
Promoting the Conservation of Mixed Deciduous Forest to the Students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University

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Limmanee, P., Doungwilai, D. (2016). Promoting the Conservation of Mixed Deciduous Forest to the Students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University. *International Journal of Agricultural Technology* 12(7.2):1907-1918.

This research is aimed to study and compare the knowledge and attitudes toward the conservation of mixed deciduous forests of the students in the Environment Education Program, Faculty of Environment and Resource Studies, Mahasarakham University, before and after the conservational promotion (the intervention). Through voluntary participation, the samples comprised 30 second-year students of the Bachelor's Degree Program in Environmental Education, Faculty of Environment and Resource Studies. The research tools included a laboratory manual, poster media, a knowledge test, and an attitude test towards the conservation of mixed deciduous forests. The statistics used for data analysis were frequency, mean, standard deviation, and paired t-test. The findings revealed that, the mean score for the students' knowledge before the intervention was at the 'moderate' level, and at the 'high' level after the intervention. When compared these mean scores, it was found that students had better knowledge about the conservation of mixed deciduous forests than they did before the intervention, significantly at the .05 level. The mean score for the students' attitudes toward the conservation of mixed deciduous forests before the intervention was at the 'agree' level, and so was it after the intervention. When comparing these mean scores, it was found that the students' attitudes after the intervention was higher than before the intervention, at the significance level of 0.05.

Keywords: Promotion, Mixed forest conservation, Poster media, Knowledge, Attitudes

Introduction

Forests are an extremely important natural resource of the country as they are the center of so many living creatures. They are the origin of streams, plants and animals. They have benefited humans since ancient times. Besides, forests

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help to maintain the balance of nature and environment. They influence regional weather conditions and climate. Trees and forests play an incredible role in reducing damages from storms and flooding, including runoff and soil erosion. Forests also act as a natural dam that helps prevent the shallow of rivers, streams or canals. They absorb carbon dioxide from the atmosphere. Moreover, they are viewed as a huge factory that produce a massive amount of oxygen, herbs and food for human beings.

Mixed deciduous forests are commonly found in northern, central and northeastern Thailand, including some part of the south. A mixed deciduous forest is usually located at 50-800 meters above the sea level. Season is the key factor influencing the formation of this type of forest. That is to say, it is likely found in an area that has three seasons: the hot season, rainy season, and cool season, and it is usually an area with a lack of rain for at least four months, lower amount of rainfall, and low level of soil moisture to prevent leaves from falling in summer. Wildfire is probably one factor that helps maintain the continuation of mixed deciduous forests. Mixed deciduous forests, which has been of importance to the economy of the country for a long time, are home to so many expensive trees such as *Tectona grandis*, *Azadirachta indica*, *Xylia xylocarpa* and *Pterocarpus macrocarpus* that grow along with some species of bamboo e.g. *Bambusa nutans*, *Dendrocalamus* Nees and *Gigantochloa albociliata* Munro. The mixed deciduous forests in Thailand fall into two types namely: 1) a mixed deciduous forest with *Tectona grandis* and 2) a mixed deciduous forest without *Tectona grandis*. The one with *Tectona grandis* is also called as "Pasak" which is frequently found in the northern part which is located on the height of less than 500 meters from the sea level. Meanwhile, the one with no *Tectona grandis* can be commonly found in the western part of the central region (Forestry Resources, 2006: website).

In recent years, it appears that Thailand has lost a massive amount of trees. Vegetation that would normally be used to evaporate water was absorbed by all the sunlight. As a result, temperatures go up and ground temperature raises, and eventually droughts break. Recognizing such problem, the researcher was determined to do something to help conserve and maintain Thailand's mixed deciduous forests, in hoping to preserve natural water resources, reduce soil erosion, and keep flooding from happening. In fact, we all must help preserve our forestry resources and environments because the nature is home to plants, animals and humans. In this regard, the researcher produced poster media in order to promote the conservation of mixed deciduous forests to the second-year students in the environment education program who were the target group of the study. Each of the colorful posters is presented with one page of information which is short and easy to understand.

The researcher also hoped that these posters would be appealing to students, and once the student had read the information on the posters, they would be able to apply the knowledge gained into the conservation of natural resources and environment as well as to effectively transfer such knowledge to others afterwards.

Objectives

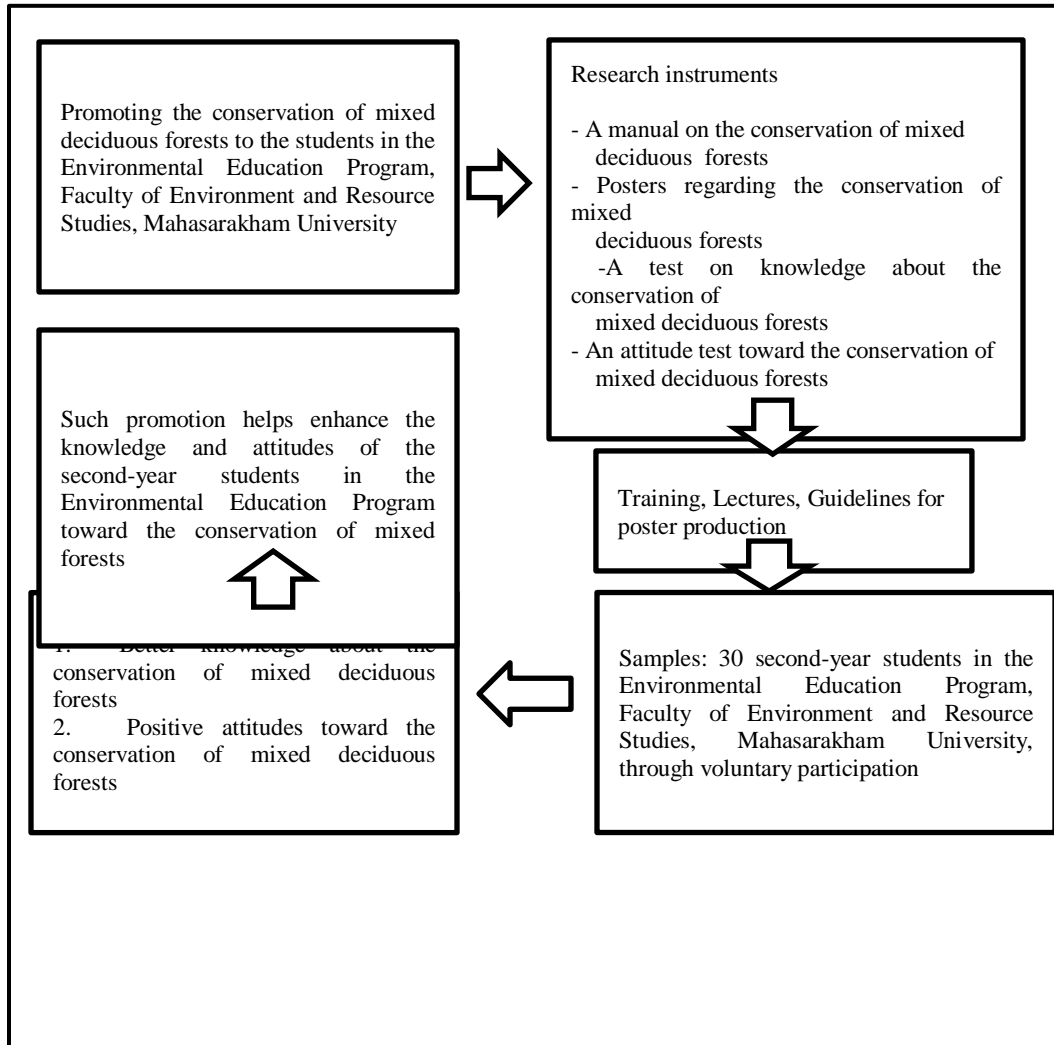
1.To study and compare the knowledge about the conservation of mixed deciduous forests of the students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University, before and after the intervention.

2.To study and compare the attitudes toward the conservation of mixed deciduous forests of the students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University, before and after the intervention.

The research hypotheses

The students have more knowledge and better attitudes toward the conservation of mixed deciduous forests than they do before they participate in the intervention.

Research Framework



Materials and methods

Research Methods

The study “Promoting the Conservation of Mixed Deciduous Forests to the Students in the Environmental Education Program, Faculty of Environment and Resource Studies, Maharakham University” is quasi experimental research based on the one-group pretest-posttest design. It

attempted to compare the knowledge and attitudes of the sample group before and after the intervention (Srisa-ard, 2000: 109).

Population and Samples

1. The population of this research comprised 67 second-year students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University during the academic years 2015.

2. The samples, who volunteered to participate in the study, were 30 students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University.

Research Tools

The research tools employed in the study titled “Promoting the Conservation of Mixed Deciduous Forests to Students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University” are as follows:

1. Knowledge Transfer Tools

1.1 Posters regarding the Definition of Mixed Deciduous Forest as well as General Knowledge about Poster Media

1.2 A manual on “The Promotion of Mixed Deciduous Forest Conservation” especially designed for the students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University

2. Assessment Tools

2.1 A test on “Knowledge about the conservation of mixed deciduous forests” for the students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University

2.2 An attitude test toward the conservation of mixed deciduous forests for the students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University

Research Procedures

Data were collected through the following means:

1. The researcher had the students do the pretest in order to determine their knowledge about the conservation of mixed deciduous forests; it is a checklist test composed of 20 items each with 4 answers to choose from.

Besides, the students were also asked to do an attitude test which covers 20 items; it is a rating scale test with 3 choices to select.

2. The conservation of mixed deciduous forests was promoted to the students in the Environmental Education Program, Faculty of Environment and Resource Studies, Maharakham University, by means of lectures, discussions, and mutual analysis of data.

3. The students' knowledge and attitudes toward the conservation of mixed deciduous forests were assessed after the intervention. That is to say, they were asked to do the posttests on both aspects which were exactly the same as the pretests they took before the intervention.

Data Analysis

SPSS was employed to perform statistical analysis of the collected data. The statistics used for analyzing data were as follows:

1. Basic statistics: frequency, percentage, mean, and standard deviation
2. Statistics used to assess the quality of the research tools
 - 2.1 Index of item objective congruence (IOC)
 - 2.2 Item-total correlation
 - 2.3 Alpha coefficient (to estimate reliability)
 - 2.4 Difficulty index
3. Statistics used for testing the hypotheses: Paired t-test ($p > .05$)

Results

1. The results for the comparison of the knowledge about the conservation of mixed deciduous forests of the students in the Environmental Education Program, Faculty of Environment and Resource Studies, Maharakham University, before and after the intervention, can be shown in Table 1.

Table 1 The results for the comparison of the students' knowledge about the conservation of mixed deciduous forests before and after the intervention

	Before			After			df	t-test	P
	\bar{x}	S.D	Level	\bar{x}	S.D	Level			
Knowledge (N=20)	13.13 (65.65%)	3.29	moderate	17.20 (85.5%)	1.21	high	9	10.00	.000*

From Table 1, the mean score for the students' knowledge about the conservation of mixed deciduous forests before the intervention was at the 'moderate' level (13.13), and their mean score after the intervention was at the 'high' level (17.20). Based on the comparison results, the mean score after the intervention was higher than before the intervention, at the .05 level of significance. This indicated that the intervention helped in fostering such knowledge of the students.

2. The results for the comparison of the attitudes toward the conservation of mixed deciduous forests of the students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University before and after the intervention can be elaborated in Table 2.

Table 2 The results for the comparison of the students' attitude toward the conservation of mixed deciduous forests before and after the intervention

	Before			After			df	t-test	P
	\bar{x}	S.D.	Level	\bar{x}	S.D.	Level			
Attitude (N=20)	2.51	0.24	agree	2.81	0.12	agree	29	6.353	.000*

* significance level of .05

As can be seen from Table 2, the mean score for the students' attitudes toward the conservation of mixed deciduous forests before the intervention was 2.15 which fell under the 'agree' level. After the intervention, their mean score was 2.81 which was also still at the 'agree' level. The comparison results showed that the mean score for their attitudes toward the conservation of mixed deciduous forests after the intervention was higher than that before the intervention, statistically significant at the .05 level. This indicated that the students had better attitudes toward the conservation of mixed deciduous forests after joining in the intervention.

Discussion

1. Studying and comparing knowledge about the conservation of mixed deciduous forests of the students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University

The mean score for the students' knowledge about the conservation of deciduous mixed forests after the intervention was higher than before the intervention. This indicated that such knowledge of the students increased due to the knowledge transfer process and the training program

designed. The research tools (the manuals and the posters) were used along with lectures for the purpose of demonstration and explanation. The students were also trained about the production of poster media. The training program lasted two days. The students' knowledge about the conservation of mixed deciduous forests was assessed and evaluated by means of a questionnaire. Once the students had joined in and had first-hand experience in the promotion intervention, their knowledge about the conservation of mixed deciduous forests was better enhanced. This finding was consistent with the idea of Wongchantra (2012). He viewed 'environmental knowledge transfer' as passing knowledge to the target group, and it does not really matter what methods are use, so that they will be able to develop systemic environmental-based knowledge, thinking skills, and problem-solving skills. There are various methods for transferring environmental knowledge; some of those methods include: 1) Telling by Words: Detailed information can be fully delivered. However, the transferring person must have strong knowledge, comprehension, experience and strategies that help the learner to understand a specific concept and to be able to apply the knowledge gained in real situations. 2) Lecturing Method: It is a method in which the teacher typically transfers knowledge to the learner through words and formal instruction. The most important person of this method is the teacher as the conveyor of the information, and the learner merely as the receiver of the information, and 3) Demonstration Method: This is similar to Telling by Words as the key person of this method is the conveyor of knowledge and skills, but what is different is that time is mostly spent on action or demonstration. It is a method of transferring knowledge/skills which is based on the notion that the skills are acquired through watching others demonstrating. Then, the individual will try to do that under the help and guidance from the demonstrator, and finally that particular skill occurs. According to Wungpanich, (1983), once the individual has learned new different information from studying, practicing or experiencing through the five sense, he/she will be able to identify facts or details which will later become as his/her own experience. Such experience will be stored within the person and it will be transferred to others by that person, eventually. Conserving mixed deciduous forests through lectures and teaching how to produce poster media could be considered as a kind of knowledge transfer that employed a wide range of methods. Recreational activities were also undertaken to entertain the learners and to trigger their interest in learning about something related to the promotion of natural and environmental conservation. Consequently, their recognition of environment-related issues developed effectively. These findings were consistent with the work by Rojanathiwut (2013) which was aimed at promoting the conservation of *Syzygium Gratum* in Hua Kha Community,

Thakhonyang Sub-district, Kantarawichai District, Mahasarakham Province. He found that the knowledge score of the participants after the promotion was higher than before the promotion. This indicated that the environmental promotion process together with the use of manuals, handouts, and posters played a role in enhancing knowledge of the participants and enabled them to apply knowledge their lives.

2. Studying and comparing the attitudes toward the conservation of mixed deciduous forests of the students in the Environmental Education Program, Faculty of Environment and Resource Studies, Mahasarakham University

From studying and comparing the attitudes toward the conservation of mixed deciduous forests of the students in the Environment Education Program, Faculty of Environment and Resource Studies, Mahasarakham University, it was found that their attitude mean score after the intervention was higher than before the intervention. This suggested that the students had better attitudes toward the conservation of mixed deciduous forests. This is because the processes they students had gone through allowed them to get access to necessary information presented in the manuals and posters that were used along with the lectures. The students also learned about poster production. The “Ask and Answer Technique” was introduced during the lecture sessions, so the students had the opportunity to ask for and give opinions on the topic being taught or discussed. Some recreational activities were performed during the lecture sessions so that the students would have a fun time and relax before moving onto another part. The participant’s attitude was assessed and evaluated before and after the intervention. This was used as a tool or a stimulant that motivated the participant to learn and have positive attitudes toward the conservation of mixed deciduous forests. This finding was relevant to the idea of Wongchantra (2012). He stated that environment education placed a primary emphasis on raising awareness, positive attitudes and good values in environmental practices. Environment education should enable the learner to recognize environmental problems and realize the importance of the environment, too. Good attitudes toward the environment should be possessed by individuals in order to help maintain a clean and hygienic environment in the society. Therefore, the learning processes should in the first place lead to actions that improve awareness, attitudes and values rather than knowledge or memorization. Thunpon (2012) conducted a study to examine the attitudes toward the conservation of natural resources of the people in the communities around the Hariruk Park, Muang District, Loei Province. The results showed that after the intervention the attitudes of the participants were better improved, and he considered this as a good sign of change. His findings were consistent

with the results of the present study which found that the attitude mean score of the participants after the intervention was higher than before the intervention; this indicated that the environmental promotion processes, manuals, posters, and lectures as well as the ask-and-answer technique could really improve positive attitudes of the participants toward the conservation of mixed deciduous forests.

Suggestions

1. Suggestions for the implementation of this research

Everyone is encouraged to use the manual and the poster media used in this study, and then apply the knowledge they have obtained from those tools to help conserve mixed forests.

2. Suggestions for future studies

Future studies may examine, compare, and find out if there are any differences in knowledge, attitudes and awareness of the people who live near a mixed forest, and if so, how? Then, some guidelines need to be developed to enhance their knowledge, attitudes and awareness for the sustainable conservation of mixed forests.

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