Chapter 1

Introduction

1. Rationales and Statement of Problems

According to the National Education Act, B.E. 2542 (1999), the learning process shall aim at Thai wisdom and universal knowledge, inculcating the ability to preserve natural resources and the environment; possessing the capacity to earn a living, self-reliance, creativity and acquiring thirst for knowledge and capability of self-learning on a continuous basis. Moreover, the Ministry of Education Thailand (2005) presents the characteristics of 21st century Thai learners as follow: 1) creativity and innovation, 2) leadership, 3) team working, 4) thinking skills, 5) critical or analytical thinking, 6) 21st century specialist skills, 7) Thai values and morals, and 8) world awareness.

In order to train students to have those kinds of characters and abilities, one of the key aspects would be to equip them with higher order thinking skills which will lead to a possession of all of those characteristics and personalities.

Moreover, in this globalization era, people with higher order thinking abilities effectively surpass other people in the society. Employers want people who can communicate effectively, work independently and in teams, and be able to apply a logical and analytical approach to solving problems (Canning, 2004). Thai students need to value and give priority to developing their higher order thinking skills, since these will make them become highly responsible and reliable thus ensuring a brighter future. Possessing higher order thinking skills is valuable or helpful because with these skills, students are able to handle their work and know how to deal wisely with adults (Pogrow, 2005).

The Thai education system does not promote students to use their thinking skills as stated in the work of James (2010), who explained why Thailand has the lowest English standard in Southeast Asia, and found that this was due to two main reasons. Firstly, in Thai schools, students are taught to copy and memorize what the teacher writes on the board. When learning English, grammar and vocabulary are written on the board. When students copy and memorize, discussion is not exercised and there is no questioning of the teacher. It is no wonder then that Thailand's English skills are the lowest in the region. Secondly, critical thinking skills are not taught to Thai students who are rarely expected to think for themselves, so they do not question what the teacher instructs them. Thai students cannot figure out complex English language structure because they lack critical thinking skills. This is also an important reason why most Thai students do not have self-confidence, which is vital in the correct learning of a language since having critical thinking skills brings about self-confidence.

Higher order thinking skills are advanced skills that can make the students become more mature and effective citizens in the world of communication and technology, both of which are rapidly changing (Ministry of Education, 2005). Moreover, having competent thinking skills can lead students to be lifelong learners and meet the characteristics of 21st century Thai learners of the Ministry of Education (2005).

How could teaching methodology and learning content be not too rigorous for students to develop their higher order thinking skills with the lessons they learn in the classroom? The higher order thinking skills need to be taught in any subject since this will help students to learn and understand how to use and apply thinking skills in a much better way. According to Mirman and Tishman (1988), thinking skills should not be taught separately as an isolated entity, but they need to be embedded in the subject matter and combined into the curriculum. This study, therefore, investigates the acquisition of higher thinking skills by students of English language subject.

Most English teachers apply traditional teaching styles with emphasis on grammar and structure, which do not promote students to develop their thinking skills through English lessons. "It is seen that the teacher is at the center of the learning process. Some teachers stick to the traditional teaching style with everything moving around the teachers' desk and the blackboard in the classroom (National Education Commission, 2001). " The reason that Thai teachers do not adapt or change their teaching styles is that they do not understand the concept of learner-centered approach and its practice. They perceived the current reforms as a foreign system. When these terms were translated, teachers gave doubt to the true intentions behind the words or phrases (Kantamara et. al., 2006). As a result, teachers do not employ the strategies and skills in thinking especially the higher order thinking skills. In order to prepare students to be effective people, teachers need to concern with organizing activities for learners to draw from authentic experience, to drill in practical work for complete mastery, to enable learners to think critically, and to acquire reading habits and continuous thirst for knowledge (National Education Act, B.E. 2542, 1999).

Moreover, language learning is a collaborative process between teachers and learners rather than a set of rules to be transferred from teachers to the learners. According to Tudor (1993), a learner-centered approach is not a method, nor may it be decreased to a set of rules. However, it is an approach, which views students to have more active role in the learning and teaching process than in traditional approaches. Nunan (1996) also discussed the two complementary aims of learner-centered classrooms. One of them focuses on language content while the other focuses on learning process. Throughout the achievement of these aims, learners need to decide what they want to learn and how they want to learn. In this phase, it is the teacher's responsibility to create environments which instruct students in the skills and knowledge they require while making choices of the process and content of their learning.

In addition, learning a language can develop analytical skills, improve problem solving ability and increase flexible thinking and creativity (Toffler, 2004). The English language is a subject that is a required course but gives so much benefit to students nowadays. It would be a better approach to train students to have thinking skills in the classroom as well.

To summarize, Thai students do not have high ability in thinking skills because they do not have the opportunities to use and practice their thinking skills while they are in school which could block them to use their thinking skills in their real life. As a

result, it is very important for Thai students to be given the opportunity to practice and train in the use of their thinking skills.

There are different skills in higher order thinking skills. Kammanee (2001) divided higher order thinking skills into sixteen skills, which are: 1) drawing conclusion, 2) defining, 3) analyzing, 4) integrating, 5) organizing, 6) constructing, 7) structuring, 8) restructuring, 9) finding patterns, 10) finding underlying assumption, 11) predicting, 12) formulating hypothesis, 13) testing hypothesis, 14) establishing criteria, 15) verifying criteria, and 16) applying criteria. In addition, Bloom (1956) classified intellectual behavior in learning thinking skills, namely, 1) cognitive, 2) affective domain and 3) psychomotor. This classification is organized by complexity levels and provides a simple structure of different kinds of thinking. Cognitive domain, which focuses on the development of intellectual skills, consists of six major categories, starting from the simplest behavior to the most complex one: 1) knowledge, 2) comprehension, 3) application, 4) analysis, 5) synthesis, and 6) evaluation. For psychomotor domain, it consists of 1) remembering, 2) understanding, 3) applying, 4) analyzing, 5) evaluating, and 6) creating. On the other hand, affective domain consists of 1) receiving phenomena, 2) responding phenomena, 3) valuing organization, and 4) internalizing. And for the psychomotor domain, it consists of 1) remembering, 2) understanding, 3) applying, 4) analyzing, 5) evaluating, and 6) creating. Lastly, Sternberg (2002) defined that higher order thinking skills or successful intelligence consists of analytical, creative, and practical thinking skills.

In this study, there are three main higher order thinking skills that are essential for students to train and develop to become effective people: analytical, creative, and practical thinking skills. These thinking skills are called successful intelligence because students will learn how to analyze problems, create their own solutions, and apply or practice their ideas. It is believed that if intelligence is properly defined and measured, it will translate to real-life success (Sternberg, 2002). Consequently, teaching students to have higher order thinking skills, such as analytical, creative, or practical thinking skills, is very important especially for Thai students.

Therefore, the three higher order thinking skills that are defined and chosen in this study, analytical thinking, creative thinking, and practical thinking, are all considered important.

Analytical thinking skills are crucial to every student when facing problems, and so through constant practice, students will acquire and develop survival skills especially in this modern era of global communication and technology. Analytical skills are abilities to judge a situation, seek various perspectives, gather more information, and identify key issues which need to be addressed (Toffler, 2004).

Analytical thinking is a thinking ability that improves the decision-making ability of students. In some research studies, analytical thinking is called critical thinking. Ennis (1996) stated that analytical thinking or critical thinking is a thinking process that develops students to have reasonable reflective thinking that is focused on decision-making.

Students who have analytical thinking skills will review reasons of problems, compare and contrast effects, find solutions, and choose the most effective results to solve problems. Analytical thinking skills have sub-skills consisting of analyzing an issue, evaluating an issue, explaining how the issue works, comparing and contrasting differences of two or more issues, and judging value of characteristics of something (Sternberg, 2002).

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Secondly, creative thinking skills should be developed because people who have these skills are those who can discover new and better ways of solving problems. Creative people become effective leaders. Students who acquire creative thinking skills develop themselves to be effective leaders. "Creative or innovative thinking is the kind of thinking that leads to new insights, novel approaches, fresh perspectives, whole new ways of understanding and conceiving of things" (Facione, 2009). It is recognized that some students learn best when they are allowed to find their own ways to learn and when they are left free to explore ideas that go beyond those likely to be in books or in lectures. Creative thinking skills measure learners' thinking skills in creating, inventing, exploring, imagining, supposing, and synthesizing (Sternberg, 2002). Students could think and create things by themselves. Moreover, creative thinking fosters learners to use their abilities and potential, helps the students discover new and better ways to solve problems, and can enhance the process of learning as well. Jeffrey and Craft (2004) investigated how learners can make their creative experience meaningful, and it was found that the students could control the learning processes when they are self-motivated and not controlled by extrinsic factors while doing task learning exercises.

Third is practical thinking that was defined by Anderson and Krathwohl (2010) as the ability to carry out or use a procedure through execution or implementation. Students who have practical thinking skills will have confidence when facing problems, and will learn to take risks in solving the problems. In other words, practical thinking skills are those skills that students can practice by applying their knowledge. Students will have a chance to implement their ideas and decide a plan to solve problems. Furthermore, they learn from making mistakes. Exercising practical thinking skills does not mean that they would not make mistakes, but from the mistakes they can learn not to do those mistakes again (Sternberg, 2002).

This learner-centered training course is based on learners' centeredness and thinking skills development that encourages students to learn, apply, create, and criticize by themselves in a free manner. Through this training course, students can acquire higher order thinking skills using the study of the English language. This is also an effective way of learning a language because students can learn to practice analytical thinking, creative thinking, and practical thinking, while they are learning the English language and thus becoming autonomous learners.

By experiencing the learner-centered style of learning, students will not only perceive knowledge from the instructors but will also share and exchange their ideas and knowledge with the class. Therefore, to completely develop students' thinking skills in a language class, the curriculum is designed based on learner-centered teaching methodology in order to enhance the students' higher order thinking skills and train them to become autonomous learners. Wohlfarth (2008) affirmed that learner-centered attitude, learner-centered relationships, and a learner-centered course design structure are the best complements of a quasi learner-centered style in the classroom where the instructor retains relatively more power in controlling the learning experiences and discussions within a small group of students.

This study focuses on three thinking skills: analytical thinking, creative thinking and practical thinking. Based on the Ministry of Education Thailand (2005), the 21st century Thai learners should have at least three of the eight characters: 1) critical and analytical thinking, 2) creative and innovation, and 3) world awareness.

A learner-centered training course is relevant or appropriate to develop students' thinking skills. A learner-centered training course develops the students'

thinking skills by allowing them to express their thoughts as much as they could through learning activities. Students are not forced to achieve high score, and students' responses are not evaluated right or wrong. This study chooses six teaching methodologies based on learner-centered course that can develop the thinking skills of students.

In addition to the six teaching methodologies, one teaching assessment was included in this study in order to train students to have thinking skills and promote them to become autonomous learners, as follows: 1) inquiry-based learning, 2) K-W-L learning, 3) hands-on learning, 4) multiple intelligences, 5) cooperative learning, 6) project work and 7) portfolio assessment.

1. Inquiry-based learning

Callison and Preddy (2005) stated that inquiry-based learning is a learning approach that gives students the chances to develop their analytical thinking skills, by analyzing some problems, using compare and contrast effects, evaluating, and criticizing some solutions. The inquiry approach is more focused on using and learning content to develop information-processing and problem-solving skills. Exline (2004) mentioned that the teaching methodology of inquiry-based learning is learner-centered, with the teacher as a facilitator of learning. There is more emphasis on "how we come to know" and less on "what we know".

2. K-W-L learning

K-W-L learning method trains students to use analytical thinking skills. Its strategy is a teaching methodology that uses questions such as "What do you want to Know?", "What do you want to Learn?", and "What do you Learn from it?" (Ogle, 1986). This learning strategy allows students to use their thinking skills because they need to think beyond what they just see from the context of the lessons. Moreover, K-W-L learning strategy builds students to become enthusiastic learners as they will then have chances to explore their background knowledge with the knowledge in class. Flavell (1979) also stated that in K-W-L learning, students allow metacognition that involves and controls cognitive processes which engage thinking ability development, self-awareness, and self-regulation.

3. Hands-on learning

Hands-on learning is a teaching approach that leads students to have actions on their learning and develop their practical thinking skills. Students will experience applying knowledge, ideas, and thoughts by themselves, and they will be trained to perceive knowledge, create and apply the knowledge into real situations. Rillero and Haury (1994) stated that, "hands-on learning involves a child in a total learning experience which enhances his ability to think critically and helps him to remember the material better besides being able to transfer that experience easier to other learning situations". Hands-on learning also promotes students to become autonomous learners. Students will be trained to perform any kind of work by themselves, they will practice doing or making real project works with their peers. "Hands-on quite literally means having students 'manipulate' the things they are

studying, in a more general sense, it seems to mean learning by experience" (Rutherford, 1993).

4. Multiple intelligence

Multiple intelligence is also a methodology that can enhance students' thinking skills. It will focus mainly on skills in students, and with this kind of learning, the students will explore their capacities in whatever they like to do which is according to their own interests. Gardner (1983) stated that students have chances to present their performances and their ideas to the class thus allowing them to exercise their higher level thinking skills. Multiple intelligence also develops students to have learning autonomy, according to Gardner (1983) who mentioned that multiple intelligence supports students to have learning autonomy performance.

5. Cooperative learning

Cooperative learning relates to the amount of group support and to the degree to which each individual member of the group needs to learn and exhibit his or her accomplishments (McCafferty et. al., 2006). Cooperative learning is a teaching methodology which allows students to work as pairs or group. The students will learn how to work as a team, how to listen to ideas or opinions from others, and learn how to share their own thinking to their friends in a group work. Cooperative learning style allows students to exercise their thinking skills and learner autonomy while they are solving problems and finding solutions in their group work, and doing creative and practical thinking, such as creating new ideas or solutions to solve issues and applying them to real situations by themselves as a group.

6. Project work

The last methodology that promotes students' thinking skill is project work learning. A project work is a learning experience which has a goal to provide students an opportunity to study, choose, and synthesize knowledge from various areas of learning, and to apply them to real life situations. Stoller (1995) studied how project work promotes students' involvement with language and content learning. Through application of the project work to content-based classroom, students acquire learning participations, higher level thinking skills, and learning responsibility even though teachers dominate instructions of inquiry learning, cooperative learning, students' collaboration, and students' problem-solving.

7. Portfolio assessment

Besides project work learning, portfolio assessment also enhances thinking ability in analytical, creative, and practical thinking skills. Paulson et al. (1991) defined portfolios as collections of students' work that show students' learning progression over a specific amount of time. Portfolio assessment helps to show this progression that includes students' reflections which could measure students' thinking skills development and their autonomous learning as well. Nakayama (2007) also stated that portfolio assessment can offer new possibilities for making the language learning visible to students and teachers, and by structuring the work of portfolio that

leads-students to take control over their independent learning, students learn to make a plan, implement and evaluate their learning.

To realize the objectives of National Education Acts B. E. 2542 (1999), the higher order thinking skills are important for students to confront problems thus the study aims to design and develop a learner-centered training course to develop students' higher order thinking skills.

2. Research objectives

1. To design and develop a learner-centered training course to develop students' thinking skills.
2. To examine students' thinking skills before and after applying a learner-centered training course.

3. Research question

Does the learner-centered training course develop students' thinking skills?

4. Significance of study

The most important thing for this research is its usefulness to the Thai secondary schools particularly at the grade 9 level as it aims to gain guidance in developing curriculum, teaching methodology, teaching materials and to support students' higher thinking skills. Students who have higher thinking skills will respond to situations that will not cause problems to other people. Furthermore, results of this research will be beneficial to language teachers who are interested in developing students' thinking skills, especially the higher order thinking skills which are analytical, creative, and practical in nature. Teachers can apply lesson plans as resulting materials from this research to become their additional teaching tools in language classes.

5. Scope and limitation of study

The sample group used in this study consisted of Mattayom 3 (grade 9 level) students in a secondary school in Chiang Mai during the first semester of the school year 2010-2011.

Variables

1. The independent variable is a learner-centered training course used to foster the students' thinking skills.
2. The dependent variable is comprised of students' thinking skills.

For the purpose of this study, thinking skills refer to higher order thinking skills consisting of analytical thinking skills, creative thinking skills, and practical thinking skills (Sternberg, 2002) and focus on four language skills: listening, speaking, reading, and writing. Listening skill deals with listening to social conversations, songs and videos; speaking skill deals with giving opinions, agreeing/disagreeing, analyzing

problems, and giving simple presentation; reading skill is about scanning and skimming, guessing the meaning of words from context, inferring links and connections between events and inferring context by using background knowledge; and, writing skill focuses on writing paragraphs of descriptive genre and narrative genre. Teaching approaches used in learner-centered training are 1) Inquiry-based learning, 2) K-W-L, 3) Hands-on learning, 4) Multiple intelligence, 5) Cooperative learning, 6) Project work, and teaching assessment (Portfolio assessment).

6. Definitions of terms

Thinking skills	Students' higher thinking skills comprised of analytical thinking, creative thinking, and practical thinking (Sternberg, 2002).
Analytical thinking	Thinking ability that focuses on analysis, synthesis and evaluation.
Analysis	Thinking ability that involves in organizing, choosing specific ideas and distinguishing between facts and inferences.
Synthesis	Thinking ability that deals with combining knowledge with new ideas.
Evaluation	Thinking ability that concerns with the selection of the most effective solutions and conclusions.
Creative thinking	Thinking ability that is classified into fluency, flexibility, originality and elaboration (Torrance, 1966).
Fluency	Thinking ability that generates a lot of different ideas.
Flexibility	Thinking ability that generates ideas that are applicable.
Originality	Thinking ability that generates unique or unusual ideas.
Elaboration	Thinking ability that expands ideas by adding details and explanations.
Practical thinking	Thinking ability that consists of application and adaptation.
Application	Skill in using knowledge in situations.
Adaptation	Skill in adjusting knowledge in situations.
Learner-centered training course	This learner-centered training course is based on learner-centered teaching approach consisting of six teaching methodologies namely, 1) Inquiry-based learning, 2) K-W-L, 3) Hands-on learning, 4) Multiple Intelligence, 5) Cooperative learning, and 6) Project work.

Students   Mattayom 3 (grade 9) students of a
                                            secondary school and studying in the
                                            first semester of 2010-2011 school
                                            year.