

# Natural Resource Management using Participatory Process of Youth Volunteer in Community

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**ABSTRACT**—The purposes of this research were to study the state of area, water and community potential, to develop and propose the method of natural resource management using participatory process of youth volunteer in community. Action research and quantitative research were used and research tools were interview form and questionnaires. Data were collected from in-depth interview, focus group discussion and quasi-experimental design. Qualitative data from 31 key informants was analyzed by using content analysis whereas quantitative data collected from 134 samples was analyzed by using descriptive statistics. Results indicated that the area and water in community has only one source of water, and it was not enough for utilization. They could not save the water during flooding season. Therefore, the leader of the community tried to find the best way to preserve water using technique of adding water to underground and making life dam in order to slow down water. Five steps of natural resource management process using participatory process of youth volunteer in community consisted of pre-research plan, planning, action plan, implementation, and follow up. Results of post-test and follow up showed higher score than pretest at significant level of .05.

**Keywords**— Natural Resource Management, Participatory Process, Youth Volunteer

## I. INTRODUCTION

Natural resources continue to be the critical issues of Thailand. Over several decades, natural resources have been utilized vastly for development. Therefore, natural resources have been constantly depleted while the natural environment has weakened in quality. As a result, conflicts over the utilization of natural resource between the government and different groups of people have tended to increase. In addition, the management of natural resources and the environment remains centralized, which has no linkage with the local level. All these factors have contributed to the existing state of natural resources such as forest areas are decreasing, soil becomes unfertile, biodiversity is threatened, coastal ecosystems are destroyed, water resources cannot meet consumption demand, and environmental problems escalate simultaneously with the growth of the economy and urbanization as in [1].

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According to the issue of water, water management is an issue that has been discussed a lot over the past especially year 2010, Thailand suffered from the lack of rain and flooding in the same year. This issue is often discussed in the management of water especially of the country's main water line. Another level of water management also brought for the discussion was at the community level. In the area, they have rarely been researched much. It is different in each area since 2005, it caused a shortage of hard water areas in Rayong province which was the site of heavy industrial area of the country. Then, it caused the problem related to the social issues greatly between different sectors especially in the industrial sector during that period of time.

In the last 30 years, the urban areas of Thailand are often faced with frequent floods. Most were born in communities located in areas at risk of flooding especially on the east coast and south of the country because it is located near the ocean. In big cities like Bangkok, Hat Yai and Chiang Mai, they suffered of flooding as well specially during the rainy season. This is because the amount of water over the detention and drainage systems are not working well enough, which refers to the flood disaster caused due to water causes. Be a flood or flash flood caused by more heavy rain continued for a long time and sometimes causing landslides that can be caused by a tropical cyclone with force. A trough of low pressure is intensifying climate variability, sea earthquake bolster levees break, it could cause a flood. For that kind of flooding, it can be divided into three types [2] as follows: 1) flash flood caused by heavy rain on the mountains or watershed and flood plain down quickly because trees absorb water slowly and the water flow to be gathered more quickly at low-water areas. The greater speed of water and power can result to increase the water level by the rapid water evacuation and cannot move away within urgent time, 2) the flooding caused by the water that flood higher than normal flood and then caused the traffic disruption, 3) the waves are huge ocean waves caused by the force of the wind and caused by a tropical cyclone is moving toward the shore. The storm surge washed on shore and the tropical cyclone with tropical storm strength levels up, and then causing large waves lapped the shore. The area at risk has a chance of storm surges hit coastal areas including the South East Coast from Phetchaburi province to Songkhla province, and the Eastern province from Chonburi to Trat.

When the state of emergency that requires utilization of emergency assistance. It is noteworthy that the teenager became a major force gathered themselves to help those afflicted by their aptitudes and capacity. There are also several youth groups gathered to serve society as normal, reading to the blind, and hearing to the forest to collect garbage in the sea, or teaching street children in order to use the free time to benefit and how they can be useful to others in society. If an adult leader or volunteer to take care of these young volunteers work closely to make these systems more and more are moving in the same direction including counseling and resolve issues that arise in the event. The tremendous power of teens can transform into benefits for society and those who need help in trouble will include the early development of these youths.

One Buddhist proverbs have said that (Thai Tipitaka 25/54/69) “children are defense of human beings, and children are defense humanity well must be a quality children as in [3], both public and private sectors have realized the importance of youth which will grow into a major force in the development and initiative the country. It was a collaboration to create activities and programs to a variety of pulling power that teens are more developed and where they are located by allowing them to participate in these activities and projects in terms of being a volunteer. Learning system volunteerism in real situations is to find their strengths and build on it including the development of their

own commentary story has appeared on the "volunteer" is a very interesting story of young man who devoted his energy to public works such as building roads, bridges, plant trees to create a residence hall walking, and clean public places. He has done 7 good action consisted of 2) take care mother and fathers, 2) conduct good manner to adult, 3) speak politely, 4) do not say sneaky to others, 5) willing to sacrifice lifelong, 6) says a faithful lifelong, and 7) do not angry through the life. The result of this painstaking send him a truly good idea or to be Indra (Thai Tipitaka 25/258/376). According to volunteer work like this, Buddha said that the praise that "these are plantations, reforestation, build bridges, classified as drinking water, ponds and marshes, provide shelter blessed are those will have good life all day and night "(Thai Tipitaka 25/246/47). This is to show that the Buddha encouraged people to work that benefits others and the public that is called "volunteer work".

His Majesty King Bhumibol Adulyadej heeds the significance of the forests for the country, a major variable in their survival being water. As such His Majesty has presented ideas on a successful, beneficial, and interesting tool to revive the forest land known as the "check dam" which serves the purpose of retaining moisture. A check dam is a structure built to block the path of water and normally obstructs small brooks in areas of headwater or sloping land. When water currents are strong, the dam delays the water flow and retains sediment to stop it from running into the lower watershed portion. This is a superb method of conserving soil and water. His Majesty presented ideas to build moisture-preserving check dams to create a water cycle for the forests. Surveying for highland near mountain peaks is done and the dam must be designed to retain sufficient water amounts for two months since water retained for long periods after the rainy season will sustain the strong and fast-growing plants interspersed throughout dry forest area as in [4].

Local government organization is the organization that is close to people in order to alleviate the suffering people of the area as much as possible. Water shortage is a problem that is deteriorating day by day, more and more every year. The government, under the leadership of General Surayud Chulanont has announced that a "water" as a national agenda in 2007 (Department of Water Resources. 2007) to ensure and set the water management systems. This leads to the solution of national water resources sustainably. The management style and currently trending in the right direction towards a holistic water management can consider the ecological dimension and the greater community. It focused on the developing of water management model that integrates knowledge and understanding. The process relies on the participation of the public sector or the local community. At the administrative organization of Nong Kham Sub-district realizes the importance of this issue. It supports projects to prevent conflicts and reduce the conditions that lead to violence. Water shortage in the area Nong Kham Sub-district always recurs every year, especially during the months of January to May, which affects farmers in the area as well. Building check dams is another alternative that can help to fix the problem of water shortage and moisture to the forest.

Therefore, researchers have realized the importance of volunteerism to develop and cultivate virtue of youth and the development process of the youth volunteer activities. According to the model, the development potential and stimulate moral good that is in these children leads their interests and aptitudes. Another important purpose is that to produce young people who do not hesitate to serve society as well as in society with wisdom. Researchers believe that people who volunteer to work for others; it is highly possible to bring the Buddhist doctrines related to social work, to serve others, and to take a share in the lifestyle in order to live together peacefully in society including the value of self

and society that being known and rewarded. As the reason, researchers are therefore interested in studying "natural resource management using the participatory process of youth volunteer in the community."

## **II. RESEARCH OBJECTIVES**

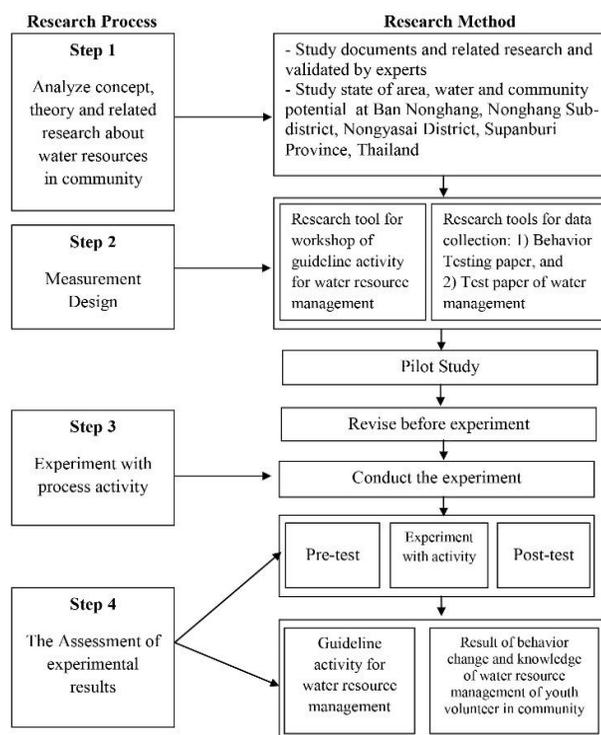
The objectives of this research article were 1) to study the state of area, water and community potential, and 2) to develop and propose the method of natural resource management using participatory process of youth volunteer in community.

## **III. RESEARCH METHODS**

### ***A. Research Design***

Action research [5] and quantitative research were used and research tools were interview form and questionnaires. Data were collected from in-depth interview, focus group discussion and quasi-experimental design. Qualitative data from 31 key informants was analyzed by using content analysis whereas quantitative data collected from 134 samples was analyzed by using descriptive statistics. The researchers developed a model of water management with the participation of youth volunteer in parallel study between (a) the focus of the learning community, and (b) scientific research in order to use for the database to the public. The process of implementation were consisted of 1) documentary study from primary sources including Buddhist scriptures [6], and the secondary sources include scripture commentary, research books, articles and other related documents, 2) an area study of understanding community youth volunteer and stakeholders about the purpose of the operation and the target, 3) recruited young volunteers who are the target audience and subscribe, 4) participants meeting in the community to find problems and the need to solve the problem together, 6) preparing materials, 7) doing, and 8) data processing at every stage of the compilation, analysis and presentation summarizing the findings.

## B. Research Process



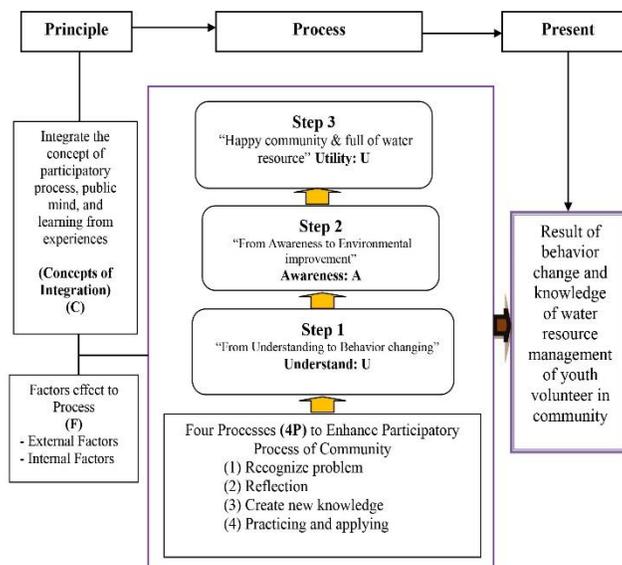
**Figure 1:** Research process for the development of water resource management of youth volunteer in community

Research process of this research has developed into 4 steps consisted of to analyze concept, created research tools, conduct the experiment, and to assess experimental results. Steps were shown in Fig. 1.

## IV. RESULTS

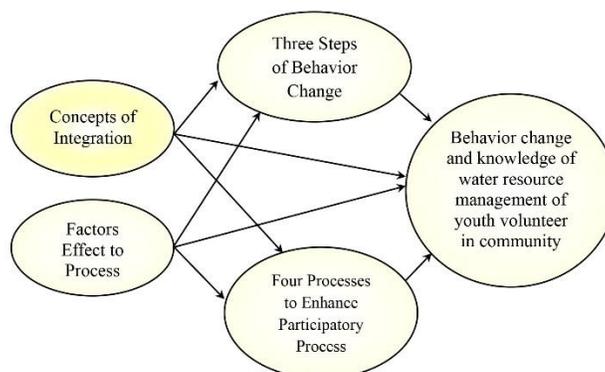
Results indicated that 1) the area and water in community has only one source of water, and it was not enough for utilization. They could not save the water during flooding season. Therefore, the leader of the community tried to find the best way to preserve water using technique of adding water to underground and making life dam in order to slow down water. 2) Five steps of natural resource management process using participatory process of youth volunteer in community consisted of (1) pre-research plan, (2) planning, (3) action plan, (4) implementation, and (5) follow up. Results of post-test and follow up showed higher score than pretest at significant level of .05.

Results of the study can be presented natural resource management using participatory process of youth volunteer in community. A Model of CF: UAU-4P was developed from area study and was effective process for youth volunteer to collaborative and tried to be part of natural resource management as shown in Fig.2.



**Figure 2:** A Model of CF: UAU-4P for Natural Resource Management using Participatory Process of Youth Volunteer in Community

From Fig.2 can be explained to A Model of CF: UAU-4P for natural resource management using participatory process of youth volunteer in community that consisted of 6 aspects. The first aspect is concepts of integration (C) that integrates the concept of participatory process, public mind, and learning from experiences. The second aspect is factors effect to process (F) consisted of external factors and internal factors. The third aspect is the process from understanding to behavior changing (U). The fourth aspect is the process from awareness to environmental improvement (A). The fifth aspect is utility that is the process of happy community and having water resource for utilization (U). The sixth aspect is four Processes (4P) to enhance participatory process of community consisted of (1) recognize problem, (2) reflection, (3) create new knowledge, and (4) practicing and applying. Then, youth volunteers have been developed to be behavior change and knowledge of water resource management in community. In addition, these six aspects can be developed as a grounded theory in order to develop for further study using causal relationship model (SEM) applying mixed methods research related to research design of L. Klomkul as in [7]-[8] as shown in Fig.3.



**Figure 3:** A Model of Behavior Change and Knowledge of Water Resource Management of Youth Volunteer in Community

## V. DISCUSSION

The results of the review of the community in the field of conservation indicated that water resources management in the past had the relationship between the community and the water resources in the community. Youth volunteering in the community is to raise awareness and the wisdom of the past to selected areas which are abundant and the children were living. However, if the weather changes like flood, drought and occupation, these things make the community aware of the importance of conserving water resources in the community. It is also talking to local communities in the management of water resources such as dams, digging canals, and cleaning of the canals and around that area. So when faced with floods in the rainy season that runs from the watershed with no trees to block. As a result, the mass of water that has plenty of erosion along the river bank, in some places, the water eroded the road junction of Ban Nong Hang School. It occurs a big hole or sometimes the break the street. The amount of water is very acute and water overflowing from the canal to the river bank, and then damage in the community. The impact due to the volume of water that much, but could not keep it grounded and make overflow spilling out riverbank damage in the community.

When a problem like this people in the community are so common quest for knowledge about how to treat people in the early practices by telling the elders in the community and a review of the experience that they had engaged in activities that lead to practices that are consistent with community life. They are learning to share local knowledge to the conservation of water resources in the community. Many communities have used such mechanisms. Regulation of water use wisdom to engage the community integrating with schools, community groups, youth leadership and volunteerism, and external support. Each engine is built from a real community feel resulting in the recognition and participation in the practice particularly the Nong Kham. The parish is a leader with vision and offers something new to the community. As a result, information, knowledge and innovation from various external agencies with the training philosophy of sufficiency economy can adopt the lifestyle. It also provides training on water management scholars from a network such as a dam. The activities in rural schools and the sections of the community send young volunteers and officials of the district administration to learn how to make a dam at HuayHin Dam. When they have learnt knowledge, they came the public hearing stage and to find a common agreement in the order to build a dam and to the management of water resources in the community. This is the way to promote the environment and water resources,

land and forest areas around water sources in the community. This is consistent with the strategic plan as in [9] to develop and increase water resources utilization. The supply of clean water for consumption is sufficient to cover all the villages by empowering the retention of existing water resources. Restoration improved water sources digging ponds on farms and developing networks linking water resources and water distribution. Development of new water sources in the area more suitable and acceptable to the public and lead to groundwater with surface water in areas with sufficient water capacity under the management of the demand for water-efficient. In addition, the work of the community through a participatory process is not only youth volunteerism in the community; there was also the participation of the community and officials of the district administration, teachers and parents in efforts to make banks groundwater. The work is due to the importance of fillingwater into the soil. To replace the amount of water pumped up from underground through groundwater pumping.

The participation of the community for youth volunteering participation has made decision to make groundwater bank instead of improving live weir because after a survey for the first time on June 3 that appeared over two weeks, heavy rains in the area. Causing a mass influx of water caused erosion around the elephant ears and glutinous rice. The area also stepped behind the dam. It was the erosion of the sand lot. As a result, damage the youth volunteers cannot be solved in a short time, so they decided on the conservation of resources and through other means, which is to make groundwater bank. Then share the plan and find space to store water underground. The area is water that was marshy water throughout the year or swampy areas. The survey found that there are two areas that should be done underground banks that related research to [10]. This paper indicated that Groundwater banking is the use of aquifers to store water to balance seasonal or longer-term variations in supply and demand. The large storage capacity provided by aquifers can be a valuable tool for conjunctive use of surface water and groundwater as well as other elements of integrated water resources management. Successful groundwater banking requires favorable hydrogeological conditions to efficiently recharge, store, and abstract large volumes of water. Additionally, groundwater banking is also highly dependent upon water management and operational policies.

Since it is an area with a water feature was marshy water throughout the year or a swampy area in front of the teachers' houses including and in the water beside the cafeteria. It was found that when the area did not have groundwater banks, both 2 areas that used to have underground water overflowing in the area. As a result, there are no problems with flooding, no smell, and no eggs of mosquitoes. This is the participatory process of engaging the local community leaders, government officials, researchers and the consequences can be filled with water to the ground. This activity can make collaboration joint planning and encourage all people who have been involved in the management of water resources in the community together. This is consistent with researcher as in [11] said that the process involved in rural development as having three dimensions and 2 contexts. The dimensions of involvement include the first dimension (What) consisted of 1) participation in decision-making, 2) participation in the implementation, 3) the involvement of beneficiaries, and 4) to participate in the evaluation. Participation in decision-making does not mean that the decision alone to take a decision in conjunction with the operations as well as in the organization. Defining development activities and decisions, and also is associated with the public about the benefits and evaluation. For context, participation means that the nature of the project by considering the nature of the import benefits and formed to define the environment of the project or event such as historical factors, physical and

natural factors. The second factor is social factors that contribute to someone (Who, Whom), including the composition of those who took part with residents in different stages, such as community leaders, government officials, and organizations that provide grants consider the demographic, social, economic, guests took part in gender, age, education, occupation, income levels in society, length of stay. The third dimension, the engagement, however, (How) is subdivided into 1) the nature of participation, such as a willingness to participate, and the reward or being forced to participate, 2) forms of participation such as to participate directly or through the organization of community. 3) The size of the part, such as the frequency and duration of participation, 4) the effects of participation. This may be the power or authority of the organization, or is it only interaction as in [11].

The procedure of checking during the learning community indicated that this research is correlated to the research [12] showed that the process of learning process in 5 steps consisted of the process of gathering "people, thinking, acting, share lessons, results from actions". If the cycle of learning communities of any spin faster or are highly dynamic, it shows that the community has the power to learn from the educational and information needs of the community. Schools are required to take advantage of the water that is considered the main factors of life, affect the cognitive development of the school and the community. This is the natural resources management using participatory process of youth volunteer in the community.

## **VI. RECOMMENDATIONS**

### ***A. Recommendations for Practices***

1. Strengthening the mechanisms to manage water resources in the community is the learning process of people in the community in order to drive other mechanisms to achieve more efficiency. Each of these communities has different dynamics. If they learn and share to each other, they will result in an adjustment to protect problems appropriately.

2. The most effective of water resources management in the community should be cooperation from the internal and external communities. The support from various organizations both public and private is absolutely necessary for the strengthening initial phase of water resource management in community.

3. Leadership is very important towards using local wisdom for conserving water resources in the community because people in the community have confidence and trusts a group of activists and leaders. Therefore, leaders should make the learning process to enhance knowledge for people in the community in order to make them full of confidence and to express themselves with reasonable. For those who are unable to attend the meeting, leader should open channels for them to attend the meeting as well.

### ***B. Recommendations for Further Research***

1. The samples tested in this study were aged around 10-13 years. For the next research, it should be done with a group of students from the age of 15-18 years to develop methods and guidelines for sustainable water resource conservation and to create new knowledge to further research.

2. This research was designed and completed by using short experimental. So, this should be set to repeat the experiment with a group of students at other ages.

3. This research conducted specifically on water resource management. Therefore, it should conduct research on various types of national resources in order to guide the conservation of local resources by encouragement people in the community to join in participatory process of preservation the natural resources with sustainable development.

4. Result of this research was developed by mainly qualitative research and grounded theory is emerged as a relationship model between variables. Therefore, it should conduct further research by analyzing structural equation model by extending the sample size of sample group, and to validate the developed model using LISREL program.

## VII. CONCLUSION

In conclusion, the findings from the analysis of both quantitative and qualitative showed that a change in the student participants in both cognition and changing behaviors in a better direction. After receiving training for a period of 2 days and 2 nights, results found that they were increase cognition in natural resource management. The results of in-depth interviews with community leaders reflected that community members who participated in the project have changed their behaviors and showed collaboration efforts in the activities. Students who attend the event have shown good value of integration activities and volunteering. The efforts have also resulted in different activities such as volunteer activity in the community to paint the walls and clearing grass along the roadside around the village. In summary, the participation of young volunteers in the community on water resources management in the community consisted 3 phases to encourage behavior change and knowledge which understanding, awareness and utility. In addition, results of this research can develop for further study by using structural equation model in order to find out the effect size between variables in the model including variations of endogenous latent variables. Then, the developed model can generalize to other communities.

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