

CHAPTER II

REVIEW OF LITERATURE

The review of literature consists of two subheadings corresponding to the major areas of interest in the study: (1) theoretical background of cooperative learning and critical thinking (2) related research on cooperative learning and the critical thinking skills.

Theoretical background of Cooperative Learning and Critical Thinking

Cooperative Learning

Cooperative learning is one strategy for group instruction which is under the learner centered approach. There are many researchers who give the definitions of cooperative learning.

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“ Cooperative learning is a means of grouping students into small, mixed-ability learning teams”(Burden & Byrd,1994,p.99).

“Cooperative learning involves students working together in pairs and groups, they share information and come to each other’s aid. They are a team whose players must work together in order to achieve goals successfully”(Brown,1994, p.81).

“Cooperative learning involves students working in small groups or teams to help each other learn academic material” (Ryn & Cooper, 1998,p.255).

Johnson & Johnson (1999) define that “Cooperative learning exists when students work together to accomplish shared learning goals.” (as cited in Johnson, Johnson & Stanne, 2000)

Over the past 40 years, many researchers who have developed cooperative learning methods have a variety of cooperative learning techniques. Olsen & Kagan (1992) introduces several models which are associated with cooperative learning: Learning together (Johnson & Johnson,1986), Student team learning such as STAD,

Jigsaw which was developed by Aronson and Slavin, Team-Games-Tournament (TGT) and Comprehensive Integrated Reading and Composition (CIRC) which was developed by Slavin and colleagues, Number Headed Together, Group Investigation by Sharan & Sharan, Three-Step Interview (Kagan,1989b), Similarity Grouping, Line-ups, Roundtable, Round Robin, Talking Token, Paraphrase Passport, Match Mine, Pair Check, Inside-Outside Circle, Color coded Co-op Cards, Think-Pair-Share, Solve-Pair-Share, Group discussion and Co-op Co-op.

Johnson, Johnson & Stanne (2000,p.3) state that the modern methods of cooperative learning are as follows: Complex instruction (Cohen,1994b), Constructive Controversy (Johnson & Johnson,1979), Cooperative Integrated Reading and Composition (CIRC) (Stevens, Madden, Slavin & Farnish,1987), Cooperative Structures (Kagan, 1985), Group Investigation (Sharan & Sharan,1976), Jigsaw (Aronson, et al.,1978), Learning together (Johnson & Johnson, 1975), STAD (Slavin,1978), Team-Games-Tournaments (DeVries & Edwards,1974), and Team Assisted Individualization (TAI) (Slavin, Leavey, & Madden,1982)

However, in this research, the researcher conducts specific research on only three techniques which are: STAD, Jigsaw and

Think-Pair-Share. There are many researchers who emphasize the advantages of using these three techniques.

Student-Teams-Achievement-Divisions (STAD) is one popular cooperative learning technique. It was developed by Robert Slavin and his colleagues at the John Hopkins University. In 1990, Slavin emphasizes that STAD has five major components; class presentation, teams, quizzes, individual improving score and team recognition (as cited in Olsen & Kagan,1992). Burden & Byrd (1994) give the definition of STAD as follows:

Student- Teams- Achievement -Divisions (STAD) involves four-member learning teams that are mixed in performance level, sex, and ethnicity. After the teacher presents a lesson, students work within their teams to make sure that all members have mastered the lesson. Students then individually take a quiz. Students' quiz scores are awarded based on the degree to which students meet or exceed their earlier performance. These points are then totaled to form team scores. Teams that meet certain criteria may earn certificate or other rewards. If students want their team to earn team rewards, they must help their teammates learn the materials. Individual accountability is maintained since the quiz is taken without the help of teammates. Since team scores are based on each student 's improvement, there is an equal opportunity for success.(p.100-101)

Another cooperative learning technique is Jigsaw which was developed by Elliot Aronson and his colleagues in 1978 at the university of Texas and then adapted by Slavin and his colleagues.

Arends (1991) defines Jigsaw as one kind of cooperative learning method in which students are assigned to five or six member heterogeneous teams. Academic materials are presented to students in text form, and each student has the responsibility to learn a portion of the material. Members from different teams with the same topic (the expert group) meet to study and help each other learn their topic. Then students return to their home team and teach the other team members what they have learned. Following home team meetings and discussions, students take quizzes individually on the learning materials. "In Slavin's version of Jigsaw, team scores are formed using the same scoring procedure as in STAD"(Arend,1991, p.325).

Littlewood (2000) states that in Jigsaw groups, each student has different information and ideas which have to be presented to the expert group. They need to apply a higher-level of thinking skill to the exploration and discussion.

Coelho (1992) emphasizes that students will develop their cognitive skills in analysis, comparison, evaluation, and synthesis of facts and opinions while they work together in order to solve a problem or complete a task in a Jigsaw classroom.

Scoring, an important procedure for STAD and Jigsaw to stimulate student learning, is shown as follows:

Scoring procedures for STAD and Jigsaw

- Step 1: Establish Base Line Each student is given a base score based on an average on past quizzes.
- Step 2: Find Current Quiz Score Students receive points for the quiz associated with the current lesson.
- Step 3: Find Improvement Score Students earn improvement points to the degree to which their current quiz score matches or exceeds their base score, using the scale provided below.

Improvement Points Scale

<u>Quiz score</u>	<u>Improvement Points</u>
More than 10 points below base score	0
10 points below to 1 point below base score	10
base score to 10 points above base score	20
More than 10 points above base score	30
Perfect paper (regardless of base score in Step 1)	30

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Determining and rewarding team scores and team summary sheet

Step 1: Determining Team scores Team scores are figured by adding each member's individual improvement points and dividing by the number of members in the team.

Step 2: Recognizing Team Each team receives a particular accomplishment certificates based on the following points system.

<u>Team Average</u>	<u>Award</u>
15 points	Good Team
20 points	Great Team
25 points	Super Team

Team average = a total team score divided by number of team members.

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Source: R. Slavin (1986) , Students team teaching. Center for research on Elementary and Middle Schools. (p.19) (as cited in Arends,1991.)

In scoring the test, the teacher or student scores the tests by using percentage of correct answers. (Gage and Berliner, 1998)

Some researchers suggest comparing the pre-test score with the post-test score as the improvement score and then give the recognition to the group which has the highest interval score by giving the praise and announcing the group score to class.

There are many theories of researchers as shown above, but in this research the scoring of the unit pre-tests and post-tests are: the unit pre-test score is the base score and the post-test score is the current score. The test content is the same in each unit. Then the pre-test score are compared with post-test score to make the improvement score. Pinkeaw (1993) states that the weak point of scoring the improvement score of Slavin is: the base score which is based on the average of past quizzes, isn't derived from the same unit content, this can cause an inconsistency in the score. Moreover, Pinkeaw also suggests that the high ability students who always get a high score will get a low improvement score which may cause low motivation in learning. In scoring the test, the teacher uses the percentage of correct answers (Gage & Berliner, 1998) to compare with the improvement points scale of Slavin (1986). Then the teacher gives

team recognition based on the sum of all team members' improvement scores by giving the rewards and praise to the team with the highest scores and announcing the group score to the class.

Think-Pair-Share is also one kind of simple cooperative technique with great benefits. Ryn & Cooper (1998) states the definition of Think-Pair-Share as "students think to themselves on a topic provided by the teacher; then pair with another student to discuss it; then share their thoughts with the class"(p.257). According to Olsen and Kagan (1992), Think-Pair-Share consisted of teachers posing a question (usually a low-consensus question), followed by students thinking of the response. The interview procedure is then used to share answers.

Course members form pairs to work on a task. Students work alone to think about ideas relating to the task. Then they discuss their ideas with their partner. Course members share some of their pair's ideas with the class. (Jacobs, George M., Lee, G. S.& Ball, J. ,1996.)

Littlewood (2000) states the benefit of Think-Pair-Share that it is a technique for stimulating students' analysis and discussion. Ryn & Cooper (1998) also suggest that Think-Pair-Share can foster participation and involvement.

Lie (2000) states that Think-Pair-Share relates to simple thinking skills. The students pose the problem, think alone about

questions for a specific time, then form and discuss the questions in pairs. During the shared time, students are called to share the answers with the whole class. However, Lasley & Mactczynski (1997) emphasize that Think-Pair-Share is aimed to enable students to develop concepts and critical thinking skills.

In implementing cooperative learning in the classroom, it is necessary to prepare the lesson appropriately. According to Arends (1991), the six steps of cooperative learning lesson are as follows: providing objectives and set; giving students information through presentation or text; organizing students into learning teams; providing time and helping team study testing for results; and recognizing both individual and group achievement.

In assigning students into groups, Johnson and Johnson (1987) recommend that the teacher should arrange the heterogeneity of students ability by placing high, medium and low ability students in the same learning group.

Johnson and Johnson (1994) describe that a cooperative learning lesson should include five basic elements: (1) positive interdependence- students must feel they are responsible for their own cooperative learning and for the other members of the group as well, (2) face to face interaction - students must have the opportunity to

explain what they are learning to each other, (3) individual accountability-each student must be responsible for mastery of the assigned work, (4) social skills- each student must communicate effectively and maintain respect among group members, also work together to resolve any conflicts, and (5) group processing- groups must give feedback to see how well they are working together and how they can improve. (as cited in Burden & Byrd,1994,p.99)

Ways to promote positive interdependence skills in groups are through the use of goals, rewards, role, resource and identity. Positive goal interdependence means that the group shares a common goal or goals. Positive reward interdependence means that each group member s' reward is affected by the reward that the other members of their group receive. Positive role interdependence means that members are assigned the specific roles in order to complete the task. Positive resource interdependence means that each member has only a portion of the information, materials, or tools needed to complete the task. Positive identity interdependence means that the group share a common identity. (Jacobs, George M., Lee Gan Siowck.& Ball, Jessica. ,1996)

Moreover, Johnson and Johnson (1995) mention three further important conditions for the effectiveness of cooperative learning:

individual accountability, mastery of social skills, and regular group processing. They argue that cooperative learning seems to work best when the group rewards, that students receive for learning, are combined with individual accountability to ensure that each student does his or her share of the work. In the cooperative learning formats they promote, students are individually quizzed and receive recognition based on the sum of all team members' scores. (as cited in Ehrman & Dornyei, 1999)

Ryn & Cooper (1998) also explain three important characteristics for successful cooperative learning strategies: group goals, individual accountability and equal opportunity to success.

Jacobs, George M., Lee Gan Siowck.& Ball, Jessica. (1996) describe the collaborative skills which are necessary for working in groups effectively. They consist of three skills: group forming , basic group functioning , and idea exchange.

The first skill is group forming which consists of getting into group efficiently, greeting others, introducing oneself-introducing others, using people's names when speaking to them, ending a group activity, and saying goodbye.

The next skill is basic group functioning which contain 16 skills as follows: saying thanks- responding to thanks, attentive listening,

getting praise - responding to praise, waiting patiently - trying not to keep others waiting, asking for help -giving help, apologizing - accepting apologies, encouraging others to participate -responding to encouragement to participate, asking questions - responding to questions, saying 'No' - accepting 'No', giving instructions - following instructions, interrupting appropriately - accepting appropriate interruption, using humor to help group functioning, getting the group back on task, paraphrasing, observing and commenting on group functioning, and keeping to time limits.

The last skill, idea exchanging consists of 11 skills : making a plan, making suggestions - responding to suggestions, asking for reasons -giving reasons, asking for feedback - giving feedback, giving negative feedback -responding to negative feedback, disagreeing politely - responding to disagreement, checking accuracy, checking for understanding, persuading others, compromising, and summarizing.

Slavin (1996) emphasizes that "All cooperative learning methods share the ideas that students work together to learn and are responsible for one another's learning as well as their own" (p.200-201).

Arend (1991) states that a final step of cooperative learning is the recognition of effort. The teacher sometimes reports on the class and publishes the results of team and individual learning in the class

newsletter. Slavin (1991) also states that the positive effects of cooperative learning on student achievement depend on the use of group rewards based on the individual learning of group members.

There has been much research that compares cooperative learning methods with competitive, individualistic learning and traditional learning groups. Johnson & Johnson (1987) found that differences between the cooperative group learning and the traditional learning group were: the traditional learning group lacks interdependence, individual accountability, group processing, and clear social skills. Moreover, students in the traditional group are responsible for only themselves. In a cooperative learning group, students are responsible for one another to ensure that all group members do the assigned work.

In 1989, Johnson & Johnson found that cooperative learning experiences, compared with competitive and individualistic ones, promoted higher achievement, greater motivation, more positive interpersonal relations among students, more positive attitudes toward the subject area and teacher, greater self-esteem and psychological health, more accurate perspective taking, and greater social skills.

Scarcella & Oxford (1992) assert that ESL teachers need to encourage students to feel comfortable with others and use

cooperation rather than competition in order to increase communication. They also state that “ the more ESL students work together, the greater their opportunities for interaction in English in the classroom setting” (p.60).

Shachar & Sharan (1994) show that in comparing the cooperative learning with traditional teaching, cooperative learning can reduce prejudice and hostility between individuals and groups and increase low-status students’ participation with social interaction, so that they can take a more equal role in group tasks. The cooperative learning also improve students’ facility in speaking and student achievement of cognitive objectives as measured with tests. (as cited in Gage & Berliner, 1998)

Ornstein (1995) also reports two differences between cooperative learning and traditional instruction, that first, students learn information by teaching each other in their group, which is not transmitted by the teacher. Second, students are responsible for each other s’ learning to ensure that every member of their group achieves the goal.

Oxford (1997) asserts that there are numerous studies that indicate that compared to competitive and individualistic learning, cooperative learning is more effective in enhancing motivation and

task achievement, creating higher order thinking skills, improving attitudes toward the subjects, promoting academic peer norm, increasing time on task, stimulating self-esteem, creating caring relationships, and reducing anxiety and prejudice.

The other advantages of cooperative learning are turning groups into teams. Watson (2000) describes that teams consist of a positive interdependence, an individual accountability, an equal sharing of the workload, and simultaneous or coincident work activity. Therefore, explicit roles and responsibilities are very essential in order to help students to know how to function effectively within a team. Holter (1994) states that students are led to attain and use a high level of thinking skills through team assignment in cooperative learning.

Critical Thinking

Critical thinking is an essential skill in learning and working in the workplace, therefore, its use is promoted for all ages and at all levels of education.

The Definition of Critical Thinking

There are many definitions of critical thinking. Some researchers define critical thinking as having a reason or purpose to the thinking,

some problems to be solved or questions to be answered by analysis, synthesis and evaluation of information.

Beyer (1985) explains that although there are some quite diverse definitions of critical thinking, nearly all emphasize the ability and tendency to gather, evaluate, and use information effectively (as cited in Potts, 1994).

Chance (1986) defines that “Critical thinking is the ability to analyze facts, generate and organize ideas, defend opinions, make comparisons, draw inferences, evaluate arguments and solve problems” (as cited in Huitt, 1998).

Angelo (1995) defines that “Critical thinking is the intentional application of rational, higher order thinking skills, such as analysis, synthesis, problem recognition and problem solving, inference, and evaluation” (p.6).

Moreover, Scriven & Paul (1996) state that critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered by: observation, experience, reflection, reasoning, or communication, as a guide to belief and action.

“Critical thinking is the intent to help students evaluate the worth of ideas, opinions, or evidence before making a decision or judgment” (Cooper, 1998,p.258).

In 1998, Huitt describes critical thinking as the disciplined mental activity of evaluating arguments or propositions and making judgment that can guide the development of belief and taking action.

Critical thinking skill is a higher level of thinking. Synthesis and evaluation in Blooms’ cognitive taxonomy are considered equivalent to higher level thinking. Synthesis which is considered more equivalent to creative thinking, requires an individual to look at parts and relationships (analysis) and then to put these together in a new and original way. Evaluation which is considered more equivalent to critical thinking, focuses on making an assessment or judgment based on an analysis of a statement or proposition.(Huitt,1998)

Orlich (1998) also states that the cognitive taxonomy is relevant to enhancing critical thinking. Critical thinking consists of the application of these two levels which are analysis and synthesis in Blooms’ cognitive taxonomy.

Burden & Byrd (1999) explain that the objectives of analysis level include breaking the whole into parts and distinguishing elements, relationships, and organizational principles. The objectives of

synthesis level include putting parts together in a new form such as a unique communication and a plan of operation. Evaluation is the highest level of complexity, the objectives of this level include judging in terms of internal evidence and external evidence.

Many researchers suggest many viewpoints in critical thinking skills. Orlich (1998) identifies the elements of critical thinking as follows: identifying issues; identifying relationships between elements; deducing implications; inferring motives; and combining independent elements to create new patterns of thought (creativity). Brookfield (1987) also identifies four aspects of critical thinking which are: identifying and challenging assumptions, challenging the importance of content, imagining and exploring alternatives, and developing reflective (as cited in Day, 1999).

Voss & Keene (1992) also identify three elements of critical thinking which are as follows: issue identification- a way to pick out the key issues or problems within the material; problem solving - a way to interpret or solve those issues or problems; and active reflection- a way to consider on what is already done.

Hooper & Carter-Wells (1994) argue that to be a good critical thinker, it is necessary to develop these five abilities: developing the interdependence skills of inquiry and analysis, developing the ability

to evaluate arguments and conclusion, making inferences, recognizing assumptions, and integrating information through synthesis to create new knowledge and new information.

Guffey (1996) describes five ways to improve critical thinking skills which are as follows: identify and clarify the problem; gather information; evaluate the evidence; consider alternatives and implications; then choose and implement the best alternatives. Moreover, Marzano (1997) identifies the productive habits of the mind that promote critical thinking skills which include open-mindedness, sensitivity to the feeling and knowledge of others, an emphasis on clarity and accuracy, and a willingness to take a stand on an issue when necessary.(as cited in Sadker & Sadker,1997)

Critical thinking is widely used in the classroom in many countries because of its importance in long life learning. Potts (1994) states that critical thinking in the classroom is facilitated by a physical and environmental lesson that encourages a spirit of discovery.

According to the American National assessments of the effectiveness of education, the low levels of reasoning skills in a number of students and the complaints from the employer about lacking of those skills are increasing, and critical thinking has become

the focus of all levels in schools and colleges. (Hopper and Carter-Wells, 1994, P.52.)

Schlick (1992) reveals that the work place demands workers to have critical thinking skills for analysis, problem solving, and team work in which there is a shortage.

Many researchers suggest different elements of critical thinking skills, however, the researcher adapts some elements of critical thinking from Bloom's taxonomy (1984) which are analysis, synthesis and evaluation levels. Analysis consists of identifying issues, identifying relationships between elements and reasoning deductively and inductively. Synthesis consists of integrating learning from different areas into a plan for solving a problem, formulating a new scheme for classifying objects or events, or ideas and combining independent elements to create new patterns of thought. Evaluation consists of judging the adequacy with which conclusions are supported by data, judging value of work in terms of internal evidence or logical consistency and judging value of work in terms of external evidence or consistency with facts developed elsewhere.

According to many researches, it is revealed that using cooperative learning does not enhance only the level of competency in language but also a higher level of thinking in students. Ornstein (1995) states

that cooperative learning can stimulate the development of alternative perspectives through exposure to multiple viewpoints. Johnson and Johnson (1987) emphasize that using cooperative learning promotes greater competencies in critical thinking, working collaboratively with others, and more positive attitudes toward the subject.

In 1992, Scaglione explains that active discussion in cooperative learning promotes discovery and higher strategies of information with critical thinking skills. Macdonell (1992) suggests that learning through a cooperative group will enhance students' chances to acquire higher level thinking skills and foster what they already know with increased motivation to get more information that makes use of critical thinking skills.

In 1998, Ryder & Graves assert that certain kinds of cooperative learning offer some advantages for teaching critical thinking. Cooper (1995) states that assigning students into group learning situations is the best way to foster critical thinking. Mustapha (2002) also emphasizes that cooperative learning provides a suitable environment for students to develop their critical thinking skills because they have a chance to discuss and interact among the group members.

In scoring the test, the researcher adapt from the standard in grading of the International Critical thinking Essay Test (ICAT). The criteria in grading the ICAT test are as follow:

In the Part I of the test , the grader makes 8 judgments concerning student work which are : question, purpose, information, ideas, assumptions, conclusions, points of view, and implications, each worth 10 points. In part II of the test, the grader grades holistically (0-20 points). There are, therefore, 100 points possible for the two parts: 80 for the first part and 20 for the second part.

First Part of the Test. Analysis of Reasoning (each item 0-10 points) Total Points Possible: 80

0-2 points- unacceptable analysis (unskilled)

3-4 points- low level analysis (minimally skilled)

5-6 points- mixed level analysis (beginning skills)

7-8 points- commendable analysis (skilled)

9-10 points- excellent analysis (highly skilled)

Second part of the Test. Evaluation of Reasoning (grading holistically) Total Possible Points:20

0-4 points- unacceptable evaluation (unskilled)

6- 8points- low level evaluation (minimally skilled)

10-12 points- mixed level evaluation (beginning skills)

14-16 points- commendable evaluation (skilled)

18-20 points- excellent evaluation (highly skilled)(p.2)

The ICAT focuses the interrelationship between content and thinking, which are the ability to isolate the connection between what it is that good thinkers must do to think well within that content and what it is that must do to perform competently in the academic field defined by it.

Since, the ICAT as the Model Descriptions of Goal for Academic Programs, the ICAT can be taken with a variety of contexts of the different department such as the History Department, the Biology Department, Marketing Department, and so on.

In scoring the test items, the researcher adapt the scoring for the critical thinking skills from the level of work in the Generic Academic Performance Standards which is the criteria for grades in courses. The course grading standard, which specify on the academic performance standard and the critical thinking embodied in the content, are shown as the grades of A,B,C,D,E, and F. These specifications must be contextual at two levels: at the department level and at the course level. (see Appendix I)

Related Research of Cooperative Learning and Critical Thinking

There are many studies on factors affecting the learning done by both Thai and foreign researchers. These studies are summarized and presented as follows:

Slavin (1991) states that 11 out of 14 researches on STAD and related methods have significantly higher achievements than traditional instruction.

Pinkeaw (1993) studied students' views on interaction and learning achievement through cooperative learning method in upper-secondary English classes for 82 Mathayomsuksa 4 students. The subjects were classified into 3 groups of 30 high achievers 24 moderate achievers and 28 low achievers. The researcher taught all classes herself for 20 periods. The questionnaire on the students' view on interaction was given before teaching. After teaching, students were given the test and the same questionnaire on interaction and the opinion of the STAD approach.

The finding indicated that all students' listening and speaking achievements were satisfactory. No difference was found between pre-teaching and post-teaching on the views of the high and low achievers but the moderate achievers' views in general decreased significantly after teaching. Their opinions on the STAD approach were at the satisfactory level but no significant difference was found among the three groups.

Sittilert (1994) studied the effects of cooperative integrated reading and composition (CIRC) on English reading comprehension

and the opinions toward classroom atmosphere of Mathayomsuksa 5 students. The subjects were 106 Mathayomsuksa 5 students taking English Reading 3 (English 033) at Yuparaj Wittayalai school, Chiangmai province during the academic year of 1994. They were divided into 2 groups- an experimental group and a control group. The researcher taught the experimental group by using the CIRC method and the control group was taught through the teacher's manual method for eight weeks. The researcher used a reading achievement test and a questionnaire asking students' opinion towards classroom atmosphere. The results showed that the English reading comprehension achievement of the experimental group was higher than the control group. The cooperative integrated reading and Composition (CIRC) helped low achievement students improve their ability and the opinions towards classroom atmosphere were positive.

Hampton & Grudnitski (1996) compared the progress of college business students of different achievement levels after they had engaged in cooperative learning. A ratio of the average post - cooperative learning test scores to the average pre- cooperative learning test scores for each student showed the progress in a semester long introductory course. The result indicated that 215 achievement- diverse participants in cooperative learning did not

benefit equally. Additionally, the low achieving students appeared to benefit most from cooperative learning. This result suggests that cooperative learning may be particularly valuable in helping low achievers.

Thupapong (1996) studied the effects of Students-Teams-Achievement-Division (STAD) learning on English reading achievement and cooperation with 78 Mathayomsuksa 4 Students. The subjects were divided into two groups--the experimental group taught by the STAD approach and the control group taught by the teacher's manual for six weeks. The instruments used in this study were reading achievement tests and cooperation tests. The results revealed that the gained English reading achievement scores of the students taught by the STAD approach were not significantly different from those of the students taught by the teacher's manual approach at the level of .05. The gained scores of the high, medium, and low achievers taught by the STAD teaching approach were not significantly different from one another, also at the level of .05.

The last finding, the high, medium, and low achievers taught by the STAD teaching approach were not significantly different in their cooperation at the level of .05.

Yimlamai (1997) studied the teaching Thai language reading for enhancement of critical thinking through the Aesthetic approach of 40 mathayomsuksa 5 students at Mahavajiravuth Songla School during the academic year 1996. The subjects were taught through the Aesthetic Approach for 17 periods. The instruments used in this study were a pre- test and a post-test. The results revealed that the post-test set of scores was remarkably higher than the pre- test score; the statistical difference was significant at the level of .01.

Siripong (1999) studied the implementation of Directed Reading and Thinking Ability activity to develop English reading comprehension and comprehension monitoring abilities of 36 higher vocational diploma students at Rajamangala Institute of Technology, Northern Campus during the academic year 1998. The subjects were taught by Directed Reading and Thinking ability activity (D-R-T) for eight weeks. The instruments used in this study were the reading comprehension test, the error detection test, the cloze test and the comprehension monitoring questionnaire. The results revealed that after the students were taught by using D-R-T activity, their English reading comprehension scores were higher. Their abilities in using comprehension monitoring strategies were higher. Moreover, the

correlation between the students' English reading comprehension and their comprehension monitoring abilities was positive.

Cohn (1999) did research on using cooperative learning assignments in a Macroeconomics course. The result revealed that over ninety percent of students strongly agreed that their critical thinking skills had improved. Nearly ninety percent of the students expressed a higher positive attitude about economics.

Tang (2000) did a research on 12 ESL students from India, South Korea, Hong Kong, Croatia and Taiwan at a secondary school in Canada which used the concept mapping skill to teach ESL reading in the classroom. The observation of ESL students' cooperative learning activities in an eight – week period indicated that teaching reading by using the concept-mapping strategy could improve reading comprehension and the communication skills as they learned how to negotiate meaning with their partners and among themselves.