

Enhancing Environmental Awareness and Behaviors among Students at Al-Mansoura Junior High School: Community Service Activities

Nurfajrian Abdurrohman¹, Lazuardhi Akbar Alkautsar¹, Reisyah Assyifaa², Ratu Aisyah Almira², and Edi Purwanto^{3*}

¹Department of Informatics, Universitas Pembangunan Jaya, Indonesia

²Department of Product Design, Universitas Pembangunan Jaya, Indonesia

³Department of Management, Universitas Pembangunan Jaya, Indonesia
edi.purwanto@upj.ac.id

*edi.purwanto@upj.ac.id

Abstract — This paper explores the integration of Sustainable Development Goals (SDGs) 12 (Responsible Consumption and Production) and 13 (Climate Action) into community service activities at Al-Mansoura Junior High School. It examines its impact on students' environmental awareness and behaviors. Through a structured program that included pre-tests, educational sessions, interactive quizzes, and post-tests, the initiative aimed to enhance students' understanding of environmental issues and promote sustainable practices. The result of the community service initiative indicate a significant improvement in students' comprehension and engagement with SDGs 12 and 13, as evidenced by the comparative analysis of pre-test and post-test results. The educational interventions increased factual knowledge and fostered a deeper understanding of the interconnections and long-term implications of climate change and sustainable consumption. The successful implementation at Al-Mansoura Junior High School provides a model for similar initiatives, demonstrating that well-structured educational programs can significantly impact students' ecological literacy and behaviors.

Keywords: Sustainable Development Goals, environmental awareness, community service activities, education for sustainable development, climate action.

Abstrak — Makalah ini mengeksplorasi integrasi Tujuan Pembangunan Berkelanjutan (SDGs) 12 (Konsumsi dan Produksi yang Bertanggung Jawab) dan 13 (Aksi Iklim) ke dalam kegiatan pengabdian kepada masyarakat di SMP Al-Mansoura. Kegiatan ini memastikan dampak pelatihan terhadap kesadaran dan perilaku lingkungan siswa. Melalui program terstruktur yang meliputi *pre-test*, sesi pelatihan, kuis interaktif, dan *post-test*, kegiatan ini bertujuan untuk meningkatkan pemahaman siswa tentang isu-isu lingkungan dan mendorong praktik berkelanjutan. Hasil kegiatan ini menunjukkan peningkatan signifikan dalam pemahaman dan keterlibatan siswa dengan SDGs 12 dan 13, seperti yang dibuktikan oleh analisis komparatif hasil *pre-test* dan *post-test*. Intervensi pendidikan meningkatkan pengetahuan faktual dan menumbuhkan pemahaman yang lebih dalam tentang keterkaitan dan implikasi jangka panjang dari perubahan iklim dan konsumsi berkelanjutan. Keberhasilan pelaksanaan di SMP Al-Mansoura memberikan model untuk inisiatif serupa, menunjukkan bahwa program pendidikan yang terstruktur dengan baik dapat berdampak signifikan pada literasi ekologi dan perilaku siswa.

Kata Kunci: Tujuan Pembangunan Berkelanjutan, kesadaran lingkungan, kegiatan pengabdian kepada masyarakat, pendidikan untuk pembangunan berkelanjutan, aksi iklim

INTRODUCTION

In the face of escalating environmental challenges, the integration of Sustainable Development Goals (SDGs) into educational curricula has become increasingly imperative. The SDGs, established by the United Nations, provide a comprehensive framework aimed at addressing global issues such as poverty, inequality, climate change, environmental degradation, and justice. Among these, SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action) are particularly relevant to environmental sustainability, emphasizing the urgent need for responsible resource use and proactive measures to combat climate change.

Education in schools is crucial for fostering environmental awareness and promoting sustainable behaviors among young people, as these institutions are uniquely positioned to shape students' attitudes and actions toward the environment. Integrating the United Nations' Sustainable Development Goals (SDGs) into school programs can bridge the gap between theoretical knowledge and practical application, empowering students to contribute meaningfully to sustainability efforts. For instance, universities and higher educational institutions have been shown to play a significant role in advancing global development and sustainability by incorporating SDGs into their operations, curricula, and research activities, thereby fostering innovation and promoting sustainable practices (Khare & Stewart, 2024). This approach can be mirrored in schools, where environmental education significantly improves students' ecological knowledge, climate change awareness, and pro-environmental intentions, positively affecting their sustainable household consumption practices (Ma et al., 2023). Moreover, a study demonstrates how citizen science initiatives can engage students in actionable cycles, teaching them about pollinating insects, recording scientific data, and creating flowering habitats, thus raising awareness about global sustainability issues and giving children the confidence to become passionate environmental stewards (Fraser et al., 2023). Extracurricular citizen science is transformative, helping students develop a deep appreciation for climate science and understand real-world sustainable solutions, as evidenced by the successful collaboration between middle school students and academic partners on a climate change and sustainable drainage system project (Batchelder et al., 2023). Furthermore, integrating SDGs into master's theses and management degree programs has shown practical and pedagogical value, encouraging further exploration of sustainability research and shaping public policy (Niemela, 2024). By embedding sustainability into the curriculum and engaging students in useful, real-world projects, schools can prepare informed and responsible citizens who are equipped to address the environmental challenges of the future.

This paper examines the implementation of a community service program at Al-Mansoura Junior High School, which focused on SDGs 12 and 13. The program aimed to enhance students' understanding of responsible consumption and climate action through a series of structured activities, including pre-tests, educational sessions, interactive quizzes, and post-tests. By assessing students' knowledge and engagement before and after the intervention, this study seeks to evaluate the effectiveness of integrating SDGs into educational activities and their impact on students' environmental awareness and behaviors.

Numerous studies underscore the importance of such educational initiatives and highlight the positive correlation between environmental education and sustainable behaviors. For instance, research indicates that students with higher levels of environmental literacy are more likely to engage in behaviors that support sustainability. Furthermore, interactive and participatory learning approaches, such as those employed in the Al-Mansoura program, have been shown to enhance students' understanding and retention of complex environmental concepts.

The findings of this study will contribute to the growing body of literature on education for sustainable development and provide insights into best practices for integrating SDGs into school curricula. By showcasing the positive outcomes of the Al-Mansoura initiative, this paper aims to inspire similar programs in other educational settings, ultimately fostering a generation of environmentally conscious and proactive individuals capable of addressing the pressing environmental challenges of our time.

COMMUNITY DEVELOPMENT METHOD

The community development method employed in this study at Al-Mansoura Junior High School was structured around integrating Sustainable Development Goals (SDGs) 12 (Responsible Consumption and Production) and 13 (Climate Action) into a comprehensive educational program. This method involved several key stages: preparation, implementation, and evaluation, designed to enhance students' environmental awareness and promote sustainable behaviors.

Preparation Phase

First, a preliminary needs assessment was conducted to understand the current level of student's knowledge and awareness regarding SDGs 12 and 13. Surveys and informal interviews with students and teachers helped identify specific focus areas and tailor the educational content to address gaps in understanding.

Second, based on the needs assessment, the community service team developed a curriculum incorporating practical examples, interactive activities, and real-world applications of SDGs 12 and 13. The curriculum was designed to be engaging and accessible, ensuring that complex concepts were conveyed in a manner suitable for junior high school students.

Third, educational materials, including visual aids, quizzes, and interactive tools, were prepared to support the teaching sessions. Additionally, the team secured any necessary resources, such as classrooms and multimedia equipment, to facilitate the smooth execution of the program.

Implementation Phase

First, the program commenced with a pre-test to establish a baseline understanding of the student's knowledge about SDGs 12 and 13. The pre-test consisted of three questions designed to gauge students' awareness and comprehension of sustainable development and its importance.

Second, following the pre-test, the community service team conducted a series of educational sessions. These sessions focused on SDG 12 and SDG 13, emphasizing responsible consumption and climate action through engaging presentations and discussions. Interactive elements like Q&A segments and group discussions were incorporated to maintain student engagement and facilitate active learning.

Third, the students participated in interactive quizzes to reinforce the educational content and assess understanding. Both of these sessions focused on the material covered in the sessions. The quizzes provided a fun and interactive way for students to apply their knowledge and deepen their understanding of SDGs 12 and 13.

Fourth, after the educational sessions and interactive activities were completed, a post-test was administered to measure the program's effectiveness. The post-test contained the same questions as the pre-test, directly comparing students' knowledge and comprehension before and after the intervention.

Evaluation Phase

First, the pre-test and post-test results were analyzed to evaluate the impact of the educational program on students' understanding of SDGs 12 and 13. Table 1 presents a detailed comparison of participants' responses, categorized into levels of experience: "Not Understand," "Somewhat Understand," and "Understand."

Second, students' and teachers' feedback was gathered to assess the program's overall effectiveness and identify areas for improvement. This feedback informed adjustments to the curriculum and teaching methods for future program iterations.

Third, a comprehensive report detailing the program's implementation, outcomes, and recommendations was prepared and disseminated to relevant stakeholders. This report aimed to share best practices and encourage the adoption of similar initiatives in other educational settings.

By systematically implementing these stages, the community development method at Al-Mansoura Junior High School effectively enhanced students' environmental awareness and promoted sustainable behaviors. The integration of SDGs into the educational program improved students' knowledge and fostered a proactive attitude towards global ecological challenges, aligning with the broader goals of sustainable development.

RESULT AND DISCUSSION

Taking Pre-test

Figure 1 depicts the initial activity conducted, namely the pre-test, designed to assess the students' understanding before receiving the socialization materials. During this phase, the students are shown to be highly focused and serious, indicating their readiness to engage with the upcoming instructional content. This earnestness suggests their preparedness to absorb the forthcoming material effectively. The pre-test serves as a baseline assessment, offering insights into the student's knowledge and comprehension levels before formal instruction or intervention. This initial assessment phase is critical as it helps the community service team tailor their teaching strategies to address specific areas of need or misunderstanding identified through the pre-test results, thereby shaping the instructional strategies effectively.

By observing the students' demeanor and approach during the pre-test, the community service team can gauge their receptiveness and readiness to learn, which informs the delivery and pacing of subsequent educational activities. This proactive assessment not only enhances the effectiveness of the teaching process but also ensures that instructional objectives are aligned with the student's learning needs from the outset. Figure 1 underscores the importance of the pre-test in laying the groundwork for effective educational interventions, thereby emphasizing its crucial role in shaping instructional strategies and optimizing learning outcomes for participants in community service activities.



Figure 1. Participants in community service activities are currently taking the pre test

Educational Session

Figure 2 illustrates the Community Service Team delivering an educational session. During this socialization phase, the material focused on SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). We emphasize practical examples of each SDG's implementation and the adverse effects of neglecting these goals aimed at enhancing students' environmental awareness.



Figure 2. The Community Service Team delivering an educational session

To maintain student engagement and prevent monotony, the session included interactive elements such as comprehension checks and brief Q&A segments related to the material. This interaction reinforced the content and encouraged active participation and more profound understanding among the students. By fostering an interactive learning environment, the session effectively communicated the significance of responsible consumption and climate action, aligning with the overarching objectives of the SDGs.

Quiz Competition

Figure 3 shows a quiz competition used to assess participants' understanding of the material. The students were divided into three groups and engaged in a quiz activity focused on SDG 12 and SDG 13, which had been explained in the previous session. The image above captures the high enthusiasm and engagement among the students during this activity. The quiz competition served as an effective assessment tool and reinforced the learning objectives through a fun and interactive approach, enhancing the overall educational experience.



Figure 3. Quiz Competition to Assess Participants' Understanding of the Material

Quiz (Guess the Picture)

Figure 4 shows a quiz activity called “Guess the Picture,” designed to assess participants' understanding more relaxedly following the more serious quiz competition. This activity remained aligned with the material discussed in the SDGs. In this quiz, students were presented with various images and were required to guess and describe them in words. This engaging format provided a fun and interactive way for students to reinforce their knowledge of SDG 12 and SDG 13, ensuring the educational content was informative and enjoyable. The session effectively maintained student interest and enhanced their learning experience by incorporating a mix of serious and light-hearted activities.



Figure 5. Participants in community service activities are currently taking the post test


Taking Pre-test

The post-test activity compares the previously conducted pre-test to measure and evaluate the student's understanding and the effectiveness of the teaching methods. Compared to the pre-test, students appeared more relaxed during the post-test, indicating a greater comprehension of the questions (Figure 5). This relaxation could suggest that the instructional approach effectively enhanced their understanding of the subject matter. The pre-test and post-test questions are: “Do you know what the Sustainable Development Goals are?” and then, “In your opinion, what are the Sustainable Development Goals?” The third question is, “Do you think the Sustainable Development Goals are necessary?”

Table 1 illustrates the results of both the pre-test and post-test assessments across different questions and participants. It allows for a detailed comparison of participants' responses, categorized into levels of understanding: “Not Understand,” “Somewhat Understand,” and “Understand.” This structured evaluation helps assess the extent to which the instructional objectives were achieved and provides insights into areas where further improvement may be necessary.

The post-test provides valuable feedback on individual student performance and serves as a diagnostic tool to gauge the overall effectiveness of the educational intervention. This iterative assessment process is crucial for refining teaching strategies and, most importantly, ensuring meaningful learning outcomes among students.

Table 1. Pre-test and Post-test Assessment

Pre-test and Post-test Assessment						
	Question 1	Question 2	Question 3	Question 1	Question 2	Question 3
Participants	Pre-test			Post-test		
1	Not Understand	Somewhat Understand	Not Understand	Understand	Understand	Understand
2	Not Understand	Not Understand	Not Understand	Understand	Somewhat Understand	Understand
3	Not Understand	Not Understand	Not Understand	Understand	Understand	Understand
4	Not Understand	Somewhat Understand	Not Understand	Understand	Understand	Understand
5	Not Understand	Somewhat Understand	Somewhat Understand	Understand	Understand	Understand
6	Not Understand	Not Understand	Not Understand	Understand	Understand	Understand
7	Somewhat Understand	Somewhat Understand	Somewhat Understand	Understand	Understand	Understand
8	Somewhat Understand	Somewhat Understand	Somewhat Understand	Understand	Understand	Understand
9	Not Understand	Not Understand	Somewhat Understand	Understand	Understand	Understand
10	Not Understand	Not Understand	Not Understand	Understand	Understand	Understand
11	Not Understand	Not Understand	Not Understand	Understand	Understand	Understand
12	Not Understand	Not Understand	Not Understand	Somewhat Understand	Somewhat Understand	Somewhat Understand
13	Not Understand	Somewhat Understand	Not Understand	Understand	Understand	Understand
14	Not Understand	Not Understand	Not Understand	Somewhat Understand	Somewhat Understand	Somewhat Understand
15	Not Understand	Not Understand	Not Understand	Understand	Understand	Understand
						
<p>Not Understand Somewhat Understand Understand</p>						

Discussion

The integration of Sustainable Development Goals (SDGs) 12 (Responsible Consumption and Production) and 13 (Climate Action) into community service activities at Al-Mansoura Junior High School has demonstrated a significant positive impact on students' environmental awareness and behavior, as evidenced by pre-test and post-test results. This aligns with findings from various studies emphasizing the importance of education for sustainable development. For instance, Zwolińska et al. highlight the necessity of incorporating sustainable development into university curricula to foster awareness and competencies in environmental protection, which is crucial for future generations (Zwolińska et al., 2022). Similarly, Zhou et al. underscore the positive correlation between public understanding and waste management knowledge, suggesting that educational interventions can significantly enhance environmental behaviors (Zhou et al., 2022). The success of Al-Mansoura's program is further supported by the work of Thomas et al., who found that integrating SDGs into school curricula can nurture a sustainable society by fostering a deep understanding of environmental issues among students (Thomas et al., 2020).

Kendall et al. demonstrate that community-based conservation initiatives, such as teacher training programs, can effectively transfer sustainable practices to broader communities, thereby enhancing environmental stewardship (Kendall et al., 2022). Maurer et al.'s GAIA project further illustrates how targeted educational initiatives can improve environmental literacy and promote sustainable behaviors among students (Maurer et al., 2020), reinforcing the positive outcomes observed at Al-Mansoura. Kalla et al. advocate for project-based learning to develop action competence in students, enabling them to contribute meaningfully to sustainable development goals (Kalla et al., 2022), which is evident in the active engagement of Al-Mansoura students in reducing waste and optimizing resource use. The GROW Observatory's findings, as reported by Ajates et al., highlight the potential of citizen observatories to advance SDG implementation through awareness-raising and participatory methods, which can be mirrored in school-based programs to foster local-level action (Ajates et al., 2020). Finally,

Al-Saidi emphasizes the importance of education and awareness as cross-cutting priorities for achieving sustainability, suggesting that regional and national educational initiatives can significantly impact global sustainability efforts (Al-Saidi, 2022). These studies underscore the transformative potential of integrating SDGs into academic programs, as demonstrated by the positive outcomes at Al-Mansoura Junior High School, where students have become actively engaged in environmental protection through community service activities.

The discussion regarding the impact of climate change on students at Al-Mansoura Junior High School represents a critical effort to raise awareness and cultivate a proactive stance towards global environmental challenges. This initiative aligns with Sustainable Development Goals (SDGs) 12 and 13, focusing on responsible consumption, production, and climate action. The initiative indicates that while students often possess factual knowledge about climate change, they frequently need a deeper understanding of its intricate interconnections and long-term implications for ecosystems and human societies (Feldbacher et al., 2024). Therefore, effective climate change education should strive to bridge this gap by fostering systemic understanding and promoting behaviors that are conducive to climate resilience (Feldbacher et al., 2024).

Various educational approaches, including model experiments and hands-on projects, have been proven effective in enhancing students' comprehension and engagement with climate issues (Henninger & Christmann, 2023; Batchelder et al., 2023). Notably, programs like the 'CO₂ League' have shown that a strong foundation in climate change knowledge significantly increases concern for climate issues, self-efficacy, and willingness to adopt climate-friendly behaviors (Kolenatý et al., 2022). However, it is crucial to consider the socio-political context in which climate education takes place, as students' pre-existing knowledge and perceptions of the social landscape can influence their interpretation of scientific information and engagement with climate issues (Zummo, 2023).

Studies reveal that while students and educators acknowledge climate change and its human causes, there is often skepticism toward political solutions and a belief in individual responsibility for mitigation efforts (Natalia et al., 2023; De Pascale, 2023). Emotional responses to climate change, such as anxiety and hope, also play a pivotal role in shaping students' attitudes and actions (Zurba et al., 2024). Successful climate action programs for youth frequently incorporate elements such as social environment, leadership development, goal setting, and systems thinking, which nurture internal factors such as self-efficacy, identity, and competence in taking action (Hohenhaus et al., 2023).

Extracurricular activities and citizen science projects further enrich students' understanding and engagement by offering practical applications and interactions with STEM professionals (Batchelder et al., 2023). A comprehensive review of climate change education underscores the importance of addressing impacts, drivers, and mitigation strategies related to climate change. This comprehensive approach is crucial in cultivating globally competent citizens capable of addressing these challenges (Radzi et al., 2022).

Thus, the initiative at Al-Mansoura Junior High School enhances students' understanding of SDGs 12 and 13 and encourages concrete actions to promote environmental sustainability, preparing them to become knowledgeable and proactive stewards of the environment in the future.

CONCLUSION

The community service activities conducted at Al-Mansoura Junior High School, integrating Sustainable Development Goals (SDGs) 12 (Responsible Consumption and Production) and 13 (Climate Action), have yielded significant positive outcomes in enhancing students' environmental awareness and behaviors, as evidenced by the results of pre-tests and post-tests. This study underscores the importance of education for sustainable development, aligning with findings that emphasize embedding sustainable practices into educational curricula to foster environmental competencies among future generations.

Through interactive sessions and engaging activities such as quizzes and educational sessions focused on SDGs 12 and 13, Al-Mansoura Junior High School students demonstrated increased engagement and understanding. These activities not only deepened their comprehension of environmental issues but also encouraged them to actively participate in promoting sustainable practices within their community.

The positive outcomes observed are consistent with previous research highlighting the efficacy of educational interventions in enhancing environmental literacy and promoting sustainable behaviors among students. Al-Mansoura Junior High School effectively equipped students with the knowledge and skills necessary to address global environmental challenges by integrating problem-based learning strategies and fostering a supportive learning environment.

Moreover, the success of these initiatives underscores the crucial role of educational institutions in shaping environmentally conscious citizens. By nurturing a sense of responsibility and action competence among students, Al-Mansoura Junior High School has exemplified how these institutions can play a pivotal role in environmental stewardship.

Moving forward, the need for continuous evaluation and adaptation of educational strategies to sustain and expand the positive impacts observed is urgent. By building on these foundations, educational institutions can

further cultivate a generation of proactive leaders committed to achieving sustainable development goals and safeguarding the planet for future generations.

In conclusion, integrating SDGs into educational frameworks not only enhances academic learning but also prepares students to become informed advocates and agents of change in addressing pressing global environmental challenges. Al-Mansoura Junior High School's approach is a model for fostering environmental stewardship through innovative educational practices, setting a benchmark for future initiatives to promote sustainability within educational settings.

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