

## A Model of Community Waste Management in Maha Sarakham Municipality

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### ABSTRACT

The research aimed to 1) identify factors affecting community waste management in Maha Sarakham Municipality, 2) design a model of community waste management, and 3) implement and evaluate the model. The research was conducted in 3 phases. Phase I was factor analysis, which was a quantitative study aiming to determine factors affecting community waste management; the sample for this phase consisted of 396 residents from 30 communities of Maha Sarakham Municipality selected through Proportional Stratified Random Sampling; and data for this study were collected by using a questionnaire and analyzed by using Multiple Linear Regression Analysis to determine factors affecting community waste management behavior. Phase II was constructing a model of community waste management in Maha Sarakham Municipality by utilizing the factors affecting community waste management behavior to construct a community waste management model by using Focus Group Discussion and Brainstorming; and the model was then evaluated by three experts to determine its appropriateness. Phase III was implementation of the community waste management model and comparison of the pre-and post- experiment results, using Multivariate Analysis of Covariance (MANCOVA) to test the hypothesis. Findings of the study are as follows : 1) Regarding the factors, the results reveal the following five major factors affecting the community waste management behavior in Maha Sarakham Municipality : knowledge, age, income, attitude and participation. 2) The constructed community waste management model consisted of six activities : training, field study, establishing a waste management center, waste management campaigns, a big cleaning day project and workshop on organic fertilizer. 3) The implementation results indicated that the knowledge, attitude and participation of the control group before and after implementation were not significantly different; but those of the experimental group were significantly different at the .05 level.

**Keywords :** Community ; Waste Management ; Maha Sarakham Municipality

## Introduction

The national development plan of Thailand emphasizes economic development. As a result, economy, industry and technology have improved rapidly, and many natural resources have been used for various purposes of the development fields : economic and national development, life quality development including infrastructure development . Due to the inefficient and inappropriate use of the natural resources cause many environmental problems: water pollution, air pollution, soil pollution, and waste. The pollution Control Department (2008) claims that the amount of waste has increased greatly and rapidly in Thailand.

Fortunately, the government of Thailand, government and private sectors including Thai people are aware of the waste problems and environmental problems, and they work together to find the appropriate and efficient solutions for the problems. According to the recent report on the waste disposal of the local administrative organizations throughout Thailand in 2000, the findings showed that the efficient waste disposal of 54 local administrative organizations of 94 organizations assessed by the Pollution Control Department was only at a moderate level (The Pollution Control Department. 2000 : 4).

Maha Sarakham provincial municipality currently has encountered the problems of waste management: quantity, smell, dust and smoke of burning garbage. The problems have a serious impact on the life quality of people in Maha Sarakham provincial municipality.

Additionally, the recent study showed that most of people in Maha Sarakham provincial municipality have not known efficient garbage disposal in community. The author is aware of the environmental problems and realizes the benefits of public participation in solving the waste problems in communities. Therefore, he has conducted the research on an efficient model of waste disposal in Maha Sarakham provincial municipality.

## Objectives:

1. To identify factors affecting community waste disposal in Maha Sarakham provincial municipality
2. To design a model of waste Management in Maha Sarakham municipality.
3. To evaluate the model of waste disposal

## Hypotheses

1. Personal factors, knowledge, attitude and participation affect the waste disposal in Maha Sarakham provincial municipality.
2. Knowledge, attitude and behavior of the research participants improve after using the model of waste disposal.

## Scope

Phase 1 : The quantitative research was employed to identify factors affecting the waste disposal in Maha Sarakham provincial municipality.

Phase 2 : The qualitative research was used to design a model of waste Management in Maha Sarakham provincial municipality

Phase 3 : The model was implemented to the experimental group in Maha Sarakham provincial municipality and evaluated.

## Research Methodology

### Phase 1 : Factor analysis

1. Population was 40,294 people from 33 communities in Maha Sarakham provincial municipality. The sample was 396 people from 33 communities in Maha Sarakham Provincial Municipality. They were selected by the proportional stratified random sampling method.

2. The research instrument was questionnaire.

3. The statistics used for data analysis were frequency, percentage, mean, standard deviation, Pearson product moment correlation coefficient and linear regression analysis.

### Phase 2 : Model Design

1. The target population was 20 participants: experts in garbage management, academicians, and people in the communities. They were selected by the purposive random sampling method.

2. The research instrument was a note taking form, video records.

3. The data was collected through focus group and brain storming methods. The author participated and observed the activities, and he took note and had video record.

4. The data of focus group and brain storming was used to design a model of the waste disposal.

### Phase 3 : Model Implementation and Evaluation

1. The research participants were divided into two groups: an experimental group and control group. The experimental group was 40 participants from Khruewal community, and the control group was 40 people from Posri Community. They were selected by the purposive random sampling method. 40

#### 2. Research variables:

2.1 Independent variables was a model of the waste disposal

2.2 Dependent variables were knowledge, attitude, participation and behavior of the waste disposal.

3. The research instrument was questionnaires, Record, .

4. The quasi experimental design and two-group pretest-posttest design were used for the research.

5. Multivariate Analysis of Covariance (MANCOVA ) was employed for data analysis and comparison of the results before and after using the model.

## Results

1. The research findings indicated that three major factors affecting the waste Management in Maha Sarakham municipality consisted of knowledge, attitude and participation.

2. The model of community waste Management included five activities : field study, establishment of waste management

center, community waste disposal campaign, a big cleaning day project and workshop on organic fertilizer.

3. Lastly, the findings indicated that knowledge and behaviors of waste disposal of the experimental group significantly improved at the .05 level in table 1

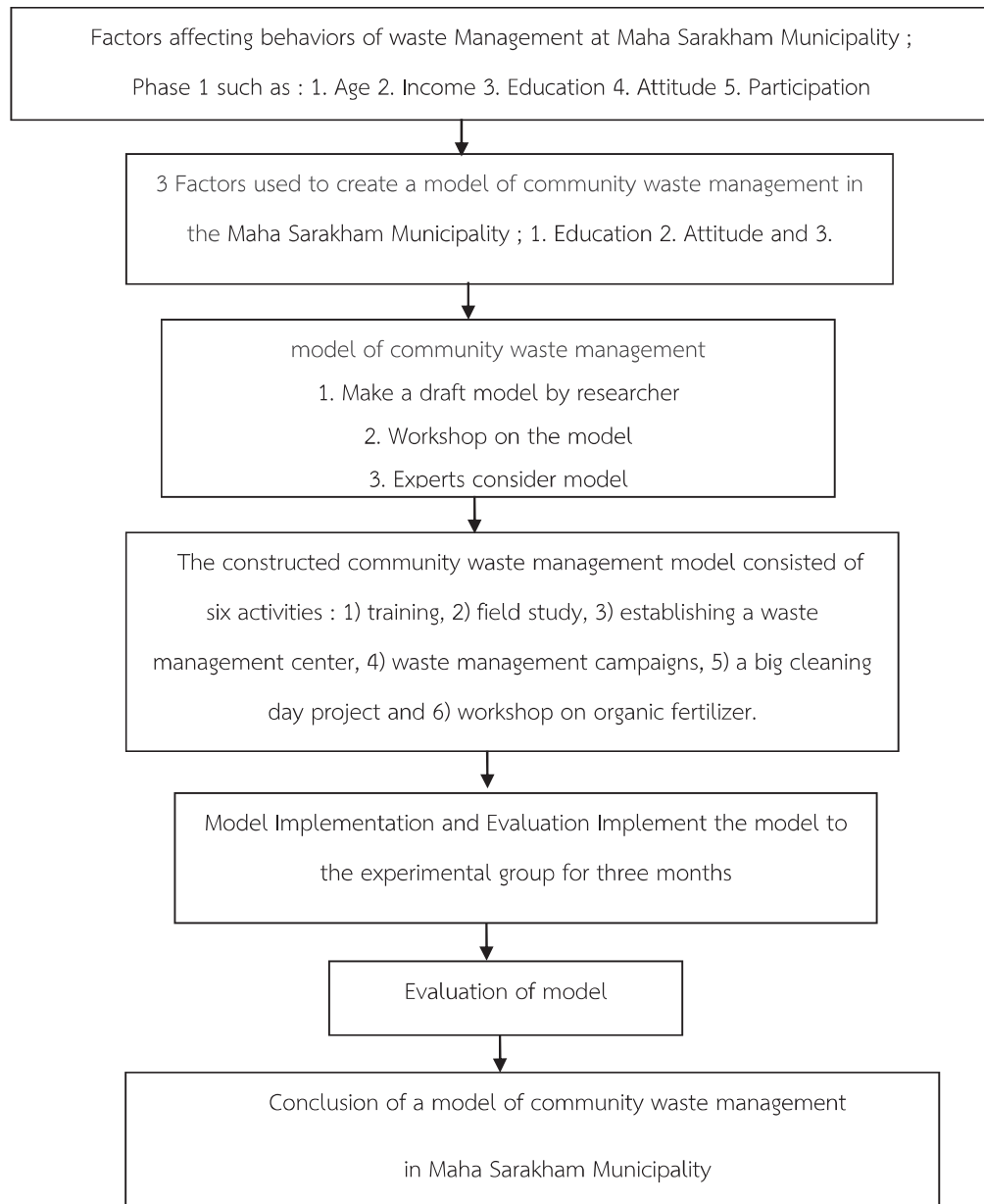
Table 1 Results of Knowledge, Attitude, Participation of the waste Management between the experimental group and the controlled group

Factors	Control Group				t	p	Experimental Group				t	p
	$\bar{X}$	S.D.	$\bar{X}$	S.D.			$\bar{X}$	S.D.	$\bar{X}$	S.D.		
knowledge	5.83	1.38	6.28	1.43	1.26	0.22	6.10	1.43	8.60	1.63	7.71	0.00*
Attitude	3.66	0.83	3.66	0.86	0.03	0.98	3.69	0.73	4.20	0.60	3.35	0.00*
Participation	3.12	0.72	3.35	0.79	1.31	0.20	2.92	0.56	4.18	0.73	10.00	0.00*

\* .05 level of the statistical significance

The implementation results indicated that the knowledge, attitude and participation of the control group before and after implementation were not significantly different; but those of the experimental group were significantly different at the .05 level.

Figure 1 Research Framework of Community Waste Management in the Maha Sarakham Municipality.



## Discussion

The paper will mainly discuss factor analysis, a model of waste disposal and model implementation and evaluation as follows.

1. Knowledge affects positively the behaviors of waste disposal. Reeder (1974 : 39–53) states that knowledge affects significantly the behaviors of people of waste management. Suphasak Mueangprom (2008 : 112) asserts that people who trained waste management courses always have efficient and appropriate behavior of waste management.

2. Attitude affects positively the behaviors of waste disposal. Suwat Letsomlad (2002 : 82) states that knowledge of waste management affects the attitudes of people towards the waste disposal in communities. And the attitude also affects people's behaviors of waste disposal.

3. Participation affects positively the behaviors of waste disposal. Yungyuth Thernkhong (2007 : 135-138). claims that getting information and news of waste management including knowledge affect the participation of people in waste disposal in communities. Chaiyuth Yothamart (2000 : 66) asserts that the public participation are related positively to the behaviors of waste management.

4. The findings indicate that the knowledge, attitude, participation and behavior of the experimental group significantly improved more than those of the control group at the .05 level. The results may be caused by the appropriate and efficient development process and activities. Boworn Moonsaku (2006: 84-89)

states that the public participation is an important strategy for garbage management. Jongrak Wongsing (2006 :105-111) asserts that participation skill development affects positively behavior of people for waste disposal.

## Suggestions

1. All related organizations should promote news, knowledge of waste management to people in the communities widely and continuously.

2. The commitment of people in communities to the waste disposal should be established regularly.

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