

Implementation of Environmental Education Module for Children in Indonesian School Jeddah

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Abstract. Children's education is an interesting concern for education activists, who are expected to become agents of change in the future. Environmental education for children will of course be a hope for the sustainability of environmental maintenance. Basic concepts of environmental maintenance need to be introduced to children's education in schools with the potential of each region. The right methods and materials are needed for the effectiveness of environmental education for children. The purpose of this community service program is to increase children's knowledge and awareness of the environment. Community service activities were carried out at the Indonesian School of Jeddah (SIJ) in January-February 2024. Participants in this community service activity were teachers and students. The implementation of community service activities was carried out through three activities, namely socialization activities and the application of environmental education modules for children, as well as hydroponic plant cultivation training as a form of environmental education for children. The results of the community service showed that there was an increase in teacher and student knowledge regarding the application of environmental education to children through learning modules. The application of environmental education modules was carried out through hydroponic plant cultivation practices, so as to improve the skills of teachers and students in environmental education. The level of satisfaction and assessment of community service activities through the application of environmental modules to children at SIJ is in the very satisfactory category.

1 Introduction

Children based on Law No. 23 of 2002 are people who are not yet 18 (eighteen) years old. Children have unique growth and development patterns that include physical development (gross and fine motor skills), intelligence (thinking and creativity), emotional, language and communication [1]. The right time to grow and develop a person's potential is in the childhood phase.

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Children's education is an interesting concern for education activists, who are expected to become agents of change in the future [2]. Children's education must be designed according to the stages of child development [3]. Environmental education for children will determine the sustainability of environmental maintenance in the future [4]. Basic concepts of environmental maintenance need to be introduced early on according to the potential of each region. Environmental education needs to be taught at every level of education, from early childhood education to higher education [5].

Schools are the right place to foster an attitude of love for the environment, with appropriate and varied methods and considering the natural conditions that underlie it. Learning with forest-loving content is not only needed in schools in areas with forests, but also in areas without forests, especially in urban areas. Environmental education is a necessity and should be the main material for learning in schools [6].

Through environmental education, students explore environmental problems, are involved in problem solving, and take action to improve the environment [7]. Students also have the opportunity to explore various environmental problems and hone their skills to make the right and responsible decisions [8]. Environmental education can improve students' attitudes and awareness of the environment [9]. Environmental education makes students think critically and contextually [10].

Learning methods for children need to be designed according to the stages of child development. Several methods that can be applied to children's learning through modules include: storytelling (fairy tales), singing, field trips, role-playing, demonstrations, giving assignments, and exercises [11-13]. The development of environmental education modules for children [14-15] has been developed and implemented in several schools with good results. Based on the description above, this activity aims to introduce environmental education modules to improve children's knowledge and awareness of the environment. Thus, environmental education can be implemented in an integrated manner both in areas with forests and in areas that access forest products. The guidelines and positive learning practices of the environmental education model that have been implemented are expected to be recommendations for application by other educational institutions in a complete and comprehensive manner.

2 Methodology

This international collaborative community service activity was carried out at the Indonesian Overseas School (SILN) at the Indonesian School of Jeddah (SIJ). Participants in this community service activity were lecturers, students, teachers and pupils. The activity took place in January-February 2024. The implementation of the community service activity was carried out through three activities, namely socialization activities and the application of environmental education modules to children, as well as hydroponic plant cultivation training as a form of implementing environmental education to children.

2.1 Socialization

The socialization activity was carried out by the head of the community service implementation team to the school, in this case the teacher of the Indonesian School of Jeddah. The material presented during the socialization was related to the objectives of implementing the community service activity, the targets to be achieved and the approach methods that will be used during the community service activity [16-17]. In this socialization activity, it was continued with a discussion activity to align perceptions of the activities to be carried out and the appropriate approach to be applied based on information from the school as a partner in the community service activity.

2.2 Module implementation

The environmental education module for children that has been developed by the Implementation Team in this community service activity will be implemented by students participating in the International Collaborative KKN who will carry out activities for 30 days at the Indonesian School of Jeddah. The topics in the environmental education module for children consist of 5 topics, namely:

- 1) Trees that produce paper;
- 2) Our tissues are from trees;
- 3) Trees are good, absorb carbon dioxide and release oxygen
- 4) Let's recycle paper
- 5) Take care of animals in the forest

2.3 Training

This training aims to improve the skills of teachers and students related to the implementation of environmental education through the practice of hydroponic plant cultivation. The practice of hydroponic plant cultivation starts from making planting media to planting. The training uses learning and playing educational methods so that participants are more active and the material is easier to apply.

2.4 Evaluation

Program evaluation is conducted on teachers who have participated in the entire series of activities, starting from socialization, module implementation, training and plant cultivation practices. Indicators and benchmarks for success are by knowing the increase in knowledge, skills, and motivation. The criteria for success are by comparing the level of knowledge and skills before and after the activity takes place. Program evaluation is conducted by analyzing the assessment of satisfaction with the empowerment program through several indicators and statements in the form of score data.

3 Results and Discussion

3.1 Socialization of environmental education modules for children

The socialization activity of environmental education modules for children was carried out by informing SIJ teachers. This activity aims to convey how the environmental education module will be applied to SIJ students. Based on the discussion, it was found that they did not know and did not fully understand what was meant by the environmental education module for children. However, after SIJ teachers received information about environmental education and environmental literacy through socialization, the SIJ teachers explained that they had actually carried out several teaching strategies that were aimed at making students learn about environmental literacy or environmental education. Examples of teaching strategies that they carried out were closely related to the theme, for example the environmental theme, for example teaching children to do several activities such as cleaning the yard, sweeping and helping their mothers clean and tidy up the house. Environmental education programs have a significant and positive impact on children's knowledge, attitudes and practices [18].



Fig. 1. Socialization of environmental education modules for children with SIJ teachers

3.2 Implementation of environmental education modules for children

The implementation of environmental education modules for children is carried out in the classroom with several learning methods such as storytelling, storytelling, and games related to the environment. This activity aims to increase the understanding and awareness of SIJ students regarding the importance of the environment. Environmental awareness is an action or attitude that is directed towards understanding the importance of a healthy, clean environment, and so on [19]. Environmental education is carried out in an integrated manner with existing subjects. This is a follow-up to the beautiful school program. The aim is to instill the foundation of environmental education from an early age, equip the younger generation with an understanding of the environment and educate students to behave in an environmentally conscious manner [20].



Fig. 2. Implementation of environmental education modules for SIJ children

3.3 Hydroponic plant cultivation training for children

The strategy for teaching environmental education to children at SIJ school is carried out by inviting children to come into direct contact with the real environment. This will provide a new experience for children who were previously more accustomed to learning in class. Students can be regularly invited to interact with the real world so that children are connected to nature. In this case, the practice carried out is by cultivating plants with a simple hydroponic system in the school environment. The purpose of this activity is so that SIJ teachers and students can practice what they have learned from the application of environmental education modules, as well as improve skills in terms of plant cultivation.



Fig. 3. Practice and training in hydroponic plant cultivation at SIJ

The environmental education practices developed around the vegetable garden enabled students to learn about the environment, planting vegetables and healthy eating from an early age, stimulating the development of values such as respect, ethics, cooperation and community [21]. Nature-based environmental education could be an effective way to promote children's connection to nature, every-day pro-environmental behaviour (PEB) and psychological wellbeing [22]. The policy implications advocate for prioritizing education and awareness initiatives, aligning educational curricula with sustainability principles, and incentivizing the adoption of renewable energy, all while addressing challenges related to waste management and ICT development with care [23]. The results suggest that the teachers were of the belief that the delivery of environmental content should be hands-on, place-based, and that students taking local actions [24].

3.4 Evaluation of community empowerment activities

Program evaluation is conducted on communities that have participated in the entire series of activities, starting from socialization, training to technical assistance. Indicators and benchmarks for success are by knowing the increase in knowledge, skills, and motivation of the community. The criteria for success are by comparing the level of knowledge and skills before and after the activity takes place. Program evaluation is conducted by analyzing the assessment of the beneficiary community towards the empowerment program through several indicators as follows.

Table 1. Evaluation score for the implementation of community service.

Indicator	Score	Category
Socialization	4,64	Very satisfied
Module implementation	4,72	Very satisfied
Training	4,62	Very satisfied
Total score	4,66	Very satisfied

*Information:
1,00 – 1,80 = Very Dissatisfied
1,81 – 2,60 = Not satisfied
2,61 – 3,40 = Neutral
3,41 – 4,20 = Satisfied
4,21 – 5,00 = Very Satisfied

Based on Table 1, it is known that the evaluation score for the implementation of the community empowerment program is 4.66 with a very satisfied category. Assessment of community satisfaction with the empowerment program is also needed. This aims to determine the extent to which the implementation process of the community empowerment program is felt. Based on Table 2, it is known that the community satisfaction score for the empowerment program that has been carried out is 4.58 with a very satisfied category. Student satisfaction is a major factor in the overall success of outdoor environmental education programs [13].

Table 2. Community satisfaction score with program implementation.

Indicator	Score	Category
Program suitability	4,54	Very satisfied
Program implementation	4,66	Very satisfied
Solution to problem	4,72	Very satisfied
Accuracy of appropriate technology	4,34	Very satisfied
Process & accuracy of empowerment methods	4,54	Very satisfied
Success confidence	4,52	Very satisfied
Value-added	4,78	Very satisfied
Total score	4,58	Very satisfied

*Information:
1,00 – 1,80 = Very Dissatisfied
1,81 – 2,60 = Not satisfied
2,61 – 3,40 = Neutral
3,41 – 4,20 = Satisfied
4,21 – 5,00 = Very Satisfied

4 Conclusions

Based on the results of the discussion that have been presented previously, it can be concluded that community service showed that there was an increase in teacher and student knowledge regarding the application of environmental education to children through learning modules. The application of environmental education modules was carried out through hydroponic plant cultivation practices, so as to improve the skills of teachers and students in environmental education. The level of satisfaction and assessment of community service activities through the application of environmental modules to children at SIJ is in the very satisfactory category.

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