

The Development of Environmental Education Learning on Sustainable Participation of Lamphun Sub-district, Muang District, Kalasin Province, Thailand

Korchock Nuntasomboon¹ & Prayoon Wongchantra²

¹ Faculty of Environment and Resource Studies, Mahasarakham University, Maha Sarakham, Thailand

² Faculty of Environment and Resource Studies, Mahasarakham University, Maha Sarakham, Thailand

Correspondence: Prayoon Wongchantra, Faculty of Environment and Resource Studies, Mahasarakham University, Maha Sarakham, Thailand

Received: November 13, 2022

Accepted: December 16, 2022

Online Published: December 19, 2022

doi:10.5430/ijhe.v11n6p60

URL: <https://doi.org/10.5430/ijhe.v11n6p60>

Abstract

The objectives of this research were to 1) develop a participatory environmental education learning activity manual for sustainable environmental management for communities in Lampan sub-district, Muang district, Kalasin province (SDMDKOP); 2) study knowledge, attitudes, and participation on sustainable participative environmental management of household heads in SDMDKOP; and 3) compare levels of knowledge, attitude, and participation in the sustainable participatory environmental management of household heads in SDMDKOP with different occupations and incomes. The sample group in this research consisted of 64 heads of households in SDMDKOP communities who voluntarily participated. The research instruments were a participatory environmental education learning activity manual for sustainable environmental management for the community, a knowledge quiz, an attitude scale, and a participation measure. The statistics used in the data analysis were percentage, mean, and standard deviation. The hypothesis test statistic, t-test, F-test (one-way ANOVA), and the comparison of the mean scores by pairs by the Scheffe method. The research found the following:

1. A handbook of participatory environmental education learning activities for sustainable environmental management for SDMDKOP reported that the efficiency was 94.02/92.30, which was higher than the set threshold, and the learning effectiveness index was 0.7189 or 71.89 percent.

2. After the activity, the heads of households in SDMDKOP had higher knowledge, attitude, and participation level than before the activity.

3. Before the activity, for the heads of households in SDMDKOP with different occupations and incomes, the average level of knowledge per person was 29.04, and after the activity, the level was 36.92. People with different occupations had different attitude levels before organizing recreation area management activities ($p < .05$).

The contracting profession has different attitude levels for agriculture and government officials. As for the hired profession, the attitude level was different from government officials. After the activity, there was no difference in attitude level. The level of participation before and after the activities did not differ. Those with different incomes had no difference in attitude and level of participation before and after the activities.

Keywords: environmental education, learning activities, sustainable environmental management, knowledge, attitude, and participation

1. Introduction

Currently, human beings are faced with serious environmental problems both directly and indirectly. As a result, the world has become more environmentally conscious from the past to the present (Suthipong Niphatthanont, 2013) 1) Environmental crises that occur are caused by a lack of proper knowledge and understanding, including the wrong attitudes, attitudes, values, and skills of people towards the environment. People need a true understanding of the environment (Khongsak Thatthong, 2004: 12). Thailand places importance on increasing the efficiency of resource use by using less, reusing materials, and recycling waste materials to create value (Prachachat Business, 2021:

Online). People think that environmental problems are a problem for the distant future, not realizing their immediacy (Nattawat Soonthornwaritthichot, 2013: 2). The Lamphan sub-district community is located in the southwest Mueang District, Kalasin Province. A survey of preliminary data found that the geographical area is a sandy loam plain in the Lam Pao irrigated area that has beneficial agriculture. The members of the community have a variety of occupations, including local people in Kalasin province and other provinces. Because the community is expanding rapidly with an increasing population, the construction of new houses in crowded areas is causing problems with garbage services, wastewater, and a lack of recreational areas. The landscape of the community lacks the development needed to be orderly and beautiful. The researcher working in the environment of Kalasin Hospital thought that environmental problems occur in the community in the Lampan sub-district because community members lack knowledge, understanding, attitude, and participation regarding sustainable environmental management. (Foundation for Environmental Education for Sustainable Development (Thailand), 2011: Online). Community members should be encouraged to experience systematic learning through the process of environmental education (Environmental Education Process) to develop community members to take action for a better environment. (Environmental Quality Development Association, 2016: Online).

The researcher is thus interested in the development of participatory environmental education learning activities for sustainable environmental management for communities in SDMDKOP. By using a training model based on results from the literature, the members of the Lampan sub-district community can develop helpful knowledge and attitudes and participate in sustainable participatory environmental management. The environment can be used as a guideline for the design of appropriate and high-quality learning activities. These will also be used as guidelines in formulating policy frameworks and projects to enhance people's knowledge, understanding, attitudes, and participation regarding sustainable environmental management. Research objectives:

1. To develop a manual for learning activities in participatory environmental education for sustainable environmental management for communities in SDMDKOP and to be efficient and effective according to the 80/80 criteria.
2. To study the knowledge, attitude, and participation in the sustainable participatory environmental management of household heads in SDMDKOP.
3. To compare the level of knowledge, attitude level, and level of participation in the sustainable participatory environmental management of household heads in the Lampan community, Muang district, Kalasin province. With different occupations and incomes, research hypothesis is
 - 3.1. A Handbook of Participatory Environmental Education Learning Activities for Sustainable Environmental Management for SDMDKOP efficient and effective according to the 80/80 criteria.
 - 3.2 The heads of households in the Lamphan sub-district community after the activity show higher knowledge, attitude, and participation levels than before the activity.
 - 3.3 Heads of households in the Lampan sub-district communities with different occupations and incomes were at different levels of knowledge, attitude levels, and levels of participation.

The important of research

The research resulted in a participatory environmental education learning activity for sustainable environmental management that has a process of development according to academic principles and quality. This makes them know the level of knowledge, attitude level, and level of participation in sustainable participatory environmental management. Which agencies and organizations related to the environment can be used as a guideline in the design of learning management for the people to be appropriate and quality? This will also be used as a guideline in formulating policy frameworks and projects to enhance people's knowledge, understanding, attitudes, and participation in sustainable participatory environmental management.

2. Method

2.1 Research Conceptual Framework

Development of participatory environmental education learning activities for sustainable environmental management for communities in SDMDKOP at this time. The researcher uses a mixed research method, both qualitative research and quantitative research. The quantitative research method developed by the researcher consists of four steps:

- 1) Study basic information by conducting a study and researching the basic information on the creation of tools used for data collection: (a) a participatory environmental education learning activity manual for sustainable environmental management for the community and sustainable environmental management; (b) a measure of attitude towards sustainable environmental management; (c) a measure of participation in sustainable environmental

management and interviewing the sample group to obtain the necessary information on current conditions, problems, and needs including guidelines leading to the creation and development of participatory environmental education-learning activities for sustainable environmental management. It was conducted during the period of September–October 2020.

2) Create and develop learning activities by conducting group discussions with the sample group to obtain necessary information on current conditions, problems, and needs. After obtaining guidelines for creating and developing participatory environmental education learning activities for sustainable environmental management, the (draft) handbook for participatory environmental education learning activities for sustainable environmental management has been developed for the community and a Sustainable Environmental Management Knowledge Quiz Attitude Scale towards Sustainable Environmental Management (SEMKQASTSEM) participation measures including quality checks and improvements as recommended by experts. It was conducted during November 2020–January 2021.

3) Experiment with learning activities by bringing a handbook of learning activities and participatory environmental education for sustainable environmental management for the community and develop an SEMKQASTSEM The sustainable environmental management participation scale was tested with non-sample family leaders. When modified after the trial, it was applied to the heads of households in the Lampan community who were a sample group of 64 people with four activities, namely solid waste management activities wastewater management, landscape management, and management of recreation areas. The learning activities are monitored by observation experts while using them. Upon completion, the knowledge test, attitude measurement, and participation of household heads in the Lampan sub-district community were assessed as a sample group. It was conducted from February–April 2021.

4) Publish learning activities by disseminating the learning activity manual for participatory environmental education for sustainable environmental management for communities in SDMDKOP to agencies and interested parties. Implemented in May 2021. (As shown in Figure1.)

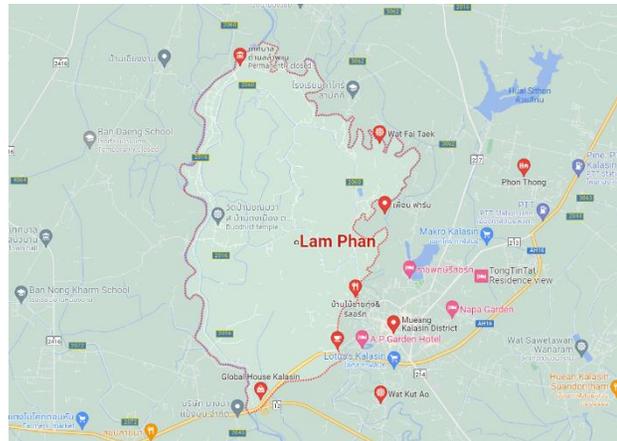


Figure 1. Location of the study area

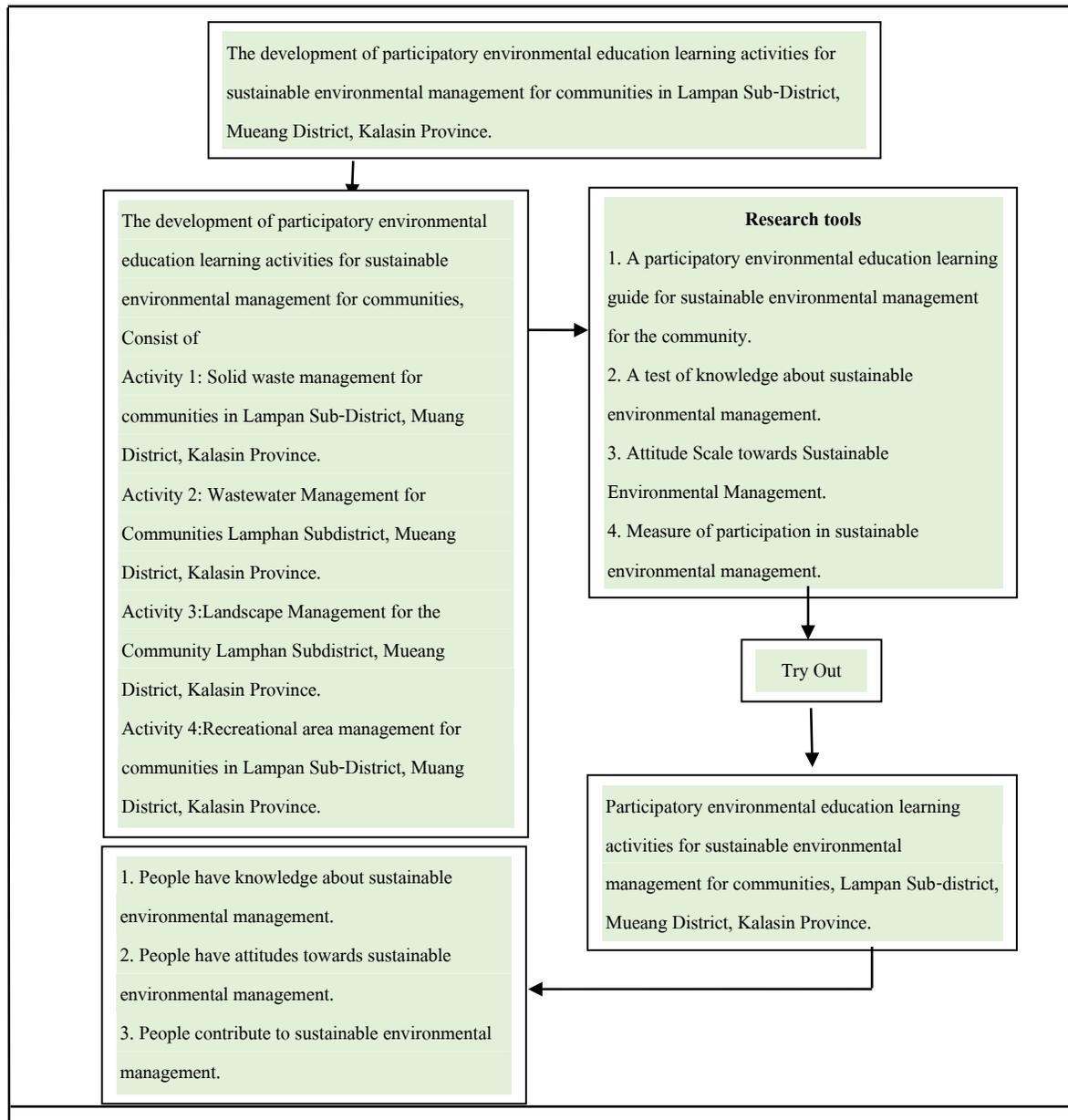


Figure 2. Conceptual Framework

2.2 Population and Sample

The population used in the study was 2,602 people in SDMDKOP. The sample group consisted of 64 household heads in SDMDKOP who voluntarily participated.

2.3 Variables

- 1) The primary variables were participatory environmental education learning activities for sustainable environmental management.
- 2) The dependent variables were knowledge, attitudes, and participation in sustainable participatory environmental management.

2.4 The Research Instruments and Checking Instruments' Quality

1) Participative Environmental Education Learning Activity Guide for Sustainable Environmental Management for Communities There elucidates the steps for creating and finding quality as follows:

1.1) Studying documents and research as a guideline for creating a participatory environmental education learning activity manual for sustainable environmental management for the community; content structure and prepare a manual (draft).

1.2) Submitting the manual (draft) to an advisor and make corrections according to recommendations.

1.3) Bringing the manual (draft) to five experts to analyze based on the criteria. The mean score of 3.50 or more using the IOC formula (Somnuk Phatthiyathanee, 2001) found that the appropriateness of the manual was 4.86, and the standard deviation was 0.06 at the most appropriate level. The conformity value (IOC) was 0.89.

1.4) Revising the manual according to the recommendations of experts and bring it to trial (try out) with people who are not the sample group. Data were collected with the heads of households in the Lampan sub-district community totaling 64 people which was a sample group.

2) Measuring and evaluation tools, such as a knowledge test attitude scale and participation measures. There are steps to create and find quality as follows.

2.1) Study the documents and research as a guideline for creating a knowledge test including attitude scale and participation measures.

2.2) Create a knowledge test attitude scale and have the participation measured on a sustainable environmental management (draft) consisting of:

2.2.1) A knowledge test is a multiple-choice test type with four choices, a, b, c, and d for 40 items; 1 point each, for a total score of 40 points by choosing only one correct answer. This means 1 point per correct answer; 0 points per wrong answer (Chom Srisaat, 2010) with scoring and interpreting criteria as follows: (a) an average score of 0.00–8.00 means that the head of the household is at least knowledgeable; (b) an average score of 8.01–16.00 means of the head of the household; (c) a mean score of 16.01–24.00 means that the head of the household is at a moderate level; (d) an average score of 24.01–32.00 means that the head of the household is at a high level; and (e) an average score of 32.01–40.00 means that the head of the household has the highest level of knowledge.

2.2.2) An attitude scale was characterized as a 20-item rating scale with 5 levels of attitude, (i.e., strongly agree, agree, not sure, disagree, and strongly disagree; Boonchom Srisaat, 2010). The scoring and interpretation criteria are as follows: (a) a mean of 1.00–1.50 means that the head of the household strongly disagrees; (b) A mean of 1.51–2.50 means that the head of the household disagrees; (c) an average of 2.51–3.50 means that the head of the household is not sure; (d) a mean of 3.51–4.50 means that the head of the household agrees; and (e) an average of 4.51–5.00 means that the head of the household strongly agrees.

2.2.3) A participation measure is characterized as a rating scale of 20 items. The level of participation is defined as five levels, which are measured as the most, the moderate, the least, and the least (Boonchom Srisaat, 2010). The scores and interpretations are as follows: (a) mean 1.00–1.50 means the head of household has the least involvement; (b) a mean of 1.51–2.50 means that the head of household has less participation; (c) a mean of 2.51–3.50 interpretation; (d) a mean of 3.51–4.50 means that the head of the household is highly involved; and (e) a mean of 4.51–5.00 means that the head of the household is the most involved.

2.3) Take the knowledge test attitude scale and participation measure (draft) presented to five experts. IOC examination (Somnuk Phatthiyathanee, 2001) found that the knowledge test was equal to 0.91, the attitude test was equal to 0.87, and the participation measure was 0.81, which is greater than 0.50, indicating that all questions are relevant to the subject matter and objectives can be used for data collection.

2.4) Take the knowledge quiz attitude scale and the participation measure to try out (try out) with people who are not in the sample group. Fifty people did not find the test difficult. With power to classify each item, (a) of the 40 knowledge test items; the difficulty value was from .45–.72; the power to discriminate between the item was from .27–.63, and the confidence value was from .45–.72. .8915; (b) the attitude measurement form had the power to classify each item between .27–.90, and the confidence value of the whole version was .9526; (c) the participation measure had the power to classify each item from .21–.90, and the confidence value of the whole issue is .9414, indicating that the knowledge test attitude scale and participation measures can be used to collect data.

2.5) Publish a knowledge test attitude scale and a complete version of the participation measure to collect data with the sample group.

2.5 Research Process

Step 1: Study the basics. The researcher proceeds as follows:

1) Study and research basic information on creating tools used for data collection: (a) a participatory environmental education learning activity manual for sustainable environmental management for the community; (b) a knowledge test on sustainable environmental management; (c) a model of attitude towards sustainable environmental management; and (d) a measure of participation in sustainable environmental management.

2) Interview and group discussion with the sample group to obtain information on current conditions, necessary problems, and needs, as well as guidelines leading to the creation and development of participatory environmental education learning activities for sustainable environmental management. The tools are in interview form and group conversation recording form.

Step 2. Build and find tool quality: The researcher proceeded as follows:

1) Prepare (draft) a manual for participatory environmental education learning activities for sustainable environmental management for the community. SEMKQASTSEM and a measure of participation in sustainable environmental management. The quality is checked and improved according to the advice of experts.

2) Take participative environmental education learning activities for sustainable environmental management for the community SEMKQASTSEM and a measure of participation in sustainable environmental management. Created and developed to experiment with the head of the household who is not a sample group.

3) Revised the manual for participatory environmental education learning activities for sustainable environmental management for the community. SEMKQASTSEM and a measure of participation in sustainable environmental management after an experiment with non-sample heads of households.

Step 3. Using learning activities, the researcher used a participatory environmental education learning activity guide for sustainable environmental management for the community. SEMKQASTSEM and a measure of participation in sustainable environmental management to be used with the head of the household as a sample group as follows:

1) Test knowledge, attitude, and participation before the activity with the heads of households in SDMDKOP, which is a sample of 64 people using a knowledge test attitude scale and participation measures.

2) Organize a participatory environmental education learning activity for sustainable environmental management for communities in SDMDKOP. With a sample of 64 people, consisting of four activities: (1) solid waste management activities, (2) wastewater management activities, (3) landscape management activities, and (4) recreation area management activities. The duration of the learning activities was 4 weeks, 4 hours each, and a total of 16 hours, as shown in Table 1.

Table 1. Table of activities for learning environmental education with the participatory environment for sustainable environmental management for communities in SDMDKOP.

Times	Activities	Contents	Hours
1	Activity 1: Solid waste management for communities in SDMDKOP	<ul style="list-style-type: none"> - Definition and Composition of Solid Waste. - Type and origin of solid waste. - Problems, causes, and effects of solid waste on the environment. - Problem-solving, efficient collection, and disposal of solid waste. - Conversion and utilization of solid waste. 	4
2	Activity 2: Wastewater Management for Communities SDMDKOP	<ul style="list-style-type: none"> - Definition of Wastewater. - Discharge of waste water from homes. - Characteristics of wastewater caused by houses. - Problems, causes, and effects of wastewater in the community. - Solving the problem of emission of wastewater from homes. 	4
3	Activity 3: Landscape Management for the Community SDMDKOP	<ul style="list-style-type: none"> - Origin and importance of landscape management and a good and appropriate community environment in the community. - Objectives and benefits of landscaping in the community. - Types, styles, and places should be landscaped in the community. - People's participation in building a livable community. 	4
4	Activity 4: Recreational area management for communities in SDMDKOP	<ul style="list-style-type: none"> - Background and meaning of recreational areas. - The importance of recreation areas. - Values and benefits of recreation areas. - types of recreation area activities. - Creation of recreation areas or public areas. - the nature of the recreation area. 	4
Totals			16

3) To test knowledge, attitude, and participation after participation of the heads of households in SDMDKOP. This was a sample group of 64 people to compare the level of knowledge, attitude level, and level of participation in sustainable environmental management after learning activities by using a knowledge test attitude scale and the participation measure created by the researcher which is the same set as before the event.

4) Analyze knowledge, attitudes, and participation in sustainable environmental management by statistical methods to test the hypothesis.

3. Results

3.1 An analysis of knowledge, attitudes, and participation in the sustainable participatory environmental management of household heads in SDMDKOP, as shown in Table 2.

Table 2. Comparison of knowledge, attitude, and participation in the sustainable participatory environmental management of household heads in SDMDKOP, which was a sample of 64 people before and after the event.

Activities	Knowledges			Attitudes			Participation				
	Number	Total	\bar{x}	S.D.	Percent	\bar{x}	S.D.	Meaning	\bar{x}	S.D.	Meaning
Before activities	64	1,859	29.04	2.87	72.61	4.31	.43	Agree	4.24	.41	Max
After activities	64	2,363	36.92	1.70	92.30	4.69	.45	Mostly Agree	4.68	.45	Maximum

3.2 Comparative analysis of knowledge level, attitude level, and participation level in the sustainable participatory environmental management of household heads in SDMDKOP with different occupations and incomes as shown in Tables 3–5.

Table 3. Comparison of knowledge level on sustainable participative environmental management of household heads in SDMDKOP. This was a sample group of 64 people with different occupations and incomes before and after the activities.

Activities	The levels of knowledge				
	Number	Total	\bar{x}	S.D.	Percent
Before activities	64	1,859	29.04	2.87	72.61
After activities	64	2,363	36.92	1.70	92.30

Table 4. Comparison of attitudes about sustainable participative environmental management of household heads in SDMDKOP. The sample group consisted of 64 people with different occupations and incomes using the F-test (one-way ANOVA) before and after the event.

Varieties	The levels of attitudes	Before activities					After activities				
		SS	df	MS	F	P	SS	df	MS	F	P
Occupation	Connect Group	3.355	3	1.118	3.867	.009*	.202	3	.067	.316	.814
	Group	369.032	1276	.289			272.420	1276	.213		
	Total	372.387	1279	-	-	-	272.622	1279	-	-	-
Personal Monthly Income	Connect Group	1.302	3	.434	1.493	.215	.221	3	.074	.344	.793
	Group	371.085	316	.291			272.401	1276	.213		
	Total	372.387	319	-	-	-	272.622	1279	-	-	-

5. Compares the level of participation in the sustainable participatory environmental management of household heads in SDMDKOP. The sample consisted of 64 people with different occupations and incomes by using F-test (One-Way ANOVA) before and after the event.

Varieties	The levels of attitudes	Before activities					After activities				
		SS	df	MS	F	P	SS	df	MS	F	P
Occupation	Connect Group	.020	3	.007	.030	.993	.356	3	.119	.543	.653
	Group	278.652	1276	.218			278.316	1276	.218		
	Total	278.672	1279	-	-	-	278.672	1279	-	-	-
Personal Monthly Income	Connect Group	1.109	3	.370	1.700	.165	.873	3	.291	1.337	.261
	Group	277.562	1276	.218			277.798	1276	.218		
	Total	278.672	1279	-	-	-	278.672	1276	-	-	-

4. Discussion

The development of participatory environmental education learning activities for sustainable environmental management for communities in SDMDKOP. The results can be summarized as follows:

4.1 The results of the development of a participatory environmental education learning activity manual for sustainable environmental management for communities in SDMDKOP that the researcher created to be effective and effective according to the specified criteria.

The results showed that the handbook of participatory environmental education learning activities for sustainable environmental management for communities in SDMDKOP, the efficiency was 94.02/92.30, which was higher than the set threshold, and the learning effectiveness index was 0.7189 or 71.89 percent.

4.2 The results of this study and comparison of knowledge, attitudes, and participation in the sustainable participatory environmental management of household heads in SDMDKOP.

The results showed that household heads in SDMDKOP had significantly higher knowledge, attitudes, and participation in sustainable participatory environmental management after the activities than before the activities. Statistically, it was at a .05 level.

4.3 The results of this study and comparison of knowledge level, attitude level, and participation level in the sustainable participatory environmental management of household heads in the SDMDKOP with different occupations and average monthly income.

The results showed the following:

4.3.1 Comparison of knowledge level before and after the activity was conducted. It was found that the heads of households in SDMDKOP had different occupations and average monthly incomes. There was no difference in the knowledge level of participative sustainable environmental management before and after the activity ($p > .05$).

4.3.2 Comparison of attitude levels before and after the activity was conducted. It was found that the heads of households in SDMDKOP had different occupations. Before the overall activities and recreation area management was significantly different at the .05 ($p < .05$) level. In terms of recreation area management, those with contract occupations had different attitude levels than those who had a job. Agriculture and government officials overall, those who have a contract career, have different attitude levels than those who are government officials. The latter organized activities as a whole and in every aspect for heads of households in SDMDKOP, there were no different levels of attitude towards sustainable participatory environmental management. As for the heads of households in SDMDKOP, with different average monthly incomes, it was found that before and after the overall activities and in every aspect the heads of households in the Lampan sub-district with average incomes per month were different. There were no different levels of attitude towards sustainable participatory environmental management.

4.3.3 Comparison of the level of participation before and after the event: It was found that the heads of households in SDMDKOP had different occupations. Before and after the overall activities and in each aspect, there was no difference in the level of participation in sustainable participatory environmental management. As for the heads of households in SDMDKOP with different average monthly incomes, it was found that before and after the overall activities and in every aspect, there was a level of participation towards the participative environmental management. The sustainable joint is no different.

5. Conclusion

Development of participatory environmental education learning activities for sustainable environmental management for communities in SDMDKOP. The results of the research can be discussed as follows:

5.1 The results of a study on the development of a participatory environmental education learning activity manual for sustainable environmental management for communities in SDMDKOP was that the researcher created to be effective and quality according to the specified criteria. The results of the research found that the participatory environmental education learning activity manual for sustainable environmental management was 94.02/92.30 higher than the set threshold of 80/80. A participatory study for sustainable environmental management before and after activities was found that the difference was statistically significant at 0.01 level, and the quality of the learning activities had a distribution coefficient of 4.60. The learning progression after training increased by 71.89%.

This was a result of the creation and development of a participatory environmental education learning activity manual for sustainable environmental management for communities in SDMDKOP.

There is a systematic operation, including the creation of tools used to collect data with clear procedures. The use of

appropriate environmental materials can increase positive environmental behavior (Abiolu and Oluremi Adenike, 2019: 53). On environmental knowledge (Evrin Ural, Guzide Dadli, 2020: 177), because the media plays an important role in helping participants with the knowledge, experience, and skills in various fields (Office of the National Primary Education Commission), it has resulted in knowledge and participation in the environment (Ksenia D. Shelest et al. 2017: 39–49), demonstrating that learning activities are a planning process for personal development. There is a sequence of activities and a systematic process. For individuals to change their behavior according to the stated objectives (Chantrani Sanguannam, 2001: 8) is in line with Siriwatthanamichai, N. and Kurukodt, J. (2018: 1921) who studied the development of a manual to promote organic farming for farmers. Ban Nong Tok Paen Nong Tok Phaen Sub-district, Yang Talat District, Kalasin Province, the results showed that the organic farming manual was efficient and effective according to the criteria. Farmers have knowledge. Attitudes after training more than before training, and the farmers have a very good level of organic farming practice. It is also consistent with Sofowora Olaniyi Alaba, and Omisope Kolawole Tayo (2014: 325) who found that the Socio-Drama Learning series is effective in teaching environmental studies and useful in increasing students' knowledge about pollution. Environment and improves students' academic performance as well as helping to transform students' attitudes into positive attitudes.

Another interesting issue is the selection of the sample group who are heads of households in the community. It is one of the key factors that affect learning success. This is because the heads of households in these communities are ready to give time to society as well as to cooperate with activities constructively. After all, the heads of households in the communities have to cooperate with the activities of the public. Often, they can learn in the learning activities that the researcher has created and developed very well. As well as their being ready to transfer knowledge to members of their households to know the environment (Niran Chulasub, 1995: 3) because working as a group together and focusing on participants centered learning results in participants acquiring essential skills (Peter Rillero et.al. 2020: 6) is consistent with Vinning, Joanne and Anjela Ebry (1992: 138–140).

Learning affects environmental management behaviors, such as the segregation of solid waste for reuse, and the Ryan's (2007: 103) study found that continuity of learning activities is essential for environmental management to improve. To maintain public awareness, learning activities are therefore beneficial to individuals to increase the capacity of the participants by providing knowledge or new techniques to improve their ability to work (Banong Tojinda, 2000: 197–199). This is also consistent with Najmun Nahar, Zakaria Hossain and Sanjia Mahiuddin. (2002), who found that understanding the causes and effects of environmental pollution influences the environmental behavior of citizens. Changes to sustainable lifestyles (Ágnes Zsóka, et al. 2013: 126), especially in educational institutions, should include courses on environmental studies as part of driving sustainable environmental management (Laura Barraza, 2010). Following Ramazan ALBAS (2019: 120–141), we found that educational topics related to the environment and environmental ethics in the curriculum affect the morality of environmental conservation and the creation of consciousness in the use of nature.

5.2 The results of a study of knowledge, attitudes, and participation in the sustainable participatory environmental management of household heads in the Lampan sub-district communities, Muang district, Kalasin province, of the research revealed that the heads of households in SDMDKOP were a sample group with knowledge about sustainable environmental management as measured by the pre-activity assessment test. The mean per person was 29.04 points out of 40, and there was a deviation. The standard was 2.87% or 72.61% and knew sustainable participatory environmental management as measured by taking the post-activity learning achievement test. The mean per person was 36.92 points out of 40, and there was a standard deviation of 1.70%, representing 92.30%. The attitude towards sustainable environmental management before the overall activities was at the agreed level (\bar{x} = 4.31), and after the overall activities were at the agreed level. Especially, (\bar{x} = 4.69), participation in sustainable participatory environmental management before the overall activities was at a high level (\bar{x} = 4.24), and after the overall activities was at the highest level (\bar{x} = 4.68).

This is because the researcher chose to use a variety of learning models as a strategy for developing the samples to increase knowledge and attitudes and enhance the participation of the sample who are already heads of the household to implement the work that sustainability (Somchai Hirunkitti, 1999: 157) is a reduction in labor costs and learning time, resulting in efficiency (Pichit Ratchabut, 2000: 42), which is consistent with the study of Juthamas Onwong (2011: 101–108). It was found that a variety of learning methods enable the subjects to have the most useful and long-lasting knowledge, helping people to participate in environmental management (Prapassorn Jangpho, 2011: 123–128). This is consistent with Ukrit Tingarm (2014: 96–103). The study found that youth had average knowledge scores after the learning activities. Higher than before learning activities followed Muhammad Aliman et al. (2019: 79–94). The study found that learning styles affect students' knowledge, attitudes, behaviors, and skills. As a result,

students have higher knowledge, attitudes, behaviors, and skills in solving environmental problems. It made me realize that environmental knowledge is a multidisciplinary concept in nature. It is an emerging concept in cognitive and social psychology (Vikas Minchekar and Rutuja M Sabane, 2017: 006), including Piyapong Janmaimooland and Chaweewan Denpaiboon. (2016: 1–20). Involvement of villagers in environmentally friendly behavior by learning the nature of the environment and awareness that environmental issues are important factors affecting participation in environmental operations (Georgia Liarakou et al., 2011: 651), which Ksenia D. Shelest et al. (2017: 39–49).

It was found that raising environmental awareness through student collaboration is a way to raise awareness and participate in creative environmental management.

5.3 The results of a comparative study of knowledge level, attitude level, and participation level in the sustainable participatory environmental management of household heads in the SDMDKOP with different occupations and incomes, the results of this research found that heads of households in the Lampan sub-district community, Muang district, Kalasin province with different occupations and average monthly incomes. Before and after the activity, there was no difference in knowledge about sustainable participatory environmental management ($p > .05$). The attitude level before and after the actor revealed that the heads of households in SDMDKOP with different occupations before the overall activities. Recreation area management was significantly different at the .05 ($p < .05$) level. In terms of recreation area management, those with contract occupations had different attitude levels than those who had a job. Agriculture and government officials overall, those who have a contract career have different attitude levels than those who are government officials. The latter organized activities as a whole and in every aspect, heads of households in SDMDKOP. There were no different levels of attitude towards sustainable participatory environmental management. As for the heads of households in SDMDKOP, with different average monthly incomes, it was found that before and after the overall activities and in all aspects, the heads of households in the Lampan sub-district communities with average incomes per month were no different. There were no differences in attitudes towards sustainable participatory environmental management. As well as the level of participation before and after the event, it was found that the heads of households in the SDMDKOP had different occupations. Before and after the overall activities and in each aspect, the level of participation towards sustainable participatory environmental management was no different. As for the heads of households in SDMDKOP with different average monthly incomes, it was found that before and after the overall activities and in all aspects, there was a level of participation towards the participative environmental management. The sustainable joint is no different.

The results of this study revealed that environmental awareness varies from person to person (Mamun et al., 2017). To see the basics of accessing knowledge differently, therefore, the educational system of educational institutions should take into account the concepts and basic needs of the learners as well. (Malandrakis et al., 2014: 537). In line with the study, Michaela Poppe et al. (2018: 435) found that public understanding of the environment is fundamental to participation. Environmental education is one of the processes that raise awareness of environmental values and ideas. In addition, following Woodward (2004: 2081-A), the study found that the sample group had knowledge, awareness, attitude, and of participation in natural resource conservation. Consistent with Ayomoh et al. (2007: 108–114), the study found that irresponsible waste disposal in developing countries poses a serious threat to the environment and health. This study suggests that environmental health management is influenced by negative ranking factors through resource allocation that works best.

References

- Á. Zsóka et al. (2013). Greening due to environmental education? Environmental knowledge, attitudes, consumer behavior and everyday pro-environmental activities of Hungarian high school and university students. *Journal of Cleaner Production*, 48, 126-138. <https://doi.org/10.1016/j.jclepro.2012.11.030>
- Abiolu and Oluremi Adenike. (2019). Environmental Knowledge and Behavior of Nigerian Youth: An Assessment. *Applied Environmental Education and Communication journal*, 18(1), 53-67. <https://doi.org/10.1080/1533015X.2018.1432431>
- Ayomoh, M.K.O. & others. (2007). An Approach to Tackling the Environmental and Health Impacts of Municipal Solid Waste Disposal in Developing in Developing Countries. *Journal of Environmental Management*, 88(2008), 108–114; March. <https://doi.org/10.1016/j.jenvman.2007.01.040>
- Banyong Tochinda. (2000). *Personnel management*. Bangkok, Amorn Printing.
- Boonchom Srisaard. (1994). *Preliminary research: teaching development*. Bangkok: Suwiriyan.
- Boonchom Srisaard. (2003). *Preliminary research*. 4th printing, Bangkok: Suwiriyan.

- Boonchom Srisaard. (2007). Preliminary educational research. Mahasarakham: Department of Educational Research and Development Faculty of Education, University Maha Sarakham.
- Boonchom Srisaard. (2008). Educational Research Analysis. Mahasarakham: Department of Educational Research and Development Faculty of Education, University Maha Sarakham.
- Boonchom Srisaard. (2010). *Preliminary research*. 8th edition, Bangkok: Suwiryasan.
- Businesspeople. (2564). Launching the 13th Economic Development Plan, focusing on 5 main goals to transform Thailand. [Online]. From: <https://www.prachachat.net/finance/news-766530>. [Retrieved on March 30, 2065].
- Environmental Quality Development Association. (2016). Knowledge of environmental education. [Online]. Available from: [http://adeq.or.th/Environmental Studies/](http://adeq.or.th/Environmental%20Studies/)[Retrieved on April 10, 2018].
- Office of the National Economic and Social Development Board. (2016). The Twelfth National Economic and Social Development Plan, B.E. 2560-2021. Bangkok: Office of the National Economic and Social Development Board Prime Minister's Office.
- Evrin Ural, Guzide Dadli. (2020). The Effect of Problem based Learning on 7th-grade Students' Environmental Knowledge, Attitudes, and Reflective Thinking Skills in Environmental Education. *Journal of Education in Science Environment and Health (JESEH)*, 6(3), 177-192. <https://doi.org/10.21891/jeseh.705145>
- Foundation for Environmental Education for Sustainable Development (Thailand). (2011). The Importance of Environmental Education. [Online]. Available from: <http://www.feedthailand.org/environmental-education/> [Retrieved April 10, 2018].
- Georgia Liarakou, Eleni Kostelou & Costas Gavrilakis. (2011). Environment Volunteers: factors influencing their involvement in environmental action. *Journal of Environmental Education research*, 17(5), 651-673. <https://doi.org/10.1080/13504622.2011.572159>
- Juthamas Onwong. (2011). Knowledge, Awareness, and Participation of Local Community in Mangrove Forest Conservation Case Study: Ban Than Nam Nam Ron.Khao Than Subdistrict, Tha Chang District, Surat Thani Province. Thesis M.A. Bangkok: Silpakorn University.
- Kongsak Thatthong. (2004). *Documents for teaching environmental studies on environmental ethics*. Khon Kaen: Khon Kaen University.
- Kosol Meekhun. (2008). Quantitative research supplemented by qualitative research. *Social Development Journal*, 10(1), 27-40; February.
- Ksenia D. Shelest, Victor V. Ionov & Leonid Y. Tikhomirov. (2017). Environmental awareness raising through universities city authorities 's cooperation. *International Journal of Sustainability in Higher Education*, 18(1), 39-49. <https://doi.org/10.1108/IJSHE-05-2015-0085>
- Laura Barraza. (2010). Environmental Education in Mexican Schools : The Primary Level. *The journal of Environmental Education*, 32, 2011, Issue 3. <https://doi.org/10.1080/00958960109599143>
- Malandrakis Georgios & Chatzakis Stergios. (2014). Environmental Attitudes, Knowledge, and Alternative Conceptions of Primary School Children in Greece. *Journal of Environmental Education Research*, 24(4), 537-563.
- Michaela Poppe, Gabriele Weigelhofer, & Gerold Winkler. (2018). Public Participation and Environmental Education. *Aquatic Economy Series University of Amsterdam*, 8, 435-457. https://doi.org/10.1007/978-3-319-73250-3_22
- Muhammad Aliman, Budijanto, Sumarmi & I Komang Astina. 2019. Improving Environmental Awareness of High School Students' in Malang City through Earthcomm Learning in the Geography Class. *International Journal of Instruction*, 12(4), October 2019, 79-94. <https://doi.org/10.29333/iji.2019.1246a>
- Nattawat Soonthornvaritichote. (2013). A Study of Environmental Problems in Sam Bundit Sub-district: A Case Study of Factors Affecting Development Natural resources and people's environment. Research report. Phra Nakhon Si Ayutthaya: Phranakhon Si Ayutthaya Rajabhat University. Bangkok: Chulalongkorn University Printing House.
- Peter Rillero et.al. (2020). Active learning methodologies in a solar power, middlegrade curriculum for Palestinian schools. *Interdisciplinary Journal of Environmental and Science Education*, 16(2), 1-7. <https://doi.org/10.29333/ijese/7814>

- Prapassorn Jangpho. (2011). People's Participation in Ecotourism Management. In a case study of the 100-year market, Sam Chuk Subdistrict, Sam Chuk District, Suphan Buri Province. Thesis M.A. Bangkok: Silpakorn University.
- Ramazan ALABAS. (2019). Environmental Topics and Environmental Ethics in Primary School Humanities and Social Sciences Education during the Late Ottoman Period (1913-1918). *Journal of Environmental Education*, 9(2), 120-141.
- Ryan, Joan Monica. (2007). An Evaluation of the Organization of Eastern Caribbean States Solid Waste Education Program, 2000–2006. *Masters Abstracts International*, 45(6), 103; December.
- Shamim Al Mamun, Tanmoy Roy Tusher & Muliadi. (2017). ENVIRONMENTAL AWARENESS OF PEOPLE AT DIFFERENT OCCUPATIONAL LEVELS: A CASE STUDY ON THE FARMERS, HOSPITAL AND INDUSTRIAL WORKERS, BANGLADESH. *International Journal Marina Chimica ActaThe University of Hasanuddin*, 18(2), 1-10; January.
- Siriwatthanamichai, N. & Kurukodt, J. (2018). The development of organic farming promoting manual for agriculturists of Ban Nongtokpan Tambon Nongtokpan, Amphoe Yang Talat, Kalasin province. *International Journal of Agricultural Technology*, 14(7), 1921-1930.
- Sofowora Olaniyi Alaba, Omisope Kolawole Tayo. (2014). A Study of the Effectiveness of Socio-Drama Learning Package in Promoting Environmental Knowledge and Behaviour of Secondary Schools Students in Osun State, Nigeria. *Mediterranean Journal of Social Sciences*, 5(23), 1325-1330.
- Suthipong Niphatthananon. (2013). Guidelines for the development of environmental education schools for sustainable development under the framework of the Department of Promotion. Environmental quality. Thesis Ph.D. Chiang Mai: Chiang Mai Rajabhat University.
- Vikas M, Rutuja M S. (2017). The Effect of SSC Model on Environmental Cognition. *Psychol Behav Sci Int J.*, 2(5). <https://doi.org/10.19080/PBSIJ.2017.02.555597>
- Vinning, Joanne & Anjela Ebry. (1992). Predicting Recycling Behavior from Goal and Specific Environmental Attitudes and Change and Recycling Opportunities. *Journal of Applied Social Psychology*, 22(20), 138–140. <https://doi.org/10.1111/j.1559-1816.1992.tb01758.x>
- Woodward, Denise Marie. (2004). Changes in Students Measures of Environmental Literacy as a Result of Instruction on Environmental Issues. *Dissertation Abstracts International*, 65(6), 2081-A.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).