

Chapter 3

Methodology

This chapter presents the methodology of the study including participants, instruments, data collection and data analysis. The objectives of the study are to construct a learner-centered training course to develop learners' thinking skills and to examine learners' thinking skills before and after applying the learner-centered training course.

1. Participants

There were two groups of participants, students and teachers. Regarding the group of students, the population was composed of two classes of Mattayom 3 (Grade 9) students who were studying in the first semester of the school year 2010-2011. All the students in both classes, who had different levels of English proficiency, were randomly selected from the population of a medium-sized school by using a cluster random sampling method. Although the students in the sample group had different English proficiency levels, they had similar background and knowledge in English. Gender breakdown of students indicated 19 were male students and 10 were female students and ages were between 12-14 years.

On the other hand, the teachers' group consisted of two English teachers who were teaching at the secondary school level. Both teachers, who obtained their master's degree in teaching English and had experience in teaching English for more than 10 years, had to complete the questionnaire and interview.

2. Instruments

In order for the data to have validity, the triangulation methodology was applied to collect data for the study. Data were collected from three sources: students, teachers and observers.

The quality control of this study involved the use of multiple methods. The methods for collecting data in this study involved 1) questionnaires, 2) interview, 3) testing, 4) curriculum, 5) evaluation, 6) observation, and 6) formative assessment. Different instruments were used in each method and were classified into four categories as follows.

2.1 Instruments for pre-study data collection

2.1.1 Students and teachers' questionnaire

The students' questionnaire was used to investigate the opinions of students on the following: their English learning background, their English proficiency, about the roles of their teachers, English language learning, learning goals, learning strategies, and thinking skills used before the implementation of learner-centered training course. The questionnaire, which was a rating scale type, was divided into two parts. The first part consisted of students' opinions on English learning background while the second part was comprised of students' beliefs in their English proficiency, about teachers' roles, on English language learning, on learning goals, on learning strategies, and thinking skills usage prior to the implementation of learner-centered training course.

Meanwhile the questionnaire for the teachers attempted to investigate their beliefs and opinions on their own roles, on the nature of the language and on thinking skills. The questionnaire intended for the teachers was given to two Mattayom 3 (grade 9) instructors to complete.

2.1.2 Students and teachers' interviews

A. Students' interview

Beside the questionnaires, interviews were conducted with the students purposely to acquire additional information dealing with the opinions and beliefs of students on their English proficiency, about the roles of their teachers, on English language learning, on learning goals, on learning strategies, and on their own thinking skills which they used before the implementation of learner-centered training course. The interview questions consisted of 11 open-ended questions.

B. Teachers' interview

After completing the questionnaires, the two teachers were interviewed to explore additional information of their beliefs and opinions on English language teaching and learning, their own roles and on the use of thinking skills. The interview questions included eight open-ended questions.

2.2 Data collection instruments

Thinking test

The thinking test, which was used as a pre-test and post-test material, was designed to examine the thinking skills of the students before and after the implementation of the learner-centered training course. Composed of three parts, this test was aimed to measure the analytical, creative, and practical thinking skills of the students.

The analytical thinking skills part was composed of 11 multiple choice items and 3 open-ended questions (total score of 24); the creative thinking skills part

consisted of 10 open-ended questions (total score of 36); , and practical thinking skills part comprised of 6 open-ended questions (total score of 24).

To improve the test, two experts evaluated the test. One of the experts was a native English speaker with an MA degree in TESOL and had an experience in teaching English for almost 50 years, while the other expert was a teacher at a secondary school who had an experience in teaching English at a secondary school for more than ten years. After improvements were made according to the comments of the two experts, the test was tried out and adjusted again before finally using it with the sample group. The average reliability of the test was 0.77.

2.3 Treatment

Curriculum

Based on the information collected from the questionnaires and interviews of students and teachers, the learner-centered curriculum was designed and constructed to enhance students' analytical, creative, and practical skills. The curriculum consisted of 28 lesson plans and each lesson plan took 50 minutes to complete. Topics in the curriculum included Pen friends, Travel, Entertainment, and Tradition. To validate, the curriculum was evaluated by other two experts. The passing criterion for each part of curriculum was 3.51 from 5 scales. Some parts which had average means lower than 3.51, were further developed and adjusted. After the evaluation from two experts, the average mean of the curriculum evaluation was presented at 4.16 (which means "good").

The curriculum was constructed by using different learner-centered teaching methods and activities, namely: inquiry-based learning (open-ended questions, example situations), K-W-L learning (interviewing peers, pen pal topic), hands-on learning (designing their own work), multiple intelligence (interpersonal-discussion, linguistic-writing and telling stories), cooperative learning (group brainstorming, jigsaw reading), and, project work learning.

The teaching methods and activities were integrated into different units in the curriculum in order to enhance different thinking skills.

Table 1. Teaching methods and activities in the curriculum of the learner-centered training course

Thinking skills' objectives	Teaching methods	Lesson plans	Topic
Analytical thinking processes			
Analyzing			
1. Identify and analyze Pen Friends background knowledge and cultural differences from reading passage about Pen Friends.	K-W-L	1	Pen Friends
2. Identify and analyze different tourist places from pictures.	Multiple Intelligence (visual/spatial)	6	Travel

Thinking skills' objectives	Teaching methods	Lesson plans	Topic
3. Identify meaning of vocabulary by using body language.	Multiple Intelligence (Bodily/kinesthetic)	12	Travel
4. Break down background knowledge about the magazine.	K-W-L	15	Entertainment
5. Select and analyze information from magazines to answer questions.	Inquiry-based learning	18	Entertainment
6. Analyze and infer background knowledge of traditions from different countries.	Cooperative learning (active review session)	21	Tradition
7. Identify and analyze questions from reading passages.	Cooperative learning (jigsaw reading)	7	Travel
8. Identify meaning of unknown vocabulary from sample contexts.	Inquiry-based learning	16	Magazine
Synthesizing			
9. Generate vocabulary about family, school, routine, and free time activities.	Cooperative learning (brainstorming)	2	Pen Friends
10. Organize various information of Chiang Mai city.	K-W-L	9	Travel
Evaluating			
11. Compare and contrast between Mexico City and Chiang Mai city.	Cooperative Learning (active review session)	8	Travel
12. Select the most effective solutions from sample situations.	Inquiry-based learning	10	Travel
13. Select good expressions for suggesting to tourists.	Multiple Intelligence (verbal/linguistic)	11	Travel
14. Evaluate peers' tourist brochures.	Multiple Intelligence (Interpersonal)	14	Travel
15. Compare and contrast different traditions of other countries with those of Thailand with a role-play.	Inquiry-based learning	22	Tradition

Thinking skills' objectives	Teaching methods	Lesson plans	Topic
Creative thinking process			
Fluency			
16. Generate different ideas about traditions.	Cooperative learning (Brainstorming)	24	Tradition
Flexibility			
17. Construct questions for interviewing others about family, school, routine, and free time activities.	Inquiry-based learning	3	Pen Friends
18. Generate ideas from magazines and write about them.	Multiple Intelligence (verbal/linguistic)	19	Entertainment
Originality			
19. Design and develop unique Chiang Mai tourist brochures.	Hands-on learning	13	Travel
20. Generate ideas of magazines from reading real magazines.	Multiple Intelligence (verbal/linguistic)	17	Entertainment
21. Create magazines in relation to interests.	Hands-on learning	20	Entertainment
Elaboration			
22. Generate information and write a letter to Pen Friend.	Multiple Intelligence (verbal/linguistic)	4	Pen Friends
23. Design and develop bulletin board of different country traditions.	Hands-on learning	27	Tradition
Practical thinking processes			
Application			
24. Construct Pen Friends' letters via emails.	Multiple Intelligence (Interpersonal)	5	Pen friends
25. Apply differences in traditions and music video from Korean and Thai music videos into real life through questions.	Inquiry-based learning	23	Tradition
26. Apply background knowledge and outside knowledge to compare Thai and other different cultures.	Inquiry-based learning	25	Tradition

Thinking skills' objectives	Teaching methods	Lesson plans	Topic
Adaptation			
27. Organize information about traditions from different countries.	Multiple Intelligence (verbal/linguistic)	26	Tradition
28. Prepare to present the bulletin board of traditions in front of the class.	Project work learning	28	Tradition

In dealing with the lessons which cover practices of the three main thinking skills, 15 lessons which involved analytical thinking, 8 lessons on creative thinking and 5 lessons on practical thinking were used.

Table 2. Number of lesson plans of each thinking sub-skill

NO.	Thinking process	Number of lesson plans
Analytical thinking		
1.	Analysis	8
2.	Synthesis	2
3.	Evaluation	5
Total		15
Creative thinking		
4.	Fluency	1
5.	Flexibility	2
6.	Originality	3
7.	Elaboration	2
Total		8
Practical thinking		
8.	Application	3
9.	Adaptation	2
Total		5
Total of lesson plans		28

From Table 2, 28 lesson plans covered three main thinking skills: analytical thinking (15 lesson plans) with 8 lesson plans on analysis, 2 lesson plans on synthesis and 5 lesson plans on evaluation; creative thinking (8 lesson plans) with 1 lesson plan on fluency, 2 lesson plans on flexibility, 3 lesson plans on originality and 2 lesson plans on elaboration; and, practical thinking (5 lesson plans) with 3 lesson plans on application and 2 lesson plans on adaptation.

2.4 Curriculum evaluation form

The curriculum evaluation form, which was designed to evaluate learner-centered curriculum, contained 7 topics, namely: (1) goals and objectives which were considered appropriate and clear for the learning and behavior of students, (2) lesson procedures which contained learning strategies, achievements of students, and learning assessment variation, (3) teaching assessment, (4) instructional procedures and strategies, (5) teaching materials, and (6) class organization. The criterion levels which were used to evaluate the curriculum consisted of: excellent = 5, good = 4, average = 3, need to improve = 2, and not applicable = 1, with reference to the rating scale type that ranged from 1 to 5.

2.5 Observation form for evaluators

Meanwhile, the observation form for evaluators was designed for the experts to use during their observation and evaluation of the teaching performance in order to check whether the activities, contents and teaching materials were appropriate to develop students' achievements according to lesson objectives or not. The evaluators were teachers who were experienced in teaching English at the secondary school for more than ten years and had also experienced working with TESOL students.

The rating scale was also applied in this observation form and the results of this observation form were used to develop and adjust lesson plans. The observation form contained 28 questions and covered 6 parts: (1) class preparation (3 questions), (2) class presentation (7 questions), (3) teaching methodology (4 questions), (4) questions used in class (7 questions), (5) teacher and student interaction (4 questions), and, (6) personal characteristics of teacher (3 questions). The scale interpretation that was used to observe and evaluate the teaching performance consisted of: excellent = 5, good = 4, average = 3, below average = 2, unsatisfactory = 1 and not applicable = N/A.

2.6 Formative assessment data collection instruments

2.6.1 Teacher logs

Teacher logs, which are records of teacher's reflection on the learner-centered training course that was implemented with the participants, were recorded in each unit. They include students' class interaction, lesson obstacles, and teacher's reflection on the lessons. This instrument that could reflect teaching skills was used as a formative assessment.

2.6.2 Project works

Project works were assigned as group activities, and showed thinking skills development of the students (analytical, creative, and practical thinking skills). Students evaluated their project reflections on their own analytical, creative, and practical thinking skills. By reflecting the development of the thinking skills of the students, project works are considered an appropriate instrument used as a formative assessment.

2.6.3 Portfolio

As a collection of students' work, a portfolio could also reflect the performance of a student in analytical, creative, and practical thinking skills. The portfolios of students were evaluated by using a portfolio rubric which involves the assessment of the work collections of the students, their understanding of the learning objectives and portfolio organization, including the analytical, creative, practical thinking reflections of the students on their work. As one formative assessment instrument, a portfolio records the thinking progression of a student.

3. Data collection

The procedure for data collection in this study was divided into two phases.

Phase 1: Pre-study data collection

In this phase, the questionnaires were administered to a sample group in order to get information about the language knowledge background of the students and their opinions or beliefs in teacher roles, on English language learning, their learning goals, their language learning strategies, their thinking skills strategies used in English learning, opinion on English language teaching and learning of the teachers, on their own roles, their teaching expectations, and their beliefs and perspectives toward thinking skills strategies used in a secondary school classroom.

After completing the questionnaires, the sample group and two teachers were interviewed in order to get additional information. The information and contents from questionnaires together with those from the interviews were analyzed and applied into the learner-centered training course. After finishing the construction of the learner-centered training course, the curriculum was evaluated by two experts who were also assessing the curriculum of learner-centered training course by using curriculum evaluation form. Afterwards, the learner-centered training course was developed and adjusted before implementation.

Phase 2: Implementation

The students were required to do a pre-test to examine their initial thinking skills after which the data collected were analyzed and interpreted. The learner-centered training course was implemented for 28 hours. During the time of teaching and learning using the learner-centered curriculum, two observers sat in the class and gave their own reflections. Both weak and strong points from the observers and

teacher logs were used to adjust the lesson plans. During the implementation of the learner-centered training course, the students were assigned to collect their portfolio work, then submit and present it in class. Both portfolio and project work were analyzed to evaluate the thinking progression of the students during the learner-centered training course. Finally, at the end of the learner-centered training course, a post-test was administered to the students. Post-test results were examined, analyzed and compared with pre-test results. Together, the results from the portfolio, project works, pre-test and post-test were used to evaluate the development of the thinking skills of the students after the learner-centered training course.

4. Data analysis

In this study, the results were analyzed both qualitatively and quantitatively.

4.1 Questionnaires

The results of the questionnaires were analyzed by using a mean and standard deviation. Resulting means were interpreted with the scale as shown below:

Mean scores	Quality (Level of language ability)	Quality (Level of importance)	Quality (Frequency of usage)	Quality (Frequency of importance)
4.21 – 5.00	Very high	Highly agree	Very often	Very often
3.41 – 4.20	High	Agree	Often	Often
2.61 – 3.40	Average	Not sure	Sometimes	Sometimes
1.81 – 2.60	Low	Disagree	Occasional	Occasional
1.00 – 1.80	Very low	Highly disagree	Never	Never

4.2 Interview and teacher logs

Results from both the interview and teacher logs were analyzed by using content analysis.

5. Pre-test and post-test and formative assessments

Results from the writing section of the tests were analyzed by using writing rubric. Meanwhile, percentages, means and standard deviations were used to analyze the data from the pre-test and post-test and formative assessments (portfolio and project work). The T-test was used to compare means from both pre-test and post-test. Means and percentages were interpreted by using the scale below:

A: Thinking test

Mean scores	Quality (Level of thinking ability)
4.21 – 5.00	Excellent
3.41 – 4.20	Good
2.61 – 3.40	Average
1.81 – 2.60	Poor
1.00 – 1.80	Very poor

B: Project work and portfolio

Percentage	Level of thinking ability
80 – 100	Excellent
70 – 79	Good
60 – 69	Average
50 – 59	Poor
0 – 49	Very poor

6. Learner-centered training course and class observation

Means and standard deviations were used to analyze the data from the learner-centered course and class observation, with the use of the scale below:

Mean scores	Quality
4.21 – 5.00	Excellent
3.41 – 4.20	Good
2.61 – 3.40	Average
1.81 – 2.60	Poor
1.00 – 1.80	Very poor

7. Conceptual Framework

