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PROVIDING ECO-LITERACY OUTREACH TO GENERATION ALPHA USING GAME-BASED PLASTIC RECYCLING ACTIVITY: CASE STUDY WITH FOSTER CHILDREN OF AN ORPHANAGE

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ABSTRAK

Abstrak: Sebuah kegiatan edukasi lingkungan berbasis permainan bagi Generasi Alpha telah dilaksanakan. Kegiatan ini bertujuan menumbuhkan kesadaran lingkungan pada anak-anak usia dini, sekaligus memberi ruang bagi mahasiswa Teknik Lingkungan Universitas Presiden dalam menginternalisasi nilai-nilai luhur Pancasila dalam konteks penyelamatan lingkungan. Mitra kegiatan ini adalah sebuah panti asuhan di Kabupaten Bekasi yang mengasuh 30 anak-anak generasi Alpha. Metode yang digunakan meliputi edukasi mengenai isu lingkungan dari limbah plastik, praktik aksi nyata dalam bantuk kreasi kriya dari plastik bekas pakai dan penanaman nilai-nilai Pancasila terkait gotong royong untuk menjaga lingkungan. Evaluasi dilakukan dengan cara memberikan quis impromptu di akhir kegiatan yang mengukur pemahaman peserta mengenai pemahaman dampak lingkungan dari sampah plastik, kesadaran untuk menjaga lingkungan dari cemaran plastik dan keterampilan dalam mengolah sampah plastik. Hasil evaluasi menunjukkan bahwa 100% mitra peserta kegiatan mendapatkan peningkatan pemahaman, kesadaran dan keterampilan terkait pengelolaan sampah plastik.

Kata Kunci: Sampah Plastik Laut; Eko-Literasi; Daur Ulang Plastik; Pancasila; Generasi Alfa; Kabupaten Bekasi.

Abstract: *An educational activity to raise environmental awareness for Generation Alpha has been carried out. This activity aims to foster environmental awareness in young children, as well as providing space for Environmental Engineering students at President University to practice the noble values of Pancasila in the context of saving the environment. The partner for this activity is an orphanage in Bekasi Regency which cares for 30 children of generation Alpha. The methods used include education about the environmental issue of plastic waste and real action practices in creating crafts from used plastic which are framed within the framework of Pancasila values. Evaluation is carried out by giving an impromptu quiz at the end of the activity to measures participants' understanding of the environmental impact of plastic waste, awareness of protecting the environment from plastic pollution and practical skill in processing plastic waste. The evaluation results show that 100% of activity participants have increased understanding, awareness and skills related to plastic waste management.*

Keywords: *Plastic Marine Debris; Eco-Literacy; Plastic Recycling; Pancasila; Generation Alpha; Bekasi Regency.*

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A. BACKGROUND

Indonesia is one of the world's largest contributors to plastic marine debris. According to (Meijer et al., 2021), Indonesia is the world's fifth largest contributor of plastic debris into the oceans. The amount of plastic waste from the country into the oceans reaches 56,333 metric tons per year. The cause of this substantial amount of plastic marine debris are partly due to its large population and the increasing use of single-use plastics, lack proper waste collection systems, weak law enforcement in the field of environmental management and the lack of awareness of the problem of plastic waste in Indonesia, particularly at the grassroots level (Dobler et al., 2022; Kamaruddin et al., 2022; M. M. Sari et al., 2022). Indonesia's geographical position is another significant factor on the amount of plastic marine debris that the country contributes to the global marine pollution problem. The extensive coastline and numerous water bodies provide multiple entry points for plastic waste to enter the marine environment (Darus et al., 2020; Nurhati & Cordova, 2020).

Bekasi Regency is one of the areas in Indonesia which is prone to generating enormous amount of plastic marine debris (Faizal et al., 2022; Sakti et al., 2021). Bekasi Regency is located directly adjacent to the sea with a coastline of 72 km which borders its land area to the Java Sea. There are 16 rivers in Bekasi Regency with a width ranging from 3 to 80 meters which empty into the Java Sea. Two of them that are well known are the Citarum River and the Bekasi River. Large populations and higher levels of urbanization also another contribution factor to generation of more plastic waste in Bekasi Regency, as urban areas often have greater consumption rates and more packaging waste. According to the latest population census, population of Bekasi Regency in 2021 reaches 3,157,962 inhabitants (Badan Pusat Statistik, 2022). Rapid urbanization driven by economic and industrial growth in Bekasi Regency is another important contributing factor to environmental problems (Hijrawadi & Adrian, 2019; Kurnia et al., 2020).

The Indonesian government has taken steps to address the plastic marine debris issue, including setting targets to reduce plastic waste and banning certain single-use plastics. One of the efforts for regulation is the issuance of Presidential Regulation Number 83 of 2018 concerning Management of Marine Debris and Its National Action Plan (Indonesia, 2018). However, implementation and enforcement of these policies can be challenging partly due to weak governance (Jing & Sutikno, 2020; Sudirman et al., 2023). Higher education is a center of excellence where intellectuals gather which not only functions as a place for learning and research but also a place where intellectuals collaborate to devote themselves to the community (Indonesia, 2012). Universities also play an important role in stemming the degradation of character and forming a strong character to face challenges that occur in life, including in the aspect of environmental management (Manyoe et al., 2022; Utami & Najicha, 2022).

The Environmental Engineering Study Program of Presidential University is located in North Cikarang District of Bekasi Regency. As a study program with an environmental-related discipline in an area prone to plastic marine debris generation, the academia of Environmental Engineering at President University are called upon to dedicate themselves in empowering the local community, particularly the younger generation (i.e., generation Alpha, those who were born between 2010 and 2024) (J. Sari et al., 2023; Ziatdinov & Cilliers, 2021), to have the environmental awareness in reducing the potential for plastic marine debris issues.

To realize this idea, the academic community from the Presidential University Environmental Engineering Study Program has initiated collaboration with Yayasan X, a social foundation operating an orphanage in Cikarang Utara District, Bekasi Regency, West Java Province adjacent to Jababeka Industrial Estate, one of the largest industrial estates in Indonesia. This collaboration is aimed at providing eco-literacy for younger generation (i.e., Generation Alpha) while simultaneously providing platform for the students of Environmental Engineering Study Program to implement the noble values of Pancasila (Mariyani, 2017; McBride et al., 2013).

This eco-literacy outreach activity on plastic waste recycling has three objectives. First, it aims to increase the awareness of Generation Alpha children about the importance of protecting the environment, especially marine plastic waste. Second, it aims to educate, increasing the creativity and inspire the Generation Alpha children in turning used plastics into valuable products with games-based recycling practices. Lastly, it seeks to provide a platform for Environmental Engineering students to internalize the noble values of Pancasila in the form of social solidarity and saving the environment through knowledge sharing and caring to foster children.

B. METHODS

The partner of this outreach program is Yayasan X, a non-government organization that provides shelter and education for orphans and children from poor families located at Cikarang Utara District, Bekasi Regency. As many as 30 children of generation Alpha are currently being cared in this orphanage. The parties involved in conducting this outreach program are a lecturer and a group of first year students of the Environmental Engineering Study Program taking Pancasila course. Figure 1 depicts the methodological framework of this outreach program.

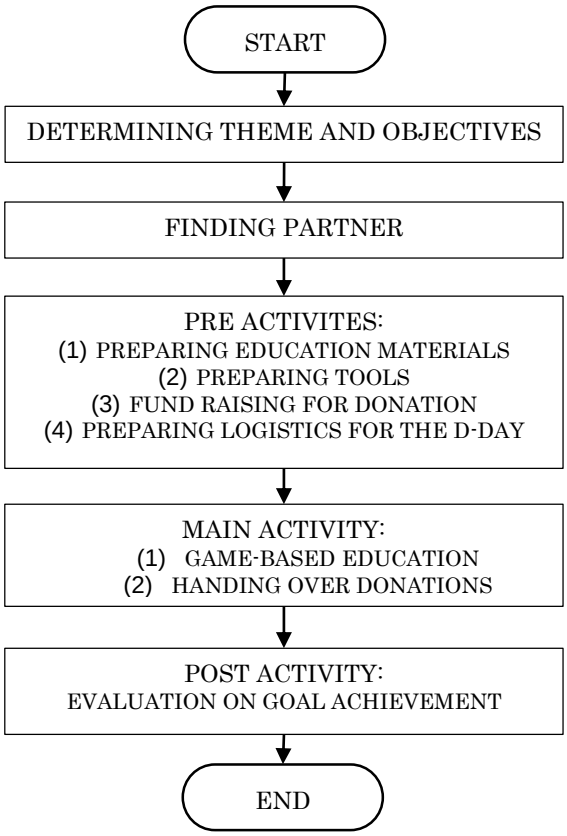

Figure 1. Methodological Framework of the Outreach Program

The whole activity was begun by determining the big theme the group wanted to solve. The big theme to be solved is how Environmental Engineering students can take part in solving the existing environmental problems that occur in the communities around the campus area, such as decreasing of air quality, contamination of water bodies, and plastic marine debris issues. The students then held discussions on the alternatives and then agreed on what topics they want to solve. From the discussion that had been carried out, it was decided to take action to increase generation Alpha awareness on the plastic marine debris problem.

Once the topic has been agreed upon, the next activity is to find target partners. The student group then approached several educational institutions around Bekasi Regency. The alternatives were then evaluated based on several factors, such as the distance to campus, the number of foster children accommodated, to the willingness of potential partners to be met. After being evaluated, it was decided that the Yayasan X was chosen the activity partner. Providing environmental awareness education for foster children at the Yayasan X is a noteworthy outreach program because the problem of plastic waste is a crucial problem and affects life in the future that will touch the future livings of today's children.

After the partner's commitment had been obtained, the pre-activities were begun. The pre-activities were: (1) preparation of educational materials such as data, photos, video contents and presentation slides on the plastic waste

issues; (2) preparation of tools and materials for game-based plastic recycling creative activities; (3) collection of donations in the form of cash and used-clothes to be handed over to the orphanage after the implementation of educational activities as a form of solidarity; and (4) preparation of logistics (food and refreshments) for the D-day program. The pre-activities lasted for one month from the mid-June 2023 to mid-July 2023 and the main activity was held on July 17, 2023. Following the main activity, an evaluation was conducted to measure the achievement of the objectives. This evaluation was conducted by making a pop-up quiz for the participant. The scope of this quiz covers the awareness, knowledge, and skill gained by participant throughout this outreach program.

C. RESULT AND DISCUSSION

1. Results of the Activities

Figure 2 are some pictures of the main activity that covers plastic education session and craft making from used plastic.

(a) (b) (c) (d)

Figure 2. Documentation of the outreach program: (a) Environmental Engineering students providing brief introduction of the program; (b) and (c) Participants making crafts from used plastic; (d) Participants showing their work

a. Plastic Waste Issues Education

During the educational session on the issue of plastic waste, the foster children enthusiastically listened to the presentations and narratives presented. From this activity the foster children gained new insights about things they did not know before about the impact of plastic waste on the environment, especially that on the marine ecosystem. This was

shown from the enthusiasm of the foster children in listening to the presentations and their responses to questions during the lectures.

b. Game-based Plastic Recycling Activities

During the game session of making crafts from used plastic, the foster children were very enthusiastic and showed a desire to try various creations. Assistance provided by students was also very helpful for foster children in overcoming difficulties encountered during craft activities. The results of the crafts obtained from the foster children were in the form of various kinds of flowers from used plastic of various colors. After the activity, the children were so proud to show off their work.

2. Results of Post-Activity Monitoring and Evaluation

During the activity, monitoring was held in the form of observing the activeness of the foster children in participating in the series of events from the beginning to the end. This monitoring aims to ensure all participants involve and respond to all series of events, starting from learning sessions, playing games, as well as exhibition that have been delivered. After the activity, the children took a quiz to measures their knowledge of the environmental impact of plastic waste, awareness of protecting the environment from plastic pollution and practical skill in processing plastic waste. The evaluation results show that 100% of activity participants have gained improvement in their understanding, awareness and practical skills related to plastic waste management, as shown in Figure 3.

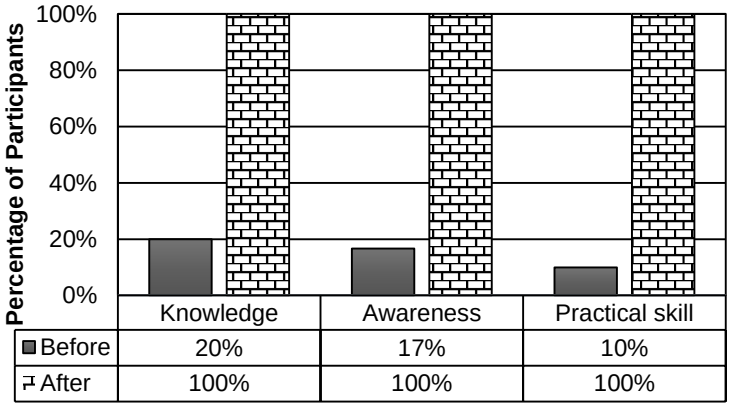

Figure 3. Evaluation results on the increase of participants' knowledge, awareness, and practical skill regarding the plastic waste management before and after the program

In addition, a joint evaluation was also carried out for the committee and partners to find out the level of partner's satisfaction with the event, and opened a suggestion-criticism session, without eroding unity, but will become the foundation for strengthening the relationship between the committee and our partners. Regarding the target of achieving the implementation of

Pancasila values through this activity, formative evaluation of students is carried out by lecturers through observation and question and answer with students.

The results of the evaluation, both during the activity and after the activity, indicate that the foster children gained new insights that would shape their attitudes in the future. The insights can be seen from how the children had not known what recycling was before the event, for example, during the presentation of the material, no one raised their hand to dare to answer the problem, and then after the material had been delivered along with demonstrations of real action aimed at them, they just started to understand it.

The management of Yayasan X is also very satisfied with the activities carried out by the team. This was expressed by a representative of the Yayasan X orally in her remarks during the closing ceremony. Representative of the Yayasan X also really appreciated the donations given by students for the foster children which are collected through fund raising.

Meanwhile, related to achieving the target of internalizing Pancasila values by Environmental Engineering students, the evaluation results from the lecturers show that students have been able to utilize the environmental education platform for Generation Alpha as a means of internalizing the Pancasila noble values. Through this activity, the students have been able to internalize the second tenet "Just and civilized humanity" and the fifth tenet "Social justice for the whole people of Indonesia" of Pancasila.

D. CONCLUSION AND SUGGESTION

The environmental problem in Indonesia is a problem that must be solved in mutual cooperation by all levels of society. Higher education as an intellectual center has an obligation to educate and mobilize the community, including in saving the environment. This community outreach program has successfully exemplified how a group of Environmental Engineering students can provide eco-literacy to a group of children belonging to Generation Alpha in Bekasi Regency by which 100% of participant gained increase in their knowledge, awareness, and practical skill in managing the plastic waste. This program also successfully provided a platform for Environmental Engineering students who organize the event to internalize the Pancasila noble values. Therefore, this program is mutually beneficial to both parties. This sort of activity is highly recommended to be carried out again at different times, places, and scales. Depending on the amount of resources and time available, activities should be expanded into fun but impactful practices.

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