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Application of Viticulture Techniques in Learning to Increase Environmental Awareness and Interest in Agriculture among Children in Kemiri Village, Puspo District, Pasuruan

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ABSTRACT

This program aims to foster environmental awareness and interest in farming in children in Kemiri Village, Pasuruan Regency. Through educational approach and hands-on practice, the children were taught about viticulture technique, which is vertical plant cultivation. This activity includes counseling on the basic concepts of viticulture, planting training, and assistance in plant care. The results showed an increase in children's understanding of the importance of sustainable agriculture and basic skills in farming. This program facilitates fun and effective learning by using simple and easily available planting media. Hopefully, this program can inspire children to implement viticulture practices in the surrounding environment and become a generation that cares about the environment.

Contribution to Sustainable Development Goals (SDGs):

SDG 4 - Quality Education

SDG 11 - Sustainable Cities and Communities

SDG 12 - Responsible Consumption and Production

SDG 13 - Climate Action

1. INTRODUCTION

1.1. Research Background

Sustainable agricultural development is highly dependent on the role of qualified human resources in developing the agricultural sector, which is one of the keys to success. However, the industry faces a serious challenge, namely the declining number of farmers, especially among young people, while the number of older farmers continues to increase. There are many reasons why young people are reluctant to work in the agricultural sector, including the less prestigious image of agriculture and the view that urbanization to cities provides higher social status and a more secure life. [1] The regeneration of farmers can be seen in the

younger generation's interest in agricultural activities. Previous research shows that the motivation and interest of the younger generation to engage in the agricultural sector is still low. In addition, the younger generation's ability in agriculture also tends to be limited. [2]

The lack of interest among young farmers in the agricultural sector is one of the main challenges in farmer regeneration efforts. This is primarily due to the view that the agricultural sector does not provide adequate returns financially and in terms of prestige. The younger generation often sees the sector as a laborious job with limited prospects, especially when compared to other fields that are considered more promising, such as the technology industry or urban businesses. revealed that there are various reasons for the low interest of youth in working in the agricultural sector. One of the reasons is that the sector has an unattractive



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image, is supported by technology that has not developed rapidly, and inadequate income. As a result, few youth are interested in working in this field. In addition, low income and uncertainty in obtaining farming profits are factors that are taken into account, so the agricultural sector is often the last choice compared to other jobs. [3]

The knowledge possessed by farmers is currently still very limited to encourage the development of more advanced agriculture. Most farmers have a low level of education, such as not completing basic education or only finishing primary school. This lack of knowledge and motivation to improve farm productivity is one of the reasons why farmers are reluctant to pass on their profession to their children. Instead, many farmers choose to lease or sell their farmland. [4]

Agricultural education for children is very important in instilling early understanding and awareness of the importance of the agricultural sector in life. Through this education, children can recognize modern farming techniques, understand the role of agriculture in food security, and appreciate the hard work of farmers. In addition, agricultural education can also encourage their interest and love for the world of agriculture, so that the regeneration of farmers can take place better in the future. The verticulture method can train children's skills and creativity in farming. This technique is easy to maintain, suitable for children, and proven to encourage biodiversity, present a natural atmosphere, maximize space, beautify the yard, and has the potential to become a source of family economy. [5]

Verticulture learning is an important step in introducing modern farming methods that are efficient and environmentally friendly. Verticulture is a technique of growing crops in a small area by utilizing vertical space for planting in stages. This method aims to optimize the use of limited land, making it suitable to be applied in the home environment. According to Sihombing et al. (2019), vertical or multilevel plant cultivation systems can be carried out both indoors and outdoors. This technique is a new concept in agriculture to increase environmental awareness and interest in farming. [6] Farming with verticulture techniques can also utilize materials available around the house, such as used bottles or cans as planting media containers. The used mineral water bottles are arranged vertically and filled with planting media consisting of a mixture of livestock waste, husks, and soil. This results in a planting technique known as verticulture, which can help preserve the environment. [7]

The PKKM 2024 Village Development Program, held by the Agribusiness Study Program, Faculty of Agriculture UPN "Veteran" East Java aims to empower the community, especially young farmers, by improving their knowledge and skills in optimal management of agricultural resources through integrated farming techniques such as verticulture. Through this program, it is expected that young farmers of Kemiri Village, Puspo District, Pasuruan Regency, can maximize the potential of local resources while increasing the interest in farming in children. Thus, this program plays a role in preparing a young generation that has skills in the agricultural sector and encourages the creation of sustainability in the management of agricultural resources in the region.

2. MATERIALS AND METHODS

The implementation method of this program was carried out through three important stages: counseling, training, and

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mentoring, aimed at introducing and improving children's understanding of verticulture techniques. In the first step, counseling on verticulture planting techniques was attended by 75% of the children. This activity was conducted in an interactive educational session, where children learned about the basic concepts of verticulture and the importance of gardening for the environment. Furthermore, in the second step, the children were involved in training on verticulture planting techniques, which was also attended by 75% of the participants, where they were invited to do hands-on practice in planting and caring for plants using simple planting media such as polybags or vertical racks. This allowed them to understand the steps of vertical planting more easily. In the third step, assistance was provided in verticulture plant management, where children were assisted in the process of plant care, including watering, fertilizing, and simple pest control. This assistance aims to help children learn to care for plants independently and take responsibility for their mini garden. Through these three stages, it is hoped that children can better understand the concept of verticulture and develop a strong interest in sustainable gardening.

3. RESULT AND DISCUSSION

Applying verticulture techniques in learning in Kemiri Village, Puspo District, Pasuruan Regency, aims to increase environmental awareness and foster interest in farming among children. The program invites them to understand the importance of sustainable agriculture and how verticulture, a vertical gardening technique, can be an effective solution for growing crops on limited land. In the process, several important steps must be taken, from preparing raw materials, making verticulture planters to planting verticulture plant seeds, where each stage ensures the plants can grow well. By following these steps, children will be able to understand the basic techniques of verticulture.

This verticulture planting technique is very good as a new innovation and cultivation technology in yard land, because the verticulture planting method has several advantages such as efficient land use, cultivated plants are easy to maintain, young plants are moved, saving the use of fertilizers and pesticides. According to Liferdi and Saparinto (2016) Verticulture farming with a hanging system can use pots, used cat cans, used drinking water bottles, or other materials, as long as the material used as a container must be light so that it is easy to choose. The materials used can be new or used materials that are not used. Some of the materials include bamboo, paralon pipes, used cans, polybags, pots, aluminum gutter channels, and even rice sack sheets. In fact, there are already assemblies for verticulture gardening being traded. [8]

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planting method has several advantages such as efficient land use, cultivated plants are easy to maintain, young plants are moved, saving the use of fertilizers and pesticides. Cultivating plants with a verticulture system is not only about planting vertically or horizontally, but in its implementation it can foster one's creativity in utilizing items that are no longer used and have an aesthetic function in the form of a variety of plants to be planted. diversity of plants that will be planted. [10]



Figure 1. Submission of material on Verticulture Planting Techniques

This socialization aims to foster environmental awareness and increase children's interest in farming by introducing verticulture techniques. This activity began with the delivery of material covering various important aspects of verticulture, ranging from basic understanding, its benefits in utilizing limited land, to how to make it. In addition, the children were also explained about the advantages of verticulture, such as ease of maintenance, efficient use of space, and its impact on environmental sustainability. After gaining a theoretical understanding, the children were invited to see this technique's application through a practical session. At this stage, they were allowed to try planting with the verticulture technique, from preparing the planting media to placing the plants on the vertical structure. By doing this practice, it is hoped that the children will not only gain basic knowledge on how to plant, but also have a real experience in farming independently. Through this activity, they learned the importance of farming in an environmentally friendly and sustainable way, and were inspired to apply the same techniques at home



Figure 2. Lettuce seedbeds

These are activities carried out in an effort to prepare plant seeds. [11] seedling media is a material or material used as a place for seeds to germinate and grow for a certain time until the seeds are ready to be transplanted to the land. Seedling media can be soil, soil mixture, and other non-soil materials. Seedling media has an important role for seed growth because when seeds germinate and grow, they need nutrients and a good place to grow. This verticulture practice uses lettuce seedbeds and cotton media that are easily available, cheap, and suitable for learning in the home environment. Cotton makes it easy for children to observe the stages of plant growth, from germination to emergence of buds, making learning more interesting and interactive. In addition, cotton can store water, maintaining the moisture the seeds need. This activity teaches plant science and encourages children to care more about the environment and understand the importance of growing media in agriculture. [12]

3.1. *Manufacture and Practice*

The tools, materials, and procedures used for planting with the vertical garden technique are plastic bottles, nails, ropes, planting media, and seeds. Procedure: (1) Punching a hole in the top of the plastic bottle (2) Punching a hole in the bottom. (3) Attach the rope to the plastic bottle hole. (4) Filling soil and fertilizer into each bottle. (5) Planting the seedlings into the planting media. (6) Water twice a day in the morning and evening.



Figure 3. The practice of making Verticulture Plants

In this practice, children can directly witness the process of sowing the right amount of seeds to ensure optimal plant growth. They were also shown how to mix soil with fertilizer in the correct proportions so that the plants receive adequate nutrition. These activities were carried out with supervision and detailed explanations so the children could understand each stage well. After witnessing this practice, the children are expected to be able to practice the same thing at home. They are invited to start an environmentally friendly gardening habit at home by utilising easily available materials such as used bottles. In addition, this practice reinforces the importance of recycling used items and utilizing them for productive activities, such as growing vegetables. As a result, the children gained new knowledge and practical skills that can be applied daily.

3.2. *Evaluation and Monitoring*

The evaluation of this socialization focused on assessing the extent to which the children received the program on verticulture

planting techniques and the extent to which they understood the concept of planting with verticulture techniques. Through the monitoring process during the activity, the teachers could observe the children's interaction and participation while listening to the material and practising. Feedback obtained from casual discussions after the practical sessions also provided insight into their understanding of the techniques taught. Thus, the results of this evaluation not only serve to measure the effectiveness of the socialization, but will also be used to adjust the materials and delivery methods in future programs, so that they can be more effective in increasing environmental awareness and interest in farming in children. This is expected to result in a more relevant and beneficial program for them in the future.

4. CONCLUSION

Applying verticulture techniques in learning in Kemiri Village, Puspo Sub-district, Pasuruan Regency, has successfully increased children's environmental awareness and interest in farming. Through structured steps, ranging from counseling to hands-on practice, children were introduced to the importance of sustainable agriculture and the application of verticulture techniques as a solution to farming on limited land. The program provides theoretical knowledge and practical experience that enables children to understand the process of planting in an environmentally friendly way. Using easily available planting media, such as cotton and used bottles, helped the children understand plant growth and the importance of recycling. Evaluations showed enthusiasm and good understanding of the techniques taught, motivating them to apply this knowledge at home. This program contributes to children's awareness of the environment and develops sustainable farming skills, hopefully creating a generation that cares about environmental issues and eco-friendly farming practices in the future

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