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Culture of Building Environmental Awareness in Orphanages: Strategy and Implementation of Nature Conservation Programs

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ABSTRACT

Background: Large cities' extremely high levels of activity contribute to rising air pollution, which can make residents feel stressed. We must be able to find a solution to this issue, but we cannot deny or resist this circumstance. Environmental pollution from garbage and air pollution is a common issue in large cities like Bekasi City, one of the supporting cities for DKI Jakarta province. For the city of Bekasi to have alternative options for environmental sustainability, these two issues need to be addressed. Teaching people about the value of preserving the environment is one of the practical steps being taken to maintain and preserve it in the Bekasi City area.

Purpose of the Study: Since it can create a culture of understanding the value of protecting the environment, this education must be continued for upcoming generations. The goal of choosing education at the orphanage was to encourage children's involvement in caring for the conditions of the surrounding environment in urban areas.

Methods: Researchers and a team implemented this education at one of the homes in Bekasi City. Sorting and choosing rubbish are one of the actual tasks completed to prevent waste accumulation. As a tangible step toward supplying oxygen in the future, planting trees is another activity.

Results: The outcomes of carrying out this activity can be successful, and it is hoped that it will foster a positive culture within the community by emphasizing the value of sustaining a sustainable environment in the vicinity of their homes.

Keywords

Children; Environmental Conservation; Participatory Action Research; Waste Sorting; Tree Planting

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Introduction

Regional development impacts shifting the ecosystem of a region, such as the city of Bekasi, which is one of the buffer areas for Jakarta, part of Jabodetabek. The increase in the number of motorized vehicles in the city of Bekasi produces air pollution, including greenhouse gas emissions such as carbon dioxide (CO₂) and methane (CH₄) (Sukmana and Aryanti 2019). The increasing development of infrastructure in Bekasi city can reduce the capacity of the soil to absorb rainwater, which changes the natural water cycle. This increases the risk of flooding in urban areas and reduces groundwater availability. In addition, urban activities produce more solid and liquid waste from household, industrial, and plastic waste, threatening aquatic and terrestrial ecosystems (Anderson and Taylor 2020).

As individuals who are part of human life, it is a shared obligation to preserve the environment for the sake of human sustainability. Several aspects that need to be carried out by us as social creatures in preserving the environment in urban areas include: 1). Reducing pollution by keeping the environment clean by reducing waste, especially plastic waste, and air pollution, using environmentally friendly vehicles and good waste processing is one step in reducing pollution (Nugroho 2019). Planting trees with the hope that they can grow well, absorb carbon dioxide, produce oxygen, and maintain ecosystem balance. Therefore, planting and caring for trees is an important action to preserve the environment (Supriatna 2014). Encouraging the younger generation to understand the importance of protecting nature and adopting environmentally friendly habits is a key step for sustainability through educational activities and environmental awareness (Gunawan 2015; Wahyudi 2021).

Based on weather predictions from the Bekasi City Meteorology, Climatology and Geophysics Agency, the predicted air temperature in Cikarang in September 2024 is 23^o/32^o, October 2024 is 24^o/32^o, November 2024 is 24^o/32^o, and December 2024 is 24^o/ 31^o, the predicted air temperature according to WHO is included in the criteria for hot air temperature and can make the body uncomfortable, and has an impact on health (Organization 2018).

There needs to be real action in responding to hot air temperatures, therefore the small steps that need to be taken are by providing assistance, counseling, and real practice in implementing greening in our immediate environment. One of the activities undertaken by lecturers and students in campaigning for greening in the Bekasi city area is carrying out community service activities with an environmental theme. This community service activity chose the location of the activity at the Panti Yatim Indonesia (Yatim and Zakat) Duta Harapan Branch, Bekasi City in the form of education for orphanage administrators and orphanage residents. The education carried out includes 1). Sorting inorganic and organic waste, 2). Implementation of reforestation in the orphanage environment in the form of tree planting, 3). Making organic fertilizer for the needs of plants around the orphanage environment.

These three educational activities are considered important, because children in orphanages need to understand the importance of a healthy environment. There are many other benefits that can be gained by providing education in an orphanage environment, namely building awareness from an early age, forming positive habits, reducing environmental impacts, empowering children, ensuring the sustainability of the future environment, playing the role of an agent of change, improving health and quality of life.

Method

In this community service activity, the method used is to conduct direct observation to the PYI Yatim dan Zakat Orphanage Duta Harapan Bekasi Branch with the aim of obtaining data, situations and conditions of the orphanage. Then an analysis is carried out regarding the plan for implementing education to protect and preserve the environment around us, the next step is

implementing activities, and the last step is carrying out an evaluation with the orphanage management.

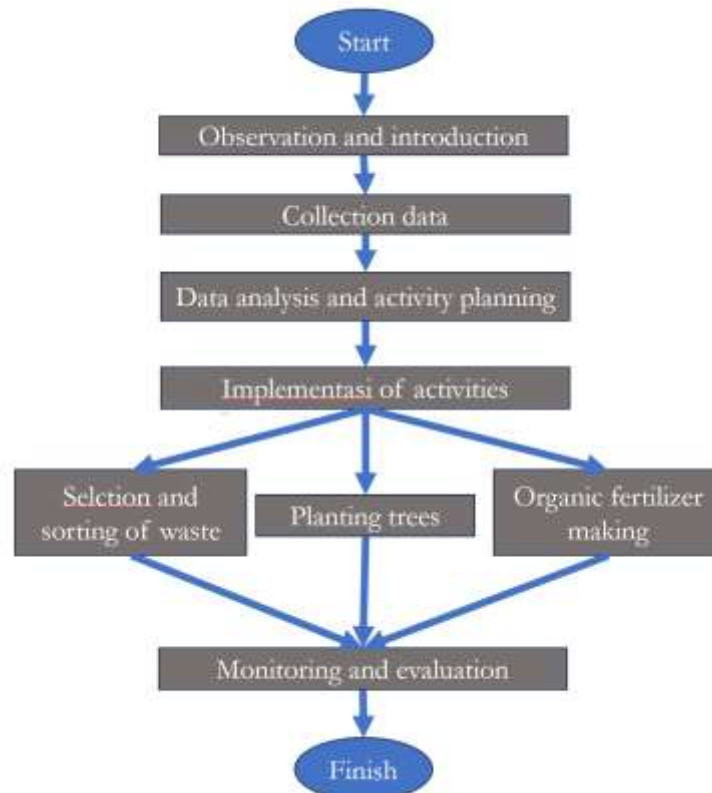


Figure 1. Scheme of Activity Plan

Result

Community service activities were carried out at the YPI Yatim dan Zakat orphanage Duta Harapan Bekasi Branch for 8 weeks from 3 June to 27 July 2025. During this service, many activities were carried out, including:

Observations and Introductions

Observations carried out included looking directly at the environmental conditions of the orphanage, the number of residents in the orphanage, and waste handling methods.



Figure 1. Site Survey and Observation Process with the Orphanage, (1). discussion with the orphanage leader, (2,3). the condition of the land behind the orphanage.

After knowing the conditions around the orphanage, the next step taken was to introduce the orphanage administrators and residents and then continue with socialization regarding the

importance of protecting and preserving the environment.



Figure 2. Presentation on How to Preserve the Environment

The presentation conveyed the importance of preserving the environment, and what steps must be taken to protect and preserve the environment. How to protect and preserve the environment can be done by sorting waste, creating waste banks, reforestation, processing organic waste into fertilizer (Gunawan 2015; Hardjanto 2017).

After the introduction and presentation of material on protecting and preserving the environment in the orphanage, the children of the PYI Yatim & Zakat orphanage at the Bekasi Hope Ambassador branch played games to refresh the atmosphere (Adji et al. 2024). The type of game carried out is an interactive game that asks questions about protecting and preserving the environment.

Environmental Preservation and Protection Action Activities

The next step taken in this community service is direct action in protecting and preserving the environment. The action carried out involved the participation of all residents of the orphanage so that they felt that the environment of the orphanage belonged to them and needed to be maintained for sustainability in the future. Change does not come from other people or outside parties but rather from ourselves as part of society and part of the change itself (Adji and Rezasyah 2023). Another message from this activity is to foster a sense of empathy for the surrounding environment and empathy for all residents that environmental cleanliness is a shared task (Adji et al. 2024). There are three actions carried out, namely 1). Sorting and selecting waste; 2). Procurement of waste banks, 3). Planting trees.

Sorting and Selecting Waste

The action taken was to invite all residents of the orphanage to sort and select the waste and then separate it into two containers, namely organic waste and inorganic waste (Putri and Fauzi 2019). Based on data obtained from the management of the PYI Yatim and Zakat Orphanage, Duta Harapan Bekasi Branch, it is stated that the PYI Yatim and Zakat Orphanage, Duta Harapan Bekasi Branch, every day produces around three large plastic bags with the type of waste in the form of used food and drink waste with a weight ranging from 5 – 7 kg/day. The collected waste will be picked up by garbage officers once a week. With conditions like this, there needs to be real action in handling community-based waste, so that administrators and residents of orphanages are aware of the importance of maintaining a clean environment (Prasetyo and Sugiri 2016).

The accumulation of rubbish mixed and piled up for a week while waiting for the collection schedule, of course, is detrimental to the nursing home environment because the bad smell from the rubbish is very disturbing to breathing, and it can be a source of disease for the residents of the nursing home. Therefore, the right step that needs to be taken is to take direct action to sort

and select waste by separating into different containers between waste that is easily decomposed and waste that is difficult to decompose.



Figure 3. Process of Sorting and Selecting Waste by Residents of the Orphanage: (1) preparation of trash bins, (2). practice of sorting organic and inorganic waste, (3). Results of waste separation

As a result of the collection, sorting, and selection of waste, two types of waste are collected, namely organic waste and inorganic waste. The results of organic waste collection are then processed into fertilizer by placing it in a hole in the ground, which is then covered so that it rots and can be used as fertilizer. For inorganic waste, further sorting and selection still needs to be carried out because waste that can be recycled or resold will be selected, this waste is plastic waste such as plastic bottles and/or plastic cups (Putri and Fauzi 2019).

Sorting and Selection of Plastic Waste

In sorting inorganic waste such as plastic bottles or plastic cups, children need to know so that they can use them so that they can make waste that has economic value. So it is necessary to create a trash bin to separate plastic bottle waste. in making this waste bank using wire and made in a large size. Apart from that, children are also given education on how to sort plastic bottle waste, so that the waste can be utilized and has economic value for the orphanage.

Education regarding sorting and selecting plastic waste for children in orphanages is also delivered simply so that children can easily understand the importance of sorting waste that has economic value (Harsono and Setiawan 2015). In practice, children are very enthusiastic and quickly understand the types of organic, and inorganic waste and waste that has economic value. With good management, it is hoped that the active involvement of children and Orphanage Management in this activity can create a sense of ownership and shared responsibility for the environment around them (Prasetyo and Sugiri 2016). In this way, a healthy environment can be created and protected from environmental pollution and the spread of disease caused by waste.

The participation of the residents and administrators of the PYI Yatim and Zakat Orphanage, Duta Harapan Bekasi branch in every stage of the activity, was very helpful and cooperative in the activities of this project (Wicaksono and Wulandari 2019). This activity will improve understanding and awareness of the importance of protecting the environment. By directly involving the participation of orphanage residents, the goal of increasing environmental awareness and empowering the orphanage community can be optimally achieved (Riyanto Adji 2021).



Figure 4. (1). Process of Making a Waste Bank, (2). Waste Bank, (3). Usage Practices Waste Bank, (4). the Results of Sorting and Selecting Waste

It requires a high level of commitment from the orphanage management in directing and monitoring the activities of selecting economically valuable waste for the children for the sustainability of activities to preserve the orphanage environment in the future.



Figure 5. Results of Selection and Sorting of Inorganic Waste

Planting Trees

The next action involving the participation of the children's residents and administrators of the Duta Harapan Bekasi branch of the PYI Yatim and Zakat orphanage was the process of planting trees. The purpose of planting this tree is to provide greenery and shaded space to provide oxygen for the environment of the PYI Yatim & Zakat orphanage, Duta Harapan Bekasi branch, as a step in mitigating climate change (Tarigan and Rahmad 2020). The type of tree chosen to be planted is a fruit plant that has wide leaves and can provide benefits for the residents of the orphanage because it can be consumed. Based on these considerations, the tree chosen to be planted is a mango tree.

When the process of planting mango trees directly involved the children of the Duta Harapan Bekasi branch of the PYI Yatim and Zakat Orphanage, their response was very enthusiastic.



Figure 6. Process of Planting Trees by Orphanage Residents

Activities Monitoring and Evaluation

After carrying out actions to protect and preserve the environment in the form of waste sorting and tree planting, monitoring and evaluation steps are carried out on the activities that have been carried out. Monitoring activities carried out include monitoring waste management activities and tree growth progress. Monitoring is carried out with students and lecturers. The monitoring results show that waste management activities are running well according to plan and the growth of mango trees is being monitored well. Even though the monitoring and evaluation results show quite good results, further education needs to be carried out, especially regarding waste management issues.

The waste problem is currently quite a complicated problem because it involves various parties. The waste problem in Indonesia also experiences big challenges, especially in the aspect of each individual's awareness regarding the habit of disposing of waste in the right place, as well as sorting waste according to its type (Sari and Riyadi 2021). To reduce and handle this waste there must be a comprehensive and sustainable management system, so that the quality of the environment and public health becomes better, as well as making waste a resource by always providing education to the children who live in the PYI Yatim and Zakat orphanage Duta Harapan Bekasi branch so that the habit of throwing rubbish in its place and the habit of sorting and selecting rubbish before throwing it in its place emerged (Nugroho and Kurniawati 2020). By getting used to a healthy life by always caring about separating waste, we can make our lives healthier, making it easier to dispose of and reprocess it, and this can certainly avoid the accumulation of waste.

Discussion

The community service program conducted at the YPI Yatim & Zakat Orphanage, Duta Harapan Branch, Bekasi, demonstrates that a participatory approach combining environmental education, hands-on activities, and continuous mentoring can effectively foster environmental awareness and behavioral change within a residential community setting. The findings suggest that environmental interventions are more impactful when they extend beyond theoretical outreach and involve direct engagement that allows participants to experience and practice sustainable behaviors.

The initial observation phase provided an important contextual understanding of the orphanage environment, including waste management practices and potential health risks

associated with weekly waste accumulation. Daily waste production of approximately 5–7 kg, combined with once-weekly collection, created conditions conducive to environmental pollution and health disturbances. This situation underscores the urgency of implementing community-based waste management practices that are practical and adaptable to institutional social settings such as orphanages.

Educational outreach supported by interactive games proved to be an effective strategy for engaging children. Delivering environmental messages through simple explanations and participatory activities improved comprehension and retention. This finding reinforces the notion that environmental education for children is more effective when delivered through experiential and interactive methods rather than one-directional instruction.

The waste sorting initiative served as an entry point for collective behavioral change. Separating organic and inorganic waste not only reduces environmental risks but also cultivates awareness that waste materials require responsible management. The composting of organic waste using simple burial methods offered an accessible solution aligned with the community's capacity. In addition to reducing waste volume, this practice introduced the concept of nutrient cycling and organic waste reuse.

Management of inorganic waste through plastic bottle segregation and the establishment of a waste bank revealed the economic potential embedded in recyclable materials. Educating children about the economic value of plastic waste helped reshape their perception of waste—from disposable material into a resource with tangible benefits. Their enthusiasm during sorting activities indicates that environmental values are more readily internalized when participants are actively involved. However, long-term sustainability depends heavily on the commitment of orphanage administrators to supervise and reinforce these practices.

Tree planting activities added an ecological dimension while offering long-term benefits to the orphanage community. The selection of mango trees with broad canopies supports greening efforts, provides shade and oxygen, and offers future nutritional and economic value. The strong engagement of children during planting activities suggests that hands-on environmental action fosters a sense of ownership toward their living environment. In the broader context of climate change mitigation, small-scale greening initiatives such as this contribute to environmental awareness and ecological responsibility from an early age.

Monitoring and evaluation results indicate that waste management practices were implemented as planned and that the planted mango trees showed healthy growth. These findings suggest that an intervention model grounded in education and direct action can be effectively applied in community-based environments. Nevertheless, continued environmental education remains essential, as waste management challenges in Indonesia are influenced not only by infrastructure limitations but also by individual habits and awareness.

More broadly, this program illustrates that cultivating environmentally responsible behavior requires consistent habituation. Continuous education has the potential to establish lasting habits of waste sorting, environmental cleanliness, and resource reuse. As a result, small-scale community interventions can improve environmental health, enhance residents' quality of life, and foster a shared sense of responsibility toward environmental stewardship.

Looking ahead, program sustainability will depend on strengthening internal waste management systems, integrating environmental practices into daily routines, and ensuring periodic mentoring support from academic institutions or volunteers. Such measures are necessary to ensure that behavioral changes become embedded practices rather than temporary outcomes, ultimately evolving into a sustainable environmental culture within the orphanage community.

Conclusion

The education that has been carried out at the Duta Harapan Bekasi branch of the PYI Yatim & Zakat orphanage regarding the culture of building environmental awareness in orphanages as one of the strategies and implementation of nature conservation programs in urban areas is a direct action of environmental care activities. The increasingly hot conditions of Bekasi City require real action to provide solutions.

A common problem that occurs in various cities supporting the Special Capital Region of Jakarta is the problem of waste, therefore there needs to be a habit of managing waste from the smallest environment. If this has become a habit, the longer the effect will be felt, namely that waste management will be carried out well.

The lack of oxygen reserves in the buffer area of the Special Capital Region of Jakarta must also be addressed by concrete action in the form of providing natural oxygen sources in the form of plants that can neutralize air pollution. Tree planting activities are a real step in providing oxygen, and this step requires support from all levels of society involved, especially in matters of maintenance, so that efforts to provide oxygen naturally can be realized and according to plan.

The involvement of children living in orphanages in preserving the environment is a good step to educate children to get used to doing positive things and educating them about the importance of environmental sustainability to ensure life in the future. Apart from that, the involvement of children living in orphanages is proof of the importance of participation in protecting and caring for environmental preservation, because it will become a good culture. Participatory culture teaches from us by us for us, and children in orphanages are not objects of research, but as actors of the research itself towards change.

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Conflicts of Interest

The author declares no potential conflict of interest regarding the publication of this work. In addition, the author has acknowledged the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy, which have been fully addressed.

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