

Development of Prototype of Young Buddhist Environmental Education

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Abstract: Buddhist principle of four noble truths is the real truth to practice with the ethical way of life for Thai people to meet the peace and happiness. This principle is the most effective tool which can leads to the raising of awareness of the environmental and natural resources conservation such as water saving and soil fertility. The research objective was to develop a prototype of Young Buddhist Environmental Education (YBEE). The population was the students of primary schools in the Mahasarakham province. The sample group of 40 students is selected by purposive sampling technique. Tools composed of test of knowledge achievement and attitude and participation forms. The descriptive statistics with percentage, frequency, mean and standard deviation and the inferential statistics with t-test and one-way ANOVA were used for data analysis. The Participatory Appreciate Influence Control technique (PAIC) was implemented to create action plans and practices for implementing project for target group. The results illustrated that before and after PAIC process implemented, the knowledge achievement, attitude and training achievement were determined. It was found that there were high statistically significant ($p < 0.01$, 0.01 and 0.01). Consequently, the Three Dimensional Evaluation (TDE) was employed for their participation in the training process of PAIC, it showed that self-evaluation, friend-evaluation and facilitator-evaluation were statistical difference ($p < 0.01$) but self-evaluation, friend-evaluation was not statistical difference ($p > 0.05$) while self-evaluation and facilitator-evaluation were statistical difference ($p < 0.01$) including friend-evaluation and facilitator-evaluation were statistical difference ($p < 0.01$). Four Dimensional Evaluation (FDE) was used for trainer role play evaluation, it illustrated that trainer self-evaluation, audience evaluation, trainer friend-evaluation and expert trainer-evaluation were no statistical difference ($p > 0.05$). During PAIC implemented, the 6 focus groups discussion were done, the overall results showed that there were at least 6 projects purposed such as prevention of waste disposal into pond, collecting the solid waste from pond produce compost from wet waste prevention of community deforestation soil erosion prevention with vetiver grass and vegetable cultivation without chemical use to be implemented according to the action plans on soil and water conservations. These were implemented at the school and community.

Key words: Development, prototype, young buddhist environmental education, four dimentional evalvation, PAIC, Thailand

INTRODUCTION

Environmental education was recommended to study in the scientific, religion and social aspects (Srisupun, 1993). Currently, science had been emphasized on but religion and society has still paid little attention. Therefore, religion and social dimensions should be introduced in teaching and learning process increasingly. Beside, the words of Buddhadasa on religion was referred to the virtue and ethics with stressing on moral and meditation.

The moral is the normal balance of nature but destruction of nature is a lack of moral. If human beings utilize the nature with balance they will have consciousness of utilization as normal and balance (Thongpan, 2002; Buddhadasa, 1989). The 10th National

Economic and Social Development Plan (2007-2011) is a developmental plan complies with self sufficiency economy to meet sustainable development. It has been applied in society starting from individual, family, community, society and country.

The principles of moral and ethics are in Humanism styles because it is universal principle that it can be applied to build the competency for Thai people to have a certain quality of life with sufficiency according to principle of sufficiency economics and happiness (Punthasaen, 2007; Thiengkamol, 2008). The concept of environmental education is identified that is a lesson to indicate that if we want to meet sustainable development, the human beings must be aware to participate for environment and natural resource conservation through changing their behaviors of daily living with value, belief,

awareness and sensitivity and taking responsibility in cooperation of global citizen in all aspects connected with environment of both subjective and object including being able to make decision to solve environmental problems in any issue. The most important issue, humans need to have knowledge and understanding of the environment as a holistic view, therefore they will be able to correctly solve environmental problems (Thiengkamol, 2011d). For that reason, the researcher was interested to study on development of environmental education program for primary school student of level 5-6 on the capacity building of soil and water conservation based on environmental education process with integration of Buddhist principle and sufficiency economy concept through PAIC training technique.

In order to change their attitudes and behaviors environment and natural resource conservation, the focus group discussion and brain storming during training process will challenge their imaginative and creative ideas to build shared vision, action plans and projects for implementing in order to meet their set shared vision. Moreover, TDE was used as tool to evaluate the participation of all participants collaboration.

After the pilot projects were implemented, PAMEI was employed for evaluating the success of the projects (Thiengkamol, 2008; Thiengkamol, 2011a). It is the evidence to point out that this environmental education program of soil and water conservation with integration of Buddhist principle and sufficiency economy concept through PAIC training technique will be able to change participant attitude and behavior for soil and water conservation. Finally, these young generations will be the hope for true sustainable development of Thailand and world.

Research objective: The research objective was to develop a prototype of Young Buddhist Environmental Education Trainer (YBEET).

Population and sample: The populations were the students of primary schools in the Mahasarakham province. The sample group of 40 students was selected by purposive sampling technique from Bann Don Mee School, Tambon Wiang Sa-Ard, Ampur Payakkapumpisai, Mahasarakham province during academic year 2010.

MATERIALS AND METHODS

The research design composed of in-depth interview and focus group discussion which was integrated in process of PAIC including the experimental research and it was implemented in step by step as follows;

development of training manual for soil and water conservation was based on environmental education process through the integration of the Buddhist principle and sufficiency economy concept.

The content contained the principle of soil and water conservation according to Earth System Science, principle of environmental education, Buddhist principle, sufficiency economy concept and principle of primary student development by analysis of the related literatures and content of in-depth interview from experts of related aspects including to experts of soil and water, Buddhism religion, sufficiency economy, environmental education and primary education. It was concluded to be a guideline for constructing of training manual, test and questionnaire (Srisupun, 1993; CEDPA, 1999; UNESCO, 1978; Went-Dse-Zel, 2002; Thiengkamol, 2004; Punthasaen, 2007; Thiengkamol, 2009).

The training manual and research tools were verified the content validity by experts of all aspects as mentioned above. The tools composed of test, questionnaire and evaluation form. Test was use to examine their soil and water knowledge. The questionnaire was used for determining and evaluating attitude changing including the participation during training. Then, it was tried out with 35 primary school students of Burapha Pittayakam, Ampur Muang, Mahasarakham province.

The experiment of training process was done with 40 students selected by purposive sampling technique from Bann Don Mee School, Tambon Wiang Sa-Ard, Ampur Payakkapumpisai, Mahasarakham province in the academic year of 2010. The age of students were between 10-14 years old both male and female. The PAIC training technique was implanted with integration of focus group discussion and the brain storming (Langly, 1988; Weiss, 1995; Sproull, 1995). The Three Dimensional Evaluation (TDE) was used to determination the congruence of three aspects evaluation; self-evaluation, friend-evaluation and facilitator-evaluation for training participation. Four Dimensional Evaluation (FDE) was used for evaluating YBEET on role playing. FDE covered trainer self-evaluation, audience evaluation, trainer friend-evaluation and expert trainer-evaluation (Thiengkamol, 2004, 2005a, b, 2008, 2011a-d).

The Pre- and Post-test one group design is used to test for before and after training process with PAIC. PAMEI technique was employed to identify the performance, assessment, monitoring and evaluation of participants performance on soil and water conservation of trained students according to the proposed action plan and projects (Thiengkamol, 2004, 2005a, b, 2011a-c, 2010).

RESULTS

The sample group of this study was 40 students that were selected by purposive sampling technique from Bann Don Mee School, Tambon Wiang Sa-Ard, Ampur Payakkapumpisai, Mahasarakham province in the academic year of 2010. The age of students were between 10-14 years old both male and female. They were female with 65.00% and studied at primary school level 5 and 6th with 50.00% equally as shown in Table 1.

PAIC technique was implemented for primary school students on the concept soil and water conservation through integration of Buddhist principle and sufficiency economy concept in order to meet the sustainable development. The result of one group pre- and post-test design was used to determine the training achievement of 40 participants with PAIC technique for soil and water knowledge achievement and attitude changing for soil and water conservation.

The result showed that post-test mean scores of participants was statistically significant higher than the pretest mean scores in all aspects of knowledge on soil and water, attitude changing for soil and water conservation and training achievement ($p < 0.01$, 0.01 and $p < 0.01$) as shown in Table 2. Three dimensional evaluation were employed for determining the perceptions of 40 primary school students in three aspects evaluation; self-evaluation, friend-evaluation and facilitator-evaluation by using one-way ANOVA in order to investigate the mean scores difference of three groups. The results of one-way ANOVA showed that there were different of mean scores about participation in training process ($p < 0.001$) as shown in Table 3. This means that the perceptions of student by himself, his friend in the group and his facilitator were highly different.

Table 1: Characteristics of primary school students

Characteristics	No. of participants	
	Frequency	Percentage
Sex		
Male	14	35.00
Female	26	65.00
Class		
Primary school level 5th	20	50.00
Primary school level 6th	20	50.00
Total	40	100.00

Table 2: Knowledge and attitude achievement of pre- and post-test of primary school students

Experimental groups	Number	Mean±SD	t-values	Sig.
Pre-test knowledge	40	21.48±2.42	13.75	0.000**
Post-test knowledge	40	25.38±1.56		
Pre-test attitude	40	60.03±5.25	11.57	0.000**
Post-test attitude	40	64.43±4.41		
Pre-test training achievement	40	82.51±3.67	12.48	0.000**
Post-test training achievement	40	90.81±2.85		

**Significant level at 0.01

The Scheffe was used for analysis of each pair of Three Dimensional Evaluation (TDE) to determine the mean score differences of their participation in the training process of PAIC, it showed that self-evaluation and friend-evaluation were no statistical difference ($p > 0.05$) while self-evaluation and facilitator-evaluation were statistical difference ($p < 0.001$) including friend-evaluation and facilitator-evaluation were statistical difference ($p < 0.001$) as shown in Table 4. Four Dimensional Evaluation (FDE) was used for trainer role play evaluation it illustrated that trainer self-evaluation, audience evaluation, trainer friend-evaluation and expert trainer-evaluation of the selected 10 students with top 10 highest scores to be trainer. One-way ANOVA was used investigate the mean scores difference of four groups. The results of one-way ANOVA showed that there were different of mean scores about participation in training process ($p > 0.05$) as shown in Table 5. This implied that the opinions of four aspects of trainer self-evaluation, audience evaluation, trainer friend-evaluation and expert trainer-evaluation on the trainer role plays were not different therefore student trainer can perform as trainer prototype of YBEE.

During PAIC implemented, the 6 focus groups discussion were done, the overall results showed that there were at least 6 projects purposed including prevention of waste disposal into pond, collecting the solid waste from pond produce compost from wet waste prevention of community deforestation soil erosion

Table 3: Three dimensional evaluation of primary school students

Source of variation	Sum of square	df	Mean ²	F-value	Sig.
Between group	459.717	2	229.858	26.05	0.00**
Within group	1032.250	37	8.823	-	-
Total	1491.967	39	-	-	-

Table 4: Scheffe analysis of each pair comparisons

Each pair of variables	Mean diff (I-J)	SE	Sig.	95% CI	
				Lower bound	Upper bound
Self-evaluation and friend-evaluation	-0.15000	0.66418	0.975	-1.7968	1.4968
Self-evaluation and facilitator-evaluation	-4.22500*	0.66418	0.000**	-5.8718	-2.5782
Friend-evaluation and facilitator-evaluation	-4.07500*	0.66418	0.000**	-5.3904	-2.7596

**Significant level at 0.01

Table 5: Four dimensional evaluation of student trainers

Source of variation	Sum of square	df	Mean ²	F-value	Sig.
Between group	2.571	3	0.857	1.081	1.357
Within group	91.988	116	0.793	-	-
Total	94.559	119	-	-	-

*Significant level at 0.05

prevention with vetiver grass and vegetable cultivation without chemical use to be implemented according to the action plans on soil and water conservations. These were implemented at the school and community. The pilot project selected for implementing was three from six proposed projects. These were prevention of waste disposal into pond, collecting the solid waste from pond and vegetable cultivation without chemical use August, 27, 2011. After three projects were implemented, the students realized that all activities would be implied to explained, they accomplished the Buddhist principle and sufficiency economy concept. The PAMEI used for participatory assessment, participatory monitoring, participatory evaluation and participatory impact were approval for project implementation.

DISCUSSION

The results from PAIC training process, it was found that the principle of environmental education had variously similar purposes as PAIC. Especially, the principle of environmental education has goals and objectives to lead the people for changing their behaviors to accomplish the sustainable development. Moreover, this PAIC training was integrated with Buddhist principle and sufficiency economy concept. These principles and concepts are emphasizing on economizing and decreasing resource consumption. Therefore, it is a new dimension to make the true of everything that interrelated of both objective and subjective to accomplish for environmental conservation for primary school student of 5-6 levels. The training program was started by making student to understand why human is born in term of belief of Buddhist principle related to construct of prestige of Lord Buddha to explain his finding of cause and effect because there is nothing occurring alone.

This concept is consistent to the ecological concept which refer that everything is related together as chain connected all the time. Once one thing is destroyed, it might affect to the others. Therefore to effectively conserve the soil and water, students need to have mercy and kindness for giving and donating such as during training process, the participants pray give and drop the water for sharing merit for everything. This is a good way to create attitude that is very abstract. This attitude will be developed through learning from soil and water conservation with merit. Meanwhile, Buddhist principle and sufficiency economy concept will be integrated to soil and water conservation. Additionally, the meditation will be introduced for creating the wisdom by stimulating through participatory practicing with PAIC. The results of PAIC was congruent with the different researches of

Thiengkamol (2004, 2005a, b, 2010, 2011b, c). These will lead to be attitude as subjective as shown in Table 4 and 5. Moreover, FDE was used to evaluate the role plays as trainer of 10 students, It might be concluded that 10 student trainers can be trainer prototype of YBEE for training other students as shown in Table 5. The result of training, the trainer as environmental education prototype was pertinent to different studies of Thiengkamol (2004, 2005a, b, 2010, 2011b, c).

However, PAIC technique stimulates the students to participate for soil and water conservation. From using PAIC, the researcher revealed that the primary school students were able to express their abilities in the brain storming process to create 6 projects as followings:

- Prevention of waste disposal into pond
- Collecting the solid waste from pond
- Produce compost from wet waste
- Prevention of community deforestation
- Soil erosion prevention with vetiver grass
- Vegetable cultivation without chemical use

From 6 projects, the students had selected the 3 practical pilot projects with sufficient and low cost projects for implementation as followings:

- Prevention of waste disposal into pond
- Collecting the solid waste from pond
- Produce compost from wet waste

Subsequently, PAMEI technique was used for monitoring, evaluating and impact from project implementing with internal and external contexts in order to examine the input, process and output of these 3 projects. Moreover after the PAIC training finished. The finding revealed that before training, the students had less to moderate level of knowledge on soil and water conservation and Buddhist principle but they had knowledge on sufficiency economy concept at moderate level. At the beginning of training process, they scare to express themselves. But after using the integration of environmental education, Buddhist principle and sufficiency economy concept as guideline for practicing in soil and water conservation, PAIC was introduced to stimulate students to express and participate to gain more knowledge and more positive attitude better than before training with highly statistically significant ($p < 0.001$) as shown in Table 3.

Moreover, PAIC is able to use for encouraging the participant to be able to make a decision on the problem solving by practicing so it is similar to environmental education process that motivate the practice in decision

making of changing behavior in environmental quality conservation, particularly on soil and water issues. PAIC technique can be used for supporting and building the proper behavior of soil and water conservation. This is congruent to the guideline of Buddhist principle mentioned that when one receives the knowledge, one will have thinking process and when one has thinking, one will have question. If one has a good question, one will receive a good answer. It leads one to use the process of hearing, thinking, asking and writing (Su, Ji, Pu, Li). Therefore, they build the different projects for building the behavior of soil and water conservation or other issues because knowledge should come together with virtue. It is difficult to separate from each other and it is accordance with Buddhist principle and it is also consistent to the ecological concept that everything cannot stand alone but everything is depended on each other and it likes cause and effect.

CONCLUSION

The results of this research indicated that environmental education should be studied in all aspects of science, religion and society. At present, it emphasized to introduce in scientific and technological knowledge to solve the environmental problems but for introducing the religion and socialization through environmental education to change human behavior might be a successful way to accomplish environment and natural resources conservation better and faster than waiting for scientific and technological knowledge.

REFERENCES

- Buddhadasa, B., 1989. *Me and Mine*. Suny Press, Oxford, New York.
- CEDPA, 1999. *Advocacy Building Skills for NGO Leaders: The CEDPA Training Manual Series*. Vol. 9, CEDPA, Washington, DC., USA.
- Langly, A., 1988. The roles of formal strategic planning. *Long Range Plann.*, 21: 40-50.
- Punthasaen, A., 2007. *Institute of Management for rural and Society. Project of Synthesis of Research Work, Writing and Article About Self-S Article about Self Sufficiency Economy, Rural Reconstruction Movement under Royal Patronage and Office of Prime Minister, Budget of National Research Council of Thailand*, Bangkok.
- Sproull, N.L., 1995. *Handbook of Research Method: A Guide for Practitioners and Students in the Social Sciences*. 2nd Edn., Scarecrow Press, New Jersey, USA., ISBN: 9780810829831, Pages: 430.
- Srisupun, W., 1993. *Environmental Education*. Odeon Store Printing House, Bangkok, Thailand.
- Thiengkamol, N., 2004. *Development of a learning network model for energy conservation*. Ph.D. Thesis, Mahidol University, Thailand.
- Thiengkamol, N., 2005a. *Development of health cities network for mekong region*. Proceedings of the International Conference on Transborder Issues in the Grate Mekong Sub-Region, June 30-July 2, Ubol Ratchathani, Thailand.
- Thiengkamol, N., 2005b. *Strengthening community capability through the learning network model for energy conservation*. *J. Populat. Social Stud.*, Vol. 14, No. 1.
- Thiengkamol, N., 2008. *Globalization Administration*. Saengchai Publishing, Bangkok, Thailand.
- Thiengkamol, N., 2009. *Environment and Development Book 2 (Food Security)*. 1st Edn. Chulalongkorn University Press, Bangkok, Thailand.
- Thiengkamol, N., 2010. *Urban community development with food security management: A case of bang sue district in Bangkok*. *J. Assoc. Res.*, Vol. 15.
- Thiengkamol, N., 2011a. *Development of energy security management model for rural community through environmental education process*. Proceedings of the 1st Environment Asia International Conference on Environmental Supporting in Food and Energy Security: Crisis and Opportunity, March 22-25, Rama Garden Hotel, Bangkok, Thailand.
- Thiengkamol, N., 2011b. *Development of food security management model for undergraduate student mahasarakham university through environmental education process*. Proceedings of the 1st Environment Asia International Conference on Environmental Supporting in Food and Energy Security: Crisis and Opportunity, March 22-25, Rama Garden Hotel, Bangkok, Thailand.
- Thiengkamol, N., 2011c. *Environment and Development Book 1*. 4th Edn., Chulalongkorn University Press, Bangkok, Thailand.
- Thiengkamol, N., 2011d. *Holistically Integrative Research*. 2nd Edn., Chulalongkorn University Press, Bangkok, Thailand.
- Thongpan, P., 2002. *Buddhist Religion and Environment*. Kasetsart University, Bangkok, Thailand.
- UNESCO, 1978. *Intergovernmental conference on environmental education organized by UNESCO in co-operation with UNEP (Tbilisi, USSR, 14-16 October 1977)*. Final reports. UNESCO, Paris, France.
- Weiss, J.W., 1995. *Organizational Behavior and Change: Managing Diversity, Cross-Cultural Dynamics and Ethics*. West Publishing Co., Anaheim, CA., USA., ISBN-13: 9780314069290, Pages: 3750.
- Went-Dse-Zel, 2002. *Regional training course. Advanced Training of Trainer*, Grand Jomtien Palace Hotel, Pattaya City, Thailand.