

## Integrating sustainability values through a workshop on utilizing environmentally friendly materials at SDN 6 Padangsembian Klod as a waste management solution

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### Abstract

This community service program aimed to increase student's knowledge about environmentally friendly practices and sustainability in the SDN 6 Padangsembian Klod schoolyard. Therefore, major issues were the limited awareness and understanding of environmentally friendly product use and sustainable practices. In handling this, the program employed a participatory and educative approach, hence the combination of workshops with discussions and practical activities such as waste sorting and handicrafts made from recycled materials. It was designed to develop theoretically founded knowledge of ecologically competent practices and their practical implementation in the student's everyday life. Preliminary results reveal that there has been a greater awareness among the students, with 85% showing better understanding and 90% actively engaged in waste sorting and recycling. Another interesting aspect was the commitment expected from the children towards environmental protection, with written pledges made on the "My Promise for the Environment" tree. These initial findings suggest that the intervention program successfully raised environmental awareness while positively impacting students' behavior about sustainability.

Keywords: Sustainability, Eco-Friendly Products, Waste Management, Student Engagement, Environmental Awareness

### Abstrak

Program pengabdian kepada masyarakat ini dirancang untuk meningkatkan pemahaman siswa tentang praktik ramah lingkungan dan keberlanjutan di SDN 6 Padangsembian Klod. Masalah utama yang dihadapi adalah kurangnya kesadaran dan pemahaman siswa mengenai pentingnya penggunaan barang ramah lingkungan dan praktik keberlanjutan. Untuk mengatasi hal tersebut, program ini menggunakan pendekatan partisipatif dan edukatif, yang menggabungkan workshop interaktif dan diskusi dengan kegiatan praktis seperti penyortiran sampah dan pembuatan kerajinan dari bahan daur ulang. Tujuan dari program ini adalah untuk membangun pengetahuan teoritis dan penerapan praktik ramah lingkungan dalam kehidupan sehari-hari siswa. Hasil sementara menunjukkan adanya peningkatan yang signifikan dalam kesadaran siswa, dengan 85% peserta menunjukkan pemahaman yang lebih baik tentang konsep keberlanjutan dan 90% aktif terlibat dalam kegiatan penyortiran dan daur ulang sampah. Selain itu, program ini juga mendorong siswa untuk membuat komitmen pribadi untuk menjaga lingkungan, yang tercermin dalam janji yang mereka tuliskan pada pohon "Janji Saya untuk Lingkungan". Temuan awal ini menunjukkan bahwa program ini berhasil meningkatkan kesadaran lingkungan dan secara positif memengaruhi perilaku siswa terhadap keberlanjutan.

Kata kunci: Keberlanjutan, Barang Ramah Lingkungan, Pengelolaan Sampah, Keterlibatan Siswa, Kesadaran Lingkungan

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## 1. Introduction

SDN 6 Padangsembian Klod is one of the central educational centers in Denpasar, Bali. The center has certain obstacles in increasing awareness on waste management and environmental conservation among the students. Single-use plastic items are still consumed highly by the students, depicted by the huge amount of plastic waste generated each day within the school setting. In a recorded study, it was estimated that an average student consumes 1.39 grams of plastic bottles per day, followed by 0.20 grams from plastic cups and 0.14 grams from plastic bags. This shows a great reliance on these products, even though a significant 94.41% of the students recognized the negative environmental effects related to their use (Nguyen et al., 2022). Awareness among students regarding the sorting and management of waste remains low, resulting in mixed waste that is often improperly treated. Studies indicate that while many students possess a basic understanding of solid waste management principles, such as the importance of segregation and the existence of related laws Molina & Catan (2021), their specific knowledge about responsibilities and detailed regulations is lacking. Many are unaware of hazardous waste disposal methods and/or the significance of disposing in appropriate waste facilities. Given these circumstances, few students are aware of the concept of Reduce, Reuse, Recycle for sustainability (Sambat et al., 2024).

Educational institutions are potent drivers of sustainable practices by developing and implementing appropriate strategies for managing waste according to the rules at hand (Rodríguez-Guerreiro et al., 2024). The concept of reduce, reusing, and recycling needs to be inculcated into the school curriculum and daily activities as part of instilling sustainable behavior in students (Haniva et al., 2024). Various studies have indicated inconsistencies between positive attitudes and behaviors related to sustainability among students (Bashirun et al., 2023). While many express support for sustainable practices, they often fail to consistently engage in them. This discrepancy underscores the importance of educational programs that not only provide information but also actively involve students in hands-on sustainability initiatives (Leslie et al., 2021).

The most important agenda in this PKM would be increasing the awareness and skills of the students in waste management, especially with the use of environmentally friendly materials. At the moment, plastic waste in schools is an urgent issue that needs to be instilled with environmentally friendly habits since early childhood. For this, integrating environmental education within school curricula will help in fostering eco-conscious behaviors among students. Projects such as the "Plastic Free Schools" initiative, in turn, aim to minimize plastic pollution by advocating for zero single-use plastic use and practicing responsible behavior among the student community. The programs of this nature have had success in attempting to raise awareness and alter behavior concerning plastic use (Liu et al., 2023). It appears from studies that behavior-change interventions are most effective when linked with educational activities. For instance, schools that establish clear codes of conduct against littering and encourage active participation in clean-up activities have reported significant improvements in managing plastic waste (Dalu et al., 2020). The program will have long-term effects on

the mindset and behavior changing in preserving the environment, as primary students are in the most optimal phase for character building.

Education for Sustainable Development (ESD) encompasses knowledge, skills, and attitudes that form the basis for attaining the ideals of sustainable development. ESD centers on the practical skills that empower individuals to lead their lives sustainably; these include effective communication, critical thinking, problem-solving, collaborative decision-making, and the ability to analyze diverse perspectives and values (Brown, C., & Green, 2012). Apart from the competencies, beyond skills, ESD also looks forward to instill values and attitudes to evoke responsibility toward the environment and society (OECD, 2019). Positive attitude development toward sustainability and active community-based involvement of all individuals in finding solutions to problems related to environmental deterioration (Ferguson et al., 2022). ESD needs not only to develop the values for sustainability in a participative and contextual manner, it needs to make appropriating the process possible as well (Venkataraman, 2009). The approach of workshops has proved to be an effective methodology in the implementation of ESD. Workshops allow for the provision of active learning for students, which is proving more efficient in understanding and building skills compared to other kinds of learning. During this program, the students were encouraged to make some useful items using scraps of fabrics or other recycled materials. Such types of activities create not only practical skills but also raise awareness of the importance of responsible waste management.

Similar initiatives have also been conducted in other learning institutions with promising results. Workshops are the perfect avenue for equipping the students with the proper concept of waste disposal, especially sorting out the non-recyclable from the recyclable trash. This baseline information minimizes the confusion about the items to be deposited in the recycling bin. For example, interactive sessions such as sorting games can also be offered to the students during the workshop (Hoensheid, 2021). This hands-on experience not only reinforces the concepts learned but also encourages students to adopt sustainable practices in their daily lives (Andrade-Arenas & Espinoza, 2024). The aims of this program are to provide an overview to students on proper solid waste disposal and environmental care, train students in the making of functional items out of environmentally friendly materials such as cloth scraps or book papers and other recycled materials, and develop environmentally friendly habits through enjoyable educational hands-on practices.

Benefits include raising the environmental problem awareness of students from an early age, reducing plastic waste in the school environment, improving the skills of students for creating products of practical value in an environmentally friendly way, and a step forward towards SDGs, notably Goal 12 Responsible Consumption and Production, and Goal 13: Climate Action. The program is practice-based and participatory; thus, it will be a model for replication in other schools with the aim of complementing environmental conservation and better waste management.

## 2. Community development method

The applied method in this community service is expected to enhance the understanding of using environmentally friendly products and their implementation among students at SDN 6 Padangsembian Klod. In the framework of the community service program, the students are provided with workshops and interactive discussions in order to understand the importance of the usage of environmentally friendly products. The aims highlight the awareness of the sustainability concept about environmental impact. This workshop also introduces various types of recyclable products that can be used sustainably and encourages students to apply environmentally friendly practices in their daily life. The approach to be used in this program is a participatory and educative approach, where students are actively involved in discussions and workshops in a fun and interactive manner. This method enables students to better understand and internalize environmental concepts. It not only enhances learning but also fosters critical thinking skills as students analyze and reflect on their experiences (Robottom & Sauvé, 2003). This approach helps create a deeper connection to the material, encouraging long-term retention and the application of environmentally responsible practices in their daily lives. Support is provided by establishing communication that is clear between the writer and the principal, teachers, and students so that everything can be understood effectively.

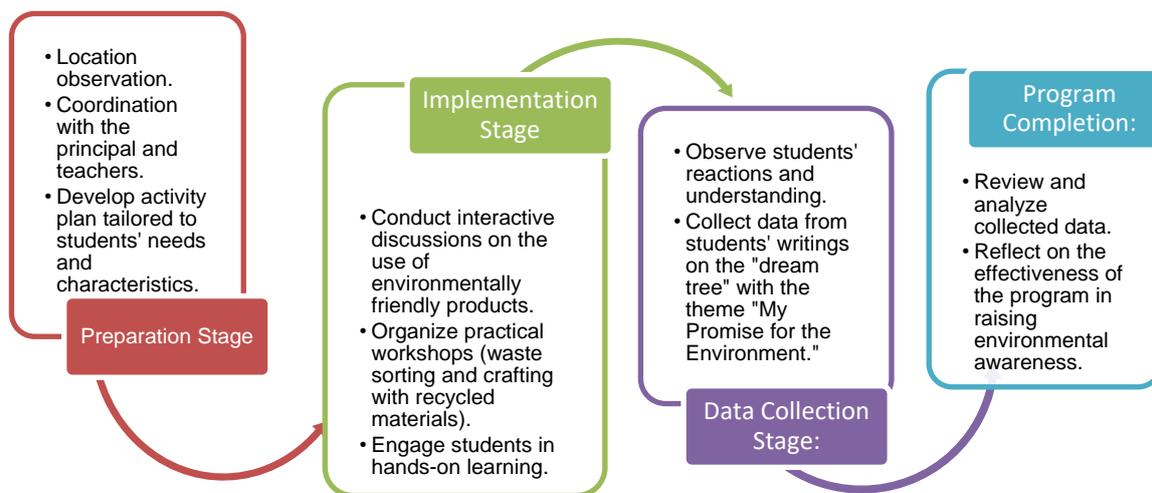


Figure 1. Flowchart of Activities

The work process in operating this program consists of several stages, namely the preparation stage where observation of the place of service is conducted along with the coordination with the school principal and teachers for the smooth running of activities. On the other hand, the author also prepares an activity plan according to the needs and characteristics of students in SDN 6 Padangsembian Klod. In its implementation, activities will include interactive discussions about using environmentally friendly products, workshops on sorting waste and making crafts from recycled materials. In such activities, students can participate actively and gain learning outcomes. Information is gathered in the data collection stage through

observation during the students' reactions and understanding of the activities and from the writings they will create on the "dream tree" themed "My Promise for the Environment." This writing serves as a reflection of what they have learned and their promise to take care of the environment. The program under study is implemented at SDN 6 Padangsembian Klod in January 2025, with activities taking place in classrooms and outdoor spaces provided for the workshop and discussion activities.

### **3. Results community development**

#### **Solving the Problem of the Partners Using the Applied Methods**

This community service program solved the problems in understanding and applying the use of environmentally friendly products among students at SDN 6 Padangsembian Klod. The students were not just theoretically informed on issues of sustainability and the use of environmentally friendly products within the participatory and educative methodology framework but were also practically involved in consolidating their knowledge. Workshops and interactive discussions informed them in an understandable and interactive way about such important concepts as recycling and using sustainable products. The students took an active part in sorting garbage and crafting some items using recycled materials; they thus received hands-on experience with regard to environmental friendly practices. Thereby, existing problems of understanding were resolved by effectively applied means.

#### **Partner or Target Audience Participation in PKM Program**

The smoothness of the running program was supported by the existence of partners, consisting of teachers and the principal at SDN 6 Padangsembian Klod. The teachers were very helpful to the writer in facilitating discussions and workshop activities, and students participated enthusiastically in each session. The principal supported the program fully by providing the necessary time and facilities. The students also showed excellent participation in the activities. They followed with eagerness each and every stage of the program, from the discussions to the crafting workshops, and showed a high level of interest in learning about environmentally friendly products. The active involvement of all parties was one of the keys to the success of this community service program.

#### **Outputs Generated from the Program Activities**

Several outputs were generated from this program, including:

- a. Increased Understanding in the Use of Environmentally Friendly Products: In these workshops, students developed a better understanding of the concept of sustainability and how to identify environmentally friendly products.
- b. Recycled Craft Creations: During the workshops, students could create several crafts made from recycled materials, which, besides their functional knowledge, gave them field experience in the application of environmentally friendly products.
- c. Written Commitments on the "Dream Tree" Theme: "My Promise for the Environment" Students wrote their pledges for environmental protection and hanged them on the dream tree. This symbolizes the commitment of students toward sustainability.

- d. Improved Practical Skills: Waste sorting and crafting activities helped students develop practical skills, which they can easily use in their daily lives to support sustainability.



Figure 1. Educational Interaction on the Field: Sharing Knowledge with Teachers and Student for a Sustainable Future

Table 1. Comparison of Conditions Before and After the Community Service Program

| Aspect                                    | Before the Program  | After the Program  |
|---|---|--|
| Students' Understanding of Sustainability | Limited understanding of environmental concepts and sustainable practices.  | Enhanced understanding of sustainability, recycling, and eco-friendly products.                  |
| Practical Knowledge and Skills            | Little hands-on experience with waste management and recycling.             | Developed practical skills in waste sorting and crafting from recycled materials.                |
| Students' Commitment to Environment       | Lack of personal commitment to environmental sustainability.                | Increased personal commitment as reflected in the "My Promise for the Environment" writings.     |
| Teachers' and School's Support            | Teachers and school leadership were not involved in environmental programs. | Active participation of teachers and full support from school leadership.                        |
| Impact on Daily Practices                 | Limited application of environmentally friendly practices in daily life.    | Encouragement to apply sustainable practices in daily life, such as recycling and waste sorting. |

**Implications for Follow-Up, Impact, Learning, and Program Development**

Follow-up for this program would be the establishment of similar programs in other schools, expanding the circle of positive impacts on the students' perception of sustainability. This program is foreseen to increase awareness among the students in terms of the use of eco-friendly products and bring a change in daily life towards being sustainable. Lessons learned from the implementation of this program show that such a participatory educative approach goes a long way in enhancing understanding for students to build practical skills applicable in real life.

#### 4. Conclusion

The community service program was conducted to enhance the understanding of, and practicing in, environmentally friendly activities of students at SDN 6 Padangsembian Klod. With interactive discussions, hands-on workshops, and reflective activities, students indeed improved in their knowledge about sustainability and recycling. There was active participation by students and the school community in the program, leading to meaningful commitments toward environmental conservation. The follow-up engagement by the students in terms of eco-friendly crafts they made and written pledges shows the positive results of the program in the sphere of making sustainable behaviors last beyond the events.

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