

Effects of Training Course for Environmental Protection Volunteer in Schools to Enhance Environmental Knowledge, Ethics and Volunteers

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ABSTRACT

The purposes of this research were to develop training course for environmental protection volunteers in schools to be efficiency and effectiveness, to compare environmental knowledge, environmental ethics and environmental volunteers of students before and after the training and different gender and grade levels. The sample used for this research were 81 students of KhokKorPittayakomschool by voluntary sampling. The research tools were environmental protection volunteer training course, environmental knowledge test, environmental ethics test and environmental volunteers test. The statistics used in the research were frequency, percentage, mean, standard deviation and hypothesis testing by paired t-test and F-test (One-Way MANOVA, One-Way MANCOVA). The results of the study showed that 1) The training course for environmental protection volunteers in schools was a performance index of 84.51/83.51. The effectiveness of the training course index was equal to 0.6983. This showed that students had increased environmental knowledge that results increased students progress at 69.83%. 2) After the training, students had environmental knowledge, environmental ethics and environmental volunteers higher than before the training statistically significantly level of .05. 3) There was no difference of average score of environmental knowledge, environmental ethics and environmental volunteers of students with different gender. There was difference of average score of environmental knowledge, environmental ethics and environmental volunteers of students with different grade levels.

Keywords

Training course; Environmental protection volunteers in schools; Environmental knowledge; Environmental ethics; Environmental volunteers

Introduction

Over the past decade, every country around the world has placed greater emphasis on development, both in terms of the economy, industry, as well as the society in which is from the concept of national development based mainly on economic development in addition to causing success in many areas, but at the same time, the result of the economic development of each country in the past has caused the destruction of natural resources and the environment by bringing various types of natural resources to use in industrial plants fully and continuously. The problems affecting the environment in various fields can be observed from natural conditions that have changed from the original, such as the occurrence of acid rain, the occurrence of greenhouse gases, causing global warming, earth's ozone layer is destroyed, some types of natural resources are completely destroyed. Natural resource competition deforestation and natural plants including various toxic problems, these problems affect the quality of human life. It is a problem that the world society has to face and urgently awaits a solution [1].

Natural resource and environmental problems whether at the local level or the national level, there are no differences, including; forest problems, soil problems, the land-use problem, the problem of encroachment on public areas, garbage problem, sewage disposal problem, air pollution problem, water problems, and noise problems, etc. Problems and obstacles in the management of natural resources and environmental conservation in the past will be seen that have not been corrected to achieve the desired results. This is because it is caused by; 1) legal and political the existing laws are characterized by inefficient resource management in enforcement, lack of justice, there are many penalties, especially the fines and fears of local influencers, 2) government officials which officials lack knowledge understanding and experience in the management of natural resources and the environment and do not operate in accordance with the law 3) people think that natural resource and environmental problems are far-reaching problems, and the impacts occurring are not immediately apparent, most of the time, it's a long story, causing the general public to not pay attention and awareness of the problems that may arise as a result, by thinking only that it will benefit the present as much as possible do not look far into the future that, if there is too much destruction of natural resources and what will eventually happen to oneself and society [2].

After studying various contexts, it was revealed that past human life was an important cause of enormous environmental destruction, and will increase if the behavior in human life remains the same. Because the cause of environmental

problems is mainly caused by human behavior and the cause of human behavior that destroys the environment, maybe due to lack of knowledge correct understanding or it could be due to a lack of attitudes and values that contribute to the environment. Even if it is only one aspect, the lack of such things may directly or indirectly affect human beings to take actions that cause or increase environmental problems individually or in groups. Which later this forecast was supported by KasemChankaew [3] that said, "human behavior that results in environmental destruction, it is due to several reasons, such as ignorance lack of cooperation lack of understanding of the environment and awareness of the duty to protect the national environment well and quality forever. Therefore, human behavior is important to the environment the information received and the impact on the environment will affect the environment as it occurs, will cause people to be more aware of environmental problems and to see the importance of it". When the causes of environmental problems are caused by human action, troubleshooting should therefore begin, that is human problem solving but most of the solutions in the past were immediate solutions or end-of-life solutions, which solves the problem at the rationale causing the loss of time and the cost is huge, moreover, solving the problem at the end is a never-ending solution. The most likely effective way to solve environmental problems is solving problems at the root cause and the cause or both short-term and long-term examples of problem-solving at the root cause are land-use planning, taking legal measures or training of specialists in the field of pollution control, etc.

The problem-solving at the root of the problem, which is an important approach is to solve the problem that people and society by cultivating true values and behaviors of environmental conservation, although it takes a long time, it's worth it because it will allow everyone in society to know and understand the conservation of natural resources and the sustainable environment. The Thai Government is well aware of this reason and has inserted this knowledge in education at all levels, as well as educating the public through mass media and training to conserve resources and the environment to achieve the goal [4]. Starting from elementary school level to tertiary level both in the central and provincial concurrently. There are also courses on the environment that can be applied in teaching alongside other subjects such as science, social science, engineering, economics, etc. These show that environmental education can be integrated into other subjects as well and can be used in daily life. This will result in efforts to use resources and the environment as long as possible with minimal loss. It is used wisely and for the maximum benefit of mankind [5]. In particular, this behavior is appropriate to conserve the environment, it must happen to students in youth ages 12-18 years, whose human resources are growing from childhood to adulthood as the basis for entering the workforce [6] and in the end, these youths will be important forces in the future development of the nation.

Environmental education is a principle that will help build awareness, knowledge, understanding, attitude, and skills in the environment and must be consistent with the general and environmental conditions and there is a process to educate the environment systematically and methodically. It covers the use of techniques, methods or processes to develop people. It is also learning that makes people know how to plan for a long-term life and participation in environmental preservation and development and can raise awareness of the world's population and concern for other related problems, strive to find solutions to the problems facing them and prevent new problems both on their own and in cooperation with others [7].

Environmental education process is way of educating to result in knowledge, awareness and attitudes towards environmental conservation. There are several ways to do this, but the method that is interested and expected to result in knowledge and awareness, is training since training is a systematic process of learning management to create or enhance people's knowledge, skills, abilities and attitudes, this will help improve the efficiency of the operation [8].

From the importance of environmental problems, disasters and flooding problems, the importance of training for environmental protection volunteers in schools, therefore it has a role to play in helping environmental restorers in their schools and localities. Therefore, the researcher is interested in studying the implementation of the training course for environmental protection volunteers in schools, to enhance environmental knowledge, ethics and volunteers to jointly protect environment in the school. In addition to training, it is also an evaluation of the trainees' self-learning, as well as participating in the development of the community, society and the nation further.

The researchers had recognized the importance of natural resources and the environment to enhance environmental knowledge, environmental ethics and environmental volunteers. Therefore, the researchers developed a training course for environmental protection volunteers in schools, to enhance students' knowledge, environmental ethics and environmental volunteers, both in schools, communities, local communities and the nation's society.

Research objectives

1. To develop a training course for environmental protection volunteers at KhokKorPittayakom School, KhokKor sub-district, MueangMahasarakham district, MahaSarakham province to be effective according to the 80/80 criteria (E_1/E_2) and the effectiveness index (E.I.) of the training course.
2. To study and compare environmental knowledge, environmental ethics and environmental volunteers of students before and after the training.
3. To compare environmental knowledge, environmental ethics and environmental volunteers of students with different genders and grade levels.

Methodology

1. Research conceptual framework

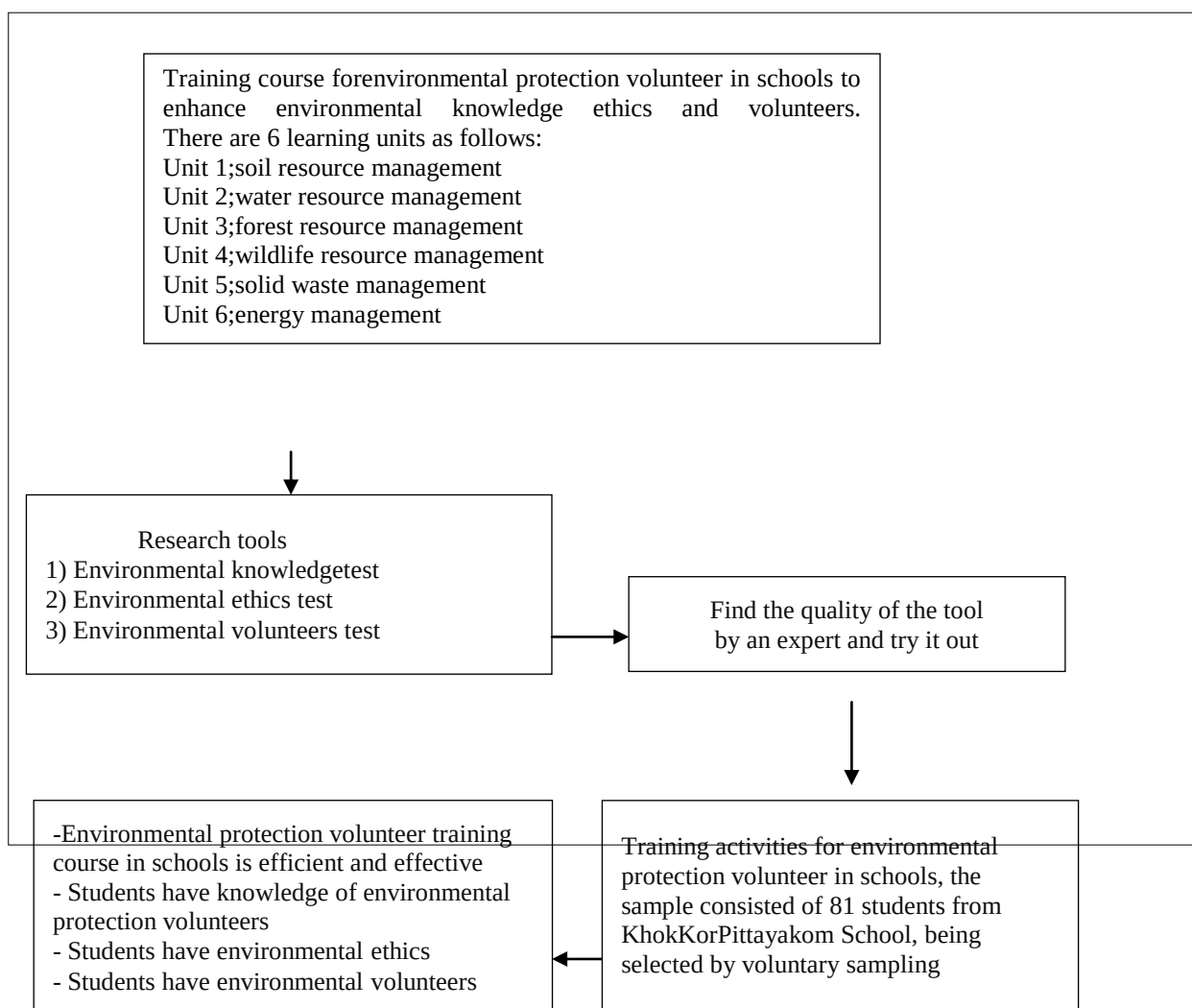


Figure 1. The research Conceptual framework.

2. Research Design

Development of environmental protection volunteer training course in schools to enhance environmental knowledge, ethics and volunteers, conduct research model research One Group Pretest - Posttest Design, to compare environmental knowledge test, environmental ethics test and environmental volunteers test before and after the training activities.

3. Population and sample

The population used in this research were 256 students of KhokKorPittayakom School, KhokKor sub-district, Mueang district, MahaSarakhm province.

The sample used in this research were 81 students at KhokKorPittayakom School, 39 of which were junior high school students and 42 high school students, being selected by voluntary sampling.

4. The research tools and quality of tools

4.1 Environmental protection volunteer learning course is the steps to create and find the quality of the tools as follows;

- 1) Study and research basic information related to the development of training courses for environmental protection volunteers in schools by studying from the concepts, theories, documents and related research to plan for effective curriculum.
- 2) Study of knowledge of environmental protection volunteers by studying the documents books, textbooks, and other media as a guideline for curricular development activities and focus on content following the objectives of the event.
- 3) Determine the course content's scope and structure according to the educational conceptual framework, to create a training course for environmental protection volunteers in schools with a content of 6 learning units.
- 4) Bring the training course for environmental protection volunteers in schools to offer to 5 experts.
- 5) Bring it to analysis based on the average score of 3.50 or more as a criterion. It was found that the suitability of training course for environmental protection volunteers in schools , the mean ($\bar{x}$) is 4.16, the standard deviation (S.D.) is equal to 0.25, at the most appropriate level and the consistency value (IOC) is 0.80, it is in accordance with the applicable standards.
- 6) Improve the training course for environmental protection volunteers in schools, then bring the training course to trial with students who are not the sample group.

4.2 Measurement and evaluation tools include environmental knowledge test, environmental ethics test and environmental volunteers test, the details are as follows;

- 1) Study basic information from textbooks, documents, and related research, to guide the creation of environmental knowledge test, environmental ethics test, and environmental volunteers test.
- 2) Use the data to create tools used for measurement and evaluation, including;
 - 2.1) Bring information to create environmental knowledge test, there are 60 items of multiple choice with 4 options; A, B, C, D, choose only one correct answer, set the correct answer criteria to give 1 point, wrong answer gives 0 points. There are criteria for interpreting scores as follows: the average score 0.00 – 12.00 means that students have the lowest level of knowledge, average score of 12.01 - 24.00 means that students have a low level of knowledge, the average score of 24.01 - 36.00 means that the student's knowledge is at a moderate level, the average score of 36.01 - 48.00 means that students have a high level of knowledge, and the average score of 48.01 - 60.00, meaning that the students had the highest level of knowledge.
 - 2.2) The environmental ethics test is a multiple-choice type with 4 options; A, B, C, D, there are 30 items, divided into 4 levels, the environmental ethics scores set as follows: for myself, average score 1.00 – 1.75, for relatives and friends, average score 1.76 – 2.50, for society, average score 2.51 – 3.25, and for goodness, average score 3.26 – 4.00.
 - 2.3) Environmental volunteers test is a multiple-choice type, 5 options; A, B, C, D, and E, there are 30 items, the scoring criteria are as follows: mean score of 1.00 – 1.80 means that students have the least volunteers, Average score of 1.81 – 2.60 means that students have a low level of volunteers, average score of 2.61 – 3.40 means that students have moderate volunteers, average score 3.41 – 4.20 means that students have volunteer spirit at a high level, and the average score of 4.21 – 5.00 means that the students have volunteers at the highest level.
- 3) Bring the instrument used for measurement and evaluation to 5 experts to consider the consistency of the research instrument with the objectives, found that; the knowledge test environmental protection volunteers has an IOC value of 0.87, the environmental ethics test has an IOC value of 0.87, and the IOC value of the environmental volunteers test was

0.89, which is greater than 0.50 show that all questions are relevant to the subject matter and the purpose can be used for data collection.

4) Bring the tools used for measurement and evaluation to try out with students who are not the sample to find the difficult power to classify each item and confidence in the whole issue, it was found that;

4.1) All of environmental knowledge test have an accessible level of difficulty, found that: the lowest value is 0.43, and the highest is 0.73. for the power to classify each item by using the criteria to classify the high and low groups, analyzing the power of discriminating items with values of 0.20 or more found that; Every question has an applicable level of discriminating power, which is: it has a classification power between 0.32 - 0.62. As for the confidence in the whole version of the knowledge of environmental protection volunteers test using Cronbach's alpha coefficient method, it was found that; have a confidence value of 0.965, show that all knowledge tests that meet acceptable values of 0.70 or higher can be used for data collection.

4.2) All of the environmental ethics test are a usable level of discriminating power, which are: it is a classification power between 0.33 – 0.62 and using the environmental ethics scale to find the whole confidence value by using Cronbach's alpha coefficient method, found that: it is a confidence value of 0.940, it shows that all environmental ethics scales that meet acceptable values of 0.70 and above can be used for data collection.

4.3) All of the environmental volunteers test is a usable level of discriminating power, which are: it is a power to distinguish between 0.32 – 0.63, and using the environmental volunteers test to find the whole version of confidence by using Cronbach's alpha coefficient method, found that: it is a confidence value of 0.935, shows that all environmental volunteering scales that meet acceptable values greater than 0.70 which can be used for data collection.

5) Bring the tools used for measurement and evaluation to improve and make a complete version, to collect data with the sample.

5. Data collection

Effects of training course for environmental protection volunteer in schools to enhance environmental knowledge ethics and volunteers, the researchers divided the data collection into 2 phases: Phase 1; development of training courses for environmental protection volunteers in KhokKorPittayakom School and phase 2; organization of training activities for environmental protection volunteers, with the following steps:

Phase 1: development of a training course for environmental protection volunteers at KhokKorPittayakom School, the steps are as follows:

1) Preliminary study; it's the process of creating a tool, by studying the concepts, theories and related research documents, to create training courses and measurement and evaluation tools.

2) The researchers developed a training course for environmental protection volunteers, KhokKorPhitthayakom School as well as creating tools used for measurement and evaluation, including: environmental knowledge test, environmental ethics test and environmental volunteers test, the researchers had set a framework for the content of the training course to be content and set the scope for creating a total of 6 training units, consisting: Unit 1: soil resource management, Unit 2: water resource management, Unit 3: forest resource management, Unit 4: wildlife resource management, Unit 5: solid waste management and Unit 6: energy management

3) Bring the training course for environmental protection volunteers to created to 5 experts to evaluate the suitability of the training course by creating an estimate with an estimation scale open-ended form at the end of the assessment form, to ask for opinions and suggestions.

4) Improved according to the advice of experts, take the training course for environmental protection volunteers to train with a sample of 81 students at KhokKorPittayakom School; 39 junior high school students and 42 high school students.

Phase 1: organizing training activities for environmental protection volunteers, the steps are as follows:

1.1) The training period is set for 2 days at KhokKorPittayakom School, the trainees were 81 students at KhokKorPittayakom School, they were 39 junior high school students and 42 high school students.

1.2) Preparation before organizing training activities for environmental protection volunteers, the researchers had prepared the training documents as follows: environmental protection volunteer training course, environmental knowledge test, environmental ethics test and environmental volunteers test.

1.3) Training procedure this training was to educate participants about environmental protection volunteers, environmental ethics and environmental volunteers to provide trainees with the knowledge or to expand a broader framework or link previous knowledge to new knowledge. The researchers evaluated the results using a test during the training activities, in which the training has been used the technique of lectures, Q&A technique, discussion techniques, there are steps for training as follows:

1.3.1) It is the preparation of the trainees, to create an atmosphere that is conducive to training, to create familiarity, and reduce the physical and mental stress of the trainees.

1.3.2) Training stage activities in this training consist of lectures, discussion, techniques by setting goals for each activity, so that trainees know what they are doing. In which the researchers had used the technique of lecturing in the training, discussion techniques to enable trainees to gain environmental knowledge, environmental ethics and environmental volunteers.

1.3.3) Training measures is the final stage which will be the objective stage of the research that was originally set out. In this training, the evaluation results were assessed in 3 aspects: environmental knowledge, environmental ethics and environmental volunteers.

5. Research statistics

The statistics used to analyze the data in this research the details are as follows:

- 1) Basic statistics are frequency, percentage, mean and standard deviation.
- 2) Statistics for test performance of the tool are 2.1) The suitability of the environmental protection volunteer training course. 2.2) Conformity index value. 2.3) Difficulty of environmental knowledge test. 2.4) The power to classify each item of the questionnaire using Item-total correlation. 2.5) The confidence according to Cronbach's alpha coefficient formula. 2.6) Process efficiency factor (E_1). 2.7) Result efficiency factor (E_2) 2.8) Effectiveness Index (E.I.).
- 3) Statistics for testing results and hypotheses at the .05 level of statistical significance are: Paired t-test (One-Way MANOVA, One-Way MANCOVA), Univariate Test, and double comparison according to Scheffe's method in One-Way ANOVA.

Results

1. Development of environmental protection volunteers training course in schools for students of KhokKorPittayakomSchool was found that the training course for environmental protection volunteers in the school the efficiency of the process (E_1) was 84.51% and the efficiency of the result (E_2) was 83.51%. Therefore, the training course for environmental protection volunteers in schools was the efficiency at 84.51/83.51, which satisfies the set criteria. The index of effectiveness of the training course for environmental protection volunteers in schools was 0.6983, this means that students' environmental knowledge had increased and resulted in a 69.83% increase in student progress after taking the training course.

2. The results of the study and the comparison of the average score of environmental knowledge, environmental ethics and environmental volunteers before and after training, found that: (As shown in Table 1.)

- 1) Before the training, students have mean score of environmental knowledge on the overall level at the moderate level ($\bar{x}$ =27.22) and after the training, they had environmental knowledge on the highest overall level ($\bar{x}$ =50.11). When comparing the mean scores of environmental knowledge before and after the training, found that after the training, they had mean scores of environmental knowledge higher than before the training with statistically significant level .05.
- 2) Before the training, Students have mean score of environmental ethics on the overall at the level for relatives and friends ($\bar{x}$ =2.25) and after the training overall they were at the level for correctness and goodness ($\bar{x}$ =3.36). When comparing the average environmental ethics before and after the training, found that after the training, they had average score of environmental ethics higher than before the training with statistically significant level .05.
- 3) Before the training, the students have mean score of environmental volunteers at the low level ($\bar{x}$ =2.27) and after the training, they had mean score of environmental volunteers at the highest level ($\bar{x}$ =4.59). When comparing the average scores of environmental volunteers before and after the training, found that after the training, they had an average score of environmental volunteers higher than before the training with statistically significant level .05.

Table 1. Results of environmental knowledge, environmental ethics and environmental volunteers using Paired t-test (n = 81).

List	Before training		Level	After training		Level	t	df	p
	$\bar{x}$	S.D.		$\bar{x}$	S.D.				
environmental	27.22	5.37	Moderate	50.11	3.57	Highest	-30.21	80	.000*

knowledge (N = 60)									
environmental ethics (N = 4)	2.25	0.18	For relatives and friends	3.36	0.20	For correctness and goodness	-43.42	80	.000*
Environmental volunteers (N = 5)	2.27	0.24	Low	4.59	0.12	Highest	-75.11	80	.000*

* Statistically significance .05

3. The results of the study and the comparison of environmental knowledge, environmental ethics and environmental volunteers of students with different gender and grade levels found that: (As shown in Table 2 - 3.)

3.1 There was no difference of mean score of environmental knowledge, environmental ethics and environmental volunteers of students with different gender.

3.2 There was difference of mean score of environmental knowledge, environmental ethics and environmental volunteers of students with different grade level statistically significant level .05.

Table 2. Comparison of the multiple variance of environmental knowledge, environmental ethics and environmental volunteers of students with different genders One-Way MANOVA.

Test statistics	Value	Hypothesis df	Error df	F	p
Pillai's Trace	.011	3.000	63.000	.297	.828
Wilks' Lambda	.989	3.000	63.000	.297	.828
Hotelling's Trace	.012	3.000	63.000	.297	.828
Roy's Largest Root	.012	3.000	63.000	.297	.828

Table 3. Comparison of the multiple variance of knowledge about environmental protection volunteers, environmental ethics and environmental volunteers of students with different grades level using One-Way MANOVA.

Test statistics	Value	Hypothesis df	Error df	F	p
Pillai's Trace	.119	3.000	77.000	3.474	.020*
Wilks' Lambda	.881	3.000	77.000	3.474	.020*
Hotelling's Trace	.135	3.000	77.000	3.474	.020*
Roy's Largest Root	.135	3.000	77.000	3.474	.020*

* Statistically significance .05

Discussions

1. Development of environmental protection volunteers training course in schools for students of KhokKorPittayakomSchool, the researchers was found that the training course for environmental protection volunteers in schools was the efficiency of the process (E_1) at 84.51% and the efficiency of the result (E_2) was 83.51%. Therefore, the training course for environmental protection volunteers in schools was the efficiency at 84.51/83.51, which met the set criteria. The index of effectiveness of the training course for environmental protection volunteers in schools was 0.6983. This means that students' environmental knowledge has increased and resulted in a 69.83% increase in student progress after taking the training course. It can be said that the result of the students participating in the training activities came from the development of training course for environmental protection volunteers in schools for students of KhokKorPittayakomSchool, the training units are divided into 6 training units; soil resource management, water resource management, forest resource management, wildlife resource management, solid waste management and energy management. Which in the transfer process, there is training before entering the training and mainly focus on learners who attend the training brainstorm for learners to develop a better idea. Training is a process that enhances aptitude, knowledge, skills, proficiency and ability of a person to have technical techniques in working for personnel to develop new behaviours, skill at work [9]. Therefore, the organization's leaders must continue to develop personnel in a systematic

and efficient manner [10]. And one of the methods used to develop personnel is training because the organization alone cannot develop itself. If there is a lack of qualified personnel, training is important to the organization [11]. This is consistent with the research of ThakornSittichok [12] found that the learning management for the development of environmental ethics is 5 components: principles, objectives and learning management processes measurement and evaluation and bringing the format to use. And SomyotWichiannit [13] found that the development of environmental education camp activities for conservation and restoration of forest resources for youth in Kalasin province is as efficient as 87.54/85.22, which meets the set criteria. And NamtipCumrae, PornnipaToomhome and SangraweeMomkuntod [14] found that the efficacy of an eco-friendly consumption training manual the efficiency index was 80.70/83.68, while the effectiveness index of the training manual was 0.790. The students who used the training manual had 79.00% progress in learning. And JurairatKurukodt, PornnipaToomhome and JirapaPumsunthia [15] found that the waste management training manual was effective at 89.45/88.5 and the effectiveness index of the training manual (E.I.) was 0.6236.

2. The result of the study and the comparison of the average score of environmental knowledge, environmental ethics and environmental volunteers before and after the training, found that:

1) The result of comparing an average score of environmental knowledge of the students before and after the training, found that the students had average scores of environmental knowledge before training at moderate level and after the training, the students had average score of environmental knowledge at the highest level. When comparing the mean scores of knowledge about environmental protection volunteers before and after the training, found that after the training, the students had average score of environmental knowledge higher than before the training. The results of students participating in training activities resulting from the establishment of training courses for environmental protection volunteers in schools, there is a form of content that is interesting to learn stimulate learning motivation to enable students to develop their body of knowledge, increase their knowledge and develop themselves. If knowledge is developed to another level, wisdom is the ability to use experience and knowledge to make decisions or to use good judgment accumulation of knowledge over a period of time will become a source of wisdom or wisdom to understand the principles [16]. Knowledge is the above behavior that the learner can only recognize, possibly through practice or by seeing, hearing, remembering. This level of knowledge is knowledge of definitions theory facts structure rules and methods for solving these problems, etc. [17]. As a result of human encounters with both natural and social phenomena, that is, human beings must depend on both natural and environmental and social environments, know how to solve problems arising from both the environment and society. In other words, human beings must seek knowledge in order to understand the causes and solutions of various natural and social phenomena [18]. This is consistent with the research of ChuleewanPraneetham [19] found that after participating workshop, the average score of environmental knowledge higher than before participating workshop with statistically significant level .05. And PongamornKotchasil et al. [20] found that the knowledge of natural resources and environmental protection volunteers villages by training manual created had scores higher than before training with statistically significant level .05. And KatesineePholboon [21] found that after the training, the students in the experimental group had scores on their knowledge of the environment more than before after the training with statistically significant level .05.

2) Comparison of the average score of environmental ethics of the students before and after the training, found that before the training, the students had an average scores of environmental ethics at the level for relatives and friends and after training, the overall level is for correctness and goodness. When comparing the average score of environmental ethics before and after the training, found that after the training, the students had an average score of environmental ethics higher than before the training. It can be said that the result of creating a situation for students to think critically about conserving natural resources and environment within their own school. And students have behaviors interested in preserving natural resources and the environment including how to treat oneself, others and society. Ethics are behavioral qualities that society expects people in that society to behave right in conduct. And freedom within the boundaries of conscience is a duty that members of society should conduct [22]. Which ethics is a characteristic of will, it's a psychological feature a person's mood or feelings to measure and assess ethics, there is a way to measure and assess as well as measurements, in terms of intention. The principle that one should behave towards the environment which has resulted in the existence of the environment in ecological equilibrium and contributing to all things that rely on the environment to survive without losing the relationship between oneself and the environment [23]. This is consistent with the research of PrayoonWongchantra, PairojBoujai, WinyooSata and PrasartNuangchalerm [24] found that the students have environmental ethic after the studying higher than before the studying. And PrachumpornLauprasert [25] found that the students had higher environmental ethics after the experiment than before the experiment. And PisarnKhrualit and ChaiwatSutthirat [26] found that after the participating in the activity, the students had environmental ethics higher than before participating in the activity. And ThakornSittichok [12] found that after studying, the students had environmental ethics higher than before studying.

3) Comparison of the average score of environmental volunteers of the students before and after the training, students have environmental volunteers at a low level and after the training, the overall level was at the highest level. When comparing the average score of environmental volunteers before and after the training, found that after training, the students had an average score of environmental volunteers higher than before the training with statistically significant level .05. This may be the result of students gaining new knowledge about environmental protection volunteers in schools which the researchers uses game techniques to intervene in the broadcasting process and the researcher created the motivation to be assertive, assertive, and behave have the mind ready to volunteer to protect the environment in their own schools. Human being will have different age characteristics for teenagers, there are age characteristics such as the age of behavioral and attitude changes change of interest own abilities and aptitudes. Volunteers arises from the mind that is ready to give or sacrifice time, physical strength and wisdom to help others and society without expecting anything in return [27]. A person with volunteer mind is a person whose mind to be ready to sacrifice time, physical effort and wisdom for the public benefit, person with an unsteady mind. Whensee a problem or the misery that befalls people a person who is happy when doing good deeds [28]. This is consistent with the research of Sompong, C., &Wareerat, K. [29] found that after studying, the students had volunteers higher than before studying. And Supawan, L., et al. [30] found that after studying, the students had public consciousness higher than before studying. And PrayoonWongchantra, KuanteanWongchantra, SurasakKaeongam, SuparatOngon, LikhithJunkaew, KannikaSookngam, UraiwanPraimee [31] found that after the training, the students had mean scores of environmental volunteers higher than before the training.

3. The results of the study and the comparison of environmental knowledge, environmental ethics and environmental volunteers of students with different genders and grade levels found that:

3.1) There was no difference of mean scores of environmental knowledge, environmental ethics and environmental volunteers of students with different gender.

There was no difference of mean scores of environmental knowledge because male and female receive an equal training process thus resulting in a different body of knowledge. Knowledge is the above behavior this level of knowledge includes knowledge of definitions, facts, theories, rules, structures and methods of solving these problems [17]. The development of knowledge to the next level will lead to wisdom, the ability to use experience and knowledge to make decisions or using good judgment accumulation of knowledge over a period of time and become a source of wisdom or wisdom to understand the principles to have a thorough understanding of the insights. The development of intelligence begins with the processing of existing information into information will lead to more understanding and seeing the relationship. When it comes to knowledge, it makes sense to understand the patterns of relationships well and when it comes to wisdom, it helps to understand the principle by looking at the development from data to information and from information to knowledge to put into practice unable to stare at a standstill but it is necessary to consider the context of the user to include the development of knowledge [16]. This is consistent with the research of Suparat B., Singseewo A., Pinyoanunt B. and Thamaseana P. [32] found that there was no difference of mean score of knowledge of forest conservation and reforestation of youth with different genders. And LikhithJunkaew, PrayoonWongchantra&WutthisakBunnaen [33] found that students of no difference of knowledge about KhokHin Lad Community Forest (Kha-Kang Creekwatershed forest) of students with different gender. And PrawitSutthiboon, PenkhaeThamsenanupap&PrayoonWongchantra [34] found that the academicachievement of male and female students who studied with a learning environment education model using the field trip process, there was no difference in average academic achievement scores after studying.

There was no difference of mean score of environmental ethic because environmental ethics is a code of conduct or behavior that must be expressed male and female. Therefore have similar expressions. Students have high environmental literacy scores, it means that he will always be a person who has a lot of environmental conservation behavior. If students still lack consciousness and awareness of environmental problems [35]. Environmental ethics refers to the principles of environmental practice for human beings that uphold integrity morality and compassion for the environment. Which will affect life and human beings together the way humans treat the environment consists of fundamental beliefs that differ in morality to the extent that they cause different environmental impacts [7]. This is consistent with the research of SakornPhromkot [36] found that the students with different sexes had the same ethical behavior. And AmornrakSuanchoophol [37] found that there was no difference of environmental ethics of male and female students. And Pawanna, P. [38] found that there was no difference of morality and ethicsof male and female students of the institute of physical education. And WorawatChanwirat, PrayoonWongchantra&WutthisakBunnaen [39] found that there was no significant difference between the average scores of environmental ethics of students with different gender.

There was no difference of mean score of environmental volunteers because the training activities encourage students to have activities together by helping to support each other in solving various environmental problems as a result, students

with different gender have different of environment volunteer spirits. Volunteer is a person who has a mind to give things, give money, help with physical strength and brain power, which is the sacrifice of what one has even time to be generous to the public [40]. Volunteers refers to the mind that is ready to give or sacrifice time, physical effort and wisdom to help others and society without expecting anything in return [28]. Volunteer means a person who volunteers to help want others to be happy, people who participate in volunteer activities are volunteers or people who volunteer help the society voluntarily and sacrifice to help others, prevent and correct social development without expecting anything in return [41]. This is consistent with the research of Somchay, S. [42] found that there was no difference of mean score of public mind behavior of students with different gender. And PrayoonWongchantra, KuantanWongchantra, SurasakKaeongam, SuparatOngon, LikhitJunkaew, KannikaSookngam, UraiwanPraimee [31] found that there was no difference of mean score of environmental volunteers of students with male and female. And SuparatOngon, PrayoonWongchantra&WutthisakBunnaen [43] found that there was no significantly difference between average score of environmental volunteers of undergraduate students with different gender.

3.2 There was difference of mean score of environmental knowledge, environmental ethics and environmental volunteers of students with different grade levels statistically significant level .05.

There was difference of mean score of environmental knowledge. Students with different grade levels have different of environmental knowledge. This is a result of the training course for environmental protection volunteers in the school. It is also divided into learning bases so that students can acquire knowledge and participate in activities thoroughly. Each base will have a variety of activities and corresponding to the training content, help students remember and understand the content more clearly as a result, the students who participated received different knowledge and interests. Group process model training is about the behavioral interactions of individuals grouped together, group interaction leads to problem solving. It is an experience for members within the group to learn, concepts, attitudes and self-practice [44]. Knowledge is a behavior that the learner can only recognize, either through practice or by seeing, hearing, remembering and taking action [17]. This is consistent with the research of WassanaNaiyapatana [45] found that there was difference of mean score of knowledge about global warming of nursing students with different grade levels. And AriyaWongphimsorn&PrayoonWongchantra [46] found that there was difference of mean score of environmental knowledge of with the students with different grade levels. And Tan Geok-Chin Ivy, Kay Siang Road, Christine Kim-Eng Lee &Goh Kim Chuan [47] found that secondary school students with different grade levels had different environmental knowledge.

There was difference of mean score of environmental ethics of students with different grade levels. This may be the result of participating in a variety of activities. The students who participated in the activities were at the middle and high school levels as a result, students have different environmental ethics. Environmental education is learning for the coexistence of human learning, problems or changes occurring with the environment will eventually affect the entire environment. Therefore, no country can avoid or solve environmental problems alone, management of environmental education. Therefore, learning from the community, country and world level must be learned simultaneously [48]. The training process is at the heart of human development to become knowledgeable, competent and have good operational skills, training is the process of gaining knowledge, abilities and skills in order to work effectively both in the present and in the future [10]. Ethics refers to behavioral qualities that society expects people in that society to behave be correct in behavior having freedom. The boundaries of conscience is a duty that members of society should behave towards themselves, others, and society. This is to create prosperity in society in order to be able to do so, practice must know what is right and what is wrong [22]. This is consistent with the research of PhramahaAmpholThanapanyo (Chaisaree) [49] found that students who had opinions of learning management to develop learners on ethics in social studies religions and cultures are classified according to different grade levels. And YasaMahaman et.al. [50] found that there was difference of ethical behavior of the students with different vocational certificate levels. And Cheatea, M., Phuchinda, W. [51] found that there was difference of mean score of environmental conservation behaviors in schools of students with different grade levels. And JackritThinkhamchoet, PrayoonWongchantra&WutthisakBunnaen [52] found that there was statistically significant difference of mean score of environmental ethics of students with different grade level ($p < .05$).

There was difference of mean score of environmental volunteers of students with different grade levels. This is because the training process employs the techniques of lectures and outcome discussions to enable students of different grade levels. In the process of training, examples were given and the study of problems to different volunteers among students. A person with a volunteer spirit is a person whose mind is ready to sacrifice time, physical effort and wisdom for the public benefit, a person with an unsteady mind. When see a problem or the misery that befalls people a person who is happy when doing good deeds [53]. The characteristic that corresponds to the volunteers in the first aspect is helping others by no expectation of return showing compassion have a kind heart generous. The second aspect is the sacrifice to

society that expresses the use of free time for the benefit of society, sacrificing money, time, physical and physical resources to help others and society as well as seeing the collective interests more than personal knowing as a giver rather than a receiver. And the third aspect is the determination to develop have initiative in their development and society in order to live in society happily [54]. This is consistent with the research of SurasakKaewngam and PrayoonWongchantra [55] found that the sample students had different environmental volunteers. And PhrathepsureeChankhao and PiyapongChanmaimoon [56] found that there was difference of public volunteers of students with different grade levels after participating activities.

Conclusion

- 1) The training course for environmental protection volunteers in schools was a performance index of 84.51/83.51. The effectiveness of the activity manual index was equal to 0.6983. This showed that students had increased knowledge of environmental volunteers and that results in increased students progress at 69.83%.
- 2) After the training, students had environmental knowledge, environmental ethics and environmental volunteers higher than before the training statistically significantly level of .05.
- 3) There was no difference of average score of environmental knowledge, environmental ethics and environmental volunteers of students with different gender. There was difference of average score of environmental knowledge, environmental ethics and environmental volunteers of students with different grade levels.

Acknowledgement

This research project is financially supported by Mahasarakham University. This research has been successfully completed with KhokKorPittayakom School, Center of Environmental Education Research and Training, Faculty of Environment and Resource Studies, Mahasarakham University, MahaSarakham, Thailand.

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