

Challenges and Coping of School Community on Solid Waste Proper Management Insights: A Descriptive Qualitative Research

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ABSTRACT

Solid waste management is a complex global challenge, especially in school settings. In this study, I explored the challenges, coping strategies, and successes of a school community in implementing proper waste management. I used a descriptive qualitative research design, conducted focus group discussions and interviews with teachers, student leaders, and students, and analyzed the data through thematic analysis. I found that challenges are multifaceted, including weak environmental discipline, limited resources, and inconsistent policy enforcement. Despite these, the school community adaptive strategies such as collaboration, behavioral change, and improved accountability. I recommend developing sustainable, context-specific interventions that strengthen behavior, policy implementation, and stakeholder collaboration for more effective waste management.

Keywords: solid waste management, school management, challenges, strategies, descriptive qualitative research, thematic analysis

INTRODUCTION

Problem and Its Setting

Solid waste management remains a complex global concern as societies continue to manage increasing volumes of waste alongside the need for sustainable practices. Across the world, waste management systems face persistent struggles related to handling, processing, and organizing waste streams within rapidly changing environmental and social conditions. Various coping mechanisms have been introduced, such as recycling systems, circular economy approaches, and integrated waste management frameworks, which aim to improve efficiency and sustainability. These approaches highlighted the importance of coordinated systems and adaptive strategies in addressing waste management challenges on a global scale (Khan et al., 2023; Karimi, 2023; Awino et al., 2024).

In different countries, struggles in solid waste management are evident despite the implementation of various coping mechanisms. In South Africa, waste management systems continue to face operational and organizational difficulties in urban communities, prompting the adoption of localized management strategies (Kubanza, 2024). In Mexico, municipalities encounter challenges in waste collection and service delivery, leading to the use of route optimization and management strategies to improve efficiency (Del Carmen-Niño et al., 2023). Similarly, in many developing countries, waste management remains a persistent issue, and coping mechanisms such as recycling initiatives and community-based practices are increasingly applied to improve waste handling systems (Fidelis et al., 2023).

In the Philippines, solid waste management continues to be a significant concern within communities and institutions, including schools and local government units. Various coping mechanisms such as segregation practices, recycling programs, and community participation initiatives are implemented to address ongoing

struggles in managing waste effectively. These efforts reflect the country's commitment to improving waste management systems while adapting to local conditions and practices. However, the persistence of these challenges highlights the need for continuous improvement and strengthened implementation of waste management strategies within the Philippine context (Abubakar et al., 2022; Devendran et al., 2023).

The struggles in solid waste management, despite the presence of coping mechanisms, result in significant environmental, health, and social consequences. Ineffective waste handling and disposal contribute to pollution of air, water, and land, as well as the release of harmful substances that pose risks to human health and ecosystems. These conditions also intensify environmental degradation and increase vulnerability to climate-related issues, demonstrating the critical need to strengthen waste management systems globally and locally (Abubakar et al., 2022).

Significance of the Study

This study is significant because it may provide insights into how school communities address the challenges of solid waste management (SWM) and sustain environmental practices despite limited resources. Guided by Resilience Theory, the findings highlight adaptive strategies that schools can use to strengthen their waste management systems and promote environmental responsibility.

The results of this study may benefit school administrators, teachers, non-teaching personnel, and students by providing practical strategies for improving waste segregation and sustainability practices within the school environment. It may also assist Local Government Units (LGUs) and the Department of Education (DepEd) in developing stronger policies, partnerships, and support systems for effective waste management programs. Furthermore, this study may serve as a useful reference for future researchers who wish to explore environmental management and resilience in educational institutions.

Statement of the Problem

This study aimed to explore and describe the challenges, coping strategies, and insights of school community regarding the implementation of solid waste management. Specifically, it sought to answer the following questions:

1. What were the challenges faced by school community with solid waste problem?
2. What were the management strategies undertaken by school community to cope with the challenges faced with solid waste problem?
3. What insights are drawn from undertaking the management strategies to cope with solid waste management?

Theoretical Lens (System Perspective theory)

The Systems Perspective Theory of Resilience views resilience not just as an individual trait but as a property of interconnected systems, such as families, schools, organizations, and communities, that continuously interact and influence one another (Lai, & Lin, 2017). From this perspective, resilience involves the ability of these systems to absorb disturbance, adapt to changing conditions, and reorganize while maintaining their core functions and identity. It emphasizes that an individual's resilience is shaped by the availability of supportive relationships, institutional structures, and cultural contexts, meaning that positive adaptation depends not only on personal strengths but also on how well the surrounding systems provide resources and opportunities.

Conceptual Paradigm

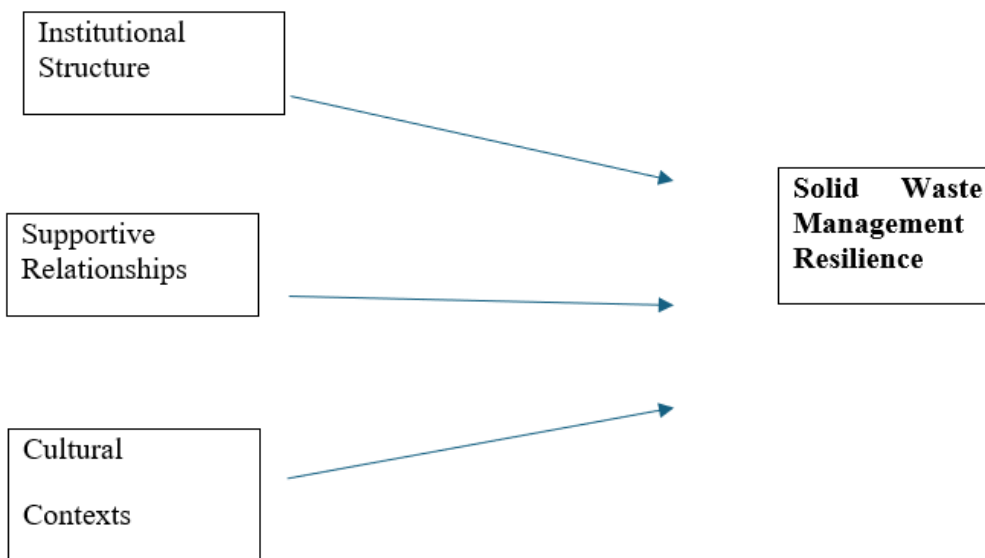


Figure 1: System Perspective Theory

Assumptions of the Study

I assumed that the participants' perceptions are aligned with the conceptual paradigm of the research, reflecting key elements and relationships identified in the theoretical framework. I further assumed that the participants provide responses that may extend beyond the predefined concepts, thereby contributing to the emergence of new subthemes relevant to the study. Additionally, my study assumed that the themes derived from the data are consistent with the principles of the guiding theory, particularly in capturing the attitudes and adaptive responses of the participants. Finally, I assumed that the theoretical framework informs and shapes the participants' perceptions, allowing for a meaningful interpretation of their experiences within the context of the study.

METHODOLOGY

In this section, I outlined the method of my study research design, locale of the study, sample and sampling technique, data gathering technique, data analysis technique, and trustworthiness.

Research Design

In this study, I used descriptive qualitative design. It is a research approach that aims to provide a comprehensive and straight forward summary of participants' experiences, perceptions, or events in their natural context without extensive interpretation or theory building (Sandelowski, 2000). It is typically applied when researchers seek to describe "what" is happening rather than explain "why," such as in exploring practices, perception, or phenomena where limited prior research exists or when practical insights are needed for policy or program development (Colorafi & Evans, 2016). This design is advantageous because it is flexible, less theory-bound, and useful for producing rich, clear, and easily understandable findings that remain close to the data, making it highly applicable in fields like education and health research (Kim, Sefcik, & Bradway, 2017).

Locale of the study

I conducted this study at Communal National High School, located at Purok 3, Communal, Buhangin District, Davao City, Philippines. The school serves students from the surrounding communities and implements various environmental programs, including solid waste management initiatives in compliance with national environmental policies. This school was evaluated and received a division recognition on maintaining the cleanliness of the school community.

Sample and Sampling Technique

In this study, it consisted of 15 teachers from various field of expertise, one administrative staff, five student leaders' representatives, six random students selected in junior and senior high school students officially enrolled during the School Year 2025-2026 in a local national high school. This school community composes of 1,000 total numbers of students and 30 faculty staff members including the principal and administrative officers.

I used purposive sampling technique, also known as judgmental or selective sampling. This is a non-probability sampling technique in which I deliberately selected participants based on specific characteristics, knowledge, or experiences relevant to the study. It is commonly used in qualitative research when the goal is to gain in-depth understanding rather than generalization, particularly when focusing on specific groups or exploring lived experiences. This approach allows the selection of information-rich cases that best address the research questions and offers advantages such as obtaining relevant and meaningful data, generating rich insights, ensuring efficiency in participant selection, and maintaining flexibility throughout the research process (Creswell & Poth, 2018; Palinkas et al., 2015; Etikan et al., 2016).

Data Gathering Technique

I utilized semi-structured interviews as the primary data gathering technique to collect in-depth information from participants. Semi-structured interviews allowed me to explore participants' perceptions, experiences, and beliefs while maintaining flexibility to probe further based on responses (Mays & Pope, 2000; Jamshed, 2014; Knott et al., 2022). Through this method, I obtained rich and detailed data. Additionally, document analysis and observations were used to support and validate the interview data. This combination of methods, known as triangulation, enhances the credibility and accuracy of findings by integrating multiple data sources (Lim, 2025; McLeod, 2024).

Data Analysis Technique

In this research, I used thematic analysis. It is a qualitative research data analysis method used to identify, analyze, and interpret patterns or "themes" within a dataset (Braun & Clarke, 2006; Braun & Clarke, 2021). It helps organize detailed information and understand meanings, experiences, or perspectives shared by participants.

In conducting the data analysis, I first familiarized myself with the data by reading and reviewing all collected information. Then, I generated initial codes by identifying important features of the data. I also searched and reviewed for themes by grouping related codes into broader categories to ensure they accurately reflect the dataset. I also defined and named the themes, clearly describing what each theme represents. I produced the report by presenting and interpreting the findings in relation to the research objectives (Braun & Clarke, 2006; Nowell et al., 2017).

Trustworthiness

To ensure the trustworthiness of my study, I followed the criteria of credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). I did member checking, provided thick descriptions, applied clear audit trail, and maintained reflexive journaling. Apart from this, before I interviewed, I provided my study participant with an informed consent form explaining the purpose, procedures, and duration of my study. They also agreed to take photos as proof of evidence that can be use in this research study. I stated that their participation was voluntary, and that they have right to withdraw at any time without any consequences. I also assured confidentiality and anonymity of their responses. I asked my participants to sign the consent form. Also, I asked permission from the Department of Education to conduct this study. Finally, I secured ethical approval from the society of Moral Integrity and Legal Ethics (SMILE) to uphold research standard.

RESULTS

In this part of the study, I presented my conversations with my participants. Likewise, I established my modified paradigm together with the summary of my findings.

Challenges Faced by a School Community with Solid Waste Problem

Through my in-depth conversations with the teachers and students, I was able to elicit and document their perceptions and personal observations within the school environment, particularly concerning the issues surrounding waste management.

One teacher shared:



This photo was taken during cleaning period, sometimes students will throw garbage outside the fence.

So, I think one of the struggles faced by our school is some of the students here inside the school will throw garbage just outside the fence, which is difficult to control because we cannot monitor them from time to time, if ever they will. (TR1) (Page 1 Line 8-11).

This highlights behavioral disregard for school waste policies.



As the photo proves that the school is lack of trash bin wherein the students will throw garbage at the same bins

Another teacher emphasized:

This includes lack of budget, insufficient waste bins for proper segregation, limited time, lack of personnel, and sometimes lack of discipline and participation from students and teachers. (TR2), (Page 1, Line 55-57)



This photo taken during cleaning time. It simply proof that mostly of the students do not comply the proper waste segregation.

While a student respondent directly stated:

wala juy disiplin sa students' number one is ..ah. in school ma'am ..ah daghan jud syag mga pag sulay labaw nag mag pa implements kag kanang proper solid waste for effective waste programs. Number two maam students indiffernce, so sa mga students maam klase klase jud na clag mga batasan na naandan nila sa ilang mga balay og madala nila sa shool like for example sa ilang balay wala sila naanad na mag lahi sa mga basura and nadala nila sa school. (There is really a lack of discipline among students. That is the number one issue in the school, ma'am. There are many challenges, especially when you try to implement proper solid waste management programs. The second issue, ma'am, is students' indifference. Students have different behaviors that they bring from home to school. For example, at home, they are not used to segregating their waste, and they carry this habit into the school.) (SR1) (Page 3, Line 82-88)

As the student explained, I can see in her eyes the sincerity in making the school improves its implementation. Her voice was strong and brave, which gives clear picture of a student leader that aiming for the school to be a better place. I can feel her frustration towards her classmates for not complying, and the school lack of budget and inconsistent policy about the solid waste management implementation. These responses suggest that improper waste disposal is not merely a matter of infrastructure, but deeply rooted in behavior and attitude. The repetition of this concern across teachers and students indicates that environmental discipline remains inconsistent and insufficiently internalized.

What I heard deeply moved me and compelled me to take a more active role in understanding the situation. It was not enough to simply observe from a distance; I felt a growing responsibility to seek clarity and gain a broader perspective. This realization led me to approach our administrative officers, engaging them in meaningful conversation to hear their side of the story. Through this, I aimed to connect the different viewpoints within the school, recognizing that a fuller understanding can only be achieved by listening to both the experiences of the students and the insights of the administration.



This photo aligned with what the participant explained about not complying the proper waste segregation.

Ang kinkaharap ng ating school ay kakulangan sa pundo, kulang na basurahan at hindi mapasunod ilang studyante at guro sa paghihiwalay ng kanilang basura. (Our school is facing challenges such as a lack of funding, insufficient trash bins, and difficulty in ensuring that some students and teachers comply with proper waste segregation.) (AOR1)(Page 3, Line 80-1)



This photo serves as proof of what the participant explained. If the students were not monitored the students are inconsistent doing the waste segregation.

Similarly, students observed the difficulty of hiring janitorial staff due to financial limitations. One said:

personal training so sa atong mga.. ahh lisod jud xag mag hire og janitor staff, janitorial staff syempre wala man tay fund ang ato sa communal duha lang si ate bevs og kadtong iyang kauban, lisod jud xa maam kay walay

mag guide sa mga students na mag clean. (personal training of our... ahh difficult to hire for janitorial staff of course lack of fund here in communal there were two only ate bevs and her companion, it is difficult that there were no one to guide for the students to clean) (SR 1)(Page 3, Line 89-91)

What began as simple observations gradually unfolded into a deeper realization about the realities within the school. As I listened closely to the participants, their statements painted a clear picture of a system striving to function despite evident limitations. Teacher's spoke of their daily responsibilities, where academic demands and school activities often took precedence, leaving little room for consistent monitoring and cleanliness efforts. In these moments, one teacher participant explained that:

So, if there is like small time, like 10 minutes or 15 minutes for cleaning, and then you are the only one cleaning, so there is a possibility that you will not be able to clean your area of responsibility. Well, for example, there is only limited time to go home to clean, so they don't want to monitor if they have cleaned their surroundings. Of course, if there are many ways, then the school will not be child-friendly anymore.” (TR1) (Page 1, Line 13-15)

Another mentioned:

Super busy... di na mamalayan (Super busy... they don't even notice anymore”) (TR1) (Page 2, Line 51-54).

This response emphasized competing priorities within the school setting.

As the conversations unfolded, a deeper pattern began to surface, one that revealed how everyday realities quietly shape the success of waste management efforts in the school. Amid these reflections, another layer emerged. In listening to these stories, I began to see that effective waste management is not only about rules and routines, but also about clarity, shared understanding, and continuous learning.

One respondent stated, “*lack of awareness... dili kabalo asa ibutang ang basura (Lack of awareness... they do not know where to properly dispose of their garbage.)*” (SR1) (Page 5, Line 147-148), pointing to confusion about proper disposal categories. Others mentioned unclear and vague policies that create misunderstanding.

I began to realize that awareness alone was not enough. It became evident to me that understanding must be nurtured over time, not just introduced once, if it is to truly influence behavior. As I continued listening and observing, deeper systemic concerns came into view.

while another respondent noted that policies are “*not consistently implemented*” (SR2) (Page 6, Line 174). It was also observed that enforcement becomes stricter during audits or competitions but weakens afterward. One of them shared:

Many schools implement these rules very strictly during specific periods, such as: DepEd Audits: When officials visit for performance reviews. Kana jud sya maam strict jud na gina pa implement, every school naga check jud ng parihas sa DepEd maam daghan jud og mga bisita if it is clean or wala ba na maintain ang clean. School Events: During PTA meetings or foundation days. Competitions: Many divisions have "Greenest School" contests that lead to temporary, near-perfect compliance. So, kana sya maam like sa yes-o maam naga clean jud cla for the competition kana strict jud sya. (SR1) (Page7, Line 215-220)

In listening to these experiences, I realized how the absence of stable monitoring mechanisms and consistent policy implementation shaped this pattern. This understanding led me to see that what the system truly needed was not just action, but continuity, structures that would sustain efforts over time and embed them into the everyday life of the school.

Participants emphasized that enforcement difficulties stem from insufficient funding, facilities, and skilled personnel. Teachers expressed that they cannot manage enforcement alone without designated personnel. One of them said:

Sometimes, pag maraming mga activities, super busy ng teacher, maraming mga ancillary si teacher, so di na niya usually na mamalayan na ting labay na diay og basura every Thursday, so mabiliin. “(Sometimes, when

there are many activities, teachers become very busy with numerous ancillary tasks, so they often fail to notice that it is already time to dispose of the garbage every Thursday, which causes it to be overlooked.) (TR1)(Page 2 Line 51)

The absence of dedicated personnel focused on environmental management. Without specific officers or staff to oversee these efforts, supervision often became inconsistent. That enforcement did not always come from a structured system, but instead relied heavily on voluntary compliance. In that moment, it became clear to me that while willingness exists, the lack of consistent guidance and oversight makes it difficult to sustain disciplined practices over time.

Management Strategies Undertaken by a School Community to Cope with the Challenges in Solid Waste Problem

As I listened to the struggles shared with me, I began asking about the coping mechanisms the school used to address waste issues. One student participant answered:



The photo is the evidence that the school implemented the policy and a constant reminder to students and teachers.

ang school management sa communal NHS cope with solid waste management challenges by implemeting “basura mo bitbit mo” policy and organizing schedules clean up drive with the yes-o club for example ang mga students kay required cla mag dispose sa ilang mga basura properly pagka recess time or even mag kaon sila inside the classroom.(The school management at Communal NHS copes with solid waste management challenges by implementing the “bring your own trash” policy and organizing scheduled clean-up drives with the YES-O Club. For example, students are required to properly dispose of their waste after recess or whenever they eat inside the classroom.)(SR1)(Page 8, Line236)

The school administrator also expressed:

dati iniwan ng mga mag-aaral ang kanilang mga basura sa mga silid aralan at pathways ngunit ng ipinapatupad na ng paaralan ang “ basura mo, bitbit mo rule” nagsimulnag itabi ng mga mag aaral ang kanilang basura sa kanilang bag at itapon ito ng maayos sa kanilang bahay, bilang resulta naging malinis ang paaralan at nabawasan ang basura sa loob ng campus.(In the past, students used to leave their trash in classrooms and along pathways, but when the school began implementing the “bring your own trash” rule, students started keeping their waste in their bags and disposing of it properly at home. As a result, the school became cleaner and the amount of waste within the campus was reduced.)(AOR)(Page10, Line 315)

I saw how our school tried to bring order and responsibility into our waste management practices by strictly implementing policies. I also realized that our efforts did not stand alone, we relied on external support, particularly from CENRO, where all our collected waste was brought for proper disposal.

One participant answered:

Of course, yung CENRO ng Davao kasi saan man naming itapon ng basura sa kanila man and of course our maintenance facilities. Sa inside, but sa outside yan, yung government sa Davao. They will collect the garbage as the waste. (Of course, the CENRO of Davao is responsible for waste collection, as all garbage is disposed of through them, along with our maintenance facilities. Waste generated inside the school is managed internally, while waste outside the school is handled by the local government of Davao. They are responsible for collecting and managing the garbage.) (TR6) (Page 9, Line 273)

Another participants said:



The photo was taken during the symposium, in partnership with Barangay Sanggunian ng Kabataan and FPOP and in line with what the participant answered. The school organized the seminar to make the students more aware of the Mental Health and Environmental Awareness.

The school has conducted information drives, placed clear labels on waste bins, organized seminars and implemented policies with rewards for those who comply. (TR)(Page9,Line 286)

In a focus group discussion, some students testified:

Ipinatupad sa paaralan ang iba't ibang programa at gawain upang mapabuti ang pamamahala ng basura, tulad ng wastong segregasyon ng basura gamit ang mga basurahang may label para sa nabubulok, di-nabubulok, at recyclable. Isinasagawa rin ang mga recycling activity at regular na clean-up drive upang mabawasan ang basura at mapanatiling malinis ang kapaligiran ng paaralan. Bukod dito, may mga paalala at aralin na humihikayat sa mga mag-aaral na maging responsable sa pagtatapon ng basura at pangangalaga sa kalikasan.

(The school implemented various programs and activities to improve waste management, such as proper waste segregation using labeled bins for biodegradable, non-biodegradable, and recyclable materials. Recycling activities and regular clean-up drives are also conducted to reduce waste and maintain a clean school environment. In addition, reminders and lessons are provided to encourage students to be responsible in disposing of waste and caring for the environment.)(SR2)(Page 10, Line 321)



This photo taken during clean up drive by yes-o and SSLG. The photos attached was aligned with what the participants answered. The school conducted clean up drive a collaborative effort from school clubs and organization such as yes-o and sslg.

Another student answered:

pangkalahatan masasabing matagumpay ang mga programa dahil sa kapansin-pansin ang pagbawas ng makakalat na basura sa mga pasilyo at paligid ng paaralan, naging epekto ang pagamit ng mga color coded trash bins dahil natutong maghiwalay ng mabubulok at di mabubulok ang mga mag-aral.(Overall, it can be said that the programs were successful, as there was a noticeable reduction in scattered waste in the hallways and around the school. The use of color-coded trash bins proved effective, as students learned to properly separate biodegradable and non-biodegradable waste.)(SR5)(Page 10, Line 332)

I observed that the school efforts extended beyond its walls. They shared how coordination with the LGUs and environmental offices played a vital role in supporting garbage collection and monitoring. Managing waste is not something the school can carry alone. It is a shared responsibility, one that depends on strong connections and partnerships with the wider community and institutions working together toward the same goal.

Insights Drawn from Undertaking Management Strategies to Cope with the Challenges in Solid Waste Management

In terms of gaining insights, teachers' perspectives are valuable in providing deeper and more reliable insights.

One teacher reflected:

Discipline and consistency are more important than simply providing facilities from my perception, I realized that discipline and consistency are more important than simply providing facilities. Even if bins are available, proper waste management will not succeed without internalized responsibility from students. I also learned that modeling behavior is crucial. When teachers consistently practice proper waste segregation, students are more likely to follow. Another important realization is that environmental responsibility should not only be a school rule but a value formation process. When students understand the long-term impact of proper waste management, they become more cooperative. Lastly, solid waste management is not just the responsibility of school management—it requires the collective effort of teachers, students, staff, and even parents to create a truly clean and disciplined school environment. (TR14)(Page 15, Line 498)

I also saw the importance of modeling behavior, as teachers' actions influence students to follow. More importantly, environmental responsibility should be a value, not just a rule. Above all, I learned that maintaining a clean school environment requires the collective effort of teachers, students, staff, and parents.

During a faculty meeting, I asked three teachers and these were their responses:

The key insights are first behavior versus infrastructure. Proper disposal depends more on the convenient placement of bins than or just telling student to be clean. Waste as a resource shifting the mindset from garbage to be heathen to materials that can generate income or fertilizer. And the last one, the power of example. Realize the school cleanliness is a heathen curriculum. Student model their habits based on the school's actual practices, not just classroom lessons. (TR12) (Page 15, Line 485)

When she was talking, I closely observed her gestures. Her lips are crooked and her forehead moves as she talked. Simply seeking approval to her colleagues that her comments are true.

Another teacher answered:

It often includes the understanding that effective solid waste management requires a holistic approach that combines education, infrastructure, and consistent enforcement. It's also realized that continuous engagement in a sense of collective responsibility among the school community are crucial for long-term success. (TR13)(Page 15, Line 492)

The third teacher answered:

This initiative fosters a culture of responsibility, encouraging everyone to actively participate in proper waste segregation. By implementing a clear guideline and engaging educational activities, we can enhance awareness about the environment and promote sustainable behaviors. Ultimately, this approach not only reduces waste, but also instills lifelong habits that contribute to a healthier planet. (TR14)(Page 10, Line 500)

I came to realize that even small things like visible and accessible bins can gently guide behavior, making it easier for students to do what is right. But more than that, I understood that true waste management comes from a shared and integrated effort, where education, infrastructure, and consistent guidance work together. I was deeply moved by the idea of seeing waste not just as something to discard, but as something that can be transformed into value, fostering a sense of care for the environment. Above all, I learned that when teachers

lead by example and the whole school community takes responsibility, waste management becomes more than a rule it becomes a shared culture rooted in accountability and purpose.

SUMMARY OF FINDINGS

Based on my thematic analysis, I found the following perceptions about solid waste proper management case:

1. That school waste management challenges are multifaceted, involving behavioral, financial, institutional, and systemic factors such as weak discipline, limited resources, manpower shortages, inconsistent enforcement, and knowledge gaps.
2. That the participants adaptive strategies including stakeholder collaboration, policy adjustments, habit formation, integrated approaches, and leadership modeling.
3. That the solid waste proper management need for a holistic approach grounded in behavioral change, institutional accountability, and community partnership, providing a basis for future recommendations and research.

Modified Paradigm

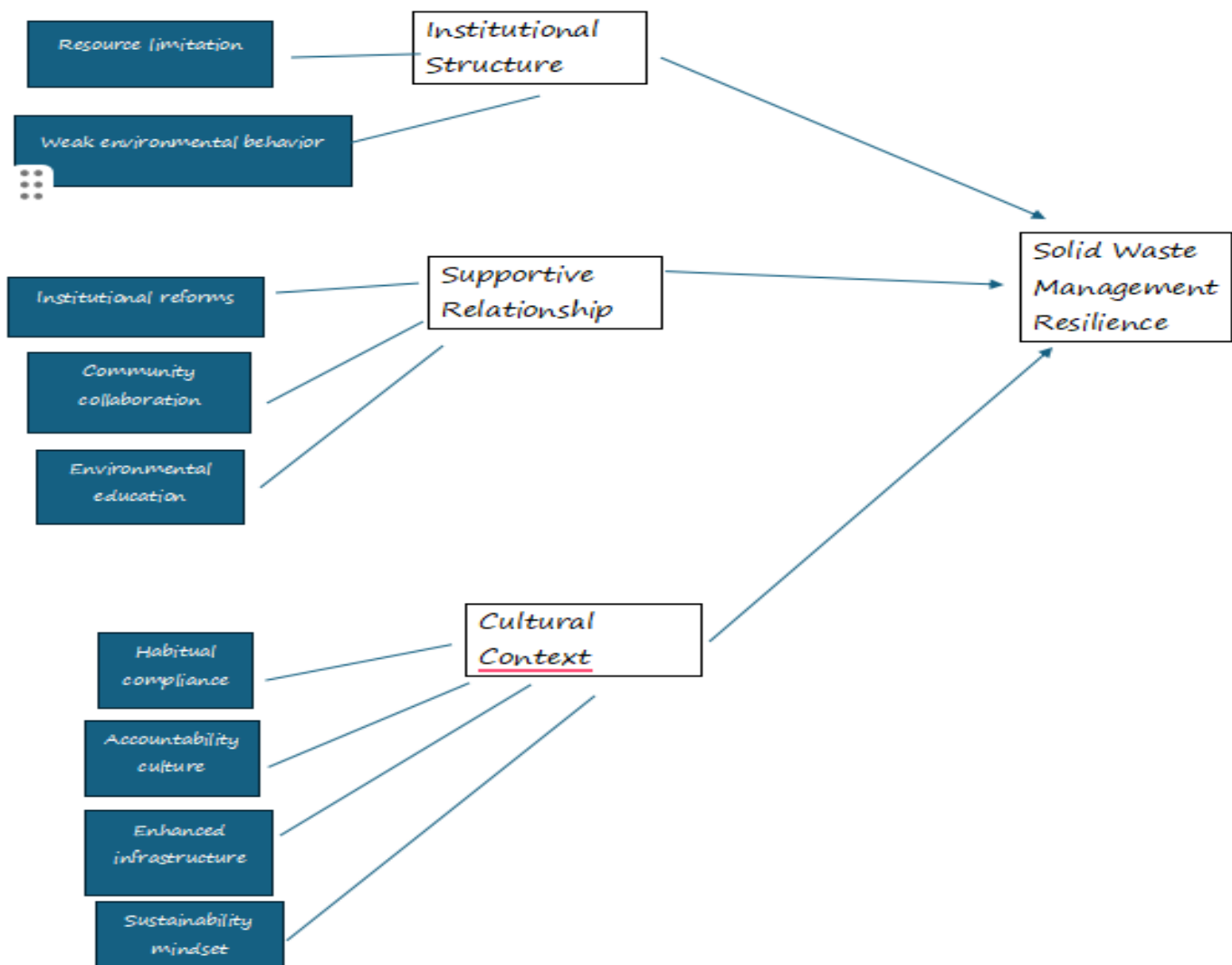


Figure 2. Integrated System Perspective Theory Reflecting the Teachers' Struggles, Coping Strategies and Insights Model

The modified paradigm illustrates that resilience in school waste management emerges from the interaction of multiple interconnected systems within the school environment. Challenges such as weak discipline, limited

resources, and inconsistent enforcement serve as system disturbances that require adaptive responses. Core components, namely; institutional structures, supportive relationships, and cultural context, function as mediating systems that shape how these challenges are addressed (Folke, 2006). Through adaptive strategies (Ungar, 2011; Masten, 2014) like stakeholder collaboration, policy enhancement, and habit formation, the system reorganizes and strengthens its capacity to respond effectively. The resulting outcome is a more sustainable and resilient waste management system, supported by continuous feedback that promotes ongoing improvement and accountability.

DISCUSSION

In this section, I presented the analysis and interpretation of the data gathered, focusing on perceptions and perspectives of the participants regarding school waste management. I organized my discussion into three major sections: struggles, coping mechanisms, and insights, which collectively capture the complexity of implementing solid waste management in the school context.

On Challenges: Multifaceted School Waste Management Challenges

In my study, I found that school waste management challenges are multifaceted, involving behavioral, financial, institutional, and systemic factors such as weak discipline, limited resources, manpower shortages, inconsistent enforcement, and knowledge gaps. This finding supports Kilaton et al. (2023) who asserted that solid waste management problems in schools are influenced by a combination of awareness, behavioral practices, and environmental conditions, noting that improper waste management leads to broader health and environmental issues. Their study highlighted that gaps in knowledge and practice among students contribute significantly to ineffective waste management, which parallels your finding on behavioral and knowledge-related challenges. My study also affirms Meradios and Manglicmot (2024), who found that students' waste disposal behavior is affected by multiple predictors, including attitudes, environmental awareness, and institutional influences within the school setting. Their study emphasizes that improper waste disposal is not caused by a single factor but by a complex interaction of behavioral and systemic elements, supporting your claim that waste management challenges are multifaceted.

However, this current my finding contradicts a study of Barr (2007), which argued that waste management behavior is largely influenced by individual environmental values, attitudes, and psychological factors rather than a broad combination of systemic or institutional constraints. His study emphasized that behaviors such as recycling and waste reduction are primarily driven by internal motivations, knowledge, and personal norms, suggesting that even in the absence of strong institutional support or resources, individuals can still engage in proper waste practices.

On Coping Mechanism: Adaptive Strategies in Waste Management

My findings indicate that participants adaptive strategies include stakeholder collaboration, policy adjustments, habit formation, integrated approaches, and leadership modeling. This finding supports Vasconcelos et al. (2022), who asserted that sustainable waste management requires an integrated approach that combines stakeholder participation, knowledge sharing, and coordinated policy actions. Their study emphasized that involving multiple stakeholders in decision-making enhances implementation success and promotes behavioral change, which directly supports your finding on stakeholder collaboration, integrated approaches, and habit formation. Similarly, my study affirms Koiwanit and Filimonau (2023), who found that stakeholder collaboration and participatory governance are critical in improving waste management systems, particularly in complex environments. They highlighted that cooperation among community members, leaders, and institutions strengthens policy implementation and encourages collective responsibility, aligning with your findings on leadership modeling and collaborative strategies.

However, my findings deny a study of Wilson, Delmas, and Rajagopal (2025), who argued that many waste management interventions are primarily focused on individual behavioral strategies such as education, social norms, and incentives, rather than broader collaborative or integrated approaches. Their systematic review found that most studies emphasize individual or household-level interventions, with limited attention to stakeholder

collaboration, leadership modeling, or system-wide integration. This suggests that effective waste management may not always require complex, multi-stakeholder adaptive strategies, but can instead be addressed through targeted behavioral interventions alone.

On Insights: Holistic Approach to Waste Management

My findings emphasize that the solid waste proper management need for a holistic approach, grounded in behavioral change, institutional accountability, and community partnership, provide a basis for future recommendations and research. My study support Saher et al. (2023), who asserted that effective waste management systems must combine technological solutions with active human participation and coordination among stakeholders, highlighting that sustainable outcomes are achieved through the integration of social, environmental, and institutional components. Their study stresses that collaboration between communities, policymakers, and systems is essential, directly supporting my finding on behavioral change, institutional accountability, and community partnership. My study also affirms Akintayo et al. (2023), who emphasized that non-holistic and fragmented approaches in waste management often lead to ineffective outcomes, arguing that successful systems require the integration of sociocultural behavior, governance structures, and institutional frameworks. This supports my claim that a comprehensive, multi-dimensional approach is necessary for sustainable waste management practices.

However, my finding opposes the study of Wilson et al. (2025), who found that many waste management interventions focus primarily on individual behavioral change, often overlooking broader systemic and institutional factors. This suggests that while holistic approaches are ideal, in practice, many strategies remain narrowly focused, limiting their long-term effectiveness

Future Directions of the Study

This study provides a foundation for future research by highlighting the need to further explore sustainable and context-specific waste management practices in school settings. Future studies may focus on developing and testing intervention programs that strengthen behavioral change, improve policy implementation, and enhance stakeholder collaboration. There is also an opportunity to examine the long-term effectiveness of these strategies across different schools and communities, as well as to integrate innovative approaches such as technology-based monitoring and environmental education programs. Expanding the scope to include quantitative measures and comparative analyses may further validate and enrich the findings, ultimately contributing to more effective and scalable solid waste management systems in educational institutions.

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