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Promotion of a waste recycling bank in schools: A case study in a municipality school in Thailand

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Abstract

The purpose of this paper was to investigate and compare the knowledge, attitude, and participation of primary school students before and after waste recycling bank promoting. The sample group included 50 Grade5-6 students from Samakkhittaya municipality school, selected by the purposive sampling method. The research tools were a manual for waste recycling bank promoting in school, a waste recycling bank knowledge test, an attitude questionnaire, and a participatory questionnaire. The data were analyzed by using percentage, mean, standard deviation and paired t-test. The findings were that mean score of the waste recycling bank knowledge after the promotion was significantly higher than before the promotion at the significance index of .05. In terms of attitude, the students was first uncertain about the effectiveness of the waste recycling bank before the promotion but after the promotion, they agreed with the idea of waste recycling bank. When comparing the mean score of the attitude before and after the promotion, it was found that the students had more positive attitude towards the waste recycling bank after the promotion with the significance index of .05. For the participation after the promotion, most students were willing to participate in the waste recycling bank activities.

Keywords: Waste recycling bank; knowledge; attitude; participation.

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1. Introduction

It is currently estimated that about 70,000 tons of garbage is disposed per day in Thailand. Waste management is controlled by local administration offices, of which there are 7,853 dispersed throughout the country. These offices can deal hygienically with only 22,000 tons of waste per day (around 32 percent of all waste), meaning the majority of waste, around 68 percent, is unduly managed. Thailand has set a strategy called The Roadmap for Waste and Dangerous Garbage Disposal. This roadmap prescribes that; there is no more open dumping, garbage classification from home, and holistic waste management aimed at turning garbage into different energy forms (Half Year Pollution Report in Thailand, 2015).

Currently, there are 2,450 public and private waste recycling sites in Thailand. However, it is reported that only 480 sites are able to effectively manage their waste. The inadequacy of waste management leads to the creation of area-based waste management systems to activate local awareness in the waste decomposition. Private sections are encouraged to take part in the waste operation especially in areas requiring huge sums of investment such as in the local administrations with large territories and those situated on an island (Half Year Pollution Report in Thailand, 2015). What has been deemed fundamental for successful waste management is creating positive disposal habits among the younger generation. It is observed more often in Thai schools that Thai students have negative habits when it comes to discarding garbage. The lessons have been created and accordingly, schools should be exploited as training stations for young people to discard clumsy disposal habits. More specifically, the students should be trained to minimize garbage production, classifying and recycling garbage (Singseewo & Tritip, 2016). The human-produced factor contributing to the outbreaks of environmental problems persist due to inadequate knowledge on environmental management and lack of awareness on environmental management (Veeravatnanond, 2012) and the last study about the promotion of solid waste management in school by application of environmental education process, it was found that the students had higher environmental literacy, awareness and participation after learning through the solid-waste management curriculum (Singseewo & Tritip, 2016).

In a case study involving the promotion of a waste recycling bank in Ban Huanong School, Kantarawichai District, it was observed that the school's project was able to generate holistic garbage management practices while successfully attaining social participation in waste diminishment. The villagers were reported to have high levels of satisfaction on the project. They wanted the projects to be consistent. Furthermore, the local people took active parts in the school waste management while learning to effectively classify home-made waste prior to discarding it. Waste management in the school waste recycling bank was observed to generate revenue for the villagers while also being able to effectively reduce the amount of waste produced from homes. It has been seen from this project that social participation is key to successful waste management (Yungyuen, 2013). Another waste management project showcase is the waste recycling bank in Ban Kumnangruay School, Warinshumrab District, Ubonratchathani province. It was observed that the key factor to the success of waste management in this school was community collaboration. The school's success of the waste recycling bank was well received by its surrounding communities (Juntuma, 2016). Upon their visit to SamakeeWittaya Municipality School, in Muang District, Mahasarakham Province, the researchers observed unduly disposing habits among its students. There was no garbage classification in the school and the overall scenic beauty of the school was diminished by the poor disposal habits. The school was well-aware of the problem and henceforth agreed to establish a waste management scheme aiming at

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triggering student participation in waste reduction while attaining positive attitude and proper knowledge on waste operation.

2. Objective of the Research

- To investigate the existing level of knowledge and attitude of the students in SamakeeWittaya School before and after the promotion of the school's waste recycling bank.
- To evaluate the students' participation in waste operation in the school after the application of the waste recycling bank scheme.

3. Research Methodology

This research was conducted at SamakeeWittaya School in Muang District, Mahasarakham Province, Thailand.

3.1. Population and sample group

The population were 387 students in SamakeeWittaya School in Muang District, Mahasarakham Province. Fifty of the fifth and the sixth graders were selected as the research samples via the purposive sampling method.

3.2. Research variables

Independent variable was the promotion of the waste recycling bank in the school. Dependent variables were;

- Knowledge of garbage recycling in the school
- Attitude toward waste recycling in the school
- Participation in waste recycling in the school

4. Data collection

The research employed in three working phases.

Phase 1: Exploring the existing waste problems in the school

- 1) Making contact with the school and gaining permission for a school visit.
- 2) Interviewing the teachers to gain more insight into the waste problems of the school.

Phase 2: Designing media for the promotion of waste recycling bank

Media used for the dissemination of bank related knowledge were vinyl banners and the waste recycle manual. Below are more specific working steps under this phase.

- (1) Studying related literature about creating a waste recycle manual and making vinyl banners.
- (2) Studying the objectives and the content relating to waste recycling in the school.
- (3) Making an outline of the waste recycle promotion content and consulting with experts for content amendment.

- (4) Producing the waste recycling manual to be used at SamakeeWittaya School.

Phase 3: Knowledge dissemination and evaluation

Conducting activities evaluating and working to disseminate knowledge on waste recycling in the school based on the environmental education system. These activities involved;

1) Evaluating the students' knowledge, attitude and participation in waste recycling processes in the school before the project was promoted.

2) Organizing activities to promote the waste recycling bank's activities and evaluating student knowledge, attitude, and participation after the promotion of the project.

5. Research Results

After promoting the working system of the waste recycling bank in SamakeeWittaya School, the following results were observed.

5.1. Results involving the students' knowledge and attitude

1) Knowledge Level: Before the promotion of the recycling bank's activities, the students were

Observed to have a Fair level of knowledge (\bar{x} = 11.76). After the project, student knowledge was gauged at a Good level (\bar{x} = 15.88). This yields to the conclusion that the knowledge on waste recycling in the school tested after the application of the campaign was higher than the knowledge obtained before the promotion of the recycling scheme with a significance level of .05.

2) Attitude Level: The overall attitude test score before the promotion of the recycling bank

Project was observed at an Uncertain Level (\bar{x} = 3.37). However, after the promotional scheme, the score was reported at an Agreeable Level (\bar{x} = 4.17). These figures denote that the promotion of the waste recycling bank in the school based on the environmental education system can increase student attitude with the significance at the level of .05.

5.2. Results regarding student participation with the program

After the promotion of the waste recycling bank in the school, student participation was observed with the following results. The overall participation was reported at a High Level (\bar{x} = 4.07). An itemized investigation showed that the Sharing of Benefits had the highest participation score, which was gauged at a High level (\bar{x} = 4.18), followed by the planning and Organizing participation score. The item with the lowest participation score was on Decision Making (\bar{x} = 3.97).

6. Discussion

The findings related to student knowledge and attitude tested both before and after the promotion of the recycling bank project in the school lead to the following areas of discussion.

1) The observable knowledge increase on waste recycling activities. It was remarkable that the knowledge level score tested after the application of the promotional scheme of the recycling bank in the target school was higher than the score tested before the program was conducted. More specifically, the knowledge score increased from "Fair" in the pre-test to "Good" in the post-test. The increasing rate of the score was found to be significant, at the level of .05. The factors contributing to the knowledge score increase should be in light of the application of teaching environmental studies material, the promotional manual, and the knowledge test bulletin. AdisakSingseewo (2011a, 2011b) explained that environmental studies include processes that equip people with knowledge and awareness about environmental issues and environmental literacy is also related to environmental education processes that place an emphasis on enabling individuals to realize the value of natural resources and environments and to clearly understand the relationship between humans and environments. These are the foundation to improving attitude, awareness, decision skills in environmental issues, environmental ethics, and participation in the conservation and preservation of environments (Singseewo, 2011a) and these findings, prove that the environmental education process contributes to learning for a promotion of a waste recycling bank in schools (Singseewo & Tritip, 2016). With this regard, Srisantisuk 1993) remarked that all human beings are entwined with nature and society. Therefore, it is necessary for all to know the remedies for social and environmental problems.

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In doing so, one cannot deny the need to trace problems to the roots to find solutions. A study by Lertthaisong (2015) applied a collaborative method for waste management in Sagonakorn hospital. This research was aimed to investigate the participation level in waste management of the 320-person hospital staff. It was observed that the hospital staff had high levels of participation after having been informed about the dangers of medical and clinical wastes. A study led by Phoonphol (2014) aimed to create role-models to encourage engaged social participation in waste management in Samakeetum Community, Dankhunthod District, Nakhonratchasima. The sample group consisted of 56 community leaders. Based on the purposive sampling method, 30 of the leaders from Dankhoonthod sub-district were classified in an experimental group while 26 others who were from Nonthai Sub-district were placed in a comparison group. The research tools were evaluation forms to test the levels of knowledge, practice, and participation of the students. These forms were developed based on the Nine steps for waste management method initiated by the Ministry Natural Resources and Environment. A workshop was conducted for the participants, which aimed to create a group of role-models for waste management. It was observed that the workshop participants' knowledge scores, practice, and participation on waste management after the promotion of the program was higher than the scores tested before the program with a significance level of 0.05.

2) Changing attitude to waste recycling bank before and after the promotion the recycling bank. The average attitude score tested before the promotion of the program was at an uncertain level, but the number changed to an Agreeable Level after the recycling bank promoting activities. This change in attitude was found to be significant, at the level of .05. The environmental attitudes of households should be examined in order to understand their behavior and how to encourage the waste separation and recycle activities and knowledge of people on environment in general and waste management in particular has long been recognized among the most crucial factors influencing household recycling. (Nixon & Sophores, 2009) The change in attitude should be attributed to the merit of the practical recycling bank promotion plan. Wongchantra (2010) suggested that environmental study bestows learners with awareness, positive attitude and values on environmental preservation and Sainak (2003) suggests that: 1) Attitude is developed after being exposed to direct learning experience, 2) Attitude portends individual patterns of behavior, 3) Attitude can be spread both from and to people, 4) Attitude is changeable after being exposed to new learning experiences. A study by Nateewattana and Tiantaworn (2017) investigated how knowledge and attitude contribute to the participation in waste management of the people in Maega Village in Prayao Province. The study was done in order to evaluate how individuals rectify the unduly disposal behaviors in the areas around Prayao University. The sample was 486 people living in 18 neighboring villages near the campus area. It was observed that the community had high understanding levels about the 5Rs Waste Reduction Method: reduce, reuse, recycle, repair and refusal of garbage. The villagers also had high levels of attitude and practice based on the 5Rs method. Yodsoong (2015) investigated the waste management behaviors of the people in BanGraud Municipality to test their knowledge, attitude and practice levels relating to waste operation.

Their samples were 390 villagers who were recruited via Yamane sampling method. Around 78.72% of the villagers were found to have high levels of knowledge on waste management, while 58.72% of the sample group was reported to have high level of attitude on waste management. About 90.77% of the villagers were reported to have a Moderate level of waste management practice.

3) The High Level Participation in Waste Management after attending the program. The samples were observed to have high levels of waste management participation after the program was introduced. The three activities with the highest participation scores were Sharing Benefit, Planning, and implementing, respectively. Similar findings were observed in a study by Singseewo (2011b).who found that environmental study is a teaching process that values the relationship between humans and their environments. The value that humans place on the environment drives responsible behaviors toward environmental nourishment. Piyasakulkiart (2016) investigated the level of public participation and the related factors contributing to the participation in waste management in Takae sub-district in Loburi. The research samples were 374 villagers who were recruited via Yamane sampling method. Questionnaires were used to attain information from the participants. It was observed that public

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participation was rated at a High Level. In an itemized investigation, it was found that “garbage classification” and “reuse of garbage” were the two practices with the highest scores. The activity with the lowest participation score was attempting to reduce the production of garbage. Kaewhous (2014) conducted a study to investigate the level of public participation in waste management in Nongo Sub-district, Mahasarakham province. The result showed that 93% of the 332 participating families had a moderate participation level in waste management. Most of the participants reported to be cooperative in classifying garbage and garbage disposal. The application of environmental study and waste management in schools provides direct learning to the students and it advocates for higher levels of participation. The related research shown above reveals that using waste management manuals contributes to the advancement of student knowledge, attitude, and participation in waste management in their respective schools.

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