International Journal of Agricultural Technology 2016 Vol. 12(7.2):1955-1961
Available online http://www.ijat-aatsea.com
ISSN 1686-9141

Enhancement of the Eco-learning Process for Loei Upstream Rehabilitation, Lakdan sub-district, Namnao District, Petchaboon Province

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Heejung, K., Rasi T., Treedat, J., and Poungsuk, P. (2016). Enhancement of the Eco-learning Process for Loei Upstream Rehabilitation, Lakdan sub-district, Namnao District, Petchaboon Province. International Journal of Agricultural Technology 12(7.2):1955-1961.

The objective of this qualitative study were to: 1) explore ecology system, relationships, and importance to the target community; 2) investigate eco-learning process for Loei upstream rehabilitation; and 3) prepare a Loei upstream eco-learning plan t connect teaching/learning facilitation in schools in the target area and outcome extension to other schools. This study employed participatory action research with learning exchange venue, survey, interview, and focus groups discussion. Locale of the study was at Baan Huaykapo, Moo 6, Lakdan sub-district, Namnao district, Phetchaboon province. Research instruments in this study included observation form, data recording form, and in-depth interview. All of these were administered with a target group of 65 persons. Results of the study were as follows:

.1Loei upstream ecology system could be classified into 3 stages: 1) abundant ecology system and the relationship in utilization by Huaykapo people was rather high; 2) the development focusing on utilization of the ecology system's resources; and 3) the rehabilitation of natural resources and environment. Findings showed that there was a high level of relationships of the ecology system both in the past and at present.

.2Eco-learning process for Loei Upstream rehabilitation arise from the integrated management process and educational facilitation both inside and outside the school. In this respect, the community must participate in the management of the ecology study process. It was found that the community had strengths in folk wisdoms, knowledge, and it could be a learning source. Outcomes of this study could obtain a model and a plan for the enhancement of the learning process and mutual agreements of stakeholders in the enhancement of learning for Loei upstream rehabilitation.

.3There was a learning plan preparation and learning assessment. This was done by copying the experience set, body of knowledge, body of knowledge, and a report form on the

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operational outcomes of the construction of eco-learning process for Loei upstream rehabilitation as a learning course. Besides, it was found that the learning module could create an awareness of ecology study focusing on importance, benefits, and problem solving in the crisis of natural resource and environmental destruction as well as Loei upstream ecology system destruction. Findings also showed that the neighboring communities and schools were responsive to the preparation of the learning plan on Loei upstream ecology.

Keywords: Learning process**,** head watershed ecosystem, head watershed restoration, conscious mind

Introduction

Loei River originates in Phuluang mountain range and its upstream is at Baan Loei Tad, Loei Wangsai sub-district, Loei province. Loei river flows through Baan Huaykapo village, Lakdan sub-district, Namnao district, Phetchaboon province then it flows through Phluang district and meets Maekhong River at Baan Khokmak, Chiangkhan district, Loei province where it is called "Pak Loei". Loei River is 231 km. in length and it covers the watershed area for 4,010 km.^{2} Main tributaries of Loei River include Huaykapo, Suay, Man, Puan, Huay, and Lai rives. There are 74 villages located close to Loei River (Maekhong River is an international one which is very important is ASEAN region).

Loei River in the past was an area where fishes in Maekhong River migrate to breeding and spawning (Wikipedia, 2015; Baan Huaykapo School, 2015). Thus, Loei River is important as an area of various kinds of fish conservation as well as bio-diversity for Maekhong River. It is a food source and a basis of community economy of people in Loei province. In fact, Baan Huaykapo is an area important to the ecology system of Loei upstream. This is because there are many small tributaries and the most important one is Huaykapo flowing from Namnao National Park. In the past, it has much bio-diversity as the habitat of flora and fauna. At present, however, there are problems in natural resource destruction and deterioration.

Therefore, the team of researchers perceiver that it was essential to conduct a study to find causes and guidelines for solving the problem in natural resource and environmental destruction as well as the deterioration of upstream ecology system. Community participation process was employed for knowledge management. The deterioration of natural resources in Loei upstream area is not only has an effect on Baan Huaykapo community but also other communities in the ecology system of Loei upstream.

Objectives of the Study

1. Explore ecology system, relationships, and its importance to Baan Huaykapo community;
2. Investigate a model of ecology learning management to rehabilitate Loei upstream; and
3. Prepare a learning plan on Loei upstream ecology system which connects to teaching/learning facilitation of Baan Huaykapo School as well as outcome extension to other areas.

Research Questions

.1 How do we enhance the process of community ecology learning for the rehabilitation of Loei upstream in Lakdan sub-district, Phetchaboon province?

.2 How do we enhance the process of community ecology learning for the rehabilitation of Loei upstream in Lakdan sub-district, Phetchaboon province?

Scope and Delimitation of the Study

This study aimed to enhance the process of ecology learning of the community for Loei upstream rehabilitation

1. Locale of the study, This was based on the community located in Loei upstream area that was Baan Huaykapo community, Moo 6, Lakdan sub-district, Namnao district, Phetchaboon province.

2. Population and Target group, The populations in this study were people living in Baan Huaykapo community with the following qualifications: 1) have been living there for at least one year; 2) earning a living in Baan Huaykapo community; and 3) willing to be part of the study.

3. Study Time Span, This study lasted one year, from May 2014 to April 2015.

Methodology

This study employed qualitative research in the form of participatory action research which included learning exchange venue, survey, in-depth interview and focus group discussion (Chooto, 2005). The target group in this study consisted of 40 local people, 9 school committee members, and 16 community leaders/local scholars. Research instruments included observation form, data recording form, and in-depth interview form (Semi-structured or guided interviews) and it was inspected by 3 scholars. Obtained data were analyzed and synthesized (content analysis).Methodological triangulation was conducted.

Project Implementation Plan

Steps	Objectives	Research Instruments	Target Groups
1. Explore and prepare the community	Seek for an appropriate area based on context, physical aspect, and community coordination	Observation form and data recording form	Community leaders, local people, teachers
2. Community venue for the construction of mutual understanding between the community and concerned agencies	1. Construction the understanding in the research project for the target group 2. Listened to opinions and suggestions of stakeholders in the community 3. Find the front for project implementation	Learning exchange venue, observation form, and data recording form	Local people, school communities, community leaders
3. Data collection	Find capital data/community potential	Walking survey for making a social map, in-depth interview, and focus group discussion	The team of researchers
4. Community researcher meeting (once a month)	Monitored project implementation, perceived problems encountered, and solved the problems	Learning exchange venue, in-depth interview, and focus group discussion	The team of researchers
5. Venue for project planning and analysis on the enhancement of learning process	Find an appropriate model for project design and management of the process of learning enhancement	Venue for learning exchange, observation, and data recording form	The team of researchers
6. Try out the practice on learning process enhancement, conclusions, and assessment by using the triangulation	Prepare readiness for activities on learning enhancement	Venue for learning exchange, observation, and data recording form	The team of researchers
7. Activities on the enhancement of learning process, making conclusion, and assessment	Find an appropriate model for teaching/learning facilitation in the school	Learning exchange venue, observation, and data recording from	The team of researchers
8. Making conclusions and project assessment	Perceiver changes and thinking method of the community before and after the process enhancement	Learning exchange venue	The team of researchers
9. Preparing a researcher report and dissemination	Public dissemination	Report document	The team of researchers

Results and Discussions

According to results of the study, it could be concluded and discussed as follows:

1. Regarding the ecology system, relationships, and its importance to Baan Huaykapo community, it was found that Loei upstream could be classified into 3 stages: 1) abundant ecology system and relationships in the ecology system utilization of local people was rather high; 2) development focusing on exploitation of resources in the ecology system; and 3) rehabilitation of natural resources and environment.

The problems in ecology system destruction connected the destruction and deterioration of natural resources and environment. Based on in the past and at present, it was found to have a high level of difference. In the past, Baan Huaykapo community had close relationships with the land, natural resources, and environment in the form of reliance to each other. Thus, resource utilization was for livelihoods and conservation. At present, however, it was found to be under the concept of the development of mono-agricultural practice in the form of capitalism and free trade. This makes the relationship between man and natural resources are in the form of oppression based on responsiveness to a highest profitability. This resulted in the destruction and deterioration of natural resources, environment, and bio-diversity. This conformed to a report of Phechaboon Land Development Station (2015) which revealed that forests in Namnao National Park were destroyed by man encroachment for residential areas and cultivation. They grew economic crops such as maize and ginger. This damaged watershed and environmental condition due to chemicals caused for cultivation. This was a factor accelerating problems in soil erosion and toxic contamination. Hence, the enhancement of learning process on the rehabilitation of upstream rehabilitation must be accelerated for the sustainability of natural resources and environment.

Besides, results of the study on ecology system, relationships, and its importance to Baan Huaykapo community were as follows: 1) the body of knowledge module was data on the ecology system which had details covering all aspects of the ecology system and having impacts on Loei upstream; 2) data on Loei upstream community context; 3) a plan enhancing the learning process; and 4) mutual agreements of stakeholders in the process of learning process enhancement for rehabilitation of Loei upstream.

2. The model of ecology system learning for Loei upstream rehabilitation arise from the arrangement of integrated process and it must be facilitated both inside and outside the school participated by the community. Results of the study revealed that the community had strengths in local wisdoms, knowledge,

and a learning source. However, it must be supported by the community. This conformed to a study of Boonyakuekool (2015) which claimed that local wisdoms have a knowledge basis due to: 1) natural resources, 2) social networks, and 3) intellects. This was concluded as life security with self-reliance. Thus, local wisdoms should be taught in the school to convince students to be aware of value of local wisdoms accumulated by ancestors.

According to the study on a model of ecology system learning for the rehabilitation of Loei upstream in Baan Huaykapo community, the following were found: 1) a model and plan for the enhancement of learning process for the rehabilitation of Loei upstream and mutual agreement of stakeholders; 2) project or program and monitoring of Loei upstream rehabilitation (5 years); and 3) a report on the progress of the process of Loei upstream rehabilitation.

3. The arrangement of an ecology system learning plan to connect teaching learning facilitation in the school and extents onto other schools in neighboring area. Findings showed that the copying of the experience set and body of knowledge could create an awareness on a study of Loei upstream system. This focused on importance and benefits as well as problem solving on the crisis of natural resource destruction and deterioration. Besides, it was found that communities and schools in neighboring areas were responsive to the arrangement of to ecology system learning plan. Outcomes of the study on the arrangement of an ecology system learning plan to connect the teaching/learning facilitation in Baan Huaykapo school were as follows: 1) a plan for ecology system learning for the rehabilitation of Loei upstream rehabilitation (elementary/secondary school) which could be integrated with other subjects; 2) an assessment of learning achievement on ecology system and Loei upstream rehabilitation; and 3) a report on project implementation on the enhancement of ecology system learning process for Loei upstream rehabilitation.

Suggestions

1. Based on results of the study, it was found that there was a high level of difference in relationships of the ecology system in the past and at present. The problems arised form the ecology system destruction related to the crisis on the destruction of natural resources and environment. Thus, concerned government agencies should seriously conduct a study on problem conditions and causes of the problems for sustainable problem solving.

2. Baan Huaykapo community and neighboring communities were responsive to the model and ecology system learning for Loei upstream rehabilitation in terms of the enhancement of learning process both in the community and school. Thus, it could be suggested that a study on this respect

should be conducted continually related to outcomes of the application of a learning model and the integration of body of knowledge related to the upstream ecology system with school learning content. Also, the assessment of outcomes of the realization on the ecology system conservation should be done as well as learning achievement of students for continual and sustainable development.

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