

CHAPTER 3

RESEARCH METHODOLOGY

The researcher proposes the following research methodology to develop a model to enhance the community teachers' abilities in research and development of local curriculum in the Northern Region through the constructionism theory learning process, which is integrated with the participatory action research. And to study the result of the model with the following order.

- Target Group
- Research Sites
- Research Tools
- Data Collection
- The Data Analysis and Interpretation

Target Group

The main target group of this research is 15 voluntary community teachers in the non-formal education centres in the Northern Region of Thailand in the areas surrounding Mae Fah Luang District, Chiang Rai Province, with 315 learners (210 learners on culture, 50 learners on herbs, 20 on environment, and 35 on agricultural practices). This research is assisted by 52 local wisdom practitioners: 34 persons on culture, 9 persons on herbs, 4 persons on environment, and 5 on agricultural practices. The name lists of these teachers and the communities where the research takes place, and the number of learners are attached in Appendix B; the list of local wisdom practitioners in Appendix C. The research is undertaken between March 2006 and July 2008.

Research Sites

The research sites are the local communities in Mae Fah Luang District, Chiang Rai Province. It is the community where each of the community teachers chosen as the samples in the Northern Region perform their tasks (the list of the local communities is given in Appendix B).

The selection of the communities in this research will be considered from the community teachers in the Northern Region who have volunteered as teachers in non-formal education centres in Mae Fah Luang District, Chiang Rai Province. They also volunteer to gain the development on their abilities in research and development of local curriculum according to the process used in this research. They are the community teachers who have joined the networks of the local wisdom practitioners and learners who are willingly to participate in the activities during the research process. At the same time they also get approval from their supervisors to participate in the research process.

Research Tools

1. Process for Developing the Abilities in Research and Development of Local Curriculum of Northern Community Teachers

The process for developing the abilities in research and development of local curriculum of the community teachers, which used in this research is the following.

CLIPAR : Constructionism Theory Learning Process integrated with Participatory Action Research

In this research, the CLIPAR constructed by the researcher integrates the constructionism theory learning process with the participatory action research by first analyzing the components of the constructionism theory learning process as well as the components of the participatory action research.

The essential components of the constructionism theory learning process are twofold. The first one is the series of components on the process that is composed of the followings: exploitation, experimentation, learning by doing, doing from the learning, and contemplation with wisdom to construct new knowledge. The second component of the constructionism theory learning process is composed of the learning environments and the learning materials that facilitate the learning along the steps of components on the processes stated above.

The essential components of the participatory action research are also twofold. The first one is the components of the process, which are composed of the steps of surveys, planning, implementation, follow-up and evaluation, and revision of the plan for future implementation. The implementation is proceeding continuously in cycles. The second component, which is the participation process, is done in the steps by the relevant people, the persons who receive the results of development, the curriculum developer and the researcher.

The analysis of such components enables the participants to see the common points and other connected points that can be synthesized to integrate into the CLIPAR. Thus the participants can set together a simple and efficient development model. The production steps of the model can be classified into four steps which are

Step 1 Exploration for studying about the problematic conditions

The participants study together the conditions or explore the problems in the communities in order to identify the research issues and to develop the local curriculum that is consistent with the local contexts and conditions.

Step 2 Planning for developing the abilities in research and development of local curriculum of northern community teachers

The participants prepare the implementation plan continuously from the Step 1 by considering the potentials, environment, climate and media and equipment that facilitate the learning and set the plan to develop the ability in research and development of the local curriculum with the participatory processes.

Step 3 Implementation of the plan for developing the abilities in research and development of local curriculum of northern community teachers

The participants implement the plan prepared in Step 2 to actual practice by using the participatory processes and arranging the conditions, climate and media that facilitate the learning. There is the exchange of the learning together continuously during the implementation according to such implementation plan.

Step 4 Supervising, Evaluation and Follow-up of the implementation of plan to develop community teachers' abilities in research and development of local curriculum.

The participants supervise and follow up the results side by side with the evaluation and discussion of the results, and with the review of the thought, adjustment of the plan and further development continuously in friendly climate.

The implementation plans throughout Step 1 to Step 4 share similar ways of implementing the cycles. For example, the implementation cycle that occurs after getting the information from Step 4 is used as the guideline to improve and develop the implementation plan in the next cycles. In all steps, the researcher arranges the environment, climate and media to facilitate the learning together continuously.

In all steps of implementation the community teachers and the researcher prepare the learning environments and the learning materials into the learning process for support and promote the teachers. The researcher as the facilitator stimulates and supports the fulfillment of the knowledge and techniques in doing research and development of local curriculum for the community teachers continuously.

There are important steps as the followings: (1) encouragement for the learners to explore the interesting subjects for them to learn by themselves, and (2) experimentation through created tasks and then usage of the experiment a guideline to follow up with other related actions. This experimentation encourages the learners to learn with their full potential, to create proper learning climate, and to select the use of the media that facilitate the learning. The facilitator would stimulate and encourage the learners to learn by themselves from the experiment along with learning with their full potential. This process moves on until the learners can create their own knowledge. This research applies the steps and the components of such learning process to be integrated with the steps of the participatory action research process in all steps.

2. Tools Developing the Abilities in Research and Development of Local Curriculum of Northern Community Teachers

The tools used for developing the abilities in research and development of local curriculum of the community teachers are composed of the followings.

2.1 Documentary Media composed of :

2.1.1 Evaluation criteria on abilities in research and development of local curriculum of the community teachers in the Northern Region.

2.1.2 The issues for group discussion.

2.1.3 The books and reports of the research, for example :

2.1.3.1 *Participatory Action Research for Practitioners.* (Kamol Sudaprasert, 1997).

2.1.3.2 *Implementation Manual for Practitioners in Non-Formal Education Community Learning Centre on Participatory Action Research of Practitioners.* (Northern Region Nonformal Education Centre, 2001).

2.1.3.3 *Participatory Action Research in Agricultural Extension through A-I-C Process* (Sukanya Athipanan, 1999) .

2.1.3.4 *A Participatory Action Research Model for Facilitating Longwithaya School Student's Discipline, Phrae Province.* (Chaiwoot Compradit, 1996) .

2.1.3.5 *Participatory Action Research for Capacity Building of Northern Rural Community's Elderly Group*. (Pirome Chongkumarnng, 2002)

2.1.3.6 *Research report "Behavior of the Leaders in Community Development: A Case Study of BAWORN Project"*. (Wichai Booranaritthithawee, 1990).

2.1.3.7 Document for Academic Conference on "Educational Research and Related Literature, 7th" (Office of the National Education Commission, 1991).

2.1.3.8 *Thesis Proposal : Process of Participatory Action Research for Research Competent Development of Nonformal Education Volunteer Teachers in Mae Fah Luang Subbdistrict, Chiang Rai Province*. (Jirachai Booranaritthithawee, 2002).

2.1.3.9 Research Report for the Local, Revised Version, of the Project to Develop a Local Curriculum on Conservation of a Community Natural Forest in Form of "Educational Park" Guided by the Local Wisdom (Chalong Khumueang et al., 2003).

2.1.3.10 *Developing Curriculum on Karen Cloth Weaving Subject for the Lower Secondary Classrooms at Mae Tuen Wittayakom School, Omkoi District, Chiang Mai Province*. (Narongsak Srivilai, 2002).

2.1.3.11 *Process of Community Participatory Action Research for Developing Local Curriculum on Kok Mat Weaving at Nanangpattanasuksa School, Phon Pisai District, Nong Khai Province*. (Piyaporn Chumchan, 2003).

2.1.3.12 *Manual for Thesis Writing of Faculty of Education, Chiang Mai University*. (Faculty of Education, Chiang Mai University., 2002).

2.1.3.13 *Manual for Thesis Publication of Sukhothai Thammathirat Open University*. (Graduate School, Office of Academic Affairs, Sukhothai Thammathirat Open University., 2002).

2.1.3.14 The other sources for secondary data are gathered from the independent studies on the community teachers in the Northern Region such as literature on local wisdom, culture and tradition, handicraft, community background, or the record of surveys on the local communities.

2.2 Electronic Media composed of :

2.2.1 the projector with its equipment.

2.2.2 computers and television sets with equipment, which are used for the training on the skills for the community teachers to be able to process the training results and present them properly.

3. Tools for Measurement and Evaluation Abilities in Research and Development of Local Curriculum of Northern Community Teachers

The tools for measurement and evaluation abilities in research and development of local curriculum of the community teachers that used in this research are composed of the followings.

3.1 Evaluation criteria on abilities in research and development of local curriculum of northern community teachers is the set of tools to develop abilities in research and development of local curriculum of northern community teachers and is also used as the tools to evaluate these abilities. They are used to evaluate the levels of these abilities on each aspect. The evaluation criteria utilized in this research can be divided into six levels as the followings.

Zero (0) means **need to study again before practice** because the community teachers' background on the abilities on the related topics is lacking.

One (1) means **should bring for implementation** because there some knowledge and understanding although there is still lack of practice.

Two (2) means **need improvement** because the abilities are already apparent and implemented but the development is limited.

Three (3) means **fair** because there are some traces of development abilities in moderate level.

Four (4) means **good** because can develop the community teachers' abilities in high. And

Five (5) means **very good** because the training can develop the teachers' abilities in a very high level. In each issue there would be some details in the evaluation criteria (see Appendix E).

The evaluation criteria on abilities in research and development of local curriculum of northern community teachers have the construction steps as the followings.

Step 1 Preliminary survey for the basic condition and the actual needs to develop the teachers' abilities in research and development of local curriculum.

Step 2 Arrangement of the evaluation criteria on abilities in research and development of local curriculum through the participatory processes.

Step 3 Development of the evaluation criteria on abilities in research together with the teachers.

Step 4 Publication of the drafted evaluation criteria in research and development of local curriculum and solicitation for the relevant people to review, check and experiment the curriculum to use. After that the researcher brings some experts to check the correctness of the curriculum based on the academic and practical principles before the real implementation.

Step 5 Application of the revised evaluation criteria on the community teachers' abilities in research and development of local curriculum. The published and copied leaflets are given out to the community teachers and relevant people in the research process. At the same the researcher also reviews the participants' understanding for each issue together again with the participants before the implementation of the evaluation criteria to measure the teachers' abilities in research and development of local curriculum in the Northern Region.

During the construction and utilization of the evaluation criteria, the community teachers create the learning representing the whole picture of the research and develop a local curriculum throughout the criteria application. These criteria are used as part of the manual for developing the teachers' abilities in research and development of local curriculum.

3.2 The summary form of the reported scores of the assessments is the evaluation form that contains the relevant issues for evaluation based on the selected topics on the evaluation criteria on the abilities in research and development of local curriculum of the community teachers. The form has some square boxes to summarize the evaluation scores before and after the process. At the same time there are also some boxes to show the "differences in score" and the boxes for the total scores including a blank place for the calculation of the percentage of the scores recorded and the score interpretation to allow the community teachers to consider by

themselves their weak and strong points and later use the data for the analysis on the evaluation results of the abilities development.

3.3 The record form of the implementation according to the research process is used for recording the events during the research implementation in order to use the data in analysis of the model of the development, which is used as the implementation of this research process. The structure of issues that will be recorded is about the implementation conditions along with the research processes in each step.

3.4 The record form for the reflection of opinions is prepared to record the reflection of opinions of the community teachers and other relevant people after their participation in the process to develop abilities in research and development of local curriculum through the constructionism theory learning process integrated with the participatory action research.

Besides, the tools above can track the traces of the real implementation in the research and development of local curriculum such as the situation around the implementation of the Steps during the research, the research proposal and the research plan, the portfolios related to the research and the development of local curriculum of the community teachers, the reports of research and development of local curriculum of the community teachers, the constructed local curriculum, the abilities of the learners, the reflection of opinions of the learners and other participants after the learning using the local curriculum, and the reflection of feelings of relevant people toward the results of the implementation of the constructed local curriculum. The evaluation itself is emphasized on the use of the authentic assessment as the main methods.

Data Collection

The data collection of this research can be classified into four steps which are

Step 1 The researcher gathers the results of the evaluation on the community teachers' abilities in research and development of local curriculum before starting the constructionism theory learning process that integrated with the participatory action research. The record of the results of the evaluation of the teachers' abilities in research and development of local curriculum is gathered from related evidence such as portfolios, research plan, research record of the community teachers, and the research reports on the local curriculum that the community teachers develop by using the qualitative data in the scales according to the criteria in the evaluation of abilities in research and development of local curriculum. Afterward these data are recorded in the summarized form created by the researcher. The highest score is five (5) or considered by the criteria as a "very good" level. However if no clear evidence or the evidence cannot represent the abilities measured in this research, the results of evaluation will be marked in the criteria of "should study further" or considered as the lowest score or zero (0). The research would gather the records of the results of evaluation in the summarized form of the evaluation results.

Step 2 The researcher records the conditions during the implementation in each step of the process into the suitable record form for the implementation conditions. The recording of the situation or events happening during the research implementation can be used to analysis the research process in its actual implementation.

Step 3 The researcher collects the results of evaluation of the abilities in research and development of local curriculum of the community teachers after the training. The researcher gathers the evaluation of the teachers' abilities in research and development of local curriculum from related evidence in order to consider the scores for their abilities in research and development together with the community teacher team. After the community teachers have undergone the development on their abilities in research and development of local curriculum by using the constructionism theory learning process integrated with the participatory action research, the researcher records the data with similar manner like the data collection in Step 1 prepared for the Step 4.

In addition, the opinions of the community teachers, the learners, the local wisdom practitioners, the researcher and other relevant people are also recorded. The record forms for the reflection of opinions and feelings in their participation in the research process and the development of local curriculum of the community teachers are filed for analysis and evaluation of the further development of the teachers' abilities in research and development of local curriculum.

Step 4 The researcher gathers the results of evaluation of the teachers' abilities in research and development of local curriculum of the community teachers at the end of the trial of development model. These results are compared between the teachers' abilities before and after the development model application. Then the recorded results are secured in the summarized forms and the scores in the evaluation sheets. All of this information will lead to analysis of the results in development of abilities in research and development of local curriculum of the community teachers who participate in this research.

The Data Analysis and Interpretation

The data analysis and interpretation of this research are composed of the followings.

1. Data Analysis

1.1 The analysis of the model for developing ability in research and development of local curriculum of northern community teachers through the constructionism theory learning process integrated with the participatory action research.

In this research the analysis of the ability development model will be done by using the data analysis within the conceptual framework developed according to the actual or real contexts during the research. The collected data will be crosschecked with triangulation methods (comparison of three sources), which are the data from the portfolios of the community teachers, the results of research findings, and the development of local curriculum of the community teachers and the evaluation in the communities along with the analysis to establish linkages of events and situations.

1.2 The analysis to evaluate the results of the implementation of the Model for Developing the Ability in research and development of local curriculum of northern community teachers through the constructionism theory learning process integrated with the participatory action research.

This research analyzes to evaluate the use of the model by using the average score on the studied variables according to the contents in the evaluation

criteria to evaluate the abilities in research and development of local curriculum of the community teachers before and after the implementation of the development model. This order is set to compare the results of development along with the calculation of the percentage values of the development to study the results of development on the variables measured. The formula for the calculation of the average score on the variables measured and the percentage of the development is given as the followings.

$$\text{Average scores on studied variables } (\mu) = \frac{\text{Sum of scores on the variables studied from all of the community teachers}}{\text{Number of community teachers}}$$

$$\text{Percentage of development} = \frac{\mu \text{ Post Assessment} - \mu \text{ Pre Assessment}}{\text{Total scores of variables studied}} \times 100$$

1.3 The analysis of the whole picture of the research implementation through a combination between the qualitative and quantitative data in order to explain the percentage of the development and the related situation or event in order to reflect the whole picture of the research and make the linkage or connection among variables and issues involved.

2. Data Interpretation

2.1 The interpretation for the average scores on the variables studied according to the evaluation criteria on abilities in research and development of local curriculum of northern community teachers is given below.

0.0 - 0.5 means **“should study further”** in order to build better knowledge background for implementation.

0.6 - 1.5 means **“should be brought into practice”** as some abilities are created by practice.

1.6 – 2.5 means **“need improvement”** because there are signs of insufficient level of abilities appear.

2.6 – 3.5 means **“fair”** as the abilities are appearing in moderate level.

3.6 – 4.5 means **“good”** as the ability is high according to the criteria.

4.6 – 5.0 means **“very good”** as the ability is very high according to the criteria.

2.2 Interpretation for the meanings of percentage recorded in the development, as the followings.

Percentage of development ranges from **0 to 20.0** means there is development in **“very low”** level.

Percentage of development ranges from **21 to 40.9** means there is development in **“rather low”** level.

Percentage of development ranges from **41 to 60.9** means there is development in **“moderate”** level.

Percentage of development ranges from **61 to 80.9** means there is development in **“rather high”** level.

Percentage of development ranges from **81 to 100** means there is development in **“high”** level.