. sleep

..........44) How many hours do the flies sleep   f. Seven

..........45) What are the flies do when the louder noises   g. move around

        happen?

Part 4: Item 45-60

Directions: Read the following passages and then tick ✓ in front of correct sentence and tick X in front of the wrong sentence.

The Ice Hotel

Are you into skiing? Is winter your favorite time of year? If you like snow and ice, maybe you should stay at the Ice Hotel in Quebec, Canada. But, you can only check in to this hotel during the winter. Why? Because this hotel is made entirely of ice and snow!

This amazing hotel is built every December. It has 32 rooms, and 80 people can stay there each night. The hotel has a movie theater, an art gallery, and a church. Of course, all of these parts of the hotel are made of ice. In fact, all the furniture, art, lights, and even plates and drinking glasses are made of ice.

Because this hotel is so unusual, it has become very popular. People from all over the world come to the Ice Hotel to look at the fantastic ice art, drink and eat from designer ice dishes, and experience the unique atmosphere. Some couples have even gotten married in the hotel's ice church.

However, all the guests keep their winter coasts on! Because of all the ice, the temperature inside the hotel is always between -2 and -5 °C. Surprisingly, sleeping is not a problem in the freezing cold hotel rooms. Every guest gets a special cold-weather sleeping bag and some fur blankets. These keep them cozy and warm until morning.

..............46. The main idea of the reading is what makes the Ice Hotel special.

..............47. We can get married in Ice Hotel.

..............48. The ice plates are the things which you can find in the restaurant.

..............49. The Ice Hotel has a sleeping bag and some fur blankets for sleeping.

..............50. The guests can see a movie in Ice Hotel.

..............51. Ice Hotel will construct every November.

..............52. There are thirty four rooms in Ice Hotel and ninety people can stay there.

Mona Who?

A young woman without eyebrows is seated in front of a beautiful landscape. Does this sound familiar to you? This is one of the most famous works by Leonardo da Vinci. The Mona Lisa is a beautiful painting. However, it was the mystery behind the painting that intrigued people. Who was the woman and why did da Vinci paint her?

Different theories have been proposed about her identity. Many art and history buffs thought that it was a portrait of da Vinci himself, but as a woan. Others thought it was not any particular person, but the ideal of a woman. They say this is why she was painted with no eyebrows. This gave her face a more unearthly look. Still, others thought that it was a portrait of an actual woman of the time, the wife of Francesco del Giocondo.

In 2005, historian Armin Schlechter of Heidelberg discovered the answer. While looking through an old manuscript, he found a small note. In this, the woman in the Mona Lisa was positively identified as Lisa del Giocondo. The artist had been paid to do her portrait after the birth of her second child. "Mona," in fact, means "madam" in Italian. As for her unearthly look? Historians say women of this time liked to remove their eyebrows. Apparently, they thought eyebrows were not attractive.

..............53. The main idea of this reading is fashion trends long ago.

..............55. According to the reading, her lack of eyebrows is interesting.

..............56. There is an idea about the identity of the woman in the Mona Lisa.

..............57. The Mona Lisa was painted with no eyebrows.

..............58. Historians said that the women of this time liked to increase the eyebrows.

..............59. The most famous work by Leonardo da Vinci is Mona Lisa.

..............60. The meaning of Mona is madam

BIOGRAPHY

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