ABSTRACT

This research was aimed to investigate the process to equip the community learning centers in the Northeast of Thailand with a capability to conduct environmental studies. Three award-winning community learning centers in the northeast awarded were targeted. The research was based on the mixed-methods research methodology. The participatory discussion was used as a mean for data collection. Two patterns of development were observed in this research. 1) The learning centers’ operation was based on a multilateral collaboration which involved the community, academy and external organizations in making the learning center capable of managing environmental studies. The center also created five environmental learning stations in its community; complex waste management station, sustainable water and soil reservation station, tree bank station, community forest station, and self-sufficiency economy for the environment creation station. 2) Learning management in the community. Base on the self-learning technique, the local people were able to develop their own environment learning. The knowledge obtained from the environmental learning process was transformed into a model which was used as a blueprint for other centers to learn from. In order to ensure successful environmental learning in the center, more learning materials were placed in the community learning center. The center was able to form a team of environmental trainers whose duty was to disseminate knowledge, create positive attitude and behavior toward the preservation of the environment.

Key Words: Community learning center, Multi-level development, Self-learning

INTRODUCTION

Many problems such as the excessive urbanization, the quick population growth and the ultimate exploitation of natural resources portend to the worsening of environmental crisis whose effects on human lives are inevitable. Due to high demand of food, deforestation is hugely exercised nationwide to transform the land for plantation and farming. Forest health has been quickly deteriorated. The use of dangerous chemicals such as insecticides and herbicides causes damage to microorganisms, wild lives, and crops. These chemicals also result in the diminishing of natural food sources among village people making them more dependent on the food sources outside of the community. Instead of obtaining food from their local forest, people have to buy it from the market. The quick losing of natural food is the result of deforestation. This is why it is important to help the community to regain their natural food sources by the means of environmental management and reforestation. To achieve this goal, the people should be equipped with the ability to; create their own environmental learning stations, preserve natural resources, control pollution, perform hygienic agriculture, apply the idea of self-sufficiency economic for environmental development, and use the local wisdom for the preservation of natural resources. These actions are responsive to the government’s policy to create natural resource security by balancing the use and the
preservation of resources. The government also struggles on finding effective measures for water management and how to cope with the weather changing problems. Accordingly, the government enforces the nation’s economic and social development plans to be natural friendly. Different media should also be used to make people aware of the importance of natural preservation. It is important to create environmental awareness among Thai people via different activities such as, directing effective environmental education at all school levels, and advertising the updates on the environmental issues to increase public perception participation in the problem solving process. To generate the sense of ownership and participation in environmental preservation, an environmental learning at schools should be based on the school or community’s environment settings. Moreover, the students should be encouraged to have direct learning from their local resources.

The environmental problem existing in the northeast of Thailand is the most severe issue compared to other regions of the country. Effort has been made to find remedy for the crisis. Based on the area investigation and the application of a Snowball Sampling Technique, three community learning centers in the northeast region were found using the environmental study techniques for the community environment nourishment. The three centers include; 1) Community Environmental Learning Center in Koklaopra village, Wungmaidang sub-district, Nakhonratchasima’s Pratia District, 2) Community Environmental Learning Center of the Tree Bank Network, in Muang District, Nongbu-almphu, and 3) Community Environment Learning Center in Banphu Community, Nongsoong District of Mookdahan province. Based on an in-depth survey conducted among the three centers, Banphu Community in Mookdahan province was reckoned as a place that could best apply the idea of environmental studies. The villagers there collaboratively blended their way of living with their environment. They created a community learning center, brainstormed ideas about the strengths and weaknesses of village while preparing the environmental development.

METHODOLOGY
This research into the promotion of environmental education in community learning centers in the northeast of Thailand was based on a research for development framework with mixed methodology. Qualitative data was exploited for the description of the community’s environmental problems which could be used to direct the community’s environmental development. The qualitative data was also used for narrating the activities for environmental preservation and the attitude that the people had for the environmental education managed by the community learning centers. Quantitative data was applied to verify the efficiency of the learning activities organized by the centers. The quantitative data collection was spread into three phases. 1) Investigating the centers’ needs and existing problems. This step also picked up on the measures taken by the centers as their attempt to become community centers for environmental learning hubs. The informants for this phase were selected via a purposive random method under which 15 committee from each of the three community
learning centers were selected. As a result, a total of 45 informants participated in an interview and a group discussion. The Index of item-Objective Congruence (IOC) of the interview among the three-group participants was rated between 0.80-1.00. 2) Designing the type of environmental education development observed in the learning centers. The samples were 35 environmental educators selected equally from the three centers. Their answers to the prepared questions were rated with The Index of IOC between 0.60-1.00. Additional data was collected from a participatory meeting and 5 scholars were appointed to evaluate the type of development that took place at the three centers using a prepared evaluation form. The types of development design were revised based on the suggestions of the scholars before being finalized and used as a model for other community learning centers. The meeting of the committee from the three centers appointed Banphu Community Learning Center as a pilot center in which the designed development plan was later used with 48 young volunteering learners. 3) The evaluation of knowledge, attitude and behavior of the learners after the program trial. Test forms were used to dictate the levels of knowledge, attitude, and behaviors of the participants before and after the program. The knowledge test items were rated with the following statistics; difficulty level between 0.65-0.84, discrimination power between 0.72-1.00, reliability is 0.87. Reliability values of the knowledge test form, the attitude test form and the satisfaction test form were, 0.86, 0.89, and 0.89, respectively. Percentile, mean, standard deviation, and T-test were used for data analysis. This research methodology was founded on the review of the following topics; community environment, environmental education, community environment management, self-sufficient economy, teaching and learning management, participatory learning, and principles for environmental education.

RESULTS AND DISCUSSION

With regard to the general operation condition, the three community learning centers were supported by the local development offices to make them a center for occupational development focusing especially on weaving, looming, breeding livestock and self-sufficiency economy. The centers were equipped partially with information of the above occupations. The centers disseminated knowledge for natural resource protection by urging the people to take part in fighting against forest burning and wildlife hunting. They also advocated community’s wellness by doing health promotion activities and preserving social wisdoms and promoting local scholars. Inside the centers was where the local products were displayed. The problems that the community learning centers encountered were outdated information and the inadequacy of information relating to waste and pollution management. Moreover, the centers were in needs of more learning medium and environmental trainers, one of the factors which the researchers believe to play a part in the community’s less contribution to environmental management. The measures to be taken to help make the centers a hub for environmental learning were to obtain updated environmental information and to provide more information about the community’s environment. The centers should emphasize on the community’s waste and pollution management. In addition, interesting media should be used to attract the public attention in solving soil and water problems in the community. The community should create environment learning routes with the dispersing of different environmental learning bases along the way. Environmental learning should be made consistency with the support of adequate learning media and trainers. The centers should also highlight the importance of being environmental dependence which can make the people realize the value that nature has on human lives. By seeing the value that environment holds for them, people are likely to take more part in sustainable environment development.

An attempt to make the community learning centers as a hub for environment learning was based on various theories such as environment management and community learning development. The type of development plan developed from the above theories consists of the following components. 1) Principle for the development of the community learning center
was set. It prescribed that center’s database be updated and environmental learning based be made practical for environmental learning. Learning bases should make people realize the importance of living in harmony with nature and how the prevailing local wisdom helps preserve the environment. 2) Principle of multilateral collaboration involves the participation from the community and external organizations in making integrated environment learning center happen. People in the community should have chance to exercise their skills to correct the environment problems existing in the community. 3) There were three steps for the development of community learning center. Step 1: Amending of the community learning center. The revised center should be placed with updated environment data, up-to-date information technology and learning medium. Brochures and video displaying basic information of the center should be prepared. Practical learning should be conducted via the help of the environmental trainers. These trainers should also be trained to successfully and systematically present the information to the public. Directly learning experiences should also be exercised by the centers to ensure insight learning among the learners. Step 2: Making of environmental learning routes and 5 learning bases. The Five learning stations consisted of; a) Complex Waste Management Station which involved the demonstration of effective rubbish recycling and rubbish reusing, b) Sustainable Water and Soil Reservation Station which demonstrated different techniques for water treatment such as using water hyacinth for water treatment, using biotic fertilizer for soil treatment and planting soil nourishment plants. c) Tree Bank Station which was the station that encouraged people to grow more trees, d) Community Forest Station which showed how to protect the community forest and how to use the forest more effectively, and e) The Self-Sufficiency Economy for the Environment Creation Station which applied the idea of self-sufficiency economy for the environmental protection. In this learning station, learners were encouraged to plant their homegrown vegetables and planting variety types of plants. Step 3: Creating of the practical guide to be used at the community learning center and learning stations. The learning activity designed at this step helped create knowledge, attitude and behavior relating to environmental protection. The activities were rated by the scholars to have the appropriate IOC value of 1.00, meaning that they were effective for instruction at the community learning centers. The success of using these activities was a developmental model that other community learning centers can learn from.

After the community learning center for environmental education had been developed, a group of volunteering students participated in the learning centers. It was observed that the participating students had higher posttest scores of knowledge, attitude and behavior than the pretest ones, with the significance of .05. Moreover, the students’ satisfaction score on the development of the learning center was at the highest level (\( \bar{x} = 4.67, \text{SD}=0.48 \)). In addition, the score of the center’s development quality was rated at a high level (\( \bar{x} = 4.53, \text{SD}=0.65 \)).

The working principle of the community learning center for environmental education was based on the collaboration of different organizations. More specifically, when undergoing any environmental problems groups of people such as environmental scholars, learning center representatives, and members of different community groups had to take part in solving the problems. The prevailing problems of the old community learning centers were the lack of learning media, trainers and up-to-date information. These problems were solved by the corroboration of all the members mentioned above. The developed community learning center had clearer plan and mindset on how to provide environmental education. Two main tasks of the community learning centers were to increase the performance of the center and to provide better learning management. The knowledge obtained from the practical learning was used as a framework for the creation of environmental learning bases as illustrated in Fig. 1.

According to Fig. 2, the centers have to carry out two main tasks to become hub for environmental learning in the community. First, The center’s performance was supported by different principles namely; Self-learning (S), multilateral Cooperation (C) and Active learning (A).
Second, The Center’s Learning Management which should be based on the five learning stations including; Complex Waste Management Station, Sustainable Water and Soil Reservation Station, Tree Bank Station, Community Forest Station, and Self-Sufficiency Economy for the Environment Creation Station. These five learning stations were used as a roadmap for the environmental learning. The community learning center for environmental education had environmental expert (E) who volunteered to work as a trainer for the center. Moreover, modern environmental learning media (M) was equipped to the center in order to help create knowledge, attitude and positive behavior for environmental conservation.

Based on the abbreviation of the keywords which were the principles that highlighted the operation system of the center, the researchers came up with an acronym SCA-BEM Model which demonstrates the working system of the center as described in Fig. 2.

![Diagram](image1.png)

**Fig. 1:** Processes for the development of community environmental learning center

![Diagram](image2.png)

**Fig. 2:** SCA-BEM model

The operation of the three community learning centers in the northeast of Thailand was well supported by the community development office and the local administration office. The learning
centers were developed particularly as a hub for occupational promotion in order to teach the local people with skills on self-sufficiency economy, forest conservation, community wellness and the preservation of the local wisdom. Inside the buildings of the learning centers, there were tags displaying the names of the community outstanding products. Similar problems observed among the three learning centers were the outdated environmental data, the lack of environmental trainers and the insufficient of environmental contents to disseminate to the people and also the lack of interesting environmental learning media. These problems should be one of the causes for less public participation in environmental conservation. Despite its noticeable effect on the environment, the village’s center for community forest conservation was unable to find measures to tackle the problem since the center did not have clear working system and practical development plan. Lee et Al. explained that the factors related to learning were; a) Community context which can be something from the nature of community settlement, the culture and the race, and the experience and thought of the society. b) Contact with the external world which is a good mechanism for learning. In a study by Woodward that was aimed to measure environmental knowledge obtained from training on environmental problem solving, it was showed that the process of environmental education could equip university level students with higher scores of knowledge, attitude and behavior for environmental conservation.

There were some amendments that need to be implemented in order to make the community learning centers to be a hub for environmental learning. The centers need to have up to date environmental data while the emphasis should be placed on waste management and water and soil pollution treatment. Center needs to have more learning media and environmental trainers. The center managing system should be adjusted to make it more supportive for the administration of environmental education to the community. Most importantly, the environmental learning activities should be provided consistently. Adisak Singseewo explained that effective remedy to environmental problem was to organize environmental activities for the learners to directly expose them to practical environmental learning. It was believed that direct exposure to environmental learning was an effective way to create knowledge, attitude and positive behavior for environmental conservation. It was revealed in a study at the Center for Community Forest Conservation, located in Non Hinpueng village, Phrachinburi’s Pranchantrakham district, was successful in promoting the community forests. The center’s success was fueled by having learning media, organizing of environmental learning activities for the local students and villagers. The teenagers there were well aware of the importance of the forest and they would be in charge of maintaining their community forest. Suffice to say that the amendment of the center’s working system and administration system are key elements for the success in making the community learning center to be able to cater for environmental education.

The patterns of development undertaken to make the community learning center capable for fostering environmental education consisted of three components. 1) Development of center’s thinking framework, database, and environmental learning bases. 2) Development of multilateral collaboration. The work of the center was implemented via the help from different social sections including environmental academy and external organization. The environmental activities should integrate the content of community problems to make the learners feel the value in taking part in the environmental conservation. 3) Steps for the center development were classified into three phases. 1) Refining of the center’s administration system which involved updating environmental database, obtaining more learning media and finding the environmental trainers for the center. 2) Creating the environmental learning routes and 5 learning stations which were; Complex Waste Management Station, Sustainable Water and Soil Reservation Station, Tree Bank Station, Community Forest Station, and Self-Sufficiency Economy for the Environment Creation Station. 3) Creating practical guide of the center and of the learning bases. The activities implemented were aimed to promote higher knowledge, attitude and positive behaviors about environmental conservation.
appropriate for learning since they were rated with appropriate IOC, 1.00.
As observed in this research, the community learning center that was developed to be a center for environmental education was found effective for the environmental training and learning purposes. 
After the center and the learning bases had been developed, a trial training was conducted to verify whether the developed center and learning bases could foster the students learning as evidenced by the scores of knowledge, attitude and environmental beha-vior. The post test scores in all of these areas were found higher than the results obtained in the pretest with the signif - cance of 0.05. Moreover, the students reported to have had a high level of satisfaction ($\bar{x} = 4.53, \text{SD} = 0.65$)on the training program. It was found that the students’ knowledge presented in the posttest score was higher that the pretest score with the significance at the level of 0.01.

**CONCLUSION**
In order to promote the community learning center as a center for environmental education, the center has to apply the idea of multilateral corroborations into duty exercises. Moreover, the learners need to be encouraged to use the self-learning process to learn from the learning bases provided by the center. In order to trigger the sense of belonging and the idea of environmental conservation, environmental problems embedded in the community need to be used as samples for learning. In so doing, the outcome of environmental learning may lead to the solving of the local community environmental problems while creating the sense of living in harmony with nature. Learning from a real community’s environmental problem also strengthens people connection and makes students understand the value of community resources. The community collaboration to develop their learning resources may result in an establishment of a new conservative tourism site in which the local people, especially younger generation, are trained to be tour guides. Doing environmental tour guide does not only make students comprehend the value of the natural resources presented in their community but also fosters team working and help maintaining the local ways of living and cultures. Based on these merits, that application of environmental education developed in the community learning center can help increase the students’ knowledge, attitude and behavior in the conservation of natural resources.

**REFERENCES**
