

TEACHING MANAGEMENT, CONSERVATION AND PRESERVATION OF BIODIVERSITY;
A CASE STUDY CENTERED ON CURRICULUM DESIGN TO PROMOTE WATER
RESOURCE MANAGEMENT IN MAE HONG SON PROVINCE, THAILAND

12

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ABSTRACT

The major objectives of this research were to examine appropriate curriculum design to promote education in the fields of conservation of the biodiversity to achieve and maintain a sufficiency economy within a community. This research used a participatory action research pattern. The focus was on such issues as to preserve water quality and to minimize air pollution and to produce educational manuals for using by the local community in establishing “self-help” protocols. This research also focused on local community map construction which determined the risk points relative to fire protection in forest areas, and agricultural management using biomass fertilizers in minimizing air pollution. Data had collected by the people including teachers and students in the community, who then entered their findings into a data base which developed by the researchers, using the first phase was the drinking water quality improvement models, the conservation of water resources in the community manuals and also the prototype of improving water quality kits from their own. The second phase was the water resource management and the water resource conservation and the decreasing in air pollution in this area. The third phase was the development of the local curriculum using in monitoring the water quality by simple test method in physical, chemical and biological qualities aspects. Those were built in 1st lesson plan for Prathom Suksa VI students from four schools, Huey Phueng School, Ka Han School, Na Prajard School and Huey Pha School, who were studying the Ecosystems in the Living Environment, participated in data collection under the supervision of their teachers and the researcher team. This research indicated the benefits of teaching students in the elements of environmental management and at the same time creating teaching outcomes that got the benefit to the local community. Using students to collect data served a dual purpose of not only teaching them elements of conservation and sustainable management but also met a wider objective of performing a service to the local community, a win-win outcome for teachers, students and the community. Moreover, most of the participants in all activities had a high score in the satisfaction of proceeding activities (most score were more than 95 % from 100%). The score was for evaluating that all activities were suitable: for the area, could apply to everyday life and the participants were agree to have all of these activities continuously done.

Keywords: Local curriculum; Sufficiency Economy Base; Biodiversity

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INTRODUCTION

The area of Muang District, Mae Hong Son Province is located in the most of the biodiversity area. Nevertheless, in the present day, these all biodiversity matters still decreasing rapidly caused by the human activities and also by natural disasters. From this problem, the solution to solve all problems could be managed with systematic management and could have cooperated with the community participatory integration method together. The main reason which brought the seriously problems to the community was from the people in the community lack of the participation, conscious mind and the responsibility to all their natural poverties. The selfishness, no disciplinary regulations, the duty in protecting the biodiversity and environmental problems were the government organization's responsibility only which were occurred in most of the people in the community's thought. From all over problems, the researcher could take an opportunity to consider and could have every organization to cooperate this research project with clearly reification and in urgently. The results from solving these problems must be sustainable by the knowledge and the awareness built and a systematic proceeding project. All of that said should from the efficiency in education management by the local for the local, which would be the sustainable in solving problems and go forward to be the best changes in the community. The local participation in education management could show in the personal character in each area, by using their natural resources in their area leaded them to solve their own problems (Lubell., M.et.al, 2002).

Chiangmai Rajabhat University (CMRU) is the higher education institute which has the major incumbency in serving the local education development. The major visions and missions of this university are to develop the learning activities, the researches and academic matters should serve to the local or community. The three incumbencies including the application of interdisciplinary study approach, for example: science, social science and local wisdom, in the integration would the important factor to solve community's problems. At the present, CMRU is proposing, promoting and supporting the students to get their knowledge from variety learning sources (outsource and in source). This believe is base on the learners should get the knowledge and have good attitude to their environment, love in their home land and the best practice could pass on their knowledge, in the very good in solving skills, from the ancestors to the younger generation with successfully and correctly. From all that reasons, this research, Teaching Management, Conservation and Preservation of Biodiversity; a case study centered on curriculum design to promote water resource management in Mae Hong Son province, Thailand would be a pilot study for studying, evaluating and would be the new route of the study in solving environmental and biodiversity problems in that area through the community's activities and learning management with the purpose in correctly and sustainability (Phu-Kaew, 2005). Moreover, the community should have cooperation in the determination of curriculums and the models in learning management, in advantages for undergrad students, instructors of CMRU and the people in the community in short-term, mid-term and long-term effects. After that, the sustainable of the management and the conservation in the biodiversity on economy sufficiency base would be occurring in the community further.

OBJECTIVES

1. To study the model of the conservation and the management of the biodiversity to achieve and maintain a sufficiency economy within Muang District area, Mae Hong Son Province, Thailand.
2. To examine appropriate curriculum design to promote education in the fields of conservation of the biodiversity to achieve and maintain a sufficiency economy within Muang District area, Mae Hong Son Province, Thailand.

CONCEPTUAL FRAMEWORK

This research used a methodology for the teaching management, conservation and preservation of biodiversity on a sufficiency economy base. The integration of teaching, research and local academic matter serving for appropriate curriculum designing to reach the local curriculum and could pass the knowledge through the students, the academic staffs, the teachers and the community leaders. All of activities had done by a participatory action research with the people in the community including awareness construction and the realization in the important problems in environmental and biodiversity and in the same time, could solve their problems in sustainable ways as mentioned in Adler, P. et al.(2000). The conceptual framework is shown in Figure1.

POPULATION AND METHODS IN COLLECTING DATA

The population in this research consisted of 125 households, 75 students from 4 schools in this area, Tambon Huey Pha, Muang District, Mae Hong Son Province. In this research, tools in data collection consisted of the main methods in interviewing, questionnaire using, observation and the local community forum. All of methods were base on the existing and the relations between phenomena under the facts and real circumstances in the community. The researcher collected data by using

1. The semi-structural interview in the generality of the community such as the historical background, the life style, the culture etc. The interviewing processed with the community leaders, the people including the general officers who on the duty in this area. On the items of the resource management and conservation, the researcher determined wide scopes in studying and the people had interviewed in those setting important items.
2. The questionnaires, data collection had items about the realization and the knowledge in the resource management and conservation of the community, the satisfaction and the resource adaptation, problem and resource conservation in the community.
3. The participatory observation method and the non-participatory observation method which used in this research as Hall, B.,(winter,1992) and Bradburry, H.,and Reason, P.(2003) had done in their research, the researcher had joined with the community activities such as the community's dam construction activity. After finishing in doing all activities, the researcher would get the factors that supporting all activities, the characteristics and the steps in doing activities and also the steps in participation in the community's activities.

4. The local community forum method, the researcher activated the people in sharing their idea, attitude, opinions with open-minded to the public. From doing that, the researcher would like to have the problem status in the adaptation of water resource of the community, the main causes of the problem and the best practices in solving problem which affected to the people and their community which was the same technique of Anderson, S. D., (1999).

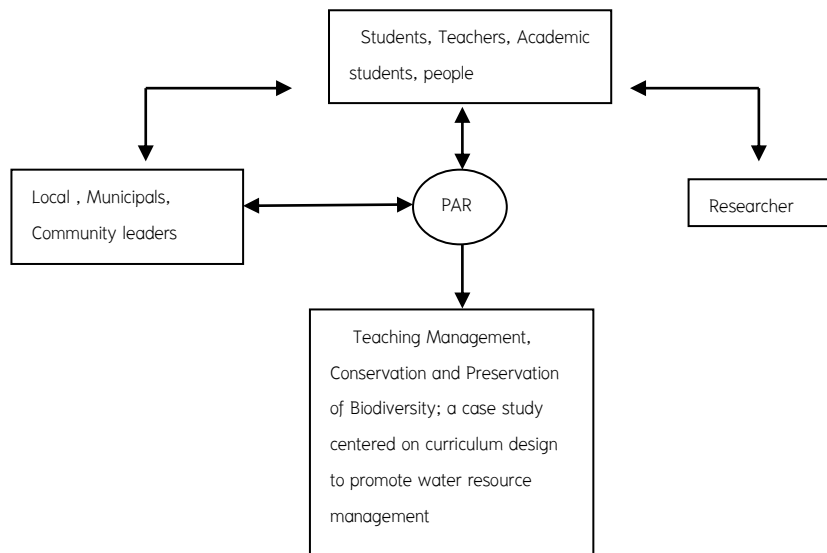


Figure 1 the conceptual framework of this research

METHODOLOGY

Phase I: Research preparing stage.

1. The study in general linguistic context of the community and in application and problem of water resources data

The researchers coordinated with the community to survey the generality of community, community context about the realization, the knowledge, the satisfaction and the problem in consumption water resources.

Phase II: Research and development stage

2. The participatory action research This PAR method used for helping people to know the context of water resources in their area since the past until now and also to activate the people planning in the water resource management for the future. The activity consisted of

2.1 Analyzing and findings the pattern in solving problems together. The researcher team processed the local community forum, which to clarify the objectives of this research and problems of water resources in the community. Idea exchanging, brain storming, and comments in public hearings had done for people to know and to realize in how serious of their problems. After that, the people could set the pattern in solving their problems by their own, cooperated with the data that the researcher collected in first phase. The community data which relevant to the water resources problems had examined by people in upstream area. 35 people joined these activities as shown in Figure 2.



(A)



(B)

Figure 2 (A) The people's realization construct about the management and conservation of water resource by their own
(B) The community's brain storming in finding out the problems and the solution plans

The sub-activities was 1). The Ice-breaking and Greetings activities, to build up the friendship between the people and the people could naturally present their ideas or opinions. 2). Time-line activity, to help the people who joined this activity told about the generality of water since the past till present that was for the Cherish in water and community of the people in this area would occurred. 3). The expectation and the demand activity in water resources management in the the community, to know people's expectation in community status that would change in the future and what the changes that they want to have in the future.

2.2 The Water Resource Management and Conservation on Sufficiency Economy Base Activity proceeding. The activities proceeded on the people's choosing plans; aim to construct the understanding between people in making a decision and planning together in solving their community water resource problems. The activities were

1) The community water resource survey. This activity, the researcher team had set for people in the ommunity could get to know the problem in their each water resources together (The Community water resources in the community such as a community water supply system, a mountain water supply system, stream resources and shallow pond). The main aim in proceeding activity was for overall surveying in water resource system which used for consumption from 4 villages that settled in upstream area (consisted of Huey Phung, Ka Han, Na Prajard and Huey Pha village). 5 people had joined in these activities; most were community leaders and the consumption water system administrators as showed in Figure3.



Figure 3 The community water resource survey activity

2) The water pollution and consumption water management activity, the solving in agricultural water pollution activity had activities such as the test in water pollution using a simple and easy test-kits, the grease trap tank build up for waste water (from household activity) treatment, the water pollution protect activity from agricultural waste and the improvement in consumption water activity. Aim to support and promote people in this area to know the pattern in simple analyzing water pollution including the pattern in solving agricultural water pollution problems. As showed in Figure 4.



Figure 4 The demonstration for construction of water pollution protect and consumption water management

3). The management and conservation of natural resource by decreasing in air pollution in this area, which had done by managing to set burning materials in the open space areas and also fire forest managing. By Participatory Action Research done in the community, the researcher team collected and synthesized data and classified into categories. That all data was from the local community forum activity and also shared the idea between the researcher and the people, for analyzing in causes of their problems and specified target in solving air pollution for driving activity in concrete way, as showed in Figure 5.



Figure 5 The management and conservation of natural resource by decrease in burning and management of fire forest in the community

Phase III : Following and Evaluating a proceeding activities result stage

3. The integration of education management for local curriculum development. teenager and people group had created the body of knowledge with the monitoring of water quality with simple test method, which composed of sub-activities as, provide a training course in monitoring of water quality with simple test method to the teenager and people group, survey and simple water quality test method including recording all data in information system, as showed in Figure 6 and 7.



Figure 6 The measuring and the simple water quality test and record all data in information system



Figure 7 The training in a simple water quality test and data record

That all of activities had done for knowledge construction to the teenager (in topic of water pollution analyzing and management, and also to create their realize and responsibility in the conservation and the management of water resources) in this area by choosing and construction the lesson plan for Pathomsuksa IV students from 4 schools and the educational efficiency would investigate. All of things could be processed in long lasting way further.

RESULTS AND DISCUSSION

After processing the the teaching management, conservation and preservation of biodiversity on sufficiency economy base, the participatory action research had done through many activities in phase I, found that the result from knowledge construction and problems analyzed together between the researcher and the people in the community, problems data categories setting, and the pattern which choosing in solving problems deal with the management and the conservation in water resource on sufficiency economy base application from brainstorming people in the community. The other important aspects such as the readiness of budgets, apparatus, tools and way in solving consistent with life style, careers, local culture and traditions with the people in the community. Moreover, the ways in solving problems could originated from the need of people and community and also meet the requirement of the people in that area. The received utility was correspond to the need of people and local community and finally, is the activities could be done continuously and long lasting. All activities which done in phase II consisted of

- the monitoring in community water quality that the way in body of knowledge construction which relevant to the management and the conservation water resources, for people in that area could know about the quality of consuming water and for the proper way in solving problems which meets the need of the people in the community. This activity started from surveyed data in each village together between the system administrator researcher and the interested people. After water quality test had done in mountain water supply which villagers used in consuming, the researcher tested many parameters in 4 of the mountain water supplies from 4 villagers, the results showed that there was 1 village that the mountain water supply had all parameters over standard values. That was a Huey Pha village, but in the amount of the Manganese and Iron ions not proceed over standard value so the people in that village could bring water to consumption without harm to people's health as method in testing as mention to Novoty,.V. (2003) 's research.

- The improvement of drinking water quality in the community, the management and the conservation of water resources in many aspects of the water quality improvement as in the drinking water and the treatment of pollution in water for people's truly understanding till leaded to provide the instruction in improving water quality in the public (cooperated between researcher and people in the community). From workshop training activity in title "the instruction of water filtration to get rid of the turbidity precipitates and the hardness from the water". The researcher team could build up 5 sets of the prototype in water quality improvement set. From 1 month period time of data collection, after using 5 water quality improvement sets found that the 20 liters of clean drinking water per day per set had received. From the efficiency study of the water quality improvement system for consuming found that the quality of water that passed through the water quality improvement system set which using for consuming in household had the values

passed the standard values for being used as drinking water from the Public Health Department and the standard for water in closed-container all parameters. The efficiency of water quality improvement set could get rid of turbidity the most and amount of Manganese, respectively.

- The water resource management and the water resource conservation and the decreasing in air pollution in this area, which had done by managing the people to set in burning materials in the open space areas and fire forest managing. All of operations composing of the community map construction and determined the risk points for fire forest ignition to specify as the control area. The fire protection area points setting and biomass fertilizer making from useless materials from the agricultures, in the risk area which could be initiated to be a fire forest further. The walking security guards had setting in fire forest awareness in these areas, including burning follow one after another that in the period of proper time for decreasing the accumulation of smog quantity.

- In phase III, The integration in education management for local curriculum development for using in monitoring the water quality by simple test method which in physical, chemical and biological qualities aspects. The test-kits had used by the teachers and the students in this area for collecting data and reporting all data in the information system program. This was for teachers and students learnt and reported data. For the evaluating the activity, the 98 percent of students who joined this activity had a highest satisfaction level and the 97 percent of participants commented that this activity suitable to the area and 95 percent of participants commented that these activities could apply to everyday life and agree to have these activities continuously and approve to use these activities to built a lesson plans for PrathomsuksaVI, 1st lesson plan for the students who studying the Ecosystems in the Living Environment, participated in data collection under the supervision of their teachers and the researcher team. In process, this activity had the cooperation from Prathom Suksa VI students from four schools, Huey Phueng School, Ka Han School, Na Projard School and Huey Pha School. The cooperation could be built for the school network in the management and the conservation water resource on a sufficiency economy base in that area further.

APPLICATIONS

1. From this research, the teaching management, conservation and preservation of biodiversity on a sufficiency economy base by Participatory Action Research Method in Muang District area, Mae Hong Son Province found the result that the people in the community known about their problem situation. The water resource situation in the community of watershed area pushed all the people in that area planning to solve that problem. First of all, they set the target which has the clear direction. After that, they used many activities to solve their problem in concrete way. They solved their problems in systematic pattern by arranging to solve the problem from the most serious to less than. Moreover, they attributed the process activities to the developing action plan of local municipal. The local administrators cooperated with the community to set up a budget and workshop planning in solving water pollution problem in that area with will long lasting. The local administration had that plan to the delivered budget planning in the part of the natural resource and circumstance management for continuously processing and solving their problem with high satisfaction forever.

2. The indicators in the sufficiency of the cooperation between people and the education organization in processing the activities were a public relation from the educational and the instruction in prototype in water quality improvement set.

3. The people in this area had a higher quality of life beneath having the clean drinking water and clean consuming water without any contaminants.

4. The body of knowledge in the monitoring of simple water quality method could be used for test in the other living organisms which community/teenager/school could be done by them. In the same time, there would have the cooperation to set the activities to strengthen, lift up the quality of life, well-being and healthy including the realization of the community in water using, especially, in the upstream water area.

5. The economics effect to community, in the result of the research processing could help in reducing the expense of the people in buying a drinking water. Moreover, this research could be the way for solving drinking water and water problem in other community.

CONCLUSIONS

The teaching management, conservation and preservation of biodiversity on a sufficiency economy base by Participatory Action Research Method in Muang District area, Mae Hong Son Province compose of the initiation of searching for the community problem, after that, the cooperation between, people in that area, leaders and researchers had specified the way in solving all the water resource problems, planning and proceedings by the activities. Along the process they could follow and evaluate the efficiency of activities on a sufficiency economy base which composed of the reasonable part, the sufficiency part, the immunity part, the knowledge part and the morality part. Moreover, those activities could correspondent to Participatory Action Research: PAR theory as mentioned in Walaisateine. P. (2000). The cooperation in proceed the research should have the researchers in the area, as people and the area developer worked with the outsource researcher as the target to built up the knowledge, conscious and awareness for all the people and teenagers by their own management without any help from others and could process all activities by their own efficiency and long lasting.

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