

Environmental Management Practices in Public High Schools

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Abstract—Environmental management in schools plays a vital role in promoting sustainability and instilling ecological responsibility among learners. This study explored the lived experiences of school heads, environmental coordinators, and teacher-implementers in selected public high schools. Anchored on Bronfenbrenner's ecological systems theory and employing Colaizzi's phenomenological method, the research examined how policies, practices, and stakeholder interactions shape environmental management at the school level. Findings revealed that effective practices include leadership and collaboration in waste management, student and teacher engagement, curriculum integration, energy conservation initiatives, and water conservation supported by infrastructure. However, several challenges were identified such as leadership and staff turnover, limited student awareness and motivation, and resource and infrastructure gaps. To address these, the study recommends strengthening stakeholder collaboration, enforcing policies, enhancing capacity-building programs, providing logistical support, and fostering a culture of environmental accountability in schools. The results highlight the importance of sustained leadership, active stakeholder involvement, and community partnerships in advancing sustainable school-based environmental programs.

Keywords— Environmental management, public high schools, sustainability, waste management, energy conservation, water conservation.

I. INTRODUCTION

Waste management is one of the most pressing environmental concerns worldwide, influencing ecosystems, public health, and climate systems. In the Philippines, public high schools generate considerable amounts of solid waste each day, yet many lack systematic approaches to reduction, segregation, and disposal. As learning institutions, schools play a vital role in shaping environmental consciousness and sustainable behavior among students, making environmental management a key component of education for sustainability.

The Philippine government has established several policies to address this concern. Republic Act No. 9003, otherwise known as the Ecological Solid Waste Management Act of 2000, provides the framework for waste reduction, segregation, recycling, and materials recovery. Complementing this, the Department of Education (DepEd) issued directives such as DepEd Order No. 72, s. 2003, DepEd Order No. 52, s. 2011, and DepEd Order No. 5, s. 2014, which institutionalize environmental programs in schools. Programs like the Youth for Environment in Schools Organization and the National Search for Sustainable and Eco-Friendly Schools

were also introduced to encourage active student participation and innovation in sustainability practices.

Despite these efforts, recent studies reveal that implementation remains inconsistent across schools. While some institutions have functional waste segregation systems, active environmental clubs, and strong stakeholder support, others struggle due to resource limitations, leadership turnover, and low student engagement. These variations highlight the need to examine how school-level practices align with national mandates and how different factors affect sustainability outcomes.

This study explored the experiences of school heads, environmental coordinators, and teacher-implementers in selected public high schools. It focused on environmental management practices in waste management, energy conservation, and water conservation, as well as the challenges and strategies encountered in implementation. By documenting these experiences, the study aims to generate insights that will strengthen school-based sustainability programs and foster a culture of environmental responsibility within the education sector.

II. FRAMEWORK OF THE STUDY

This study is anchored on Bronfenbrenner's Ecological Systems Theory (1979, 1994), which explains how individuals and institutions are shaped by interactions across different environmental systems—from the immediate school and family contexts to broader societal policies and cultural values. In the context of public high schools, this theory provides a lens for analyzing how administrators, coordinators, teachers, students, and external partners influence the success of environmental management practices. The neo-ecological perspective (Navarro & Tudge, 2023) further emphasizes how schools adapt to socio-cultural changes, shifting priorities, and policy reforms.

Supporting this are other frameworks that strengthen the study's conceptual base. The Sustainable Development Theory (Brundtland Commission, 1987) underscores the responsibility of schools to meet present needs in waste reduction, water conservation, and energy efficiency without compromising future generations. Closely related is the Environmental Education Theory (Tilbury, 1995; UNESCO, 2017), which highlights the role of schools in embedding environmental values, awareness, and action into both classroom and co-curricular programs. Stakeholder Theory (Freeman, 1984) adds the dimension of collaboration, recognizing that teachers,

students, administrators, parents, local government units, and community partners must share accountability to sustain school-based environmental programs. Finally, Environmental Management Theory, reflected in frameworks such as ISO 14001, provides a practical model for ensuring compliance, systematic planning, and continuous improvement in resource management.

Together, these theories establish a holistic foundation for the study, enabling a deeper understanding of how policies, leadership, culture, and partnerships converge to either strengthen or hinder environmental management practices in public high schools.

III. OBJECTIVES

This study aimed to explore the environmental management practices of public high schools. Specifically, it sought to: Examine the environmental management practices implemented in public high schools; Determine the challenges and opportunities encountered by administrators and teachers in implementing and sustaining environmental management practices; and Propose intervention strategies that may strengthen and improve environmental management practices in public high schools.

IV. METHODOLOGY

This study employed a qualitative research design using hermeneutic phenomenology as articulated by Max van Manen to explore the experiences of school administrators, environmental coordinators, and teachers in implementing environmental management practices in public high schools. Data were gathered through semi-structured interviews, review of school documents, and observations. Colaizzi's (1978) method was used in analyzing the data to extract significant statements, formulate meanings, cluster themes, and arrive at an exhaustive description of the phenomenon.

The study was conducted in three selected public high schools, representing one large, one medium, and one small school. These schools were purposively chosen based on their active participation in DepEd environmental programs initiatives.

Participants included nine purposively selected individuals composed of three school administrators, three environmental coordinators, and three teachers directly engaged in environmental initiatives. Selection criteria required at least one year of service in their schools and prior involvement in relevant environmental activities. Participants were assured of the confidentiality of their responses, and their identities were not revealed in any part of the paper.

An interview guide served as the main research instrument. It was reviewed and validated by experts to ensure clarity, relevance, and ethical compliance. Transcripts were returned to participants for validation to ensure accuracy of interpretation. Supplementary documents were reviewed to support and triangulate the findings.

Ethical considerations such as voluntary participation, informed consent, confidentiality, and anonymity were strictly observed throughout the conduct of the study.

V. RESULTS AND DISCUSSION

This section presents the results of the study on *Environmental Management Practices in Public High Schools*. Data were organized into three major frames: (1) Environmental Management Practices, (2) Challenges and Opportunities, and (3) Recommended Intervention Strategies. The findings were derived from participants' narratives and analyzed thematically. The school heads, coordinators, and teachers were individually interviewed using a guided protocol, allowing them to share their experiences, challenges, and perspectives in implementing environmental management practices in Bayugan City public high schools.

Frame 1: Environmental Management Practices

Environmental management in public high schools fosters sustainability and ecological responsibility among students. In Bayugan City, schools implemented various environmental initiatives, partnered with stakeholders, and promoted resource conservation. Challenges included limited leadership continuity, resources, and student motivation. Recommendations focused on collaboration, policy support, training, infrastructure, and monitoring to embed sustainability into school culture.

Theme 1: School-Based Environmental Management Initiatives

This theme highlights the various school-based efforts that demonstrate leadership commitment and institutional accountability in managing environmental programs within public high schools. The accounts of the participants reflected the strong influence of school leaders and the active participation of teachers and coordinators in maintaining an environmentally responsive learning environment.

Subtheme 1: Modeling Leadership and Accountability

Principals and coordinators modeled environmental responsibility by leading clean-up drives, monitoring waste segregation, and actively participating in sustainability programs.

- *“As a principal, I conduct campus rounds to ensure cleanliness and proper waste disposal.”*

Leadership by example fosters accountability and instills ecological values, aligning with Republic Act No. 9003 and DepEd Order No. 72 (Abdon & Farin, 2022; Alburo, 2021; Tizon et al., 2020). This participative approach supports whole-school engagement and demonstrates how leadership shapes student behavior in line with SDG 4.7 (Bronfenbrenner, 1979; Navarro & Tudge, 2023).

Subtheme 2: Coordinator Leadership in Programs

Environmental coordinators operationalized policies, supervised school-wide environmental activities, and engaged students in sustainability initiatives.

- *“As YES-O Coordinator, I oversee waste segregation and coordinate school-wide environmental programs.”*

Coordinators act as critical agents linking policy with practice, fostering consistent implementation and embedding ecological values in daily school routines (Freeman, 1984; Prisco & Cubillas, 2022; Tilbury, 2018). Their role ensures the

operationalization of RA 9003 and DepEd environmental directives.

Subtheme 3: Spearheading Structured Environmental Practices
Schools implemented organized systems such as color-coded bins, clean-up drives, posted guidelines, and regular reinforcement to sustain environmental management.

- *“We have designated color-coded bins across the campus and coordinate regular clean-up drives.”*
- *“I enforce proper waste segregation by implementing clear guidelines, providing color-coded trash bags, and conducting regular awareness campaigns for students and staff.”*

These structured routines ensured consistency, embedded sustainable behaviors, and fostered a culture of ecological responsibility (Alburo, 2021; Nabor & Ortega-Dela Cruz, 2022; Tizon et al., 2020). Visible systems combined with continuous awareness-building supported student compliance with national environmental policies and operationalized sustainability within school practices (RA 9003; DepEd Orders 72 s.2003 and 52 s.2011; Tilbury, 2018).

Subtheme 4: Building Partnerships Within and Beyond the School Community

School-based environmental initiatives were strengthened through collaborative partnerships with students, parents, barangay officials, NGOs, and external agencies.

- *“During Brigada Eskwela, we invite parents and local partners to help build eco-brick stations and recycling corners. It becomes a whole-of-school and community effort.”*

These partnerships, both internal and external, promoted shared responsibility, civic engagement, and effective implementation of environmental programs. Coordinators served as key links, cascading initiatives and ensuring alignment across stakeholders. Collaborative efforts fostered collective ownership and reinforced sustainable practices within the school and community (Colonia et al., 2024; Nabor & Ortega-Dela Cruz, 2022). By engaging multiple sectors, schools institutionalized environmental stewardship while supporting compliance with national policies (RA 9003; DepEd Orders 72 s.2003 and 52 s.2011) and advancing education for sustainable development (SDG 4.7, SDG 17).

Subtheme 5: Teacher Roles in Environmental Monitoring
Teachers incorporated environmental monitoring into classroom routines, guiding students in proper waste management and reinforcing ecological values.

- *“As advisers, we check our classroom waste corners daily and remind students to segregate properly.”*

Consistent teacher engagement strengthens student accountability, integrates sustainability into learning, and supports SDG 4.7 (Tilbury, 2018; Wals & Benavot, 2017; Magluyan, 2019). Teachers’ active role operationalizes policy and nurtures environmentally responsible behaviors.

Subtheme 6: Student Participation and Instructional Integration in Environmental Practices

Students actively contributed to school-based environmental management when ecological values were embedded in classroom instruction and reinforced through hands-on activities. Teachers integrated environmental content

across subjects and co-curricular projects, fostering peer support and shared responsibility.

- *“We incorporate environmental topics into lessons and assign student helpers to remind classmates about segregation.”*

This approach transforms students into active participants, promoting behavioral internalization and practical understanding through initiatives like eco-bricking. Consistent classroom routines and experiential projects cultivate environmental responsibility, aligning with bioecological and neo-ecological perspectives on how structured, socially embedded experiences shape sustainable behaviors (Bronfenbrenner, 1979; Navarro & Tudge, 2023). These practices also support SDG 4.7 by integrating sustainability education and fostering eco-leadership (Tilbury, 2018; Wals & Benavot, 2017; Magluyan, 2019).

Theme 2: Stakeholder Partnerships in Environmental Program Implementation

School-based environmental programs are most effective when supported by partnerships with community stakeholders. Collaboration with LGUs, barangay councils, parent associations, and civic groups provides policy backing, resources, and participatory engagement, ensuring initiatives are sustainable and culturally relevant (Colonia et al., 2024; Nabor & Ortega-Dela Cruz, 2022).

Subtheme 1: Policy Support from Local Government Units

LGUs strengthen school environmental programs through policy alignment, collaborative initiatives, and community engagement, reinforcing compliance with RA 9003 and encouraging student participation.

- *“The school complies with RA 9003 by coordinating with our SWM coordinator and implementing consistent waste segregation practices. We also benefit from strong LGU support. They initiate contests like the ‘Barangay Clean-up’ and recycled Christmas decoration competitions, which students participate in and bring their practices to the school.”*

LGU ordinances and programs complement school efforts, harmonizing governance with instruction and fostering consistent ecological behavior across school and community contexts (Colonia et al., 2024; Nabor & Ortega-Dela Cruz, 2022).

Subtheme 2: School-Community Coordination

School environmental programs are strengthened through active coordination with barangay councils and community organizations, extending ecological practices beyond school boundaries.

- *“We integrate solid waste management across lessons and coordinate with the Barangay Council, which has passed an ordinance aligned with RA 9003. This ordinance supports our school’s practices and strengthens community involvement.”*

Visual reminders, logistical support, and student-led initiatives, such as clean-up drives, foster shared ownership, compliance, and civic participation. These efforts align with RA 9003 and demonstrate the reciprocal influence of school

and community contexts (Colonia et al., 2024; Lalamonan & Comighud, 2020).

Theme 3: Monitoring Strategies on School Environmental Policies

Effective implementation of school environmental programs relies on consistent monitoring and enforcement. Staff-led inspections and student-led initiatives ensure that solid waste management becomes a daily practice rather than a one-time activity, fostering accountability, behavioral consistency, and long-term ecological responsibility.

Subtheme 1: Student-Led Monitoring

Students actively contribute to monitoring and enforcing school environmental policies, particularly through organizations like YES-O and SSLG.

- *“We conduct classroom visits and short orientations to reinforce the importance of proper segregation. Our YES-O officers conduct weekly monitoring and remind classmates about proper waste disposal.”*

Peer-led inspections, checklists, and feedback mechanisms institutionalize environmental compliance, empower students as co-implementers, and nurture leadership and civic responsibility. These practices reinforce behavioral internalization, align with SDG 4.7, and complement staff-led oversight to sustain school-wide solid waste management (Colonia et al., 2024; Navarro & Tudge, 2023).

Subtheme 2: Staff-Led Monitoring

Teachers and coordinators play a central role in enforcing solid waste management through routine classroom inspections, orientations, and reminders during flag ceremonies and school programs.

- *“We enforce waste segregation through regular classroom checks, orientations, and reminders during flag ceremonies and school programs.”*

Structured reinforcement, including visual cues, color-coded bins, and awareness campaigns, normalizes environmental responsibility and fosters shared accountability across the school community. Staff-led monitoring ensures that ecological habits become consistent and embedded in daily routines, complementing student-led efforts and cultivating long-term sustainability (Tilbury, 2018; Tizon et al., 2020; Bronfenbrenner, 1979).

Theme 4: Fostering Environmental Awareness and Campaigns

School-initiated and student-led campaigns promote environmental awareness and translate ecological values into action through visual cues, peer education, and participatory activities such as clean-up drives and poster-making contests.

Subtheme 1: Campaigns and Education

Classroom orientations, posters, and student-led reminders reinforce routine ecological behaviors:

- *“We conduct classroom visits and orientations. Posters about proper segregation are placed where students can always see them, and our YES-O officers regularly remind students about compliance.”*

Interactive campaigns, including student-created materials and clean-up activities, foster ownership, participation, and consistent environmental habits. These practices highlight the school’s role in shaping behavior through repeated, structured

interactions, effectively embedding sustainability into daily routines (Tilbury, 2018).

Theme 5: Sustainable Energy and Water Conservation Strategies

Schools adopt structured practices and behavioral strategies to promote responsible energy and water use, integrating conservation into daily routines and instructional activities.

Subtheme 1: Institutional Approaches and Instructional Integration in Energy Conservation

Energy conservation is implemented through policies, monitoring, and instructional strategies that embed sustainability into daily school operations.

- *“For energy conservation, we issue a school memo mandating all offices to follow strict austerity measures. For example, air conditioners can only be used during prescribed times. Our security guards are also tasked to double-check all classrooms to ensure appliances are turned off after use.” (SHI)*

Structured routines, student monitors, and reminders during flag ceremonies reinforce energy-saving behaviors, while solar-powered lights serve as visible teaching tools. These strategies promote habitual pro-environmental behavior through repeated interactions and modeling (Tilbury, 2018; Cortese, 2003; Paganelli et al., 2019; Tizon et al., 2020; Albuero, 2021).

Theme 6: Measurable Outcomes and Institutional Gains from Environmental Management Practices

This theme highlights the tangible results of implementing school-based environmental management practices. It focuses on how sustained efforts in waste segregation, energy and water conservation, and education lead to observable student behavior change and institutional improvements.

Subtheme 1: Positive Outcomes and Measurable Benefits

Schools reported both behavioral and operational improvements as a result of integrated environmental initiatives.

- *“Yes, we’ve seen positive changes. Students now routinely segregate waste. Our electricity bill dropped by about 10% after installing solar lights, and our rainwater collection system consistently provides a supplementary water source.”*

These outcomes reflect improved student accountability, internalized ecological values, and operational efficiency. Consistent engagement with sustainable practices reinforces environmental behavior and demonstrates practical benefits, supporting Bronfenbrenner’s bioecological theory, Navarro and Tudge’s neo-ecological theory (2023), and the goals of SDGs 4.7 and 12 (Bollettino et al., 2022; Ibañez et al., 2022).

Subtheme 2: Behavioral Change and Campus Impact

School-led environmental initiatives improve campus cleanliness and promote student accountability.

- *“Our clean-up drives and eco-bricking campaigns have not only improved school cleanliness but also encouraged students to be more mindful about reducing plastic waste.”*

Activities like clean-up drives and eco-bricking foster reflection, responsibility, and habit formation. Sustained

engagement with these practices cultivates lasting ecological attitudes and aligns with Bronfenbrenner’s bioecological theory and Navarro and Tudge’s neo-ecological theory (2023) (Tilbury, 2018; Collado et al., 2020).

Subtheme 3: Resource Efficiency and Institutional Gains

Environmental management practices, particularly energy conservation, yield measurable institutional benefits.

- *“Because of our energy-saving policies and consistent monitoring, we’ve seen a noticeable drop in our monthly electricity usage, which we report during our school meetings.”*

Structured policies, monitoring, and reporting foster operational efficiency, accountability, and shared responsibility. These practices align with Bronfenbrenner’s bioecological theory and Navarro and Tudge’s neo-ecological theory (2023), and support SDG 12 on responsible consumption (Tizon et al., 2020; Tilbury, 2018).

Frame 2: Challenges and Opportunities in Implementing Environmental Management Practices

Public high schools encounter challenges in sustaining environmental initiatives, including staff turnover, resource gaps, and student engagement issues. Viewed through bioecological and neo-ecological perspectives, these challenges reflect the interaction of individual, institutional, and contextual factors affecting program continuity and effectiveness.

Theme 1: Leadership and Staff Turnover Challenges

Sustaining environmental management programs in schools is often disrupted by frequent changes in leadership and staff. Such transitions can lead to inconsistent implementation and loss of program continuity.

Subtheme 1: Leadership Turnover and Sustainability

Frequent administrative changes affect long-term environmental initiatives.

- *“One key challenge is leadership continuity. As principals, we get reassigned every few years, so practices we initiate may not always be sustained. New school heads may have different priorities.”*

Leadership turnover disrupts ongoing programs, requiring repeated re-training and reimplementation. Without embedding initiatives into school structures and plans, environmental efforts remain dependent on individual leaders, affecting sustainability and stakeholder engagement (Colonia et al., 2024; Nabor Jr. et al., 2022; Tilbury, 2018; UNESCO, 2017).

Subtheme 2: Coordinator Commitment and Staff Re-orientation

The effectiveness of environmental programs is affected by frequent turnover and varying commitment among coordinators.

- *“Another challenge is the turnover of coordinators— if a new one isn’t as committed, you need to train and mentor again. And lastly, student behavior varies per batch. Some groups are naturally more engaged and responsible than others.”*

Coordinator transitions disrupt program continuity, requiring repeated staff re-orientation and mentorship. Without committed coordinators, environmental initiatives

often falter, as institutional memory and consistent student engagement are compromised. Sustained support, structured roles, and capacity-building are essential to maintain program effectiveness and foster long-term ecological responsibility (Bronfenbrenner, 1979; Tudge et al., 2009; Navarro & Tudge, 2023; Tilbury, 2018; UNESCO, 2017; Colonia et al., 2024; Lalamonan & Comighud, 2020).

Theme 2: Challenges and Improvement Strategies

This theme presents school stakeholders’ perspectives on addressing obstacles in implementing environmental management practices, highlighting both barriers and actionable strategies to strengthen programs.

Subtheme 1: Resource Challenges and Gradual Improvement

Schools initially faced logistical hurdles, particularly insufficient resources, when implementing environmental programs.

- *“Implementing waste management was a big challenge at first. We didn’t have enough bins, so we used labeled sacks and sought donations from the barangay and parents just to get started.”*

Despite initial limitations, creative adaptation, collaboration, and persistent advocacy gradually improved resource availability and student participation, supporting incremental institutionalization of environmental practices (Bronfenbrenner, 1979; Navarro & Tudge, 2023; Colonia et al., 2024; Tilbury, 2018).

Theme 3: External Infrastructure and Resource Gaps

This theme highlights how limitations in external services and infrastructure affect the consistent implementation of environmental management practices, despite school-led programs and student engagement efforts.

Subtheme 1: Limitations in External Services and Resources

Schools face challenges from inadequate waste disposal services and insufficient infrastructure, which hinder students’ ability to practice sustainability consistently.

- *“Delayed garbage collection from the LGU causes waste to build up in the school, especially when the bins are already full. It becomes unsightly and affects the surroundings.”*

These gaps in external support and physical resources disrupt program continuity and reinforce the need for coordinated action between schools and external stakeholders to sustain environmental practices (Tilbury, 2018; Colonia et al., 2024; RA 9003, 2001).

Subtheme 2: Dependence on Government and Community Support

Sustaining school-based environmental programs relies heavily on continuous support from LGUs, barangays, and external partners.

- *“We really need support from the BLGU, LGU, and other stakeholders to continue our efforts—more trash bins, seedlings, composting materials. We can’t sustain this alone.”*

Limited external backing constrains program continuity and operational capacity, highlighting the need for collaborative partnerships to ensure long-term sustainability (Tilbury, 2018; Colonia et al., 2024; RA 9003, 2001).

Theme 4: Student Awareness, Behavior, and Motivation Challenges

This theme examines how behavioral and motivational factors influence student participation in school-based environmental programs.

Subtheme 1: Inconsistent Student Behavior and Compliance

Student participation in sustainability activities is often irregular and heavily reliant on external reinforcement.

- *“A major challenge is inconsistent student compliance in waste segregation. We address this by holding regular reminders during homeroom, using visual signage, and incorporating environmental topics into various lessons.”*

These inconsistencies reflect weak internalization of ecological values and highlight the need for sustained reinforcement, role modeling, and integration of environmental practices into daily routines (Bronfenbrenner, 1979; Navarro & Tudge, 2023;).

Subtheme 2: Strategies to Promote Awareness and Positive Habits

Schools employ proactive strategies to reinforce environmental awareness and foster lasting student engagement.

- *“It’s also challenging to balance discipline with encouragement... I try to use positive reinforcement.”*

These strategies—including curriculum integration, awareness campaigns, peer monitoring, and collaborative initiatives—promote intrinsic motivation, shared responsibility, and accountability among students. Embedding environmental topics in lessons and involving peers enhances sustained engagement and internalization of ecological values (Bronfenbrenner, 1979; Navarro & Tudge, 2023; Bollettino et al., 2022).

Frame 3: Recommended Intervention Strategies to Improve and Sustain Environmental Management Practices

Based on the experiences of school heads, coordinators, and teachers, six key strategies were identified to strengthen environmental management: collaboration and stakeholder engagement, policy advocacy, capacity building, resource provision, student motivation, and monitoring with cultural integration.

Theme 1: Strengthening Collaboration and Stakeholder Engagement

Effective environmental programs require strong partnerships with LGUs, parents, community members, and other stakeholders to enhance resource mobilization and shared responsibility. Two key approaches include establishing formal links with barangays, NGOs, and government offices, and engaging PTAs, alumni, and student organizations to support school activities.

Subtheme 1: Multi-level Collaboration and Stakeholder Engagement

Schools rely on collaboration among administrators, teachers, students, parents, LGUs, and NGOs to sustain environmental programs.

- *“Teachers, especially advisers, play a major role. We collaborate through designated coordinators like the SWM, SSLG, YES-O, and DRRM coordinators. We*

also work with external stakeholders, particularly during Brigada Eskwela, to promote cleanliness and disaster preparedness.”

This multi-level collaboration—including community participation, formal coordinators, and partnerships with external stakeholders—enhances program consistency, resource sharing, and long-term sustainability. Engagement across school, family, and community networks fosters student environmental responsibility and embeds stewardship within the broader social ecosystem (Bronfenbrenner, 1979; Navarro & Tudge, 2023).

Subtheme 2: Leadership Alignment and Policy Support

Effective environmental programs depend on aligned leadership and active administrative support.

- *“Faculty meetings are used to align teachers with our environmental goals. We also activated the SSLG to monitor and lead student involvement. The Barangay Council remains a strong ally, particularly in policy-making and community-wide awareness.”*

Leadership alignment—including regular meetings, teacher engagement, and coordination with student organizations—ensures coherent program execution, reinforces policies in classrooms, and integrates environmental goals into school culture (Bronfenbrenner, 1979; Cortese, 2003; Tilbury, 2018; DepEd Order No. 5, s. 2014).

Subtheme 3: External Policy Support and Community Engagement

Sustaining school environmental programs requires strong community and LGU support.

- *“We need stronger LGU ordinances requiring strict solid waste segregation in every barangay. If students are already exposed to good environmental practices at home and in their community, it becomes easier to reinforce these habits in school.”*

Collaboration with LGUs, barangays, and community stakeholders reinforces school-based efforts, creating consistent ecological norms across school and community settings and promoting long-term sustainable behaviors (Bronfenbrenner, 1979; Navarro & Tudge, 2023; Reyes & Madrigal, 2020; SDG 11 & 17).

Theme 2: Policy Advocacy, Orientation, and Structured Enforcement

Effective environmental programs require clear policies, consistent enforcement, and stakeholder orientation.

Subtheme 1: Policy Development and Enforcement

Strong LGU ordinances and school-based rules reinforce sustainable practices.

- *“We need stronger LGU ordinances requiring strict solid waste segregation in every barangay. If students are already exposed to good environmental practices at home and in their community, it becomes easier to reinforce these habits in school.”*

Structured enforcement—including inclusive teams, monitoring, and reporting—ensures compliance and internalization of environmental values (Bronfenbrenner, 1979; RA 9003, 2001; DepEd Order No. 52, s. 2011).

Subtheme 2: Community and Parent Orientation

Awareness campaigns and orientations for parents and community members strengthen program support.

- *“I would like to recommend nga ang atong school mag-present sa Solid Waste Management policies, ingon man sa water ug electricity conservation policies, sa mga parents ug students.”*

Engaging parents and local stakeholders fosters consistent reinforcement of sustainability practices beyond school, promoting shared responsibility and long-term behavioral change (UNESCO, 2017).

Theme 3: Capacity Building and Continuous Learning

Sustained professional development strengthens the knowledge, skills, and commitment of school personnel for effective environmental management.

Subtheme: Comprehensive and Inclusive Environmental Training

Regular training and workshops for teachers, coordinators, and students enhance awareness, policy compliance, and program ownership.

- *“Support from BLGU, LGU, and other stakeholders would greatly help especially through training for teachers and student leaders on RA 9003 and other sustainable practices.”*

Inclusive and continuous training fosters a learning culture, improves program implementation, and nurtures long-term ecological values (Bronfenbrenner, 1979; Navarro & Tudge, 2023; Tilbury, 2018; Wals & Benavot, 2017).

Theme 4: Resource Provision and Infrastructure Development

The effectiveness of school-based environmental programs depends on adequate physical and informational resources.

Subtheme 1: Provision of Essential Infrastructure and Materials

Stakeholders highlighted the need for waste bins, composting pits, MRFs, seedlings, and eco-brick stations to support consistent program implementation.

- *“Regular garbage collection, more trash bins, seedlings... would make a big difference.”*

Access to these resources enables operationalization of environmental policies and strengthens stakeholder engagement (Bronfenbrenner, 1979; Nabor et al., 2022; Tizon et al., 2020).

Subtheme 2: Visual and Informational Resource Support

Visual aids, posters, and signage reinforce awareness and proper behavior.

- *“It’s important to provide more visual aids and clear signage around the school—these remind students of where to throw their trash properly.”*

Consistent exposure to environmental cues fosters habit formation and internalization of sustainability practices (Navarro & Tudge, 2023; Wals & Benavot, 2017; Cortese, 2003).

Theme 5: Student Engagement and Motivation Strategies

Schools use varied approaches to foster sustained student participation in environmental programs.

Subtheme 1: Incentives and Curriculum Integration

Reward systems, competitions, and embedding environmental topics in lessons encourage compliance and reinforce sustainable habits.

- *“Reward systems like recognizing the ‘Most Compliant Classroom’ and integrating environmental themes in class discussions are very effective.”*

Positive reinforcement builds extrinsic motivation that can evolve into intrinsic commitment (Tilbury, 2018).

Subtheme 2: Creative, Interactive, and Fun-based Engagement

Interactive activities—poster-making, quizzes, role-plays, and clean-up drives—enhance engagement and ownership.

- *“More interactive activities like contests and awareness drives can boost involvement.”*

Subtheme 3: Empowerment through Positive Discipline and Responsibility

Positive reinforcement and recognition foster responsibility, autonomy, and sustained motivation.

- *“I focus on positive discipline... By making them feel responsible and appreciated, mas active and willing sila to participate.”*

Supportive, appreciative approaches enhance self-determination and long-term environmental behavior (Hungerford & Volk, 1990).

Theme 6: Monitoring, Accountability, and Cultural Integration

Schools sustain environmental practices through consistent reinforcement, structured oversight, and the cultivation of a shared ecological culture.

Subtheme 1: Habit Formation and Citizenship Education

Regular reminders, modeling, and moral framing help students internalize environmental responsibility.

- *“Ginabuhat nako is constant reminders and continuous practice. I tell my students that as citizens of the world, they share the responsibility to protect the environment.”*

Daily practices and teacher modeling foster habits and social norms aligned with sustainable citizenship (Bronfenbrenner, 1979; Tilbury, 2018; UNESCO, 2017).

Subtheme 2: Monitoring and Feedback Mechanisms

Clear monitoring systems and feedback loops promote accountability and program continuity.

- *“Regular monitoring and clear responsibilities for students will also help.”*

Student-led patrols, classroom checks, and structured feedback reinforce compliance and motivate engagement (Collado et al., 2020; Wals & Benavot, 2017).

Subtheme 3: Fostering a School-wide Environmental Culture

Embedding environmental values into daily routines, rituals, and school practices ensures long-term sustainability.

- *“Our school is steadily progressing in its environmental efforts. However, we need to work on making these initiatives more consistent and ensuring more students are actively engaged.”*

A whole-school approach transforms sustainability from isolated initiatives into shared norms and institutional culture (Navarro & Tudge, 2023; UNESCO, 2017; RA 9003).

Proposed Intervention Strategies for Environmental Management in Public High Schools

Rationale

The findings of this study revealed that while public high schools in Bayugan City implement environmental management practices such as waste segregation, energy conservation, and tree planting, these initiatives face challenges in sustainability, participation, and policy enforcement. Limited resources, weak monitoring systems, and low stakeholder engagement hinder the long-term effectiveness of these programs. To address these gaps, a set of intervention strategies is proposed to strengthen environmental practices in schools. These strategies are designed to enhance awareness, improve policy implementation, foster collaboration with stakeholders, and integrate sustainability into the teaching-learning process, thereby promoting a culture of environmental responsibility among students, teachers, and the community.

Based on the challenges, objectives, interventions, and time frames provided, here is the information summarized in paragraph form.

The primary challenges identified in the school's environmental management plan are inconsistent waste segregation and disposal, limited participation of students and teachers, insufficient resources (materials, facilities, and budget), weak policy implementation and monitoring, and a lack of integration of environmental concepts in lessons. To address these, a set of clear objectives has been established. The school aims to strengthen waste management practices and foster collective responsibility and awareness among the school community. Additionally, it seeks to provide support for sustainable initiatives, institutionalize policies and accountability, and ultimately embed sustainability in learning. The corresponding interventions are varied and target each specific issue. To improve waste management, the school will implement training on proper waste segregation, install labeled bins, and create a school-wide monitoring system, all to be done quarterly. To increase participation, the plan includes environmental education campaigns, Eco-clubs and YES-O activities, and incentive programs for best practices, which will run throughout the school year. Resource limitations will be tackled by forming partnerships with LGUs and NGOs, organizing fundraising projects, and starting recycling-for-income schemes, all to be done as needed/annually. To ensure strong policy implementation, the school will form school-based environmental committees and conduct regular policy review and compliance checks every semester. Finally, to integrate environmental concepts into the curriculum, the school will conduct teacher training on environmental integration and develop contextualized lesson plans during the annual INSET/training season.

VI. CONCLUSIONS

The study concluded that environmental management practices in Bayugan City's public high schools are actively implemented, primarily driven by strong leadership, teacher collaboration, curriculum integration, and community partnerships. These efforts demonstrate alignment with

national mandates, specifically RA 9003 (Ecological Solid Waste Management Act) and DepEd Order No. 52, s. 2011. However, the sustainability of these school-based environmental initiatives faces several significant challenges, including leadership turnover, inconsistent student participation, resource limitations, and weak alignment between school policies and community efforts. Stakeholders, recognizing these obstacles, emphasized the critical role of collaboration, training, infrastructure support, and student-centered strategies as essential components for strengthening environmental management moving forward. Ultimately, the findings underscored the necessity of developing an intervention plan grounded in ecological systems theory to address the systemic gaps identified and effectively cultivate a lasting culture of ecological responsibility across all schools in Bayugan City.

VII. RECOMMENDATIONS

To ensure the continuous improvement and sustainability of environmental practices in public high schools, several key recommendations are proposed for different stakeholders. The Department of Education should strengthen its monitoring and support for existing school-based environmental management programs. Meanwhile, school heads are encouraged to formalize environmental committees and integrate clear sustainability goals directly into the School Improvement Plan (SIP). For classroom and activity-level impact, teachers and coordinators should work to enhance student participation through both curriculum integration and engaging environmental activities. Crucially, Local Government Units (LGUs) have a vital role in establishing partnerships with schools, offering essential support for waste collection, infrastructure improvements, and technical expertise. Finally, it is recommended that a comprehensive intervention plan be officially adopted to serve as a structured guide for sustaining and improving environmental management across all public high schools.

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