

Chapter 3

Research Methodology

To integrate the Philosophy of Sufficiency Economy with an English Course to promote analytical thinking ability and English proficiency, certain research process and instruments were implemented. The methodology could be described in details as the followings.

1. Population and Sample Group
2. Research Instruments
3. Instrument Construction
4. Information Collection
5. Information Analysis

1. Population and Sample Group

The population in this research were lecturers responsible for GE 243 English for Agriculture 1 and 38 Maejo University students from the Faculty of Agricultural Production enrolled in the 1st semester in Academic Year 2016. The students already passed Fundamental English I and Fundamental English II, the pre-requisite courses which focused on basic communication such as listening, speaking, reading, and writing skills. In higher level of language competency, English for Agriculture an English for specific purpose designed for students in the Faculty of Agricultural Production.

2. Research Instruments

The research instruments implemented were classified into 4 categories as the followings.

1. Lesson plans integrating the Philosophy of Sufficiency Economy with English for Agriculture course, 7 lesson plans, totally 30 hours. The component of each lesson plan comprised of course objectives, reading passages, reading and writing activities, learning materials, assessments, and time allocation. There were analytical thinking and English assessment in every lesson.

2. The Assessment Test of Understanding in the Concepts of Philosophy of Sufficiency Economy that the researcher designed. The assessments comprised totally 40 items. There were 25 items in True or False Part, 10 items in Multiple Choice Test Part, and 5 items in Opened Ended Question Part. The Comprehensive Assessments in the Philosophy of Sufficiency Economy concepts were applied before and after the implementation of the 7 lesson plans.

3. The Assessment Test of Analytical Thinking that researcher designed. The objective was to assess learners' understanding and application of three components: moderation, reasonableness, and self-immunity, with two accompanying conditions: appropriate knowledge and ethics & virtues. These components and conditions were assessed by assigning learners to do analytical thinking activities. Learners were needed to give suggestions and suitable practice after they read the given passage and situations. The tests were divided into 2 categories.

Type 3.1 The Analytical Thinking Assessment Tests for each lesson plan (12 points)

Type 3.2 The Analytical Thinking Assessment Test before and after the implementation of the lesson plan (12 points)

4. The English proficiency Tests. The tests of English reading and writing proficiency could be divided into 2 categories.

Type 4.1 English Proficiency Tests for each lesson plan. The tests could be divided into 2 parts.

Part 1 English Reading Proficiency Test for each lesson plan. The tests consisted of 30 question multiple choice test (30 points)

Part 2 English Writing Proficiency Test for each lesson plan. The test consisted of 2 writing tasks based on the given reading passage (20 points)

Type 4.2 English Proficiency Test before and after implementation of the lesson plans. The test could be divided into 2 parts.

Part 2 English Reading Proficiency Test. The test consisted of 20 question multiple choice test and 2 writing tasks. (30 points)

Part 2 English Writing Proficiency Test. The test consisted of 2 writing tasks based on the given reading passage (20 points)

3. Instrument Construction

The research instruments were created by following the steps explained below.

1. Lesson plans integrating the concepts of Philosophy of Sufficiency Economy with English for Agriculture course.

1.1 Studied the English language teaching approach focusing on Content-Based Instruction and integration of the Concepts of Philosophy of Sufficiency Economy. Made discussion with English for Agriculture teachers in order to design appropriate contents and instructions for the course which promoted analytical thinking ability and expected learners' outcomes of the university.

1.2 Studied documents and studies on analytical thinking ability and concepts of the Philosophy of Sufficiency Economy based on the three components and two conditions and application in varieties of disciplinary.

1.3 Consulted with 3 lecturers teaching an English for Agriculture Course to design the lesson plans under the course objectives. The consensus was to design an integrated course with the uses of learning resources inside the university such as agricultural learning bases and background of learners.

1.4 Designed 7 lesson plans of An English for Agriculture course that integrated with the concepts of the Philosophy of Sufficiency Economy to promote analytical thinking and English proficiency. The learning activities consisted with reading comprehension exercises and analytical thinking activities based on the three

components: moderation, reasonableness, and self-immunity, with two accompanying conditions: appropriate knowledge and ethics & virtues. The elements promoted the skills in the 21st century and expected learners' outcomes of the university. The 7 lesson plans were as followed.

Lesson 1 Agriculture in Thailand from Past to Present: Introduction to Sufficiency Economy (6 hours)

Lesson 2 Philosophy of Sufficiency Economy: Middle Path of Moderation, Reasonableness and Self-immunity (6 hours)

Lesson 3 Sufficiency Economy and New Theory Agriculture (6 hours)

Lesson 4 Herbs and Local Plants' Qualities (3 hours)

Lesson 5 Vermicomposting (3 hours)

Lesson 6 Vegetable Production: Backyard Vegetable Gardening, Organic Vegetable Gardening, and Hydroponic Systems (3 hours)

Lesson 7 Plant Protection and Disease Control (3 hours)

1.5 Presented the prepared lesson plans to 3 experts on curriculum and English teaching in order to check the appropriateness of contents, learning activities, lesson plans, and gather the recommendation for revision. To analyze the lesson plans, 3 experts were asked to do the rating scale questionnaire. The items consisted of 1) Appropriateness and elements of lesson plans 2) Lesson plan details and conciseness 3) Objectives and coverage to the course description 4) Contents, Activities, and Time allocation 5) Academic principles and contents 6) Using variety of teaching activities that are suitable for different proficiency of learners 7) Using teaching activities to promoting analytical thinking 8) Using variety of teaching material that are appropriate with the subject and contents 9) Using variety of assessments and evaluations 10) Assessments and evaluations consistency with learning objectives.

The researcher set up the criteria that the qualified lesson plans must be higher than 3.50 means. Analysis of the lesson plan effectiveness could be identified as the criteria of the means followed.

Means	Meaning
4.51-5.00	Highest level of appropriateness
3.51-4.50	High level of appropriateness
2.51-3.50	Moderate level of appropriateness
1.51-2.50	Low level of appropriateness
1.00-1.50	Lowest level of appropriateness

Lesson Plan	Means	Standard Deviation	Interpretation
Lesson Plan 1	4.27	0.06	High
Lesson Plan 2	4.60	0.10	Highest
Lesson Plan 3	4.70	0.10	Highest
Lesson Plan 4	4.63	0.21	Highest
Lesson Plan 5	4.23	0.06	High
Lesson Plan 6	4.40	0.10	High
Lesson Plan 7	4.53	0.12	Highest
Average	4.48	0.18	High Level

The table showed the effectiveness of the lesson plans developed based on the opinions of 3 experts in curriculum and instruction, English teaching, and the Philosophy of Sufficiency Economy, and 3 lecturers responsible for the course of English for Agriculture. The effectiveness of the lesson plans was at 4.48, with a standard deviation of 0.18, which had effectiveness in High level.

From the 3 experts who assessed the lesson plans for the validity, the objectivity, and the appropriateness, the lesson plans were also assessed for IOC (Index of Item – Objective Congruence), the results from lesson plan 1 to lesson plan 7 were 0.83, 0.93, 0.97, 0.83, 0.87, 0.87 and 0.80

The experts gave suggestions to improve the lesson plans before the implementation. One of the suggestions was to simplify the reading passage. The passage should be concise, otherwise the reading activities would take too much time. In addition, the vocabulary must be revised. The difficult vocabulary should be revised and replaced with the vocabulary less difficult or using paraphrasing techniques. The other suggestion was to prepare students for reading and writing activities, especially

technical terms and basic sentence structure which were the important part of the lessons.

1.6 Lesson Plan No.1 and No.2 were tried out for appropriateness of reading passages and activities in a section of 47 students in An English for Agriculture Course in the third semester of academic year 2016.

1.7 Lesson plans were revised before the implementation in the first semester of Academic Year 2016.

2. Assessment Test of Understanding in the Concepts of Philosophy of Sufficiency Economy before and after the implementation of lesson plans created

2.1 Studied documents and studies on analytical thinking ability and concepts of the Philosophy of Sufficiency Economy based on the three components; Moderation, Reasonableness, and two conditions; Knowledge Condition and Moral Condition.

2.2 Designed the Assessment Test of Understanding in the Concepts of Philosophy of Sufficiency Economy. The assessment test divided into 3 parts, 40 items. The first part comprised of 25 items of True or False Background Knowledge in The Philosophy of Sufficiency. The second part was 10 Multiple Choices Test of Background Knowledge in New Theory Agriculture. The third part was 5 open-ended questions on attitude and application the Philosophy of Sufficiency Economy.

2.3 Presented the Assessment Test of Understanding in the Concepts of Philosophy of Sufficiency Economy to 3 experts on curriculum and instructions, English teaching, and the Philosophy of Sufficiency Economy to check the appropriateness of structures, objectives, items, and gather the recommendation for revision. The indicator of the congruence was at 0.88. The experts suggested to revised some questions that are ambiguous and could be interpreted into many ways, so that more than one answer was possible.

2.4 The Assessment Test of Understanding in the Concepts of Philosophy of Sufficiency Economy was revised before the implementation in the first semester of Academic Year 2016.

3. The Assessment Test of Analytical Thinking

The analytical thinking ability test was divided into two parts.

Type 3.1 The Assessment Test of Analytical Thinking for each lesson plan. The tests were created by following the steps explained below.

- (1) Studied documents and studies on analytical thinking ability based on Bloom (Bloom et. al., 1956) and analytical thinking in accordance with the Philosophy of Sufficiency Economy based on the three components and two conditions and application in varieties of disciplinary.
- (2) Designed the Assessment Tests of Analytical Thinking. In each lesson, the test comprised of a reading passage related to agricultural issues. After reading the passage and the situations given, learners were needed to demonstrate their analytical thinking ability by giving suggestions and suitable practice based on the concepts of The Philosophy of Sufficiency Economy; moderation, reasonableness, and self-immunity, with two accompanying conditions: appropriate knowledge and ethics & virtues. The criteria of the test interpretation divided into 6 levels; excellent, very good, good, fairly good, fair, and need improvement.
- (3) Presented The Assessment Tests of Analytical Thinking together with the lesson plans to the 3 experts on curriculum and instructions, English teaching, and the Philosophy of Sufficiency Economy to check the appropriateness of structures, objectives, activities, and gather the recommendation for revision.
- (4) Revised the Assessment Test of Analytical Thinking before the implementation in the first semester of Academic Year 2016.

Type 3.2 The Assessment Test of Analytical Thinking before and after implementation of the lesson plans.

- (1) Studied documents and studies on analytical thinking ability based on Bloom (Bloom et. al., 1956) and analytical thinking in accordance with the Philosophy of Sufficiency Economy based on the three components and two conditions and application in varieties of disciplinary.

- (2) Designed the Assessment Test of Analytical Thinking. The test composed of a reading passage related to agricultural issues. After reading the passage and the situations given, learners were needed to demonstrate their analytical thinking ability by giving suggestions and suitable practice based on the concepts of The Philosophy of Sufficiency Economy; moderation, reasonableness, and self-immunity, with two accompanying conditions: appropriate knowledge and ethics & virtues. The criteria of the test interpretation divided into 6 levels; excellent, very good, good, fairly good, fair, and need improvement.
- (3) Presented The Assessment Test of Analytical Thinking together with the Reading Proficiency Test to 3 experts on curriculum and instructions, English teaching, and the Philosophy of Sufficiency Economy to check the appropriateness of structures, objectives, items, and gather the recommendation for revision.
- (4) Revised the Assessment Test of Analytical Thinking before the implementation in the first semester of Academic Year 2016.

4. English Proficiency Test before and after implementation of the lesson plans.

English Proficiency Test could be divided into 2 types.

Type 4.1 English Proficiency Test for each lesson plan. The test could be divided into 2 parts.

Part 1 English Reading Proficiency Test for each lesson plan. The tests consisted of multiple choice questions and short answer questions. (30 points). The tests were created by following the steps explained below.

- (1) Studied documents and studies on English reading proficiency.
- (2) Selected the reading passages and designed the activities based on the course learning objectives of the designed curriculum. The reading passages were simplified with

appropriate vocabulary level, sentence structure and time allocation for each lesson.

- (3) Designed the English Reading Proficiency Test which consisted of multiple choice questions and short answer questions. The purpose of the test was to assess learners' proficiency in text analyzing; Knowledge, Comprehend, Application, Analysis, Synthesis, and Evaluation (30 points)
- (4) Presented English Proficiency Test together with the lesson plans designed to the thesis committee and 3 experts on curriculum and English teaching in order to check the appropriateness, do the IOC, and gather the recommendation for revision.
- (5) Revised English Reading Proficiency Test before the implementation in the first semester of Academic Year 2016.

Part 2 English Writing Proficiency Test for each lesson plan. The test consisted of 2 writing tasks based on the given reading passage (20 points). The tests were created by following the steps explained below.

- (1) Studied documents and studies on English writing proficiency.
- (2) Designed the English Writing Proficiency Test to assess learners' proficiency in writing a descriptive paragraph to express their ideas and suggestions towards the topics or agricultural issues from the reading passage (Part1).
- (3) Presented English Writing Proficiency Test together with the lesson plans designed to the thesis committee and 3 experts on curriculum and English teaching in order to check the appropriateness, do the IOC, and gather the recommendation for revision. The experts suggested to rewrite some questions to make them more concise. Examples of task writing or

writing techniques such as Scaffolding could be applied to promote learner's proficiency.

- (4) Revised English Writing Proficiency Test before the implementation in the first semester of Academic Year 2016.

Type 4.2 English Proficiency Test before and after implementation of the lesson plans. The test could be divided into 2 parts.

Part 1 English Reading Proficiency Test before and after the implementation of the lesson plans. The tests were created by following the steps explained below.

- (1) Studied documents and studies on English reading proficiency
- (2) Selected the reading passages that was appropriate with reading proficiency assessment based on the course learning objectives of the designed curriculum. The selected passage was about pesticides and their affects to consumers and produce exports of Thailand. The reading passages were simplified with appropriate vocabulary level, sentence structure and time allocation for the test.
- (3) Designed the English Reading Proficiency Test which consisted of 20 multiple choice questions and 2 short answer questions. The purpose of the test was to assess learners' proficiency in text analyzing; Knowledge, Comprehend, Application, Analysis, Synthesis, and Evaluation (30 points)
- (4) Presented English Proficiency Test together with the lesson plans designed to the thesis committee and 3 experts on curriculum and English teaching in order to check the appropriateness, assess the IOC, and gather the recommendation for revision. The indicator of the congruence was at 0.88. The experts suggested to review some questions to make the test more suitable for learners with different proficiency. The passage should be concise,

questions must be clear, and suitable with the time allowed for the test.

- (5) Revised English Reading Proficiency Test before the implementation in the first semester of Academic Year 2016.

Part 2 English Writing Proficiency Test before and after the implementation of the lesson plans. The test consisted of 2 writing tasks based on the given reading passage (20 points). The tests were created by following the steps explained below.

- (1) Studied documents and studies on English writing proficiency.
- (2) Designed the English Writing Proficiency Test to assess learners' proficiency in writing a descriptive paragraph to express their ideas and suggestions towards the agricultural issues from the reading passage(Part1).
- (3) Presented English Writing Proficiency Test together with the lesson plans designed to the thesis committee and 3 experts on curriculum and English teaching in order to check the appropriateness, assess the IOC, and gather the recommendation for revision. The indicator of the congruence was at 0.83. The experts suggested to rewrite some questions to make them more concise. The questions should promote writing skills and focused on language structures or familiar language patterns taught in the lesson plans.
- (4) Revised English Writing Proficiency Test before the implementation in the first semester of Academic Year 2016.

4. Information Collection

The research implementation and data collection were collected by following the steps explained below.

4.1 Asked permission from the Faculty of Liberal Arts, Maejo University, to implement the research of integrating the Philosophy of Sufficiency Economy with an English Course to promote analytical thinking ability and English proficiency in the first semester of Academic Year 2016.

4.2 Assessed understanding in concepts of The Philosophy of Sufficiency Economy, Analytical Thinking Ability, and English Proficiency before the lesson plan implementation.

4.3 Implemented the lesson plans with a group of 38 students enrolled in an English for Agriculture Course. The implementation took 3 hours a week for 10 weeks, totally 30 hours. For time management, students were assigned to read the passages, study vocabulary, do research, and prepare group work or presentation before class activities. The researcher collected data from the tests and learners' participation in each lesson.

4.4 Assessed English Proficiency and analytical thinking ability from the tasks and activities of each lesson plan.

4.5 Assessed understanding in concepts of The Philosophy of Sufficiency Economy, Analytical Thinking Ability, and English Proficiency after the implementation of the lesson plans.

5. Information Analysis

To study analytical thinking ability and English proficiency of Maejo University students taking an English for Agriculture course focusing on the concepts of The Philosophy of Sufficiency Economy, the information analysis could be explained as below.

5.1 Analyzed understanding in The Philosophy of Sufficiency Economy by comparing the pretest (beginning of the semester) and posttest (end of the semester) scores of the students. The statistics used were mean, standard deviation, and percentage.

5.2 Analyzed analytical thinking ability from exercises after each lesson, and compared the pretest and posttest scores of the students. The criteria of the test

interpretation divided into 6 levels; excellent, very good, good, fairly good, fair, and need improvement. The statistics used were mean, standard deviation, and percentage.

5.3 Analyzed English proficiency from reading and writing tasks in each lesson, and compare the pretest and post test scores of the students. The statistics used were mean, standard deviation, and percentage.

Criteria for Interpretation

Criteria for interpretation of understanding in The Philosophy of Sufficiency Economy, Analytical Thinking Ability, and English proficiency was classified into 6 level; excellent, very good, good, fairly good, fair, and need improvement as followed.

Average test score	Interpretation
higher than 81 %	Excellent
between 76 - 80 %	Very good
between 71 - 75 %	Good
between 66 - 70 %	Fairly good
between 60 - 65 %	Fair
lower than 60 %	Need improvement

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