



# The Performance of the Adiwiyata Program: An Evaluation Study at Madrasah Tsanawiyah Negeri

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## ABSTRACT

*Environmental challenges, such as climate change, pollution, and deforestation, require proactive educational strategies to foster sustainability awareness and responsible behavior among students. The Adiwiyata Program, introduced by the Indonesian Ministry of Environment and Forestry, aims to integrate environmental education into the school curriculum to promote sustainable practices. This study evaluates the implementation of the Adiwiyata Program at MTs Negeri Luwu Timur using the CIPP (Context, Input, Process, Product) evaluation model. The research adopts a qualitative approach, utilizing observations, semi-structured interviews with school administrators, teachers, students, and community members, and document analysis to assess the program's effectiveness. The findings reveal that the program aligns well with the school's vision and mission, emphasizing academic excellence and environmental stewardship. Strong government support and active community engagement significantly contribute to the program's success. Adequate resources, including well-trained educators and interdisciplinary curriculum integration, have increased environmental awareness, positive behavioral changes among students, and noticeable improvements in the school's physical environment. However, challenges such as limited funding, delayed external resource fulfillment, and difficulties in engaging new students highlight areas for improvement. This study concludes that the Adiwiyata Program at MTs Negeri Luwu Timur effectively integrates environmental education in madrasahs. The research offers strategic recommendations for enhancing program sustainability, improving stakeholder collaboration, and expanding the program's impact beyond the school community. These findings contribute to the broader discourse on environmental education and its role in fostering sustainable development in educational institutions.*

## INTRODUCTION

Environmental issues have become a global concern due to the increasing frequency and impact of environmental disasters, such as climate change, air and water pollution, biodiversity loss, and deforestation ([Abbass et al., 2022](#); [Rathod et al., 2024](#); [Shivanna, 2022](#)). These crises underscore humanity's unprecedented environmental challenges, necessitating coordinated and sustainable

responses. In Indonesia, ecological degradation is further exacerbated by unsustainable consumption patterns, limited environmental education, and policies that do not fully support conservation efforts ([Kinseng et al., 2023](#)).

One of Indonesia's fundamental problems is the public's low awareness regarding the importance of environmental protection. Data from the past five years reveal that Indonesia generates approximately 65–67 million tons of waste annually ([Kusumawati et al., 2020](#); [Siba, 2021](#)). Moreover, deforestation due to illegal logging, forest fires, and land conversion has resulted in the loss of approximately 684,000 hectares of forest each year, positioning Indonesia as the second-largest contributor to forest loss globally, after Brazil ([Razak et al., 2024](#); [Siba, 2021](#)). This phenomenon threatens ecosystems and endangers human well-being, which depends on the sustainability of natural resources.

From a theological perspective, the Quran emphasizes maintaining environmental balance. As stated in Q.S. Ar-Rum/30:41, environmental degradation on land and at sea is largely caused by human actions. This verse underscores the responsibility to adopt environmentally responsible behavior. Environmental education is a critical means of instilling this awareness and accountability among younger generations ([Mondal & Islam, 2023](#); [Pauline Lipman, 2023](#); [Rudyshyn et al., 2021](#)).

In response to the environmental crisis, the Indonesian government, through the Ministry of Environment and Forestry, introduced the Adiwiyata Program. This program aims to integrate sustainability principles into the education system, enabling students to understand and practice environmental stewardship ([Nurwidodo et al., 2020](#); [Saadah et al., 2023](#)). Based on Ministerial Regulation No. 5 of 2013, the Adiwiyata Program is designed to establish environmentally friendly schools through participatory policies and the management of facilities that promote environmental preservation ([Fauzani & Aminatun, 2021](#); [Megawati et al., 2022](#)).

Despite its potential, implementing the Adiwiyata Program in various schools has not been optimal. Studies indicate challenges such as inadequate funding, insufficient educator training, lack of stakeholder collaboration, and minimal community involvement ([Anggraini et al., 2024](#); [Razak et al., 2024](#); [Sangia et al., 2022](#)). At Madrasah Tsanawiyah Negeri (MTsN), these challenges impact the program's effectiveness, making achieving the goal of fostering a culture of environmental care difficult.

This study evaluates the implementation of the Adiwiyata Program at MTs Negeri Luwu Timur. This research seeks to identify the strengths and weaknesses of the program and provide strategic recommendations for improving its implementation using the CIPP (Context, Input, Process, Product) evaluation model. This focus is particularly relevant given the critical role of educational institutions in fostering environmental awareness and a culture of sustainability among students and the broader community.

The objectives of this study are to evaluate the context of the Adiwiyata Program's implementation at MTs Negeri Luwu Timur, including its relevance and policy framework; to analyze the input factors such as human resources, facilities, and administrative support; to examine the process of program implementation in daily school activities; and to assess the product, including the program's impact on students' environmental awareness and school community engagement.

This research holds significant theoretical and practical contributions. Theoretically, it adds to the body of knowledge on evaluating environmental education programs, particularly in the context of madrasahs. Practically, it provides strategic recommendations for school administrators, educators, and other stakeholders to enhance the effectiveness of the Adiwiyata Program, thereby fostering a stronger culture of environmental care and responsibility.

## **METHODS**

This study employs a descriptive, evaluative design to systematically assess the implementation of the Adiwiyata Program at MTs Negeri Luwu Timur. The evaluation focuses on determining the program's effectiveness and identifying areas for improvement. The research utilizes the CIPP model (Context, Input, Process, Product) as its framework, which offers a comprehensive analysis by examining the relevance of the program's objectives (context), the adequacy of resources and inputs (input), the quality of implementation (process), and the outcomes or results achieved (product) ([Stufflebeam & Zhang, 2017](#)). This approach ensures a holistic understanding of the program's strengths and weaknesses.

The participants of this study were selected using a combination of purposive sampling and snowball sampling techniques. Purposive sampling was used to identify key informants with direct knowledge of and involvement in the Adiwiyata Program, such as the school principal, the Adiwiyata program coordinator, teachers, and students. If additional data were needed, snowball sampling was employed to identify further informants through recommendations from initial participants. This strategy ensured a diverse and representative sample for the study.

The instruments used to collect data included an observation checklist, interview guidelines, and a documentation review guide. The observation checklist was employed to systematically record activities, physical conditions, and interactions related to the program, such as teaching practices, environmental actions, and infrastructure. Semi-structured interview guidelines were developed to gather in-depth insights from informants about various aspects of the program, including its vision, objectives, implementation strategies, challenges, and outcomes. The documentation review guide was used to analyze relevant records, such as lesson plans, curriculum documents, activity logs, and policies, providing a detailed understanding of the program's structure and results.

Data were collected through observation, interviews, and documentation analysis. Direct observation allowed the researcher to capture real-time data on program activities, including student participation, teacher engagement, and the use of facilities. Semi-structured interviews with key informants explored their perspectives on the planning, execution, and impact of the program. Additionally, relevant documents, such as program reports, teaching materials, and photos of environmental activities, were reviewed to gain further insights into the program's implementation and effectiveness.

Data analysis followed the Miles et al. framework, which involves three stages: data reduction, data display, and conclusion drawing and verification ([Miles et al., 2014](#)). In the data reduction stage, the collected information was organized, summarized, and categorized based on the four CIPP components, focusing on relevant findings while eliminating unnecessary details. The data display stage involved presenting the information in structured formats, such as tables, charts, and narrative summaries, to facilitate interpretation and draw meaningful comparisons. Finally, conclusions were derived by synthesizing findings across the CIPP components and were validated through triangulation, ensuring that the conclusions were consistent and supported by credible evidence.

The study employed triangulation of sources and methods to ensure the reliability and validity of the data. Data collected from interviews, observations, and documentation were cross-verified to ensure consistency and accuracy. This triangulation process enhanced the credibility of the findings, ensuring that the evaluation provided a comprehensive and trustworthy assessment of the Adiwiyata Program. By adopting this methodological approach, the study aims to deliver an in-depth evaluation, identifying actionable recommendations to improve the program's implementation and effectiveness.

## RESULTS

### ***Context of the Adiwiyata Program Evaluation***

The context evaluation reveals that the Adiwiyata Program at MTs Negeri Luwu Timur has been designed with clear objectives aligned with the school's vision and mission, emphasizing academic excellence and environmental responsibility. Observations confirm that the objectives are well understood by stakeholders, including teachers, staff, and students, and have been effectively communicated during routine teacher meetings. The program also benefits from strong external support, including resource contributions and active collaborations with local organizations and government agencies. During an interview, the school principal shared:

*"The Adiwiyata Program perfectly aligns with our school's mission. It's not just about academic success but also about creating environmentally conscious individuals. We ensure that this understanding is shared during our meetings and by providing relevant training to our staff."*

Another teacher remarked on the program's external support:

*"The government and local organizations, like PT. Vale has been instrumental. They provided tree seedlings and supported our greening initiatives. This partnership is crucial for overcoming some of our challenges."*

Students also expressed enthusiasm for the program:

*"We feel proud to be part of a school that values the environment. Activities like waste segregation and tree planting make learning more meaningful,"* said one student.

These perspectives highlight the clarity of the program's objectives, its relevance to the school's strategic goals, and the shared commitment of internal and external stakeholders.

### **Input of the Adiwiyata Program Evaluation**

The input evaluation indicates that MTs Negeri Luwu Timur has adequately allocated resources to support the Adiwiyata Program. The school has a capable team of teachers and staff who have undergone specialized training in environmental education. These workshops, facilitated by district and provincial governments, equip educators with the skills to effectively integrate environmental topics into the curriculum. Moreover, active community involvement and additional resources from external partners further strengthen the program. In an interview, the Adiwiyata program coordinator shared:

*"Our teachers have attended multiple workshops to enhance their understanding of environmental issues. It has helped them design lessons that inspire students to adopt sustainable practices."*

A teacher added:

*"Every subject now incorporates elements of environmental education. For example, we discuss renewable energy in science, while in art, students create projects using recycled materials."*

A parent also highlighted community involvement:

*"We participate in activities like tree planting and waste management with the school. It's not just the students learning; we, as parents, also gain new insights about protecting the environment."*

These accounts demonstrate that the program is well-supported by skilled personnel, sufficient resources, and active engagement from the community, all of which contribute to its success.

### **Process of the Adiwiyata Program Evaluation**

The process evaluation reveals that the Adiwiyata Program has been implemented systematically, with well-structured planning involving all stakeholders. Environmental education, waste management, and greening initiatives are integrated into the school's curriculum and daily operations. Monitoring and evaluation mechanisms ensure the program stays aligned with its objectives despite challenges like limited resources and raising awareness among new students. The school principal explained during an interview:

*"Our planning involves creating working groups, each with specific responsibilities. We hold regular evaluations to ensure that every group meets its targets."*

A student described their involvement in the program:

*"We learn about environmental conservation through fun activities, like making compost and designing posters about recycling. It feels great to contribute to something meaningful."*

The program coordinator discussed the challenges faced:

*"Raising awareness among new students is challenging, but we have strategies like peer mentoring and orientation programs to address this."*

These narratives highlight the school's commitment to effective planning and execution and adaptability in overcoming obstacles.

### **Product of the Adiwiyata Program Evaluation**

The product evaluation shows significant positive outcomes from the Adiwiyata Program. Students have developed greater environmental awareness, as evidenced by their active participation in initiatives such as waste management and tree planting. The school's physical environment has also improved, with greener spaces and better waste disposal systems. These changes contribute to a healthier and more conducive learning environment. A teacher shared during an interview:

*"The students have become more proactive in managing waste and conserving energy. During environmental education sessions, they even remind each other to practice what they've learned."*

One of the students mentioned:

*"Before joining this school, I never thought much about the environment. Now, I always sort my trash and try to save water and electricity at home."*

The principal emphasized the broader impact of the program:

*"Our goal is for these habits to extend beyond the school. We want our students to influence their families and communities, spreading the message of environmental conservation."*

The program coordinator outlined plans:

*"We are working on expanding the program's reach. It includes increasing community engagement and developing new activities combining innovation and sustainability."*

These dialogues underline the program's success in achieving its objectives, changing behaviors, and laying a foundation for long-term sustainability within and beyond the school community.

## **DISCUSSION**

### **Context of the Adiwiyata Program Evaluation**

The context evaluation of the Adiwiyata Program at MTs Negeri Luwu Timur reveals a strong alignment between the program's objectives and the school's vision and mission. This alignment underscores the importance of integrating environmental education into the broader educational framework, as highlighted by studies emphasizing that school programs are more effective when their goals resonate with institutional values ([Hermansen, 2020](#); [Shanafelt et al., 2021](#); [Wang et al., 2023](#)). At MTs Negeri Luwu Timur, the Adiwiyata Program complements the school's academic goals and enhances its commitment to character building through environmental awareness. The explicit documentation of this alignment in the school's strategic plans ensures clarity and consistency in implementation.

The findings also indicate robust support from external stakeholders, such as local government and private organizations. This support includes material contributions like biopores and tree seedlings and collaborative efforts in environmental campaigns. Such partnerships are vital for program sustainability, as external resources often compensate for limitations within schools ([Al-Hail et al., 2021](#); [Cayabas et al., 2023](#); [Green et al., 2020](#); [Mu et al., 2023](#)). However, while the support is significant, some challenges persist, such as unmet promises for waste sorting facilities. Addressing these gaps could further strengthen the program's operational framework.

Additionally, the enthusiastic perception of the program among teachers, students, and staff plays a critical role in its success. Positive attitudes and shared commitment among stakeholders create an enabling environment for the program's activities. Previous research emphasizes that a supportive school culture is integral to the long-term success of environmental initiatives ([Holst, 2023](#); [Koh et al., 2023](#); [Smith et al., 2020](#); [Uzorka et al., 2024](#)). At MTs Negeri Luwu Timur, the active engagement of

stakeholders fosters a sense of ownership, motivating them to actively contribute to the program's goals.

The integration of environmental education within the school's culture is also supported by religious values, as emphasized in the school's approach. Islamic teachings, such as those found in Q.S. Ar-Rum/30:41, align with the principles of environmental stewardship, reinforcing the program's moral and ethical dimensions ([Bibri et al., 2024](#); [Bieling et al., 2020](#)). This alignment strengthens the program's relevance and provides a spiritual foundation that resonates deeply with the school community ([Karsono et al., 2022](#); [Lukmantoro et al., 2024](#)).

Despite these strengths, there are opportunities for improvement. For example, expanding communication strategies to engage a broader audience, including parents and local communities, could amplify the program's impact ([Farias et al., 2024](#); [Gil & Johnson, 2021](#); [Saini & Corrente, 2024](#)). Furthermore, enhancing monitoring mechanisms for external contributions would ensure that promised resources are delivered effectively, minimizing implementation delays ([Bibri et al., 2024](#); [Mutebi et al., 2020](#)).

### ***Input of the Adiwiyata Program Evaluation***

The input evaluation of the Adiwiyata Program at MTs Negeri Luwu Timur highlights the availability of sufficient resources, the competence of educators, and active community involvement as critical factors in its implementation. These findings align with previous research emphasizing that the success of environmental education programs depends on the adequacy of resources and stakeholder collaboration ([Alshukri et al., 2024](#); [Höffken & Lazendic-Galloway, 2024](#); [Lake et al., 2022](#)).

The school has demonstrated a strong commitment to allocating resources effectively. Internal funding from the school and external support from government agencies and private organizations have ensured that essential materials such as tree seedlings and biopores are available to support program activities. Observations indicate that this resource availability has facilitated activities like waste management, tree planting, and environmental conservation. However, the partial fulfillment of promised resources, such as waste sorting facilities, reveals an area for improvement in the coordination with external stakeholders ([Bekrar et al., 2021](#); [Chauhan et al., 2022](#); [Sharma et al., 2021](#)).

The competence of teachers and staff is another significant strength of the program. Training workshops organized at district and provincial levels have equipped educators with the skills necessary to integrate environmental education into the curriculum effectively ([Avci & Gümüş, 2020](#); [Quay et al., 2020](#); [Sholahuddin et al., 2021](#)). Integrating Adiwiyata principles across various subjects demonstrates the educators' ability to align environmental concepts with academic content, making learning more meaningful for students. This approach supports the findings by [Anggraini et al. \(2024\)](#), who argue that teacher competence and preparedness are critical in fostering environmental literacy among students.

Active community involvement further enhances the program's implementation. The participation of parents and local communities in activities like waste management and greening initiatives creates a collaborative environment that extends the program's impact beyond the school. It aligns with the notion that community partnerships are essential for the sustainability of school-based environmental programs ([Holme et al., 2020](#); [McCabe et al., 2020](#)). At MTs Negeri Luwu Timur, the involvement of parents and community members provides additional resources and fosters a shared sense of responsibility for environmental preservation.

Despite these strengths, the evaluation also reveals opportunities for improvement. While teacher training has been effective, expanding these workshops to include advanced strategies and tools could enhance the program's quality ([Aydarova, 2020](#); [Van Overschelde & Wiggins, 2020](#)). Additionally, strengthening communication with external stakeholders could address delays in resource delivery and ensure that promised contributions are fulfilled promptly ([Aydarova, 2020](#); [Canfield et al., 2022](#)).

### ***Process of the Adiwiyata Program Evaluation***

The process evaluation of the Adiwiyata Program at MTs Negeri Luwu Timur reveals that the program is implemented through a structured and collaborative approach involving all key stakeholders. The planning phase is systematic, with clearly defined roles for the school principal, teachers, staff, students, and the school committee. Establishing working groups (*pokja*) to manage specific aspects of the program ensures an organized and focused approach to achieving its goals. Such

structured planning aligns with the principles of participatory program management, which emphasize shared responsibility and accountability as critical to the success of environmental initiatives ([Baba et al., 2021](#); [Klaus-Rosińska & Iwko, 2021](#); [Shaukat et al., 2022](#)).

The implementation phase is equally robust, integrating environmental education into the school curriculum and daily activities. Core activities, such as waste management, resource conservation, and greening initiatives, are conducted both as standalone projects and within the context of academic subjects. For instance, science lessons incorporate discussions on environmental sustainability, while art projects utilize recycled materials. This interdisciplinary approach enhances students' understanding and encourages the practical application of environmental principles in their daily lives. Such integration is supported by research indicating that contextual and experiential learning strengthens the impact of environmental education ([Ardoin & Heimlich, 2021](#); [Gaurifa & Harefa, 2024](#); [Razak et al., 2024](#)).

Monitoring and evaluation processes are another strength of the program. Regular observations, surveys, and documentation ensure that activities align with the program's objectives. Evaluations are conducted systematically using questionnaires and external verifications to assess the program's effectiveness. This rigorous monitoring framework enables the school to identify progress and areas for improvement, contributing to the program's overall success. The structured use of monitoring and evaluation reflects best practices in program management, as highlighted by previous research, who stress the importance of continuous assessment in maintaining the relevance and impact of environmental initiatives ([Fairman et al., 2023](#); [Kulkov et al., 2024](#); [Singh et al., 2022](#)).

Despite these strengths, some challenges have been identified in the program's implementation. Raising awareness among new students and addressing resource constraints are notable issues. For new students, integrating into the program requires targeted strategies to instill the values and practices promoted by the Adiwiyata Program ([Nurwidodo et al., 2020](#); [Tlili et al., 2021](#)). Additionally, resource limitations, particularly funding and infrastructure, pose challenges to scaling up program activities ([Komalasari et al., 2023](#); [Kusnadi & Lutfi, 2023](#)). While common in environmental education programs, these challenges highlight areas where strategic improvements can enhance the program's impact and sustainability.

Efforts to address these challenges demonstrate the school's adaptability and commitment to continuous improvement. Initiatives such as peer mentoring and orientation programs for new students have been implemented to bridge awareness gaps ([Fazira & Ramadan, 2023](#); [Zaliyanti & Azani, 2024](#)). Furthermore, active engagement with external stakeholders has helped mitigate some resource constraints, enabling the continuation of program activities despite financial limitations ([Shofiyah & Adawiyah, 2021](#); [Zaliyanti & Azani, 2024](#)).

### ***Product of the Adiwiyata Program Evaluation***

The product evaluation of the Adiwiyata Program at MTs Negeri Luwu Timur demonstrates significant achievements in fostering environmental awareness, improving the physical environment, and instilling sustainable behaviors among students and staff. These outcomes align with the program's objectives to promote environmental responsibility and create a model of sustainable practices within the school community.

One of the most notable impacts of the program is the development of students' environmental awareness and the corresponding behavioral changes. Students have adopted environmentally friendly practices such as proper waste management, energy conservation, and active participation in greening initiatives. These changes indicate the program's success in integrating environmental education into students' daily lives. As highlighted by previous research, changes in student behavior are a key indicator of the effectiveness of environmental education programs ([Ahmed et al., 2021](#); [Olsson et al., 2022](#); [Pirchio et al., 2021](#)). At MTs Negeri Luwu Timur, these behavioral shifts suggest that the program has instilled a culture of environmental consciousness.

The program has also contributed to tangible improvements in the school's physical environment. Greening initiatives, waste management systems, and cleaner surroundings have transformed the school into a more sustainable and aesthetically pleasing learning environment. Such enhancements align with the Adiwiyata Program's principles and create a conducive academic and personal growth atmosphere. Research indicates that a well-maintained physical environment positively influences

student engagement and learning outcomes ([Arjanto & Telussa, 2024](#); [Izadi & Hart, 2024](#); [Udeze, 2024](#)). The visible improvements at MTs Negeri Luwu Timur affirm the program's impact on the school's infrastructure and overall ambiance.

Key success indicators of the program include increased environmental knowledge, changes in student behavior, active participation in environmental activities, and recognition in the form of awards received by the school. These achievements highlight the program's ability to meet its objectives and establish itself as a model for other institutions ([Fazira & Ramadan, 2023](#); [Prasetiyo et al., 2020](#)). Additionally, the school's efforts to document these successes through evaluations and reports provide valuable insights for continuous improvement and broader dissemination of best practices ([Roswita, 2020](#); [Suci Megawati et al., 2023](#)).

Despite these successes, challenges remain, particularly in introducing the program to new students and ensuring their full integration into its activities. The need for ongoing orientation and awareness-building activities underscores the importance of sustaining the program's momentum and inclusivity. Furthermore, while the program has made significant strides within the school, extending its impact to the broader community remains an area for potential growth. Strengthening partnerships with local organizations and increasing community involvement could amplify the program's reach and effectiveness ([Bibri et al., 2024](#); [Lithanta et al., 2024](#); [Rahman et al., 2023](#)).

To sustain and expand its achievements, the school has developed a comprehensive development plan, including regular evaluations, enhanced teacher training, improved infrastructure, and innovative program activities. These strategies are essential for maintaining the program's relevance and ensuring its long-term sustainability ([Nurmansah & Retnowati, 2020](#); [Prasetiyo et al., 2020](#)). Additionally, the plan's focus on extending the program's influence to the community reflects a commitment to broader environmental advocacy, which is crucial for addressing global environmental challenges ([Adisetiawan & Nurhajati, 2023](#); [Pratiwi & Yarliani, 2023](#)).

## CONCLUSION

The evaluation of the Adiwiyata Program at MTs Negeri Luwu Timur, based on the CIPP (Context, Input, Process, Product) model, demonstrates that the program has been successfully implemented and aligns effectively with its intended goals. The program's context aligns with the school's vision and mission, emphasizing academic excellence and environmental responsibility. The program's objectives are clear, well-communicated, and supported by government agencies and local organizations, as well as enthusiastic engagement from the school community. This alignment ensures the program's relevance and establishes a strong foundation for its sustainability.

The input evaluation highlights the effective mobilization of resources, including trained teachers, adequate infrastructure, and active involvement from parents and the broader community. Workshops and external collaborations have enhanced the readiness of the school's staff, while community participation has strengthened the program's implementation. However, challenges such as delays in fulfilling external resource contributions indicate a need for improved coordination with external stakeholders to optimize program support further.

In terms of process, the program's implementation is characterized by systematic planning, interdisciplinary integration within the curriculum, and robust monitoring mechanisms. Waste management, greening efforts, and environmental education are carried out effectively, involving all stakeholders. Despite challenges like integrating new students and addressing limited resources, the school has demonstrated adaptability and resilience, employing strategies to ensure the program's continued success and relevance.

The product evaluation reveals significant outcomes, including heightened environmental awareness, student behavioral changes, and noticeable improvements in the school's physical environment. The program has successfully fostered a culture of environmental stewardship within the school and has received recognition through various awards. Nonetheless, expanding the program's impact beyond the school community and ensuring effective engagement of new participants remain areas for further development.

The Adiwiyata Program at MTs Negeri Luwu Timur exemplifies how environmental education can be successfully integrated into a school setting. Its achievements underscore the importance of clear objectives, adequate resources, collaborative planning, and ongoing evaluation. The program can

further enhance its effectiveness and sustainability by addressing external coordination and community outreach challenges. The program's success benefits the school's immediate stakeholders and contributes to broader efforts in fostering environmental consciousness among future generations, positioning it as a model for environmental education initiatives.

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