

The Concept of Development by Making Use of Waste Plastic Bottles in the Pojok Village in Central Java Province

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Submitted: 31 Jan 2019; Accepted: 08 Feb 2019; Published: 17 May 2019

Abstract

This program is an effort to utilize plastic bottle waste to become a container of viticulture planting media with external products in the form of a vertical garden and hanging plant garden. Starting from the abundance of used plastic bottles buried in the garbage bank of Pojok village and the existence of plant nurseries by the community and added enthusiasm and community participation in building the village. The object of this service was the people of Pojok village Central Java Province. This service program aims to increase public awareness in utilizing used plastic bottles that were previously only sold and as an effort to improve the agro-tourism opportunities. The method used in this activity is Participatory Rural Appraisal (PRA). PRA is an approach method in the process of empowerment and increasing community participation. The Pojok village community will be actively involved in identifying problems, prioritizing the problems to be resolved, making alternative solutions to problems, planning and implementing programs. In addition, the community is also involved in program evaluation. The analytical method is to measure changes in the knowledge and behavior of the pretest and posttest design using the Wilcoxon test. At the end it can be concluded that the program can be the best solution in utilizing the former plastic bottles into a park as well as an effort to make people aware and motivate the people in Pojok Village to be more creative in using former plastic bottles.

Keywords: used plastic bottles, verticulture, pojok village

Introduction

Plastic garbage bottle which is obtained from the former beverages package becomes one of the biggest plastic waste distributors in Indonesia. The demand of beverage packaging every year is increased. Rachmat Hidayat, the chairman of Bottled Water Company Association Indonesia (Aspadin) said that the production capacity of bottled water in Indonesia increases continuously (15/04/18). The enhancement of bottled water production caused by the increase of production capacity from some companies is because the consumer demands. According to data of Central Bureau of Statistik (2015), the total production capacity in 2013 attain 20,8 billion/liter [1]. The percentage of soil type composition in Middle Java Province, especially plastic waste is increased about 2% from 2012. The increase in plastic waste in each region in various regions has made Indonesia as the second largest waste producing country with 187.2 million tons in 2015. The increasing accumulation of used plastic bottles will be dangerous and cause the pollution for the environment. Plastic bottles that are flooded can be a nest of diseases that are dangerous for humans.

The conditions in the Corner Village, according to data obtained from interviews with the Head of the Pojok Village, Mr. Tukiman (01/04/18), about 350 bottles are produced every day. This number shows that the volume of plastic bottle waste in Pojok village is high. There needs to be an effort to reduce this waste. In addition, the problem that occurred in Pojok Village was the abundance of

plant seeds from the Ibu Pembinaan Kesejahteraan Keluarga (PKK) group of Desa Pojok, which in 2016 had pioneered plant nurseries, but in its journey these nurseries did not end in commercialization and were left alone. Therefore, to reduce plastic bottle waste, it can be used as a verticulture planting medium and using plant seeds from the Family Welfare Development/ Ibu Pembinaan Kesejahteraan Keluarga (PKK) group as verticultural plants.

Actually the potential of Pojok Village, Pojok Village, Tawanghari Sub district, Sukoharjo Regency is very large, but the awareness of the villagers' potential has not emerged. Based on the Statement of the Ministry of Research, Technology and Higher Education Number 1356 / AA1 / PR / 2017 on March 29, 2017 states that Pojok Village is a pilot village. The pilot village is a village that deserves priority for a service program by the campus academic community. Therefore the team chose Desa Pojok as the object of the service program. The purpose of this service is first, to help make people aware of how to reduce the volume of waste in the village of Pojok. Second, increasing the creativity of the community in an effort to reduce, recycle, and reuse the waste to be more useful. Third, build Pojok village in the realization of tourist village through the Vega-Hang (Vertical Garden for Hanging plant) program. All this efforts will go on when residents enthusiastically build their area together to become a tourist village.

The Pojok Village community consists of 1130 family heads with a population of 4543 people consisting of 2313 men and 2230 women. The average productive age in Desa Pojok is over 40-45 years old.

Most of the population in Desa Pojok has jobs as construction workers with a percentage of 80%, 10% entrepreneurs, and 10% civil servants and factory employees. Among them had a side job, which are as a farmer and joined in a farmer group in the village. Based on these data it can be seen that there is a link between human resources and natural resources that supports the rural tourism programs based on agriculture. The process of making verticulture is not difficult and can be maximized by build a vertical parks to pioneer agro-tourism-based areas so that verticulture will be easily accepted by the people of the Corner Village of Sukoharjo Regency. The vertical garden program by utilizing the enthusiasm of the community and various items available at the waste bank can support the feasibility of Desa Pojok as an agricultural-based tourism village.

Material and Methods

The research method used in this activity is Participatory Rural Appraisal (PRA). Participatory Rural Appraisal is an approach method in the process of empowerment and increasing community participation. The Pojok village community will be actively involved in identifying problems, prioritizing the problems to be resolved, making alternative solutions to problems, planning and implementing programs. In addition, the community is also involved in program evaluation. The analytical method is to measure changes in the knowledge and behavior of the pretest and posttest design using the Wilcoxon test. The implementation method used in this activity will be divided into four stages, which are: the stages of observation, socialization, practice and mentoring. The stages are as follows:

- **Observation**

The observation stage is where the dedication team formulates the problem and observes the conditions of the service area through interviews and literature review. Interviews related to the problem, the condition of the community to the chairman of the village, the chairman of the rukun tangga (RT), and the chairman of the youth organization (Karangtaruna). The dedication team formulated and concluded the subject matter and made it into a program proposal.

- **Dissemination**

The socialization phase is carried out by instructional methods and dialogues on the use of used plastic bottles and making vertical gardens. First, program socialization to the Head of Pojok village and the head of youth organization. In this socialization a program plan was produced, which is the utilization of plastic bottle waste into a container of planting media in verticultural systems. Second, the socialization of plastic bottle waste processing, the manufacture of vertical gardens, product commercialization and maintenance was delivered by Rysca Indreswari, S.Pt., M.Sc. The villagers of Pojok Village were given material about processing plastic bottles, utilizing used bottles for vertical gardens, maintenance management and gardening intensively for the commercialization of products. Socialization was provided with power point media and discussions with residents of Pojok Village.

- **Making Practices of Vertical Garden for Hanging plant (Vega-Hang)**

The practice stage is carried out by making planting containers from the former bottles, preparing plants, and making vertical garden frames. The practice of making vertical garden installations will be carried out by a team and residents with the aim of the entire community of Pojok village to find out about how systematic the process of making a vertical garden. With

the existence of joint practice activities it is expected to foster synergy between all elements of the community in the village of Pojok so that the vertical garden activities can run smoothly. Community involvement in the making of vertical garden is highly preferred because it is hoped that the community can manage the program well so that the vertical garden can continuously developed optimally. Vertical garden is made by utilizing the former bottle junk that can be obtained easily from the waste bank. The initial method is to make a planting medium, which is mixing soil, sand and organic fertilizer with a ratio of 2: 1: 1. The addition of sand aims to change the texture of the dense alluvium soil to absorb water well. Then the mixture is put into a used plastic bottle that has been prepared. Ornamental plant seeds are planted on the media, after which plastic bottles are arranged in a vertical place made of bamboo by hanging. Next make the makrame from the rope. Makrame itself is a place for decoration / hangers of verticulture planting media containers. And hanging plant is a term for using plants using containers from plastic bottles that are hung using makrame. Mentoring: The service team provides program assistance to the community of Pojok village. The service team monitors, accompanies, evaluates, and provides direction to the Pojok village community regarding the maintenance of the vertical garden.

Result

In the service of using the PRA approach method is to provide effective support in the planning and implementation process as well as sustainable community empowerment, so the UNS service team helps the community in providing program proposals and planning the development of their villages. According to Chambers in Moeliono and Rianingsih, the PRA method is an approach in formulating planning and development involving the community as effectively as possible [2]. According to Rochdyanto, community service is the best way for campus academics to pour, transfer, and practice their knowledge that has been obtained in college [3]. The community service program is held from April to June 2018 in Pojok Village Tawang Sari Sub district, Sukoharjo Regency.

The first stage is observation. The observation was by interviewing the chairman of Youth Organization, Mas Wahyu and the chairman of Pojok Village, Bapak Tukiman. The team succeeded in compiling the main problems in Pojok Village, called the abundance of plastic bottle waste and the inability of plant nurseries by PKK group.

The next activity is program socialization to Mitra village; this is the Pojok village community as the object. The implementing team explained and explained the technical and schedule of activities to be carried out to the partner villages. The program socialization was carried out twice on April 17, 2018 and May 4 2018. This event took place at the house of Mr. Wahyu Sapto Prasojo and he was the Chairperson of the Selo Beraksi Village Association which was attended by several residents of Pojok Village. The socialization process runs smoothly and the community accepts well the programs we offer. Residents really hope this program can increase knowledge of the application of agricultural science and obtain additional income from the vertical garden products. According to Mead socialization has the aim of providing certain skills in accordance with the material delivered [4]. And the type of socialization used in this service is secondary socialization. That is, the delivery by individuals to group audiences. According to Rochdyanto the results of socialization can

be seen from differences in knowledge before and after socialization [3]. After that, we carried out socialization on the making of vertical garden and makrame which was attended by the people of Pojok village. The implementation of this program was held on 10 May 2018 at the Selo Association in Action. This socialization activity began with remarks from the head of the implementing team and the chairman of the Pojok Village, Bapak Tukiman. This socialization was filled by members of the implementation team, Tinon Yushiana. Before the socialization was carried out, it was filled with filling in the questionnaire (pretest) before the material was delivered by the guest speaker. This questionnaire aims to determine the level of knowledge of the citizens before the socialization is held. The residents also filled out questionnaires distributed after the material was delivered; this is for measuring the influence of the socialization and its impact on the community. After the presentation of the material continued with discussion. The residents were very enthusiastic about the many that asked and actively expressed their opinions. This is because the vertical garden is a new thing for the residents and has not developed much among the people.

Based on the results of the analysis with the Wilcoxon analysis method it can be concluded that there are differences from the results of the pretest and posstest. The socialization activity of making vertical garden was categorized as effective in increasing the knowledge of the residents with the effectiveness of socialization of 67.34%. According to Kartasaputra stated that the increase in knowledge was an indication of the effectiveness of the socialization provided [5]. The pretest results showed that the level of knowledge of the residents both related to making vertical garden or public awareness in utilizing used plastic bottles before they are given socialization was still low at 24.39%. Most of them do not know full about making vertical garden and maintenance intensively. After the socialization program, which was assisted by the screening of educational videos on the utilization and manufacture of vertical gardens, it could make it easier for residents of Pojok Village to understand the vertical garden and its maintenance intensively. The posttest results were 79.03%, this shows that after the socialization can increase the knowledge of the villagers of Pojok Village in understanding the making of vertical gardens and their intensive maintenance.

The activity of making a vertical garden is divided into two parts, namely the making of planting containers and garden tralis. Making a planting container starts from cutting the bottle into two parts, washing it and drying it, then it can be painted to make it more attractive and has aesthetic power. Then after the bottle is painted dried, after that input the planting media in the form of soil and husks as well as input the plants that are cultivated. The second is making tralis made of bamboo and iron. The making of the trident was carried out with the residents of the Pojok Village. Tralis is made into three forms, which are love shape, rectangle shape, and rhombus shape. This arrangement aims to create attraction and add aesthetics. Plants that have been left to stand for approximately 3 x 24 hours which can be concluded that they have been adapted with new planting media so that when applied to the trident it does not die.

During the period of maintenance of the vertical garden, the PKM team provided assistance to monitor how the development and maintenance. In addition, the team also monitored the extent of the obstacles faced by villagers in Pojok in maintaining vertical gardens. This monitoring and mentoring activity was carried out

for 4 times in one month. Next the team conducts an evaluation; this evaluation is useful to provide solutions to citizens about the problems and problems faced. Constraints faced by residents are irrigation of vertical garden. The solution from the team is making water reservoirs to facilitate irrigation because it is considered the reservoir is the best solution in handling irrigation problems. It is expected that with the creation of reservoirs the residents can increase the choice of vertical garden. Subsequent assistance will be given to the selo village in action and the local government so that the program does not stop and can be preserved and developed into a larger one.

The results of this activity were changes in the people's mindset about using former bottles and increasing community motivation after the program was to be more creative in using former bottles. The success of the community service program is shown by the increasing motivation of the community through data analysis before and after the program [6]. At the end it can be concluded that the vertigo program can be the best solution in utilizing the former plastic bottles into a park as well as an effort to make people aware and motivate the people in Pojok Village to be more creative in using former plastic bottles [7,8].

Acknowledgement

The conclusion of this activity is the utilization of plastic bottle waste. Vertikultur garden can be one good form of agro tourism. Plastic bottles can be used as planting containers vertical garden with lots of prominence. Therefore the use of bottles plastic can support agro tourism. In addition, the use of bottles plastic can save the cost of planting containers and can reduce the impact environmental pollution.

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