



## CHAPTER III

### RESEARCH METHODOLOGY

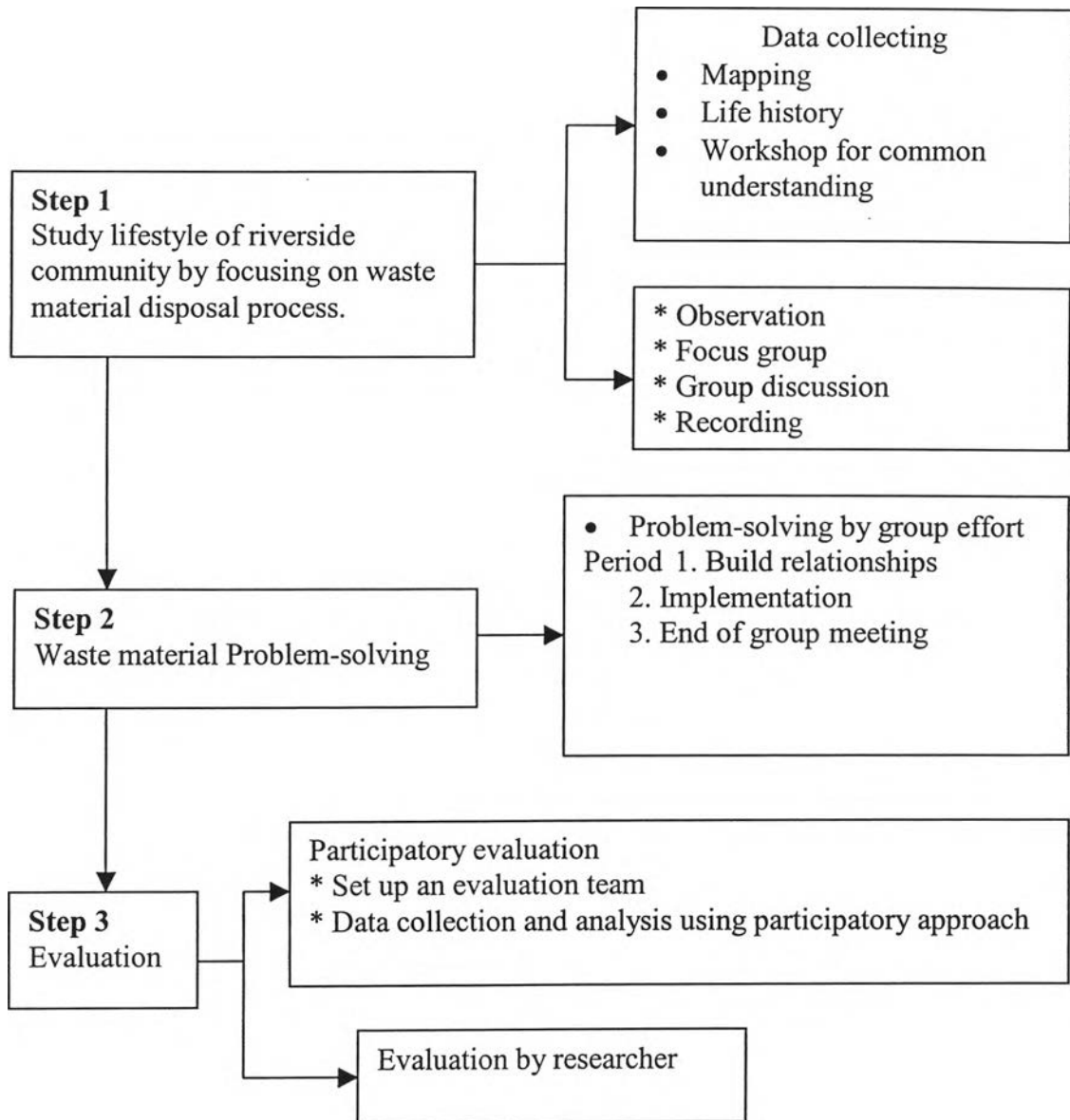
This study applied participatory approach to develop a continual learning process for the stakeholders of the community with assistance and guidance from the researcher. Forums among the villagers would be frequently organized in each phase of the research activity in order to promote the expression of opinions and the exchange of knowledge among the villagers and the researcher, leading to a systematic finding of solutions to identified problems. The community participation approach enabled the villagers to learn by themselves and to improve their capability in solving community problems based upon their own perspectives, habits, needs, and lifestyles (Denzin & Lincon, 1994).

The waste materials disposal process of communities living along the bank of the Yom River would be thoroughly examined through sociological theories; e.g. down at the grassroots level to find out the lifestyle factors which were related to the daily waste generation and disposal activities. This study allowed the villagers together with the researcher to discover the cause of the problems by using systematic learning methods. New bodies of knowledge would emerge from the inspection of patterns and behaviors of the community in regards to waste disposal. They would then use these new discoveries to help develop a change in the ways waste products are to be handled using their combined intellectual capabilities

This study consisted of three phases, which took place in a continuous sequence.. It started with an investigation of the riverside people's behavior in regards to waste disposal by applying the Buddhist teachings of the Four Noble Truths (Ariyasacca) and the Right Understanding (Samma-ditthi) to investigate the cause of problems. These methods would enable the villagers as well as the researcher to understand, and realize the real cause of waste disposal problems in relation to their

lifestyle and allowed them to investigate and analyzed the origin of these problems. Using this as a guide to find the solutions to the problems by deriving them from local wisdom, life experiences and systematic brainstorming process. This study linked the cause of the problems which had been identified earlier in the study to formulate solutions appropriate to the lifestyles of the people and the needs of the community mainly based upon the “Samliam Kayern Pookuo” (The triangle the can move mountains) approach. After obtaining the solutions, the villagers would then develops processes and mechanisms for participatory evaluation with the assistance of the researcher (Ayers, 1987). The evaluation assessed whether the solutions recommended for waste materials disposal problems met the need of community or not. Fortunately,, the result was effective and beneficial to the community.

The researcher conducted an assessment of the whole process to check if it effectively served the original aim or purpose. Then, results in each phase were logically integrated and brought to a conclusion which could answer questions of this study as well as prove whether the solution for the waste disposal problem made by the people was implementable and successful or not (See Figure 3.1: Research Structure).



**Figure 3.1:** Research Structure

According to Figure 3.1, the details of this study were to be presented as follows;

### **3.1 Location for the Study**

The researcher chose Tupperng community of Srisamrong, Sukhothai province as the location to study because of the following reasons:

1. The community lives next to the Yom River and currently faces the waste disposal problem which is representative of the issue under study. The quality of the water along that section of the Yom River is below accepted scientific standards and people are eager and most enthusiastic to make a change by participating in the study.
2. People in the community had prior experience in participating in many government initiated sanitation programs.
3. Volunteers, villagers, both appointed and non-appointed community leaders, government officials are united and enthusiastic in developing their community which is a key ingredient in the success of a participatory community development.

### **3.2 Research Team**

Two hundred and forty households comprised of the population of this community. Forty of these individuals which can be seen as stakeholders were selected to form the research team. This research team members were to be referred to as the 40 leaders in this report and could be classified as follows:

- People in the riverside community who had prior experience in participating in sanitation programs.
- Members of informal community organizations; i.e., public health volunteers, agricultural volunteers, housewife group, youth group and the senior citizen group.
- Informal community leaders; i.e., monks and leaders in the village.
- Members of formal community organizations; i.e., sub-district administrative organizations.
- Local government officials; i.e., Deputy Chief of the sub-district Administrative Office, health workers, teachers, developers and sub-district agricultural officials.

### **3.3 Methodology**

The study mainly applied the qualitative approach and participations from the villagers were needed in all three phases from the beginning to end. The followings are details of each phase;

#### **Study Component 1:**

##### **3.3.1 Studying lifestyle of riverside people concentrating on waste disposal practices.**

There are also a group of people selected from the community, these people had lived in the community most of their adult life and knew very well about what is going on in the community in terms of lifestyles, behaviors and practices of the population.

This study encouraged the villagers to go through the learning process together in a democratic way as they would be the one to utilize the knowledge acquired from the study to improve and make a positive change in their own community (Masten, 2000). This study differed from other previous studies mainly because it changed the role of the study subjects from being passive and nonchalant into becoming actively involved and fully engaged in the research. This study attempted to consolidate together the knowledge base of all the participant, namely, the public group members, the professionals, the researcher and the local villagers in order to derive new bodies of knowledge in a systematic manner that would lead to finding the best route to take in addressing the community waste disposal problem

The lifestyle referred to the daily behavior of people. It related to the physical context, social and local culture as well as the philosophy of living (Bunpanya, 1999). One important aspect in finding the right solution to the problem was to step back and understand the culture, background, behavior, attitudes as well as other social practices of the community in order to understand why the people do things the way they did. And nobody could do the investigation better than the community members doing it themselves. It was somewhat of a self discovery, a soul searching process that nobody

ever took any time to think about it before and as a result, they were quite astonished at what they found out. The overall exercise made them get a clearer picture of all the causes of the problems and its implications.

#### **3.3.1.1 Purpose of studying the lifestyles of people living along the riverside**

The researcher guided the stakeholders in such a way that led these people turn into becoming researchers themselves (Heron & Reason, 1997) . They were now capable of sorting things out in a systematic way. They could collect data, record the information, group their ideas based on relationships and categorized them. This eventually led them to obtaining the big picture pertaining to their own lifestyles, consumption behavior, waste generation and disposal practices as well as their own values on wastes issues. With this background understandings, the ability to arrive at a resolution would be made much easier and achievable.

#### **3.3.1.2 Expected outcome**

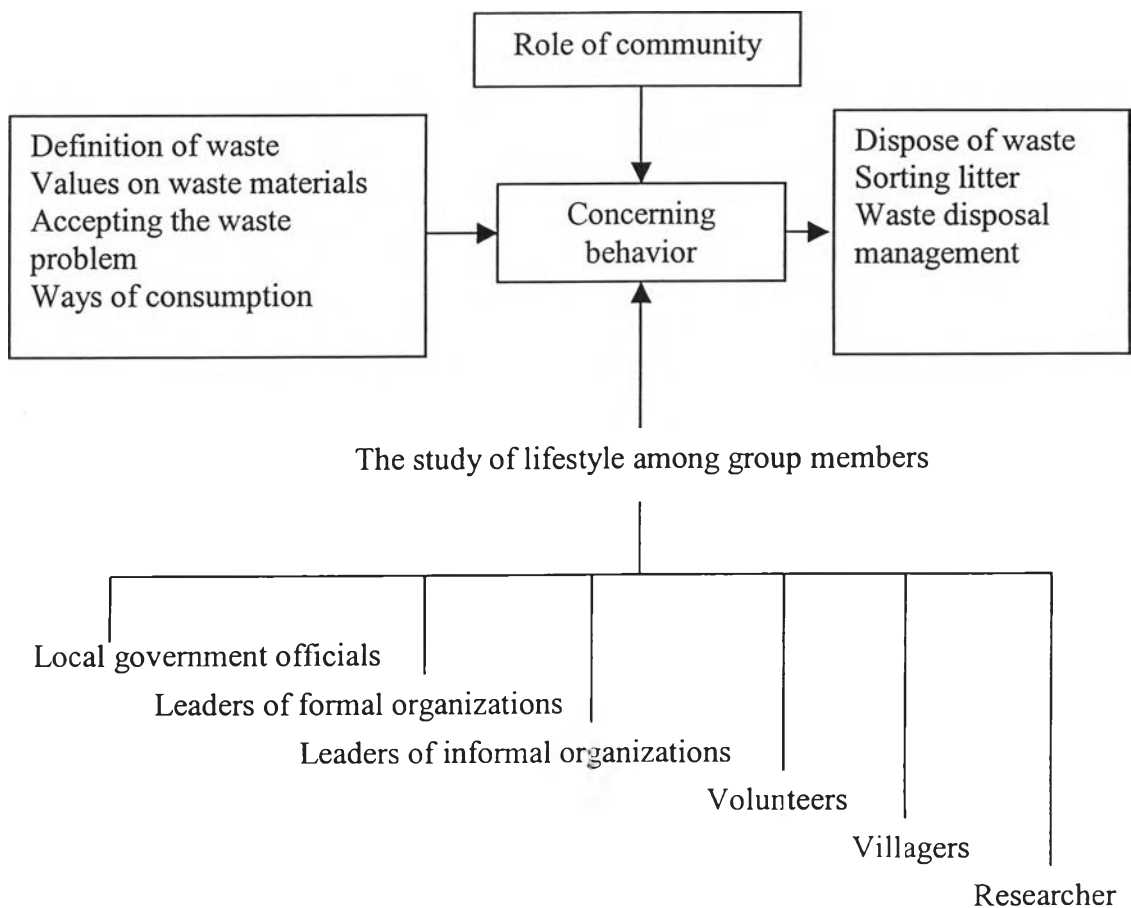
The outcome of this “soul searching’ exercise was one of the most valuable aspect of this research. Once the stakeholders came to a uniform understanding of the cause of their respective problems, they all at that particular juncture were operating at the same level or plane of thought and ready to start their journey further to find solutions to the waste disposal problems being faced by the community. In other word, they all had the “facts and figures” in their hands and a clear knowledge of where these information came from and the rationale of how it was being derived. The next step was to do the detailed analysis and solution seeking.

#### **3.3.1.3 Procedures of the study**

The first thing the researcher had to do was to conduct an area inspection to identify potential research team members and tried to recruit them to participate in the research program voluntarily by clearly explaining the objectives of the study and emphasizing the benefits to the community. It was most important to provide people in the community an opportunity to participate in the process of this study so that they could fully understand it and could provide cooperation in solving the waste disposal problems (Maguire, 1987).

In this study, the researcher first classified members of the community as being from an organization and from a non-organization. Then, the researcher specifically recruited these people identified earlier as potential candidates to join in and take the role referred to in this report as the “40 leaders” of the community. The selection criteria was based upon the level of eagerness of the person to make sacrifices to the community, their current role and respected status in the community, their in depth knowledge of the community, their command of local wisdom as well as to come up with a full range of diversity among the group members to make sure that every section of the community was well and equally represented.

The study of their lifestyle was presented in the Figure 3.2.



**Figure 3.2:** The Research Structure of Lifestyle of People Living along the riverbank

The researcher and the stakeholders needed to have common understanding of this study before collecting data. A workshop was organized to familiarize and to prepare them for this study. All researchers participating were trained to have a common understanding over the objectives of this study as well as the activities and roles of their co-researchers as follow.

#### 3.3.1.3.1 Workshop for common initial understanding

The researcher organized a workshop to create a common initial understanding in the process and to build up research skills for the selected 40 leaders. The representative villagers were informed about the process and concepts of the research program and how it was supposed to benefit the community. They were also reassured that they will eventually arrive at a point where they would possess the skills to do research, to systematically develop concepts and solutions to tackle problems in their community and to be able to resolve these problems by themselves without any complication (Hills, 2000).

After the introductory workshop, successive meeting were held on a continuous basis among the participants in order to allow exchanges of ideas, to revise the findings and to discuss about the assumptions, to reach a consensus on the various issues being discussed and to finally lay out the plans for moving forward (Panthip Rammasoot, 1997). In every phase of the meetings, discussions were always encouraged as this would not only beneficial to the stakeholders themselves but also to the villagers who would obtain the knowledge and skills transferred from the stakeholders.

#### 3.3.1.3.2 Participatory mapping.

The researcher and stakeholders worked together to develop what was termed as participatory mapping. To obtain a comprehensive set of information to adequately create these maps, those responsible in the mapping process must come from a varied combination in terms of gender, social status, age, etc. because differences in their perspectives were needed. (Miles, 1984) The researcher selected 6-10 people to form a group for mapping developers based upon the above seasonings. Three types of maps were being produced;



- Social map.

A “social map” of people living by the riverside was recorded, i.e. family relations, status and participatory activities using the guideline for questioning and observation shown in Appendix 1.. The researcher and the stakeholders visited each family at their houses to talk and ask questions. The conversation was informal, starting with questions about their daily life and relationship to other members. The outcome of this informal talk and observation of their behavior assisted the researcher and stakeholders to analyze their social structure (Whyte & William, 1984). It was essential for the research team to learn about their relationships and conflicts among all groups in the community as quick as possible since it affected how the research team could appropriately interact with them. The researcher made visits to talk to as many households as possible to cover the whole community and at the same time established a relationship with these people and invited them to participate in this study.

- Physical map.

The second type of map is called the “Physical Map’ where physical characteristics of the community was detailed; for example, location of the community, access roads to the community and household locations, etc. Physical mapping allowed the researcher to visualize physical entities such as organizations in the community, markets, shops, temples, houses, schools and garbage and wastewater dumping sites to determine their proximities to one another.

- Demographic map.

Demographic mapping was an instrument to survey households. It recorded the number of houses, the house numbers, names of the head of the households, the number of children, the ages of children, etc. Demographic mapping enabled us to know the physical character and the relationship of people in the community in order to be ready for the research to proceed (Supany Chantavanich, 1998). During the mapping process, the chance to talk to many individuals to learn more about their lives turned out to be very important data for the research activity. In particular, the information about the participants themselves was considered valuable information for it represented a wide spectrum of the community itself. The participants were requested to come up with

their respective biography to be included in the study as explained in the following section.

#### 3.3.1.3.3 Developing life history of participants

The researcher and the research team developed and studied the detailed life history of each of the participants. Their basic information was recorded through the descriptive ethnography approach with the guidelines shown in Appendix 2. The information was collected on their thoughts and opinions (Erikson, 1984) leading to an understanding of their actions. It could also become a significant information resource where the researcher could trace back later when analyzing and interpreting the data obtained from the participants. This information would look like a large number of independent variables but in fact could be linked up to determine their respective dependencies later on, such examples are the individual behaviors versus the group behaviors. (Miles, 1984) The researcher used this information as a reference that must be constantly studied and revised in order to understand the root cause of the participants' behavior.

#### 3.3.1.4 Data collection

To smoothly conduct this study in a systematic manner, the researcher developed an activity plan as follows:

##### 3.3.1.4.1 Observation

Systematically observing the lifestyles of people living by the riverside was to keep careful tab on their behavior in order to analyze or find the relationship between the such behaviors and others (Spradley, 1980) especially in the observation of waste disposal practices. The observation was classified into two types; participatory and non-participatory. The research team conducted observations by spending time with people in the community long enough to understand their attitudes, thoughts as well as their practices in area that the researcher was interested in studying (Supang Chantavanich, 1998). This way, the researcher could obtain accurate information since the villagers were not aware that they were being observed and therefore went about doing their business as usual. The research team recorded their behaviors based on these

observations. Further questioning could be made if an observation was inadequate or unclear, particularly with the rationality of certain actions (Rist, 1997). Finally, the outcome was presented in the group discussion.

The researcher did, however, use non-participatory observations to obtain more complete information as well. The non-participatory observation enabled the researcher to observe certain behaviors; for example, the disposing of garbage into the river where typically such practices were not done openly for everyone to see. The non-participatory observation guidelines are depicted in Appendix 3. As the scope of observation was wide, in order to avoid confusion and make the observation more systematized and focused, the researcher defined the frame of observation as follows;

- **Acts**; refer to an observation of lifestyle, activities in daily life and behaviors of the riverside people. It also includes eating habits, disposing food and others.
- **Activities**; refer to an observation of actions or behaviors which have systematic process and have been practiced continuously that they become a way of life; for example, planting, disposing of chemical containers and garbage, organizing a merit making affair.
- **Meaning**; refers to giving meaning to actions or patterns of behaviors as mentioned earlier. Acceptance or rejection of any activities can reflect the people's belief and attitude toward society and cultures of the community. (Spradley, 1980)

#### 3.3.1.4.2 Focus groups

Focus groups enabled us to understand the thoughts and behaviors of participants in the social context of the waste disposal into the river problem. As the participants lived in this area, they very well know the situation and the practice that we were exploring (Whyte, 1984).

Focus group discussion was a research methodology to collect qualitative data through non-structured exchanges of ideas among participants selected by the researcher (Denzin & Lincoln, 1994) whereby the participants must have had adequate

knowledge of the topic in question. Focus group discussions helped the researcher to understand the thoughts of the participants, how they defined the meaning of waste and their categorization of garbage, as well as their behaviors in disposing of waste materials in the context of their culture and social norms.

Focus group discussions were conducted in this study consisted of 60 people in total. The community researchers were the main participants. Among this large number of participants in the focus group, their ideas and personal experiences varied widely. The focus group discussions started by creating a closer relationship among the participants by dividing them into a small group of 10 people. These small grouping shared certain similar characteristics; such as, social status, job responsibility, occupation, belonging to the same organization or live in the same area, educational background or having the interest or concerns over same issues. Such groupings resulted in, for example,, people living on the riverside, health care officers, housewives, local government officers, community leaders, the elderly and the young. These smaller groupings would yield insights, experiences and knowledge from the perspective of their representation which were determined to be very valuable for future analysis.

The researcher created a guideline to be used in the focus group discussions based on the aim of the study. The guideline, which was listed by topics and arranged in sequence, was written in the form of conversation with details pertaining to each step. (See Focus Groups Guidelines in Appendix 4) The outcome of focus group discussion from each of the sub-group had to be analyzed and verified first before being presented to the whole group.

#### 3.3.1.4.3 Group discussion

After the focus group discussion was completed, all participants participated in an overall group discussion. A group discussion was organized in a venue that had a good atmosphere with adequate space for 60 members. All of these members had previously participated in the focus group discussion and then were invited to take part in the overall group discussion. The researcher led the discussion and controlled the

flow of the discussion. There were a note-taker and an audio-recording assistant. The discussion started with a welcoming speech and introducing all the participants by the researcher. The researcher then explained the objectives of this study, leading to the group discussion. Next, representatives of each focus group discussion presented the outcomes of their findings (lifestyles, habits, practices, etc) to the audience. This enabled the other groups to learn, discuss, ask questions and express their opinions. Once all sub-groups had finished their presentation, the researcher would make an overall conclusion at the end. All participants would have opportunities to give their opinion and comment on what had been presented so far. The differences observed plus the opinions and information exchanges enabled everyone to mutually understand each other better and exemplifying the notion of going through a learning process together.

#### 3.3.1.4.4 Note-taking.

Due to the fact that this study used a qualitative approach which focused on note taking to build up the data source to be further analyzed, the researcher had to take detailed notes by himself in order to cover all aspects to be used in the next phase of the analysis.

Note taking was classified into two types; (1) preliminary note and (2) final note. The researcher took the preliminary note during the discussions. At that time, it was inconvenient for the researcher to write down every word mentioned, so only key words or topics were jotted down. It is also because the researcher did not want the villagers to see and understand what were written in the notes (Lofland, 1971). The researcher then came up with a final note based on the preliminary note in the following day and before the next data collection took place. Furthermore, the villagers in the research team could take notes concurrently but they would record data mostly from their own observations. The notes of the researcher and the community research team members needed to be separated. The information would later on be integrated into one during the data analysis phase.

#### 3.3.1.4.5 Tape-recording

A tape-recorder was also used during the discussions in order to record all details in the conversation. If certain information was not properly noted down, the tape recorded minutes of the meeting could always be referred back to.

#### 3.3.1.5 Data analysis

It was essential for the researcher to analyze the data by himself and to periodically present the outcome of the analysis to the stakeholders. The researcher and the stakeholders usually exchanged ideas in order to share the findings from the data and to ponder abstract concepts. This strengthened their intellectual capacity for addressing the issue at a stage. The stakeholders could observe the analysis and verify its accuracy. In addition, they could make comments, provide additional suggestion or even to refute the analysis.

The aim of the data analysis at this phase was to classify and explain the various components, definitions and the relationship of the behaviors in the social and cultural context through a holistic approach. The followings were activities for the data analysis with details;

##### 3.3.1.5.1 Indexing.

Indexing referred to word selection to make into an alphabetically ordered list. It was important especially when the researcher had more and more data accumulated; indexing made it easier for the researcher to remember all the words in the study.

##### 3.3.1.5.2 Typology and taxonomy

The researcher arranged the information collected from the fieldtrip in order and defined its meaning, categorized its components as well as connection and found out their relationships. Only by doing this will the researcher be able to understand the lifestyle of the people living by the riverside. The researcher categorized and organized the data (Typology-Taxonomy) in order to understand the meanings and the social behaviors concerning waste disposal in the context of Yom riverside community. Data categorization and organizing could explain the meanings and the relationship of the behavior from the villagers' perspective.

#### 3.3.1.5.3 Comparison

Data categorization enabled the researcher to obtain complete and accurate qualities and attributed of data to make it ready for comparison. Data comparison referred to as a systematic investigation of similarities and differences in qualities or attributes of more than two sets of data to formulate a conclusion. The conclusion tended to be more abstract and could be used to sum up more than one case. Furthermore, componential analysis was conducted to determine the accuracy, redundancy or difference of qualities or components of each statement. The comparison was made to check some similar statements and to determine if anything should have been included or excluded.

#### 3.3.1.5.4 Interpretation

The emphasis of data analysis in this phase was on finding the meaning by interpreting the data.

#### 3.3.1.5.5 Research quality control

The quality control was an important issue in research. In this study research quality control was to be achieved as follows.

1]. The fact that he researcher was an officer of the Sukhothai Provincial of Public Health Office enabled him to make prior contact with people in the community. As a result, it was an opportunity for the researcher to obtain preliminary information about the community before the start of the study. The ability to speak the local dialect facilitated the reseach work even more.

#### 2]. Data Triangulation

Data might be obtained by many means and from various sources. The researcher had to seek information from other sources as well (Miles, 1984). Therefore, to arrive at a consistent and meaningful data, the principle of triangulation was used to enhance the data's validity by identifying suspicious data. Triangulation could be practiced in the following manner;

- (1) Data received from different individuals; i.e., checking with other individual sources; for example, verifying the accuracy of information from several community leaders.
- (2) Data received from different places; i.e., changing places to obtain the information on the same topic; for example, temples, houses and health center.
- (3) Data received at different time; i.e., changing time to collect the data; for example, the data could be different if we collected it in different times of the day.
- (4) The researcher could also validate the data by asking people in the community verify the accuracy. They could have reviewed the analysis, given comments or additional information and to either rejected or accepted the data presented in the analysis.

## **Study Component 2:**

### **3.3.2 Waste disposal problem-solving by community**

Being fully aware of the problems led to the consensus among the villagers to tackle these problems in the first place. So, the idea of the study actually came after having talked to the villagers. As a result, the villagers felt that waste disposal was in fact a community problem that needed urgent attention. After the research was completed, their attitude towards typical government sponsored activities had changed for they had found another alternative where the people can get fully involved in a different kind of approach and take full control and ownership of the project compared to just being a passive listener, a low keyed unwilling participant being forced by the officials to sit in on a series of pre-packaged lectures.

The solution of waste disposal problem in the riverside community needed participation from both the official and non-official organizations. Both met to discuss and found out methods to solve the problem together. They were linked up with the help of the researcher in order to pool ideas and concepts derived from their members leading to mutually acceptable solutions. It also created a learning process and promoted the consciousness of being responsible for community development as well



as the commitment to this study, thus symbolizing a learning environment in the community (Park, 1993) which was the basis of sustainable development.

The purpose of the problem solving was as follows:

### **3.3.2.1 Purpose of the study**

By apply the outcome of this study to formulate the solution to the waste disposal problem as well as to develop a practical guideline and identify the role of various individuals in solving these problems.

### **3.3.2.2 Expected outcome**

Members of both the official and unofficial organizations met to formulate a guideline to solve waste disposal problems together, resulting in their agreement on the solution. This initiated the learning process and created a community consciousness of being responsible for the river's sanitary condition. This also led to behavioral changes in accordance with the guidelines produced by the stakeholders.

### **3.3.2.3 Method and strategy**

The researcher focused on the strategy in having people in the community to solve problems by themselves in perfect accordance with Buddhist philosophy. It allowed the people to exercise their right to choose the best strategy to solve their problems whereby stressing the capacity of the community to help themselves. This study, therefore, emphasized the lifestyle and culture of a community (Lofland, 1971) as well as the local wisdom which was considered to be a very valuable social asset. The participatory problem solving process among members was based on community culture which was key to the identification of the lifestyle of people in the society and unite people to live together with a balance between human and nature (Tandon, 1996).

The advantage of problem solving through the study of local lifestyles resulted in the importance being given to the local wisdom and community empowerment in solving the waste disposal problem. In the definition of a civil society to be a group of people joining together to make changes; i.e., villagers, community leaders, volunteers,

government officers, academia and other members (Prawes Wasi, 1998), this research study is truly a testament of a civil society coming together to achieve a betterment of its own community. The researcher used the data obtained from the first phase of the research as a guideline for the dialogue during the ongoing discussions. Each individual was encouraged to express both positive and negative opinions towards the problems and the solutions but done so with respect to other members of the community. The community culture minimized the importance of the government's role by decreasing the dependence on external interferences and focusing on the local wisdom in waste disposal. This led to changes from improper behaviors to the proper ones (Hills & Mullet, 2000).

Organization or association members collectively going through a learning process were key to sustainable development, particularly for environmental development (Gamba, 1994). Everyone had the fundamental right to participate in solving the waste disposal problem. Participation served the psychological need of these people as it indirectly showed their ability to help themselves leading to their sense of self-independence (Tendon, 1996). The researcher firmly believed that participation of the people in the process of solving waste disposal problems increased their level of confidence as well as their acceptance in the application of newly discovered concepts, methods and innovations derived from having generated new bodies of knowledge from the collective experiences and combined local wisdom of their own.

The researcher, for this phase, used the group process as a guideline of this study. The group process was termed to be the central resource of concepts and experience of various groups of people who met and felt satisfied with their relationships with one another (Israel, 1994). Their interaction in the group helped them find a way to solve problems. It enabled them to exchange ideas and experiences, to create unity and to work together which resulted in a successful operation and the analysis of the causes of the problem and the respective options for the solutions. It also allowed the villagers to know each other better, to be responsible for their roles, to learn how to solve problems, to become persons of reason, to have sympathy towards others,

to lend help to others. All of these characteristics would be most applicable for leading a fruitful and content daily living.

From past experience of the researcher in a study about waste materials management of riverside people in the Prapradaeng municipal, Samutprakarn Province, it was found that problem solving in the community was always carried out by local groups or existing or newly established community organizations. They truly represented the community and it became quite obvious that a group process approach was much more effective than individually done. Doing things as a group allow pooling of ideas creating more options, varied points of views as well as the ability to spot mistakes or potential pitfalls much faster. For the above reasons, the researcher, therefore, chose the learning process of stakeholders' participation as a guideline of this study.

The stakeholders in this particular study consisted of people living along the riverside who had once participated in the sanitation program, both informal and formal community organization members, informal and formal community leaders, local officials and the researcher. Each group processed the information and understood the problem well. They came to meetings to brainstorm and found methods to handle the problem associated with the draining of wastes water as well as the dumping of garbage into the Yom River. Their cooperation resulted in jointly working and the collective learning to tackle the problem of waste disposal into the river. This was in accordance with the concept on "triangle that moved mountains" (Prawes Wasi, 1998) by using the strength of one in a particular area to supplement the weakness of another and vice versa. The followings were the strengths of each group:

- Informal community leaders included monks and the senior citizens. They are well versed on the local traditions knew and were fully aware of the sensitivity of the culture and understood the community well.
- Formal community leaders included the chairman of the sub-district administrative organizations, leaders of sub-district, heads of the village,

members of the sub-district administrative office. They understood well the internal workings of the administration.

- Volunteers included health care volunteers, agriculture volunteers, housewives and the youth. They had the ability to coordinate and understand the community and what is required for the continuity of the operations.
- Representatives of people whose houses were located along the riverside. Only key people in this group had in depth local wisdom and pertinent information.
- Local officials included teachers, development officers, sub-district agricultural officers, deputy chief of sub-district administrative office and health care officers. They specialized in the law and an innate knowledge of how the bureaucracy functions
- The researcher acted as a facilitator. The researcher specialized in technology and innovation training, ways in passing on the knowledge and group facilitation.

Procedure of problem solving through the group process (using group discussion) composed of 3 phases namely Phase 1: Introductory or initial Phase 2: Working Phase 3: Final phase. Details of three phases are as follows:

### **Phase 1: Introductory or initial phase**

The initial phase focused at establishing the relationship between the group leader (researcher) and the member (community researchers) as well as also among the members themselves. The group leader created a friendly atmosphere to make the members feel safe and secured. In the early stages, the leader needed to clarify and reassure that all members understood the purpose of this study, rules, and guidelines as member of the team in order to make them feel relaxed. The leader encouraged the members to express their feeling and opinion and to share their experience with others. The tales of experiences touched everyone allowing them to feel as if they all were in the same boat. This created a common understanding and trust amongst themselves. The success of the project deeply depended upon the relationship within this group of

people, if they showed interest in other people's point of view, demonstrated patience in listening to others, showed concerns for others' problems, provide advise and share thoughts in a friendly manner, the success of the undertaking would be guaranteed.

Once the leader gained trust from the members, they began revealing their thoughts, their feelings, and experiences as well as felt more confident to extend their hands either to offer help or to accept support from the other members. They became more open and talk about their problems as well as the ones they are aware of without any hesitation. By being open minded, the initial anxiety among other members had been greatly reduced and a more frank and free discussion ensued.

During this phase, a general ground rule for the group was created to use for their interaction.

An operation in phase 1 began by inviting the community researchers for a group meeting. The researcher informed them about the objectives of this study and emphasized the importance of their participation. Next, they were asked to introduce themselves and told the audience about their lives in the hope to establish and strengthen the bonds among members of the group. Members were willing and enthusiastic to listen to others and they had a chance at the end to talk to one another and acquaint themselves even more. (see details in Appendix 6)

### **Phase 2: Working phase**

In this phase, the members started to trust one another and had more confidence in the group. The researcher also had a closer relationships with them. Their confidence allowed them to express their thoughts, feelings and exchanged experiences more freely. The members concentrated on waste disposal problem and tried to seek solutions with support from other members. Opportunities for them to discuss and exchange experiences brought in new ideas to solve the problems in the community. The reciprocation of ideas allowed members to act both as giver and taker of advice making them feel valued and dignified among their peers

The researcher played an important role to strengthen the members' confidence, facilitate group discussions about problems and assisted in conducting a validity test so that they felt confident to apply a means of solving problems (Daniel, 1995). From the study about problem solving of the Prapadaeng people, it was found that they always use Buddhist teachings to solve problems. As a result, Buddhist teachings; i.e. the Four Noble Truths were applied in this study (Ariya-sacca) as a guideline to deal with problems.

The operation of phase 2 was the continuation of phase 1. The researcher as the facilitator presented an overview of lifestyle studies and encouraged all members to use it as a basis for solving problems and finding answers for their group in accordance with the guideline in Table 3.1. The members had a chance to brainstorm and suggested ways to solve problems. Their suggested solutions were written in cards visible to the audience and the researcher selected and include only those which gained acceptance from the majority.

**Table 3.1 :** Procedure of problem solving in Buddhist teachings (the Four Noble Truth or Ariya-sacca) by using group discussions.

<b>Phase</b>	<b>Guideline</b>	<b>Find answers through group process</b>
1. Suffer	Accept the existence of the problem as shown in the result of the lifestyle of the riverside community. The community realized, accepted and agreed that was their problem.	<ul style="list-style-type: none"> <li>- What are we suffering from?</li> <li>- What are the problems?</li> <li>- How are the situations?</li> <li>- What is the conclusion (concept)?</li> </ul>
2 Cause of sufferings	Sort out problems Exchange the outcome from the study of lifestyle of the people living on the riverside and build up an understanding of the cause of problems so that people were fully aware of the situation and could identify what behaviors were the main causes.	<ul style="list-style-type: none"> <li>- What is the cause?</li> <li>- How does it happen?</li> <li>- Why does it happen?</li> <li>- What is the consequence?</li> <li>- What is the conclusion?</li> </ul>
3 Solving	Identify the acceptable conditions People gather to identify and define the acceptable conditions in order to know the community's shared goals. This allowed people to participate in identifying the needs of the community and be informed of the shared goal from the beginning.	<ul style="list-style-type: none"> <li>- Can this problem be solved?</li> <li>- What is the principle?</li> <li>- What is the acceptable condition for the community?</li> <li>- What does the community want to happen after this study is completed?</li> </ul>

**Table 3.1 :** (Cont.) Procedure of problem solving in Buddhist teachings (the Four Noble Truth or Ariya-sacca) by using group discussions.

Phase	Guidelines	Find answers through group process
4 Way of solving suffering	<p>People in the community must find the means or possible options to solve the problem at its root. Members must be responsible for compiling data as it will yield various ways to cope with problems and create the acceptance and sense of involvement in the problem solving. The principle is to get rid of the cause of the suffering and other possible factors; for example:</p> <ul style="list-style-type: none"> <li>- Riverside toilet</li> <li>- Latrine</li> <li>- Sort out the rubbish</li> <li>- Grow aqua plants to absorb the waste.</li> <li>- Rules and regulations, etc.</li> </ul> <p>During this phase, if there is more than one solution, all of the solutions will be compared and assessed. The one, which can solve the problem and matches with the lifestyle of people in the community, will be selected to tackle the problems. The solution must be most acceptable and appropriate to the community. Then, the operational plan will be developed in detail (who do what, when and how).</p>	<p>Question guideline</p> <ul style="list-style-type: none"> <li>- Is there any short-term or long-term plan?</li> <li>- What should be done before and after?</li> <li>- How to solve the cause?</li> <li>- What needs to be conducted?</li> <li>- What are the activities that should be taken?</li> <li>- What is the conclusion of the plan?</li> <li>- What is the detailed summary of roles, actions, deadline and methods?</li> <li>- What problems are solved by the guideline in this project?</li> <li>- Raise this study method to the Sub-district Administrative Office.</li> </ul>



### **Phase 3: Final phase**

The researcher made a summary of all activities in the study. This helped the research team to assess the progress, positive changes and success of the group. The evaluation focused at both words spoken and behaviors of members which were assessed by outside people; for example: did the community gain any benefit from the group work? Did members feel that their group could face problems and able to deal with them by themselves? Finally, the researcher informed the members of the termination of the exercise in advance. If any member become anxious and upset about the ending of the group work, the researcher would ask him/her to express thoughts and feeling and the researcher would explain and point out the benefit that the community would obtain after group work ended.

#### **3.3.2.4 Data analysis**

Data was collected and analyzed by the researcher concurrently in every phase of the study. Data collection was continually accumulated until no more was available or determined to be sufficient for the analysis. For this phase, the researcher applied the following techniques:

##### **1 Typology and Taxonomy**

Typology and taxonomy were the methods for data classification and categorization. Various types of data were classified according to types, categories and logical relation, such that it was made easy to understand. The data was classified based upon the social structure or community culture. The researcher also used the people's thoughts, beliefs and definitions of behavior, as well as their perceptions as the principle criteria in doing the typology and to explain the relationship of the behaviors.

In addition, the researcher applied the concepts of domain analysis because the meaning of culture was defined by the use of symbols. The symbols might be objects or events that explained or referred to something. Messages found might be in folk or generic terms. The relationships between these terms were next investigated.

## 2 Analytic induction

The researcher developed concepts based on raw data and it was then transformed into abstract data by using the analytic induction method.

### 3.3.2.5 Data quality control and evaluation

The researcher verified the accuracy and validity of the data using the following methods.

#### a) Representatives

The researcher examined whether his conclusion represented the data or not and whether the researcher obtained too much data from some sources compared to others or not. Some person would have like to provide data to the researcher while others would not. The researcher must inspect that the informant represented the group of people of the community we were trying to study or not so that the conclusion would be valid.

#### b) Inspection of any effect that may originated from the researcher

The researcher inspected whether closeness to a situation affected any data collected from the field or not, and whether anyone had any unusual behaviors or not. These could impact the nature of data and make the data unusable because it was made from “fake” data. To prevent this from happening, the researcher spent plenty of time in the field and collected data carefully and unobtrusively. In addition, the researcher avoided being too self-centered (Miles, 1984). The researcher was cautious not to allow any of these pitfalls to happen; for example, did not let any informant influence or take control of the situation or accepted falsified data.

#### c) Triangulation

The principle of triangulation was used when the researcher had any doubt about the data sources whether it was reliable or not. The researcher had to seek the same data from other sources to compare. (Miles, 1984). The data inspection was executed as follows:

- Data received from different individuals; i.e., checking with other individual sources; for example, verifying the accuracy of information from several community leaders.
- Data received from different places; i.e., changing places to obtain the information on the same topic; for example, temples, houses and health center.
- Data received at different times; i.e. changing time to collect the data; for example, the data can be different if we collect it at different times of the day.

d) Assessing the quality of data

The researcher assessed whether the data used to formulate the conclusion was realistic, reliable and valid and the quality of the data could be verified and accepted by others. Below is the outline of data quality assessment:

**Table 3.2 :** Data Quality Assessment

<b>Obtain Good Data</b>	<b>Obtain Weak Data</b>
1. Good data obtained: the data in the later stage of data collection after gaining trust	1. The data in the early stage of data collection might not reflect the truth because building trust was still ongoing
2. The researcher had seen or heard it by himself (primary source)	2. The researcher obtained the data from others (secondary source).
3. Data about behaviors or events which could be observed	3. Data, which was derived from reports.
Researcher is trusted.	Researcher is distrusted.
Informants were willing and pleased to provide data	Informants were forced by researcher to provide data unwillingly
Researcher and informant were alone by themselves when the informant provided the data.	Informants provided data in front of others

e) Contrasting data

To make the conclusion strong, the researcher would contrast the data in some aspects; for example, persons, activities, and events. The researcher must have had ideas in mind what answer he wanted; such as, contrast the data to reach a conclusion between two stakeholders. The difference drew the researcher back to examine whether a group was similar to the other or not. If the difference was confirmed, it strengthened the conclusion. In contrasting the data, the researcher picked up extreme cases or deviant cases to consider and contrast with others.

f) Replication.

In order to be assured of the accuracy of the conclusion, the researcher tried to collect data in another field and used the same conceptual framework and the same method to analyze the data. This was to check if the new data and the old were similar or not and what conclusions were confirmed from the new data.

g) Seeking other reasonable explanations.

The researcher assumed that his conclusion was still unsatisfactory and find whether there were any other theory or explanation that could elaborate the behavior in an equally or much more sounder fashion. After that, the researcher tried to argue and defend whether his conclusion replaced the other conclusion or not. If it did, the researcher would have been more confident on his conclusion but if it did not, his conclusion need to be revised.

### **Study Component 3:**

#### **3.3.3 Participatory evaluation**

Participatory evaluation was the review of performance in problem inspection and success. The evaluation was conducted mainly based on the goal of this study (Ayers, 1987). The stakeholders were the center of this evaluation. The researcher was an advisor guiding the stakeholders who participated in the study. The researcher and the stakeholders conducted the evaluation together to decrease the complexity of the methodology and to give opportunities for members to raise questions and they themselves identified indicators in areas of their interest.

### **3.3.3.1 Purpose of participatory evaluation**

The purpose of the evaluation might be divided into 2 dimensions;

- 1) Evaluate the formulation of problem solving whether it fit the needs of people or not, whether it was possible to bring to practice or not, how it could be propagated to the public, as well as what the reaction of people was.
- 2) Evaluate the effectiveness of formulation of problem solving using scenario; i.e. evaluate if the solution found in this study was submitted and included into the sub-district development plan created by the sub-district administrative office or not (the previous environment plan was never included in the sub-district development plan) and whether members of the group changed their behavior and behaved themselves like in the agreement or not.

### **3.3.3.2 Expected outcome**

Participatory evaluation allowed people to realize the effectiveness, potential problems, weaknesses of their problem-solving pattern. The researching process enabled the villagers and the community at large to acknowledge the outcome of the operation as well as to accept its outcome or not. In addition, throughout the process, they could see the advantage of participating in studying the problems by themselves. They will gain more confident being able to study and learn, feeling the ownership of project as well as continuously and permanently carry on the learning process.

### **3.3.3.3 Formation and strategy of evaluation**

Participatory evaluation was the process of evaluation, which allowed the stakeholders to be the center for evaluation. It was a concept that the researcher applied to solve community problems (Ayers, 1987). The participatory evaluation from the stakeholders in order to form pattern, guideline and procedure that consisted of two main parts: the first part was to identify the content and procedure while the second part was to collect, implement and summarize. During the conclusion period, all relevant parties were allowed to participate in identifying the content, the indicator, the standard and the process. They also took part in the survey, evaluated the data and most

importantly, had an involvement in summarizing the evaluation outcomes, providing recommendations, giving comments for improvement. This evaluation method enabled people in the community to fully recognize the result of the operation and to accept the result of the evaluation. Moreover, this will encourage people to feel that they took part in the improvement of their community and environment and being a part of a permanent and continual learning process. A main goal of villagers was to reach an outcome that was practical.

### **Procedure for participatory evaluation**

#### **1) Organizing the evaluation team**

The researcher allowed each group member to select his evaluation team to play a significant role in the evaluation process. In this case, there were ten people altogether, those who were community researcher volunteered. A size of the team should not be too large in order to avoid any inconvenience. The team worked together for a plan on how to do an evaluation as well as to produce some indicators. As most villagers were not familiar with the evaluation method, the researcher gave some guidelines, such as explaining the definition of evaluation, stating the objectives and defining a group of beneficiaries. For example, the researcher provided some sample questions relating to the result of group working, such as, the opinion of villagers toward disposing of waste as discovered by the villagers. Guideline of questions; Were the solutions that we developed appropriate to the community? Could we proceed with implementing these solutions? Were you satisfied with these solutions? Were these solutions better than those in the past? Did you think that problems would be solved? The types of questions were simple and direct while longer questions with longer answers were acceptable as well. The researcher might allow the group members to set their own questions that indeed could garner better answers than questions designed by the researcher. The main role of the researcher was to assist the team in designing questions properly in accordance with the objective of the evaluation.

#### **2) The data collecting process for the participatory evaluation.**

The team members participated in the data collection step by step, which was required in the tracking and evaluating the appropriateness of the waste disposal

management scheme that they all helped formulate. In addition, the team was supposed to identify problems and obstacles by collecting data from all teams participating in the project and systematically inspecting the result. Besides arranging a group discussion and completing the data collection during the monitoring period, the team would concentrate on the problem-solving method in order to find any error and to correct it promptly by setting questions based on past working experiences as well as the study team member's reaction towards the outcome.

### 3) Analyzing and evaluation conclusion.

The researcher and stakeholders together analyzed and made an evaluation conclusion that reflected the overall concept of the project to respond to all objectives of the evaluation.

#### **3.3.4 Evaluation by Researcher**

The researcher evaluated the success of the learning process based on the lifestyle of the people living along the riverside area towards the recommended waste disposal methods whether it responded well with the objective or goal. By doing analysis and obtaining a conclusion, the researcher studied if the community had gained some knowledge and understanding of the current condition as well as the overall process of handling the waste. Besides, the study wanted to find out whether the people recognized the problems or not, it seek to build their self-awareness, analyzed the cause and effect and determined the effect of both the primary and secondary waste problems towards their way of life. The researcher systematically performed the same evaluation by doing a technical analysis and compiling the conclusion from each related part. It was done by using multiple methods throughout the data evaluation process in order to determine whether the derived conclusions are in accordance with the known facts or not. The researcher summarized the whole process leading to answering the research question and demonstrated the effectiveness of the method for disposing waste materials.

To assess the outcome of this study, the researcher compiled the results of the following components to make an analysis; 1) results of community lifestyle, 2) results of problem resolution and 3) results of participatory assessment.

The researcher validated these results and left out irrelevant data. Conclusions of each components were analyzed and linked up to answer (1) whether the community lifestyle, the solution to the problem and the participatory assessment led to sustainable solutions or not, (2) whether these three components raised people's sense of ownership in this research, (3) how and at what extent this research accomplished the task of having community participation and (4) where the result led to and whether the result was practical in real life. The researcher analyzed the outcomes by systematically linking up the relationships of the results from each component. This will measure whether the methodologies used in this research were appropriate or not as applied to the riverside community and focusing on the involvement and participation of villagers as the project owner.

In addition to the aforementioned method, the researcher evaluated the villagers' level of satisfaction, understanding, and expectation as evidences for the efficiency of the research process. Outcomes were assessed by relying on an important indicator whether the villagers developed operational plans and the plans were included into the community development plan of the local administrative organizations or not. Previously, there was no proposed plan to cope with problems being implemented by the villagers. This indicator reflected an achievement in the problem solving capabilities of the riverside community and assess new roles for community members in other problem solving process such as those identified in the second components; i.e., the construction of toilets by the river and latrines, etc.



**Table 3.3 :** Time Line

Project Activities	Time Frame (Month)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Study lifestyle of riverside															
- Participatory mapping	—														
- Developing history of participant		—													
- Workshop for common understanding			—												
- Qualitative data collecting (Observation, focus group, group discussion and data analysis)				—	—	—	—	—	—	—					
2. Waste disposal problem-solving and data analysis									—	—	—	—			
3. Participatory evaluation												—	—		
4. Evaluation by researcher														—	—

**Table 3.4 :** Budget Details

<b>Category</b>	<b>Budget Requested (Baht)</b>
1. Study lifestyle of riverside	
- Participatory mapping	10,000
- Developing history of participant	10,000
- Workshop for common understanding	40,000
- Qualitative data collecting (Observation, focus group, group discussion and data analysis)	150,000
2. Waste disposal problem-solving and data analysis	90,000
3. Participatory evaluation	70,000
4. Evaluation by researcher	10,000
Total	380,000