A Participatory Action Research-Based Community Development Program to Overcome Problem of Access to Fresh Water: Case Study of Malingping Village, West Bandung

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Abstract. *Water connects every aspect of life, but access to it still becomes a problem for some communities in the world. Many initiatives in the form of community development program have been developed to help people to get better access to fresh water. To accomplish this, it needs several steps to be done. It starts with the needs identification and ends with the program implementation. However, the question is whether the identified needs is the priority and whether the program recipient needs it. This condition causes that not few community programs end ineffectively. The community development program is not only about the program, but the term explains the overall process. This paper is to explore how Participatory Action Research can be a method to increase the efficiency of the community development program by taking a case of community development program run by students of a business school in Indonesia. By using the Participatory Action Research method, the students identified problems faced by the community and worked collaboratively with them to solve the problem. As a result, they built a freshwater facility that can be used by all of the people in the community, and now they have better access to water, so they no longer have difficulty in getting fresh water especially in the dry season. With this new freshwater facility that is owned and managed communally, people have enough water supply to fulfill their needs as well as to support their activities such as make irrigation that eventually can increase their wellness.*

Keywords: *Access to fresh water, community development, collaborative action, participatory action research, sustainability.*

1. Introduction

Water is essential not only for the survival of all living beings but also for socio-economic development of communities all over the world. It contributes to achieving the goal of sustainable development; and its proper management is a prerequisite for sustainable development (Singh, 2016).

Water scarcity is a paramount concern that affects growth and sustainable development (Balooni, & Venkatachalam, 2016). Water generates a variety of various ecosystem services in term of its use values and non-use values based on the nature of utilization (Freeman III, 2003). Use values include direct use values, for example, drinking water, and indirect use values, for example, the removal of pollutants. On the other hand, non-use

values include option value, for example, people's willingness to pay a premium for using the services in future, and existence value, for example, people's willingness to pay for a mere existence of the services. These all make managing water resources and ecosystem adequately crucial for reducing poverty and inequality. Furthermore, managing and allocating water in an efficient, equitable and sustainable manner, especially in a complex socio-economic-political and environmental context, has turned out to be a challenging task (Balooni & Venkatachalam, 2016).

In order to improve the well-being of all of its people, Indonesia aims to undertake prevalent development as one of its national goals. However, the distribution of growth in Indonesia is still uneven. The effect of this

unequal distribution of development makes many communities in many areas even do not have enough accesses to their basic needs, including fresh water; and this is a reflection on how the current development in Indonesia is still far from the expectation.

Many social programs have been done to help the unfortunates to get better access to fulfill basic needs: water, food, education, and health. However, many community development programs are not a success and do not adequately deliver the objectives of the program. The low efficiency at one point causes resource waste; meanwhile, on the other point, the people do not get what they need. To avoid this, the correct way in development community program need to be identified. The appropriate approach might cause a community development program being effective.

In order to design and implement a community development approach, the stakeholders urged to strategize. Answering this, and as part of activities of being responsible management education, a business school in Indonesia pushes its students to take part in developing communities through a community development program aimed to help a community to alleviate their quality of life. This program, called as the Community Project, starts by identifying needs and problem faced by the community and their potentials, and then together with the students, the people of the community are invited to think on how to solve their problem and become a self-sustain community in the future.

2. Literature Study

Community Development Program
Social and economic changes are transforming communities. How communities deal with these changes depends not only on the "delivery" of services, the maintenance of infrastructure and economic development, it also relies on local people using assets in new ways, working cooperatively, improving networks, mobilizing existing skills, and putting innovative ideas into action. The outcomes are not only jobs, income and infrastructure but also strong functioning communities, better able to manage change (Cavaye, 2001).

Fundamentally, development is the creation of wealth (Shaffer, 1989). It entails efforts to combine and build resources to improve the quality of and well-being (Green, 2016). It involves the improvement from economics, social and environmental aspects which resulted in sustaining an ideal version of the environment. The vital social system indirectly fosters collaboration, equity, and freedom. Also, a vital economy that is diverse, competitive and accessible will emerge as a side effect (Christenson, Fendley, & Robinson, 1989). Development increases choices sustain positive attitudes, improves the function of institutions and enhances quality-of-life (Cavaye, 2001).

In the process of developing the rural and regional communities, it is necessary to pay attention to several factors. They are good infrastructure that can support the implementation of economic activities; a healthy economy supported by the development of new businesses, easy access to capital, and the formation of new industries; appropriate policies that can have an impact on the competitive level of a rural and regional communities both economically, socially and environmentally; and lastly, high quality services (Cavaye, 2001).

In the process of developing rural and regional communities, government and external parties have the role in assessing needs and providing the service delivery and infrastructure to meet that needs. However, if it is true that community development relies on rethinking, motivation, organization, and local leadership, service delivery represents a partial approach. To complete this approach, involving

communities to find their problems and use their skill and resources can help the development process (Cavaye, 2001).

Integrating the vast body of literature, Matarrita-Cascante, & Brennan (2012) propose a community development continuum typology to show how development efforts may be categorized based on the views guiding the work, benefits produced, and the stakeholders involved, along with other attributes. They label them as "imposed," "directed," and "self-help" approaches to community development (Green, 2016).

The Challenge of Participation

According to Soetomo (2006), the community development program can succeed if paying attention to the change process, resource utilization, and community capacity building. The four assumptions derive the fundamentals of any community development. First, community development is necessarily a change process. Second, it can make the needs, resources, and opportunities for proper coordination. Next, it focuses on problems in communities. Finally, it is a multidimensional process because it makes many variables such as natural resources, human resources, and capital into harmony.

The community is the essential aspect that it is important to note that community development program demands active involvement, participation, of the community An expanded rural agenda needs to involve approaches to community participation. First, people are seeking more informal, temporary and social ways of participating in their community. Second, a more complete rural and regional development agenda needs to firstly embrace new forms of community involvement, such as coalitions, temporary commitments, and networks of existing community groups. These are more likely to engage people with minimal volunteer capacity and to encourage a broader spectrum of community participation. Secondly, a more extensive approach needs to involve local

people in prioritizing issues based on the level of internal motivation, and also create more accessible ways for people to act on their current concerns (Cavaye, 2001).

To increase local people's participation, it is vital that the program should be tailored to the community's internal capacities to answer the development problem faced by the community. Community's participation has been an observation from the beginning to the end of the program, ranging from the identification of the problem, designing alternative solutions, implementing the solution, and evaluating to improve the implementation. By doing this, the communities can have more understanding to what the needs and how to fulfill that needs (Lyon, 1999).

Thus, the activities of community development have the objective to satisfy the community needs and have a positive impact on increasing community autonomy in the future. With the development of independence, people can empower themselves by optimizing their resources (i.e., natural, social, and cultural capital) without depending on help from external organizations (Bhattacharyya, 2004). External involvement is needed only to the extent that it is a catalyst for the change process (Ahmed, & Combs, 1984). By making communities fully involved, the resulting program is expected to sustain even when the help from an external stop. This is because the community is already well prepared to execute the program and they also has everything they need (i.e., resources) to make the program running (Wisesa, Purnawan, & Wulansari, 2017).

3. Methodology

Answering their moral obligation of being part of the larger society, in 2017 students from an Indonesia business school conducted a program of community development in some villages under the Community Project course.

In this course, the students are challenged to initiate a community development program in a real context in certain rural areas as the school's commitment to be a responsible management education. The key is to stimulate the community to be aware of a problem that may exist and to design a program that can solve the problem and give the benefit to the communities.

By using Participatory Action Research approach, the students identified what potential that communities have, what their social needs and problems that can inhibit them to develop. The students need to spend several weeks in the villages so they can gather data through observations, interviews, and focus group discussion. Focus group discussions with representatives of the community were conducted to discuss their lives, social problems they face, and the social needs they have, including how to address the problems. From the process, the students and the community should think about the program that can help the community. This program must be run primarily by the community where the students can still help them.

Participatory Action Research
Participatory Action Research (PAR) is "a systematical method to collect and analyze data to take action and making a change" by generating practical knowledge (Gillis, & Jackson, 2002). Action research regarded as "systematic and orientated around the analysis of data whose answers require the gathering and analysis of data and the generation of interpretations directly tested in the field of action" (Greenwood, & Levin, 1998). In conducting action research, the researcher and community need to work together to solve the problem. Therefore, action research is the focus with a program for social change that represents the belief of knowledge to identify a problem and try to solve it (MacDonald, 2012).

By maintaining a focus on local contexts, PAR makes the process of research different from conventional prescriptive methods and seeks to disperse traditional research (Marshall, & Rossman, 2006). It changes social analysis from a linear cause and effect to a participatory framework that accommodate the situations of how people live (Chandler, & Torbet, 2003; Kelly, 2005; Young, 2006) and includes a repeated process of research, reflection, and action (Marshall, & Rossman, 2006; Selener, 1997). A common framework for PAR covers a "cyclical process of fact-finding, action, reflection, leading to further inquiry and action for change" (Minkler, 2000).

Selener (1997) identified several components regarding the PAR process. First is the acknowledgment that the problem comes from the community itself followed by the analyzing and solving by them. Second, the objective of PAR is the necessary transformation of social reality and development of the individuals' lives who involved in the process; therefore, the one who gets the most benefit of this research is the community itself. Next, PAR needs the full involvement and active contribution of the community in all process of research. Fourth, it incorporates incapable groups of individuals such as people who are exploited, poor, oppressed, and marginalized. Finally, the last component is cited by Selener (1997) as the capability to create a higher consciousness in individuals' resources so it can trigger them for self-reliant development.

Data Collection
The interview is a method used in PAR that enables participants to describe their situation (Stringer, 1999), experiences (Kaufman, 1992; Kvale, 1996), and ideas in their own words (Reinharz, & Davidman, 1992). It is a method that collects information through face to face communication between researcher and respondents use direct questioning (Gillis, & Jackson, 2002).

Participant observation is a method of inquiry and a rich source of data collection in PAR (Dargie, 1998; Marshall, & Rossman, 2006;

Stringer, 1999). It helps the researcher in capturing the individual function in a social setting context through recorded of subjective and objective human behavior (Gillis, & Jackson, 2002; Mulhall, 2003). Therefore, the researcher can get a complete view of what is happening and has a chance to detail the communication, and the implicates in it (Streubert, & Carpenter, 1995).

Focus group discussion (FGD) is a socially oriented process and a method where several research participants are interviewed as a group to capitalize on the communication among them and to obtain data (Kitzinger, 1995). According to Morgan (1997), using both participant observation and focus groups can help in obtaining access to the group, focusing on sampling, and site selection, while it can also help in checking tentative conclusions and possible changes to be implemented.

4. Findings and Discussion

Malingping is the name of a small village in West Bandung Regency, West Java Province, Indonesia. It is located around 40 KM from the Bandung city, the capital of the province. During the initial observation, the students focused their observation to gather the glimpse of the overall area and the community's condition there, including demographic, geologic, socio-economic, infrastructure, and access conditions. This initial observation was also employed to help the students to engage with the community.

We have conducted the in-depth interview two times; the first one was an initial interview to gather information regarding the potential and problems in Malingping Village and the second one is conducted after FGD to validate the result of FGD. Interviews helped the students to get more detailed information regarding how the community deal with problems. The FGD was aimed to invite the villagers to think of the problem they faced, what they need, and how to fulfill the need to overcome the problem. The students conducted FGD with village key persons and the representatives of the community to gather aspiration from the community regarding the program.

General Findings

Road Access to and on Malingping Village can be considered as decent, even though the size of the road is relatively narrow. Most of the house in Malingping Village already made by bricks and woods with West Java style house. All the house in Malingping Village is in excellent condition which did not need immediate renovation. There are 574 people live in Malingping village and most of the denizens in Malingping work as farm labor.

There is also an educational facility in Malingping Village, which is Islamic Elementary School Al-Hidayah. However, most of the people in Malingping choose to send their children to another school in a neighboring village since the quality of education is better than to the local schools. Malingping village did not have any health facility, but there are much decent health facilities exist near the village. However, Malingping Village has an ambulance to be used by the people in an emergency.

All the Malingping community already have access to electricity, even though the usage is still low. Electricity is already used by Malingping community for a long time, and they are getting used to utilizing it for their daily life. Malingping Village located in a highland which makes it has excellent natural potential. This condition makes most of Malingping Village community choose to work on the farm. The main economic activity of Malingping Village is farming and gardening.

Malingping community has a high empathy towards each other. People in Malingping always help each other in their daily life. The situation is reflected when there is someone who passed away. All people in this community show their condolences and voluntarily help the family left behind. Not

only empathy, but this community is also always co-operated on living their daily life, like sharing clean water, help repairing an old house and many more. Elder is also highly respected in Malingping. Thus, the role of elder in this community is critical, especially when this community deciding about change in their village.

Economic Potentials

Malingping Village has varied economic potentials which is a result of the natural condition of Malingping which have much potential, especially in the farming industry. Many people in Malingping open a home industry using farm produce such as cassava chips and banana chips. Based on the observation there are three significant potentials in Malingping Village, which are farming, handicraft, and art performance.

Farming is the primary source of business in Malingping and community in Malingping already used to cultivate their land and have a decent amount of goods produced. The community already develop some business utilizing this farm produce. Some people in Malingping is also creating and selling a handicraft from recycled plastic. They create a plastic flower from plastic and sell it to the traditional market. However, due to decreasing demand in the past years, no many people still doing this business. Giving the community access to the new market is one of the alternatives to boost the potential.

In art performance, people in the village are well-known for their Marawis tradition. Marawis is a traditional art where people are singing a religious song. In West Java Marawis usually performed on religious festival. People in Malingping Village teach their child to perform Marawis, and this children group have performed on many occasions. This activity can be a great potential considering the demand in the neighboring city for Marawis performance.

Defining Problem and Solution

After compiling the potential and problems from observation and interview, students create several Focused Group Discussion (FGD) session to share their findings with locals. Communication and discussion in finding a solution together with the locals is the critical activity in Participatory Action Research Method. FDG help the community and the students to design the best program to answer the problem faced by the community. In FGD the students explained the result of potential and problem identification they did on the initial research from observation and interview to a community forum, consist of local's people and elder. Then, together they are discussing to choose the best project for Malingping Community. From the first FGD sessions, most of the people agreed that access to clean water is the primary concern in Malingping Village since it affects their daily life a lot. This FGD also concluded that the community needs access to technology to help them getting access to clean water.

The students then collaborated with an expert from Environmental Engineering and civil engineer to resolve this problem which comes up with a solution in creating a water depot to collect water from nearest clean water spring then reserves it to provide clean water on Malingping village. This collaboration is a form of effort from students to give access to technology for the community. In developing community, technology is crucial to be adopted, where access to technology in Malingping proved to be one of the central issues in the lack of clean water access for Malingping community. The clean water supply exists. However, it is located in a hard to reach the location where technology can help reach this location and deliver the clean water near the community settlement.

This solution and application of technology then further discussed with the local community on another Focused Group Discussion since the application of technology will incur some running cost and maintenance cost. In this Focused Group Discussion,

students give the cost breakdown on the technology applied and all the consequences which will be imposed to the community. The result of this Focused Group Discussion, locals, agree and understand all the cost incurred to this application of technology, and agree to help in building the water depot as a form of participation in this project. To implement it, the students along with the community and the consultant calculated the volume of the water needed and electricity needed to run the pump. After the calculation, the estimated maintenance cost for this facility is Rp. Five thousand eight hundred for each household per month. The people agreed to pay this cost, and the project implementation started immediately.

Implementation
The program then was implemented in a month timeline in collaboration between student, local community, and civil and environmental engineer. There are several challenges on the implementation, and all the challenges are solved by discussing the solution between all parties involved. As the result of continuing discussion with locals, at the end of the implementation period, not only this project finished the reservoir designed on the project, but the local community also developed their water distribution system to work corresponding with the reservoir. This water distribution system helps the people in Malingping to distribute clean water from the reservoir to their houses. This phenomenon shows the eagerness of self-sustain from the local community which is a result of their participation in the whole project. Local community shows a sense of belonging on the whole project, and this becomes a trigger for self-improve and sustainability of the facility.

Discussion
In this project, student successfully applying Participatory Action Research method. Students collaborating with locals and expert to identify local potential and problem then together discuss to find the best solution. The solution, in this case, comes from repeated

input, evaluation, and revision which obtained from interview, observation and repeated FGD – This repeated method is the core of PAR.

This project demonstrates that using Participatory Action Research on community development project could increase the success rate of the community development project. Implementing PAR can improve the impact of the project on the community's welfare. By implementing this approach, the students were able to deepen their understanding of the real condition how the lack of access to fresh water became a problem for the local community. It is easy to understand that lack of water is a problem, but how the community sees it as a problem is another thing that is questionable except by touching directly to the real context. This kind of participative increases awareness and empathy toward the condition and that becomes the real strength for this approach in defining problem faced by real people in real context, and therefore enable the researcher (in this context is the students) to get a better solution to the problem.

What becomes interesting in this project was how the students did collaborative work with the local community and the expert consultant as well. This collaborative work increased the likelihood to find the better solution the problem of lack of fresh water access. By participating in every discussion, starting from defining the problem, solution, and implementation, the students experienced several cycles of evaluation on the ideas proposed. Not every idea run well. They evaluated the idea, found the error, fixed it by a new idea, tested it both theoretically or practically in discussion with the community and the consultant. In future research, Participatory Action Research needs to implement on different rural location with different culture background to see the correlation between culture and implementation of this method. This future research can increase the robustness of this research.

5. Conclusions

Nowadays business school is demanded to be more participating in the betterment of life quality of society through the Principles of Responsible Management Education as one of United Nations' initiative. This challenge is answered one of many by involving students in answering the problem faced by a community and implementing community development program to elevate the life condition of the society.

Designing and implementing community development program is another challenge faced by business students since they are not trained to be a professional social worker. On the other side, it is a fact that there are many community development program which does not run well due to the incompatibility of the program with the needs of the community in which the programs take place.

Participatory Action Research can be a solution to this problem since this method enables both the agent and the community to work collaboratively in solving the problem faced by the community. It showcases higher effectivity since the community actively involved in the process. It becomes the strength of the method that it is the community themselves who have the problem; and since it is they who aware of the problem, then they know whether the program is answering the problem or not. It means that employing the Participatory Action Research might increase the chance of the community development program to answer the problem and at the same time increase the rates of acceptance from the local community to the program. This acceptance and sense of belonging from the community is one crucial aspect that should be there to ensure the sustainability of the project and the community self-sustain in general.

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