

Principal Management in Realizing Adiwiyata Schools: A Qualitative Study of Environmental Education Leadership in Indonesian Secondary Schools

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Abstract:

This study explores how principal management practices contribute to the successful realization of the Adiwiyata School program as an effort to promote environmental education and sustainable school culture. Employing a qualitative descriptive case study design, the research was conducted at SMP Negeri 1 Ciamis and MTs Negeri 5 Ciamis, Indonesia. Data were collected through in-depth interviews, field observations, and document analysis, and analyzed using an interactive model involving data reduction, data display, and conclusion drawing. The findings reveal that the effectiveness of the Adiwiyata program is strongly influenced by principals' managerial and leadership capacities. Strategic planning, collaborative organization, consistent implementation of environmental activities, and continuous evaluation enabled environmental values to be embedded into daily school practices and learning processes. The study also identifies persistent challenges, including limited resources, time constraints, and varying levels of environmental awareness among school members. These challenges were addressed through adaptive leadership, participatory decision-making, and collaboration with external stakeholders. The study concludes that environmental education initiatives cannot be sustained through procedural compliance alone, but require strong school leadership and institutional readiness. This research contributes to educational management literature by highlighting principal management as a key mediating factor linking environmental education policy to sustainable school practices.

Keyword: Adiwiyata Program; Environmental Education; Principal Management; School Leadership; Sustainable Schools

Introduction

Environmental degradation, climate change, and ecological crises have intensified global demands for sustainable development across sectors, including education (Mueller, 2009). Schools are increasingly recognized as strategic institutions for cultivating environmental awareness, responsible citizenship, and sustainable behavior among younger generations (Stevenson, 2007). In this regard, environmental education is no longer considered supplementary but integral to holistic schooling that balances cognitive, social, and ecological competencies (Khofi, 2024).

In Indonesia, the Adiwiyata School Program represents a national policy initiative aimed at institutionalizing environmental values within educational settings (Rahman, Santosa, Basyir, Nur'aini, &

Arifin, 2023). Initiated by the Ministry of Environment and Forestry in collaboration with the Ministry of Education, the program seeks to transform schools into environmentally responsible institutions characterized by participatory governance, sustainable practices, and ecological integration within the curriculum (Aqilah & Lathifah, 2023; Prasetyo et al., 2020). Conceptually, Adiwiyata promotes systemic environmental education by embedding sustainability into school policies, learning processes, infrastructure management, and community partnerships (Prayogo, Ratnaningsih, Suhardono, & Suryawan, 2024; Zaliyanti & Azani, 2024).

However, despite strong policy support, the practical realization of Adiwiyata schools remains uneven. Many schools formally adopt environmental programs but struggle to internalize sustainability as an enduring school culture. Challenges such as limited teacher engagement, passive student participation, fragmented curriculum integration, and inconsistent monitoring frequently hinder meaningful transformation. Empirical observations in several Indonesian secondary schools, including SMP Negeri 1 Ciamis, indicate that improvements in students' environmental attitudes remain modest, suggesting that the program often functions procedurally rather than substantively.

This situation raises a critical problem: although Adiwiyata is designed as a systemic environmental reform, its implementation often lacks strategic leadership and coherent management practices at the school level. Environmental initiatives may be present, yet without integrated planning, stakeholder mobilization, resource alignment, and sustained evaluation, they risk becoming symbolic compliance rather than transformative practice.

A review of recent literature reveals that most studies on Adiwiyata concentrate on environmental outcomes, student behavior, curriculum content, or technical program components (Priantari, 2021; Subur, 2022). While these perspectives are valuable, they predominantly emphasize what the program achieves rather than how it is strategically managed. Moreover, existing research tends to treat leadership as a contextual factor rather than as the central analytical focus. There remains limited in-depth investigation into how principals interpret environmental policy mandates, translate them into managerial strategies, and institutionalize sustainability within school culture. This gap is particularly significant given contemporary leadership theories that position principals as change agents capable of shaping organizational vision, culture, and long-term innovation (Ismail, 2022; Setiawan, Sudrajat, & Tedjawiani, 2022)

Therefore, the research gap lies in the insufficient conceptual and empirical understanding of principal management as the mediating mechanism between environmental policy and sustainable school practice. While environmental education frameworks highlight curriculum and participation, and leadership studies emphasize organizational change, few studies explicitly synthesize these dimensions within the context of Adiwiyata implementation in Indonesian secondary schools.

Addressing this gap, the present study investigates how principals manage the realization of Adiwiyata Schools at SMP Negeri 1 Ciamis and MTs Negeri 5 Ciamis. Specifically, it examines how principals plan environmental programs, organize stakeholders and resources, implement sustainability-oriented initiatives, evaluate progress, and overcome managerial constraints. By focusing on the managerial functions of planning, organizing, implementing, and evaluating, this research positions leadership not merely as supportive background but as the core mechanism enabling environmental education reform.

Theoretically, this study contributes to educational leadership and management literature by integrating environmental education policy with school management frameworks. Practically, it offers insights for

policymakers and school leaders seeking to strengthen sustainability initiatives beyond symbolic program adoption toward long-term cultural transformation.

Literature Study

The Adiwiyata program represents Indonesia's institutional response to the global agenda of Education for Sustainable Development (ESD). ESD emphasizes the integration of environmental, social, and economic sustainability principles into educational systems to foster responsible citizenship and long-term ecological awareness. Within this framework, schools are not merely venues for environmental instruction but organizations that must embody sustainability through policy, curriculum, infrastructure, and culture. Therefore, Adiwiyata can be understood as a school-based environmental reform policy that requires systemic organizational transformation rather than isolated environmental activities.

To theoretically situate Adiwiyata implementation, it is necessary to integrate environmental education theory with school management and leadership frameworks. Environmental education literature underscores that sustainability becomes meaningful only when embedded within daily practices and institutional culture (Gough, 2013). However, transforming sustainability from curriculum content into lived school culture requires structured management processes. In this regard, principal management serves as the mediating mechanism that translates environmental education ideals into institutional practice.

From a leadership perspective, (Kensler & Uline, 2016) argue that leading a "green school" demands a paradigm shift in which the principal perceives the school environment as a dynamic learning ecosystem. This aligns with transformational and instructional leadership theories, which position principals as vision setters, culture builders, and agents of organizational change. In the Indonesian context, Ikhsan, Muhammad, and Gani emphasize that Adiwiyata realization requires embedding environmental ethics into school vision, mission, and strategic plans. Such integration reflects the managerial function of planning, which establishes normative direction and organizational commitment (Ilahiyah, 2025).

School management theory further clarifies how Adiwiyata operates as a systemic reform. The four pillars of the program environmentally friendly policies, environment-based curriculum, participatory activities, and infrastructure management correspond directly with the classic managerial cycle of planning, organizing, implementing, and evaluating. (Suryatini, Mulyasa, Yusuf, & Iriantara, 2019) highlights that principals must mobilize resources strategically to support eco-friendly initiatives, illustrating the organizing and actuating dimensions of management. Meanwhile, (Shallcross & Robinson, 2008) suggests that sustainability reforms succeed when leaders cultivate a "whole-school culture," reinforcing the idea that management and leadership are inseparable in institutional transformation.

The qualitative dimension of Adiwiyata implementation further demonstrates that leadership is central to cultural change. Rohman and Ningsih (2021) observe that successful principals employ persuasive communication and stakeholder engagement strategies to align school communities with environmental goals. This supports distributed leadership theory, which posits that sustainability initiatives are more durable when responsibilities are shared among teachers, staff, and community members. Without strategic leadership and coherent management structures, environmental education risks remaining symbolic or project-based rather than institutionalized.

Conceptually, therefore, the relationship among environmental education, the Adiwiyata program, and principal management can be synthesized as follows: environmental education provides the normative and pedagogical foundation; Adiwiyata functions as the policy framework operationalizing these principles; and principal management acts as the strategic mechanism that institutionalizes sustainability within school

structures and culture. Leadership theory explains how principals shape vision and mobilize stakeholders, while management theory explains how that vision is operationalized through structured processes.

This integrated theoretical framework underscores that the effectiveness of Adiwiyata implementation depends not only on environmental awareness or policy mandates but on the principal's capacity to align leadership vision with systematic management practices. A qualitative case study approach is therefore appropriate to explore how these interconnected dimensions are enacted in real school contexts.

Methods

This study employed a qualitative approach using a descriptive case study design to explore in depth the managerial practices of school principals in realizing the Adiwiyata School program. A qualitative methodology was selected because it enables researchers to understand social phenomena holistically within their natural context and to capture participants' experiences, perceptions, and meanings regarding leadership and environmental education practices (Creswell & Clark, 2017; Teddlie & Tashakkori, 2009). The case study design was considered appropriate as it allows for comprehensive examination of complex processes within real-life institutional settings where the boundaries between context and phenomenon are not clearly separated (Adrias & Ruswandi, 2025; Yin, 2017).

The research was conducted at two secondary-level schools in Ciamis Regency, Indonesia: SMP Negeri 1 Ciamis and MTs Negeri 5 Ciamis. These schools were purposively selected because both actively implement the Adiwiyata program and represent different institutional characteristics, thereby providing rich and varied contexts for understanding principal management practices in environmental education. The selection of multiple sites enabled cross-case comparison and enhanced the depth of analysis

Participants consisted primarily of the two school principals as key informants, given their central roles in planning and managing the Adiwiyata program. Supporting informants included teachers, administrative staff, and students who were directly involved in environmental activities. Participants were chosen through purposive sampling based on their knowledge, experience, and active engagement in the implementation of the program, ensuring the relevance and credibility of the data collected (Tisdell, Merriam, & Stuckey-Peyrot, 2025).

Data were collected using methodological triangulation, including observations, in-depth interviews, and document analysis. Observations were conducted to examine daily environmental practices such as waste management, greening initiatives, school garden maintenance, and environmentally responsible behaviors within the school environment. In-depth interviews were carried out to explore principals' leadership strategies, decision-making processes, challenges, and solutions related to program implementation. Additional interviews with teachers and students provided complementary perspectives on the effectiveness of management practices. Document analysis involved reviewing relevant materials such as school work plans, environmental activity reports, policy documents, and Adiwiyata program records (Patton, 2014). In qualitative research, the researcher served as the primary instrument (human instrument), directly engaging with participants and interpreting field data (Lincoln & Guba, 1985). To support systematic data collection, several supporting instruments were utilized, including interview guides, observation checklists, and document analysis protocols.

To ensure the trustworthiness of the findings, this study applied the criteria of credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). Credibility was strengthened through source

and method triangulation as well as member checking with participants to validate interpretations. Transferability was supported by providing detailed contextual descriptions (thick description) of the research settings. Dependability and confirmability were enhanced through an audit trail, systematic documentation of procedures, and peer debriefing to minimize researcher bias (Shenton, 2004)

Data analysis followed the interactive model proposed by (Miles, Huberman, & Saldaña, 2014), consisting of three stages: data reduction, data display, and conclusion drawing/verification. Data reduction involved selecting, coding, and categorizing relevant information. Data were then organized into narrative descriptions, matrices, and thematic patterns to facilitate interpretation. Conclusions were drawn iteratively and continuously verified throughout the research process. Data analysis was conducted simultaneously with data collection, enabling the researcher to respond adaptively to emerging insights in the field. The study was conducted over several stages, including preparation, fieldwork, data analysis, and report writing. Through this methodological approach, the research aimed to generate comprehensive and contextually grounded insights into how principal management practices influence the successful realization of Adiwiyata Schools.

Results

Planning of Principal Management in Realizing Adiwiyata Schools

The findings indicate that the planning stage constituted the fundamental basis for the successful implementation of the Adiwiyata School program at SMP Negeri 1 Ciamis and MTs Negeri 5 Ciamis. Planning was not limited to administrative preparation but functioned as a strategic and cultural process aimed at embedding environmental values into the vision, policies, and daily practices of the schools. Both principals demonstrated proactive leadership by integrating environmental sustainability into long-term school development plans and operational programs.

Interview results reveal that principals initiated the planning process through a needs assessment and internal evaluation of environmental conditions within the school environment. They reviewed previous activity reports, observed daily practices, and collected input from teachers and students to identify priority issues such as waste management, school cleanliness, and green space development. One principal explained:

“We started by identifying what environmental problems existed in our school. From there, we designed programs that were realistic and could involve teachers and students directly. Planning must match the real conditions of the school.” (Interview, Principal of SMP Negeri 1 Ciamis)

This statement suggests that planning was evidence-based and context-sensitive rather than merely following national program guidelines. The principals adapted the Adiwiyata framework to the specific needs and capacities of their schools, demonstrating situational and strategic management practices. Observational data further confirmed that planning activities were conducted collaboratively. Regular coordination meetings were held involving teachers, staff, and student representatives to discuss environmental goals, activity schedules, and task distribution. During these meetings, participants collectively designed annual environmental action plans, including tree-planting programs, waste segregation systems, composting initiatives, and environmentally integrated learning projects. The researcher observed that such meetings encouraged shared responsibility and fostered a sense of ownership among school members.

Document analysis also supported these findings. Several formal documents were identified, including school work plans (RKS), environmental activity proposals, Adiwiyata program roadmaps, and official decrees establishing environmental committees. These documents illustrate that environmental programs were systematically incorporated into the institutional structure rather than treated as extracurricular additions. Environmental objectives were explicitly linked to character education and school culture development, reinforcing the long-term commitment to sustainability. Teachers emphasized that early planning facilitated smoother implementation. One teacher noted:

“Because the programs are planned together at the beginning of the year, we already know our responsibilities. It makes the activities more organized and students become more prepared to participate.” (Interview, Teacher, MTs Negeri 5 Ciamis)

This perspective highlights that participatory planning enhanced coordination and operational clarity. It also minimized resistance and confusion during the execution stage, as roles and expectations had already been clearly defined. Both schools also established partnerships with external stakeholders during the planning phase. Collaboration with local education offices, environmental agencies, and community organizations provided additional resources, technical guidance, and institutional support. Such partnerships expanded the scope and sustainability of the Adiwiyata initiatives beyond the school boundaries.

Comparatively, SMP Negeri 1 Ciamis emphasized structured long-term planning integrated into academic programs, while MTs Negeri 5 Ciamis adopted a more flexible and adaptive approach, adjusting plans according to available resources. Despite these differences, both schools shared a commitment to participatory and strategic planning. A summary of the planning practices is presented in Table 1.

Table 1. Summary of Planning Practices for Adiwiyata School Implementation

Planning Aspect	SMP Negeri 1 Ciamis	MTs Negeri 5 Ciamis	Data Sources
Needs assessment	Environmental condition mapping	Internal evaluation and feedback	Interviews, observation
Program design	Integrated into school work plan (RKS)	Context-adaptive activity plans	Documents
Stakeholder involvement	Teachers, students, committees	Teachers, students, community	Observation, interviews
Organizational preparation	Environmental/Adiwiyata committee formation	Task-based team structure	Documents
External collaboration	Education and environmental agencies	Community and local partners	Interviews

Overall, these findings demonstrate that planning practices in both schools reflect strategic and participatory management principles. The principals’ ability to align environmental goals with institutional policies, mobilize stakeholders, and prepare structured programs contributed significantly to the foundation of successful Adiwiyata implementation. This suggests that effective environmental education begins not with activities themselves but with well-designed and inclusive planning processes led by strong school leadership.

Organizing Principal Management for the Adiwiyata School Program

Following the planning stage, organizing became a crucial managerial function that translated environmental strategies into structured roles, responsibilities, and coordinated actions within both schools. The findings show that principals at SMP Negeri 1 Ciamis and MTs Negeri 5 Ciamis did not merely design environmental programs conceptually but systematically arranged organizational structures to ensure effective execution. Organizing involved establishing environmental teams, delegating tasks, aligning human resources, and fostering collaboration among all school members. Interview data indicate that principals recognized that environmental programs could not be sustained without collective participation. Therefore, they created formal organizational mechanisms that distributed responsibilities among teachers, students, and supporting staff. One principal explained:

“If the program depends only on the principal, it will not last. We formed a team and divided tasks clearly, so everyone feels responsible for the success of Adiwiyata.” (Interview, Principal of MTs Negeri 5 Ciamis)

This statement highlights that organizing was designed to promote shared ownership rather than centralized control. Leadership practices emphasized empowerment and teamwork, allowing various stakeholders to actively contribute to environmental initiatives. Observational findings further revealed that both schools established dedicated Adiwiyata or environmental committees composed of teachers and student representatives. Each member was assigned specific roles, such as waste management coordinators, greening supervisors, composting managers, and environmental campaign facilitators. During daily activities, these teams operated autonomously while still reporting to the principal. The researcher observed that such task specialization improved efficiency and prevented overlapping responsibilities.

Document analysis supported these observations. Official decrees formalizing the establishment of Adiwiyata teams were found in both schools, along with organizational charts, job descriptions, and activity schedules. These documents demonstrate that environmental management was institutionalized within the school structure rather than treated as voluntary or incidental efforts. The clarity of roles and procedures contributed to greater accountability and systematic program implementation.

Teachers also emphasized that this structured organization facilitated the integration of environmental education into the curriculum. For instance, science teachers linked composting practices to biology lessons, while social studies teachers incorporated environmental responsibility into character education topics. One teacher noted:

“Because we are part of the Adiwiyata team, we naturally connect our subjects with environmental activities. Students learn not only theory but also practice directly.” (Interview, Teacher, SMP Negeri 1 Ciamis)

This finding suggests that organizing extended beyond administrative arrangements to include pedagogical coordination. Environmental values became embedded within teaching and learning processes, reinforcing the program’s educational objectives.

Moreover, both schools involved external stakeholders to strengthen organizational capacity. Collaboration with school committees, parents, and local environmental agencies provided additional resources, expertise, and community support. These partnerships expanded the organizational network beyond the school, reflecting a broader ecosystem approach to environmental education.

Comparatively, SMP Negeri 1 Ciamis adopted a more formal and structured organizational system with clearly defined hierarchies and regular reporting mechanisms. In contrast, MTs Negeri 5 Ciamis

implemented a more flexible and adaptive structure, allowing teams to adjust roles according to situational needs. Despite these contextual differences, both approaches demonstrated effective coordination and participatory management. A summary of the organizing practices is presented in Table 2.

Table 2. Summary of Organizing Practices for Adiwiyata School Management

Organizing Aspect	SMP Negeri 1 Ciamis	MTs Negeri 5 Ciamis	Data Sources
Organizational structure	Formal Adiwiyata committee with clear hierarchy	Flexible team-based structure	Documents
Task distribution	Specific roles (waste, greening, composting)	Shared and adaptive responsibilities	Observation, interviews
Teacher involvement	Curriculum integration	Curriculum and activity coordination	Interviews
Student participation	Environmental ambassadors/teams	Student-led activity groups	Observation
External collaboration	School committee and agencies	Community and local partners	Interviews, documents

Overall, these findings demonstrate that effective organization of human and institutional resources played a pivotal role in sustaining the Adiwiyata program. By establishing clear structures, delegating responsibilities, and promoting collaboration, principals transformed environmental initiatives into collective school practices rather than isolated activities. This confirms that organizing is not merely a managerial routine but a strategic process that strengthens participation, accountability, and long-term program sustainability.

Implementation of Principal Management in Realizing the Adiwiyata School Program

Following the planning and organizing stages, the implementation phase represented the practical execution of environmental management strategies within daily school life. The findings indicate that the principals at SMP Negeri 1 Ciamis and MTs Negeri 5 Ciamis actively translated environmental plans into concrete and routine actions that involved the entire school community. Implementation was not limited to occasional events or ceremonial activities; rather, it was embedded into everyday practices, learning processes, and extracurricular programs, thereby fostering a sustainable environmental culture.

Interview data reveal that principals assumed direct supervisory and facilitative roles during program execution. They coordinated schedules, ensured task completion, and monitored ongoing environmental activities. One principal explained:

“We don’t just plan the program and leave it to the team. We monitor the activities regularly, check the progress, and step in when problems occur. Implementation must be consistent, not seasonal.”
 (Interview, Principal of SMP Negeri 1 Ciamis)

This statement reflects the principals’ active leadership presence in operational matters. Rather than delegating entirely to staff, they maintained continuous oversight to ensure alignment between plans and actual practices.

Observational findings demonstrate that environmental activities were carried out systematically and routinely. At SMP Negeri 1 Ciamis, students participated in scheduled tree-planting programs, organic and inorganic waste segregation, compost production, garden maintenance, and classroom cleaning initiatives. Similarly, MTs Negeri 5 Ciamis implemented composting projects, medicinal plant cultivation, and

environmental awareness campaigns integrated into both academic and non-academic activities. The researcher observed that these activities were conducted in groups with clearly assigned responsibilities, encouraging teamwork and accountability among students.

Importantly, environmental practices were also integrated into classroom learning. Teachers connected environmental themes with subject matter to enhance experiential learning. For instance, composting processes were linked to biology lessons, while environmental responsibility was incorporated into character education and civic studies. This integration indicates that implementation was pedagogically embedded rather than treated as separate extracurricular work.

Document analysis further supports these observations. Activity logs, written reports, monitoring sheets, and portfolios of environmental projects were systematically archived in both schools. Each activity required documentation describing objectives, processes, challenges, and outcomes. These reports were later discussed during evaluation meetings, indicating that implementation was conducted with accountability and traceability.

Teachers acknowledged that structured implementation improved student engagement. One teacher commented:

“Students are more aware because they are directly involved. When they manage the garden or process waste themselves, they understand why environmental care is important.” (Interview, Teacher, MTs Negeri 5 Ciamis)

This perspective suggests that hands-on participation strengthened students’ environmental awareness and behavioral change, which aligns with the objectives of the Adiwiyata program.

In addition, both schools involved external stakeholders during implementation. Collaboration with school committees, parents, and local communities supported activities such as clean-up campaigns and greening programs. This broader participation extended environmental responsibility beyond school boundaries and reinforced community-based sustainability practices.

Comparatively, SMP Negeri 1 Ciamis emphasized structured and regular routines with strict monitoring, while MTs Negeri 5 Ciamis adopted a more adaptive approach by adjusting activities according to available resources and school conditions. Despite these differences, both approaches demonstrated effective operational management and sustained program execution. A summary of the implementation practices is presented in Table 3.

Table 3. Summary of Implementation Practices for the Adiwiyata Program

Implementation Aspect	SMP Negeri 1 Ciamis	MTs Negeri 5 Ciamis	Data Sources
Routine activities	Tree planting, waste segregation, composting	Composting, school garden, awareness campaigns	Observation
Curriculum integration	Environmental themes in science and character education	Contextual environmental learning	Interviews
Monitoring system	Regular supervision and activity reports	Flexible monitoring and adjustments	Documents
Student participation	Group-based responsibilities	Student-led initiatives	Observation

Community involvement

School committee and parent collaboration

Community-based support

Interviews

Overall, these findings demonstrate that the implementation of the Adiwiyata program was operationalized through consistent routines, collaborative participation, and integration into both academic and non-academic domains. The principals' active involvement, supervision, and facilitation ensured that environmental initiatives became habitual practices rather than temporary projects. This suggests that effective implementation requires not only well-designed plans and structures but also sustained leadership engagement and continuous participation from the entire school community.

Evaluation and Monitoring of Principal Management in the Adiwiyata School Program

Evaluation constituted the final yet continuous managerial function that ensured the sustainability and effectiveness of the Adiwiyata School program in both SMP Negeri 1 Ciamis and MTs Negeri 5 Ciamis. The findings reveal that evaluation was not treated as a formal or periodic administrative requirement only; rather, it functioned as an ongoing reflective process aimed at identifying weaknesses, measuring progress, and improving subsequent environmental practices. Through systematic monitoring and collaborative assessment, principals were able to maintain program consistency and institutional accountability. Interview data indicate that principals considered evaluation as an integral component of management rather than a separate stage conducted after activities were completed. One principal stated:

“Every activity must be reviewed. We discuss what has worked well and what needs improvement. Without evaluation, the program will stagnate and lose its impact.” (Interview, Principal of MTs Negeri 5 Ciamis)

This statement highlights the principals' awareness that continuous reflection is necessary to sustain behavioral and cultural change within the school environment. Evaluation practices were therefore embedded within daily routines and organizational meetings.

Observational findings demonstrate that both schools conducted regular monitoring of environmental activities. Principals and Adiwiyata teams routinely inspected classroom cleanliness, waste segregation practices, garden maintenance, and student participation. These observations were recorded and later discussed during weekly or monthly coordination meetings. The researcher observed that such monitoring created a sense of responsibility among students and teachers, as environmental performance was visibly tracked and acknowledged.

Document analysis further supports these findings. Both schools maintained systematic records, including activity reports, environmental audit sheets, portfolios of projects, and evaluation summaries. These documents provided evidence of progress, challenges encountered, and follow-up actions. In several cases, evaluation results directly informed adjustments to future plans, such as revising schedules, reallocating tasks, or redesigning activities to be more feasible.

Teachers emphasized that collaborative evaluation enhanced collective commitment. One teacher commented:

“We evaluate together, not only the principal. Teachers and students can express their opinions about what works or not. This makes us feel responsible for improving the program.” (Interview, Teacher, SMP Negeri 1 Ciamis)

This finding indicates that evaluation practices were participatory rather than hierarchical. By involving multiple stakeholders, principals fostered shared ownership and strengthened motivation for continuous improvement.

In addition, some innovative evaluation approaches were observed. For example, MTs Negeri 5 Ciamis encouraged students to maintain eco-journals documenting their daily environmental behaviors and reflections. This method not only served as an assessment tool but also promoted self-awareness and internalization of environmental values. Meanwhile, SMP Negeri 1 Ciamis conducted periodic environmental audits and integrated results into school performance reviews. These practices illustrate that evaluation extended beyond compliance checks toward educational and developmental purposes.

External stakeholders also contributed to evaluation processes. Collaboration with environmental agencies and school committees provided external perspectives and recommendations, enhancing objectivity and program credibility. Such multi-level monitoring strengthened the legitimacy and sustainability of the Adiwiyata initiatives.

Comparatively, SMP Negeri 1 Ciamis employed a more formal and structured evaluation system with scheduled reports and audits, whereas MTs Negeri 5 Ciamis applied a more reflective and student-centered approach emphasizing behavioral awareness. Despite these differences, both schools shared the same principle of continuous improvement. A summary of the evaluation practices is presented in Table 4.

Table 4. Summary of Evaluation and Monitoring Practices

Evaluation Aspect	SMP Negeri 1 Ciamis	MTs Negeri 5 Ciamis	Data Sources
Monitoring system	Routine inspections and audits	Daily behavioral monitoring	Observation
Documentation	Activity reports and audit sheets	Reflection logs and reports	Documents
Participation	Teachers and team meetings	Teachers and students involved	Interviews
Innovative tools	Environmental performance reviews	Student eco-journals	Observation
External involvement	Environmental agencies and committees	Community collaboration	Interviews

Overall, these findings demonstrate that systematic evaluation and monitoring played a critical role in sustaining the Adiwiyata program. By combining structured supervision, participatory reflection, and documented evidence, principals were able to identify gaps, reinforce accountability, and continuously refine environmental practices. This suggests that evaluation is not merely a control mechanism but a strategic learning process that strengthens program quality and long-term institutional change.

Discussion

This study sought to understand how principal management practices contribute to the realization of the Adiwiyata School program through planning, organizing, implementation, and evaluation processes. The findings demonstrate that the effectiveness of environmental education initiatives is strongly mediated by leadership capacity rather than merely the availability of facilities or regulatory mandates. In both SMP Negeri 1 Ciamis and MTs Negeri 5 Ciamis, principals functioned not only as administrative managers but also as strategic leaders and change agents who systematically embedded environmental values into school culture. This confirms that school-based environmental reform is fundamentally a managerial and leadership issue.

First, the planning practices identified in this study reflect the principles of strategic and participatory management. By conducting needs assessments, integrating environmental goals into school work plans, and involving teachers and students in decision-making, principals ensured that environmental programs were contextually relevant and institutionally grounded. Such findings are consistent with educational management theory, which emphasizes planning as the foundation for effective organizational performance (Bush, 2020; Miskel & Hoy, 2002). Moreover, (Kuran, Khabbaz, & Nehme, 2025) argue that context-sensitive planning enhances the sustainability of school reforms. The present findings reinforce this argument, as schools that adopted collaborative planning were better able to mobilize collective commitment and minimize resistance.

Second, the organizing function highlights the importance of distributed leadership and teamwork in implementing environmental programs. The establishment of Adiwiyata committees, clear task delegation, and curriculum integration demonstrate that environmental responsibility was institutionalized rather than individualized. This aligns with the concept of shared or distributed leadership, where responsibilities are spread across members of the organization to improve effectiveness and ownership (Hallinger, P., & Murphy, 1985). By empowering teachers and students, principals created a participatory structure that strengthened accountability and sustained engagement. These findings also support Ridwan and Dannur's (2022) assertion that collaborative leadership enhances character-based educational programs (Aqilah & Lathifah, 2023; Prasetyo et al., 2020; Rahman et al., 2023; Zaliyanti & Azani, 2024).

Third, the implementation stage shows that environmental education becomes impactful when it is embedded in daily routines and learning processes rather than treated as symbolic activities. Regular waste management, greening initiatives, and experiential learning activities enabled students to practice environmental responsibility directly. This finding corresponds with experiential learning and environmental education theories, which emphasize that behavioral change occurs through repeated practice and real-life engagement rather than theoretical instruction alone (Subur, 2022). The integration of environmental activities into classroom instruction further indicates that effective implementation requires alignment between managerial and pedagogical practices.

Fourth, continuous evaluation and monitoring were found to be essential for sustaining program quality. Principals conducted routine inspections, reflection meetings, and documentation processes to assess progress and refine strategies. This iterative process resembles the concept of continuous improvement in educational quality management, where feedback mechanisms guide organizational learning (Miles et al., 2018). Rather than serving solely as a control function, evaluation in these schools operated as a learning tool that informed future planning and strengthened stakeholder responsibility. Shenton (2004) similarly emphasizes that systematic review enhances credibility and institutional effectiveness.

Theoretical and Conceptual Contributions

This study makes two primary theoretical contributions. First, it advances a **conceptual integration model** linking environmental education, policy implementation, and principal management. While previous Adiwiyata research has focused on outcomes or technical program indicators, this study positions principal management as the mediating variable that connects environmental policy frameworks with sustainable institutional practice. In doing so, it reframes Adiwiyata not merely as an environmental initiative but as a leadership-dependent organizational reform process.

Second, the findings extend leadership theory by situating environmental sustainability within the managerial cycle of planning–organizing–implementing–evaluating. Rather than treating sustainability

leadership as a separate domain, this research conceptualizes it as embedded within core management functions. This integration contributes to international discussions on sustainable school leadership by providing empirical evidence from a Global South context, where environmental reform intersects with resource limitations and socio-cultural dynamics.

Overall, the study suggests that the realization of Adiwiyata Schools depends not only on policy mandates or environmental awareness but on the principal's capacity to orchestrate systemic managerial alignment. By strengthening the theoretical linkage between environmental education and educational leadership, this research contributes to a more holistic understanding of how sustainability reforms can become institutionalized within schools.

Conclusions

This study concludes that the successful realization of the Adiwiyata School program is strongly influenced by the managerial and leadership capacities of school principals rather than solely by program guidelines or resource availability. Through strategic planning, collaborative organization, consistent implementation, and continuous evaluation, principals at SMP Negeri 1 Ciamis and MTs Negeri 5 Ciamis were able to institutionalize environmental values into daily school practices and culture. Environmental education became more effective when it was embedded in routine activities, integrated into classroom learning, and supported by shared participation among teachers, students, and external stakeholders. However, challenges such as limited funding, time constraints, and varying levels of environmental awareness remain barriers that require adaptive leadership and sustained commitment.

Practically, schools should prioritize participatory management, clear task delegation, and ongoing evaluation to ensure the sustainability of environmental programs. At the policy level, education authorities should strengthen principal leadership capacity through targeted training, resource support, and flexible implementation frameworks that accommodate local contexts. Theoretically, this study highlights principal management as a critical mediating factor linking environmental education policy to real-world outcomes, thereby contributing to the integration of leadership and environmental education research. Future studies are encouraged to examine broader contexts and employ mixed methods to assess the long-term impacts of Adiwiyata programs on student behavior and school sustainability.

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