

Long Paper

5Rs and its Impact on Barangay Santa Lucia's Community Development: Perceptions and Attitude

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Abstract

This study examines the transition from the 3Rs to the 5Rs approach, involving key stakeholders (businesses, consumers, and the government) to boost community development. The primary objective was to gauge the perceptions and attitudes of residents in Barangay Santa Lucia regarding the adoption of the 5Rs and its influence on community development. This research aimed to understand the views and actions of Barangay Santa Lucia residents towards the 5Rs, measure its impact on community development, and suggest strategies for long-term implementation. To gather and analyze data, a mixed-method research methodology was employed. The research included key informant interviews with six community residents, two teachers, two



members of the Tricycle Operators and Drivers' Association (TODA), and two barangay officials. Additionally, focus group discussions involved fourteen students and fourteen adults, totaling 28 participants. The findings indicated that 66.67% of key informants were aware of the 5Rs and actively shared their knowledge through seminars and discussions. However, 33.33% were unaware. In the focus group discussions, only 10.71% of respondents were informed about the 5Rs, while 89.28% lacked knowledge. Effective solid waste management initiatives, like sessions and seminars, were deemed necessary to educate the community. The study revealed a positive attitude towards the 5Rs among key informants and focus group participants. In practice, 66.67% of key informants were implementing the 5Rs, while 100% of focus group respondents were not practicing proper waste disposal through the 5Rs approach. Based on these findings, the researchers recommended several actions. Organize formal discussions, seminars, and sessions led by community leaders to educate residents about effective waste management. Promote waste separation, reduction, reuse, repurposing, and recycling in Barangay Santa Lucia. Lastly, encourage active support from both community leaders and residents for the successful implementation of the Barangay's program, benefiting the community.

Keywords – attitudes, perceptions, solid waste management, 5Rs, community

INTRODUCTION

Considering the global challenges posed by the increasing world population and its demands for food, water, housing, and other services, the management of solid waste materials has become a critical concern. Rapid industrialization has led to the generation of significant quantities of hazardous waste in various sectors, posing threats to both the environment and public health (Chandra, 2020). The widespread use of plastic and the staggering amount of Municipal Solid Waste (MSW) generated worldwide, with projections indicating further growth, underscore the urgency of addressing this issue (Balwan et al., 2022). While the responsibility for solid waste management is often attributed to governments, it is widely recognized that citizens, as the primary waste producers, must actively participate in sustainable waste management practices. However, a significant challenge lies in raising citizen awareness and facilitating communication with the government.

Many developed countries have adopted solid waste management strategies based on the waste hierarchy, prioritizing principles like reuse and recycling (Ahmadi, 2017). These countries tend to have better waste management programs, despite generating larger amounts of waste. As such, it has become imperative for authorities to provide adequate waste treatment and disposal services to support the sustainable development of society. However, one persistent challenge is the lack of comprehensive knowledge regarding the physicochemical properties, chemical compositions, and environmental health hazards associated with various industrial waste materials. To

address this knowledge gap, experts from universities, research laboratories, and industries have collaborated to contribute their specialized knowledge in environmental microbiology and biotechnology, aiming to update the information available to students, scientists, and researchers (Chandra, 2020).

Against this backdrop, researchers have embarked on a study titled "5Rs and its Impact on Barangay Sta. Lucia's Community Development: Perceptions and Attitude." This study aims to examine residents' attitudes and practices in Barangay Sta. Lucia concerning the 5Rs approach (Refuse, Reduce, Reuse, Repurpose, Recycle). It investigates their current waste management habits, awareness of the 5Rs approach, challenges in implementing sustainable waste management, and potential community and environmental benefits. By addressing these questions, the research aims to provide insights for policy and community initiatives to enhance responsible waste management and environmental awareness in Barangay Sta. Lucia.

LITERATURE REVIEW

The adoption of the 5Rs concept, as advocated by Dayrit (2019), signifies a critical shift in waste management philosophy. It extends the conventional 3Rs by incorporating Redesign and Recovery and distributes the responsibility for implementation among industry, government, commerce, and consumers. Simultaneously, Sztangret (2021) underscores the instrumental role of municipal waste sector entities in spearheading pro-ecological projects. Their multifaceted strategies, evident through the ReSOLVE Model, involve systemic cooperation among various stakeholders, including independent strategic business entities, to tackle complex waste management challenges.

In tandem with these initiatives, local actions play a pivotal role. Looc Elementary School Eco-Center, private rubbish stores, and barangay eco-centers champion Local Initiatives by collecting recyclables and introducing separate waste containers (Baltazar & Seki, 2020). Additionally, CENRO conducts Awareness Campaigns to educate the public about waste reduction, reuse, and recycling. Complementing these efforts is Legislative Support, with the passage of laws leading to the establishment of Materials Recovery Facilities (MRFs) and the shift toward sanitary landfills (NSWMC). The involvement of students is integral, as emphasized by Molina and Catan (2021). Their research reveals that senior high school students actively partake in waste reduction and segregation practices. Furthermore, Community Engagement, as highlighted by Lecciones et al. (2022), emphasizes the significance of collaboration between non-governmental organizations, the private sector, public authorities, and residents, forming the bedrock of successful waste management programs. Funding Sustainable Initiatives, as proposed by the Nottinghamshire County Council (2022), bolsters these endeavors through a spectrum of initiatives, including workshops, social media campaigns, and educational programs, fostering innovative concepts like community gardens, repair workshops, and efforts to curtail food waste and encourage composting.

Finally, Recycling Strategies, as championed by Bui et al. (2022), emphasize the integration of formal and informal recycling systems and the consideration of socioeconomic, legal, and technological facets in sustainable solid waste management. The Clean as You Go (CLAYGo) program (Hesperian Health Guides, 2022) further promotes the 5Rs - refuse, reduce, reuse, recycle, and rethink - in canteens and cafeterias. Simultaneously, the introduction of an Expanded Recycling Hierarchy by Balwan et al. (2022) accentuates the importance of the 5Rs in achieving sustainable living and environmental sustainability. This holistic approach ascertains that waste management transcends mere disposal, embracing a comprehensive strategy for a greener, more sustainable future.

METHODOLOGY

Research Design

The 5Rs of waste generation is a complex issue that requires a research approach that can capture the complexity of human perceptions, attitudes, and systemic factors. A mixed approach, combining quantitative and qualitative methods, is ideal for 5Rs research because it allows for comprehensive data collection and the development of informed policy recommendations. The inclusion of both qualitative and quantitative research methods in this study is essential for a holistic understanding of the complex issue of the 5Rs and community development. The integration of both approaches is particularly beneficial when evaluating perceptions, attitudes, and their impact on community development.

Respondents of the Study

One way to collect data for a mixed-method study on the 5Rs is to use purposive sampling. Purposive sampling is a technique where the researcher intentionally selects participants or cases that best serve the research objectives and questions. This type of sampling is particularly useful in mixed-method research because it allows the researcher to strategically select participants or cases that align with their research objectives and questions. Purposive sampling plays a crucial role in ensuring that both qualitative and quantitative data contribute effectively to a more comprehensive understanding of the research topic. The researchers used a purposive sampling technique wherein sampling units were limited to key individuals of the community who were familiar with and actively involved in developing the community. The participants involved in the focus group discussion were fourteen (14) students and fourteen (14) adults (2) from each zone of the community, the other hand, (2) barangay officials, specifically the waste reduction officer, (2) Tricycle Operators and Drivers Association (TODA) officers and (2) teachers for the critical informant interview. Overall, twenty-eight (28) respondents were purposely

selected. They are the individuals who are conscious of their community and are aware of the steps that must be taken for the 5Rs application to be successful.

Data Collection

The data collection process spanned approximately one month, as respondents had different priorities and time constraints. The data collected was solely intended for residents of Barangay Santa Lucia, Nagcarlan, Laguna. The study's purpose was explained to participants, and they were informed of their right to participate or decline. Participants were assured that their personal information would be protected and not disclosed to anyone. Additionally, participants were asked to sign a consent form. The researchers did not request any names or other identifying information.

Ethical Issues

The researcher designed confidential and anonymous questionnaires, giving respondents more privacy. They only asked for information relevant to the study and obtained informed consent. Participants were fully informed of the procedures and assured of no harm.

Data Analysis

The research team used an audio recorder to collect participant responses, which were then transcribed into a format that could be analyzed and tabulated. The team then met to discuss the identified themes, which they consolidated to identify commonalities or to converge themes or constructs into propositions. These propositions led to the research conclusions and recommendations.

RESULTS

Community Perceptions and Attitudes

In this study, the community members' views on the 5Rs strategy through interviews and group discussions. Most respondents saw the 5Rs as a way to boost community safety and cut down on garbage pollution, which is a vital first step for its success. However, the strategy's success relies heavily on residents' cooperation. We noticed that without adherence to the rules, its implementation might falter. Various obstacles, such as ignorance, lack of information, limited involvement, residents' competing priorities, and concerns about time, need attention to encourage community engagement and cooperation.

Waste Disposal Practices

In interviews and group discussions, it was observed that people often don't follow the 5Rs (Refuse, Reduce, Reuse, Repurpose, and Recycle) when disposing of waste. This gap between awareness and action is a significant problem in waste management. To improve waste management, it's essential to encourage residents to consistently practice the 5Rs.

Awareness and Knowledge Dissemination

Community leaders and notable individuals raised awareness about the 5Rs applications through seminars, emphasizing the importance of waste segregation. This underscores the leadership's role in promoting sustainability. However, some residents remain unaware, emphasizing the necessity for more effective solid waste program management to ensure wider community awareness.

Sustainability of the 5Rs Application

In this study, both researchers and respondents shared valuable insights on sustaining the 5Rs in Barangay Santa Lucia, Nagcarlan, Laguna, offering a foundation for future sustainable waste management initiatives in the community.

Attitude of respondents towards 5Rs

In this study, the researchers analyzed the attitude of the key informant interview respondents towards applying the 5Rs and its impact on community development in Barangay Santa Lucia. The researchers used a bar graph to understand the presented data accurately.

Figure 1 reveals unanimous agreement among all informants, confirming the crucial link between a clean environment and our well-being. A polluted environment contributes to social issues, disease outbreaks, and numerous other problems, emphasizing the importance of a safe and clean community. These findings align with Wolff's (2018) study in the UK healthcare waste sector, which emphasizes sound waste management practices to safeguard human health and the environment. The overarching goal is to efficiently reintegrate all waste, including heat, energy, and materials, into our production cycles, following the concept of a "circular economy" (WRAP, 2016). The waste hierarchy, focusing on reducing, reusing, and recycling, should inform healthcare waste management decisions.

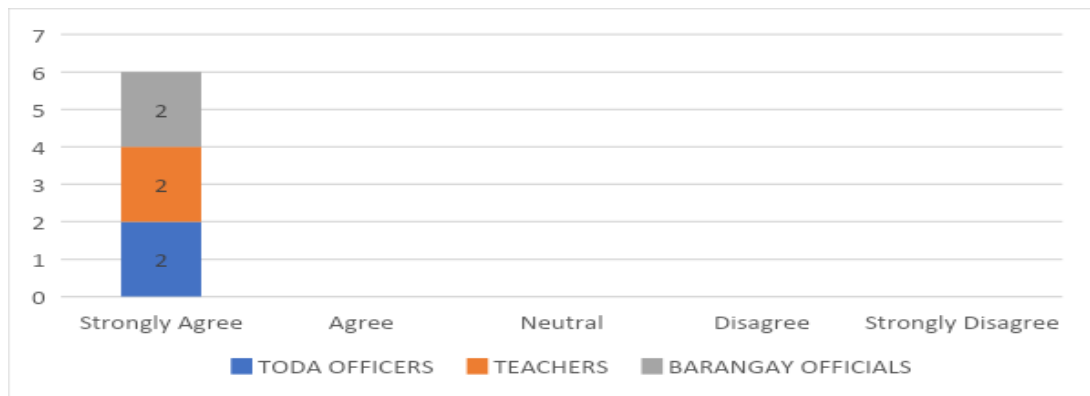


Figure 1. The importance of having a clean environment

Figure 2 illustrates that 83.33% of the respondents strongly agree with the positive impact of waste prevention on society and the environment, with only 16.67% holding a differing opinion. This study aligns with Molina and Catan (2021) to assess people's understanding of solid waste management, covering its definition, consequences of improper disposal, relevant laws, prohibited activities, school/community involvement, and its overall importance.

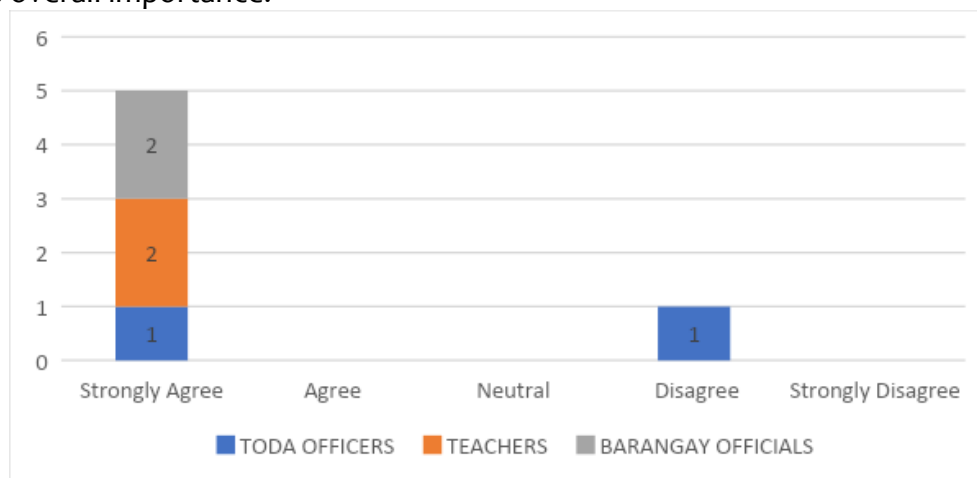


Figure 2. Waste prevention benefits society and the environment

Figure 3 reveals significant variations in attitudes toward waste management among our informants. Out of six informants, 50% strongly supported effective waste management, while 33.33% disagreed. Additionally, 16.67% expressed agreement. Three informants were particularly concerned about trash scattered around, whereas two disagreed. This aligns with Lecciones et al.'s (2022) global findings, emphasizing the importance of proper waste disposal and improved recycling rates.

Effective waste management should address community perspectives on services, outreach, regulations, and sustainability barriers. The challenge lies in structural issues, such as inadequate waste collection and recycling infrastructure, outweighing individual factors like laziness or lack of awareness.

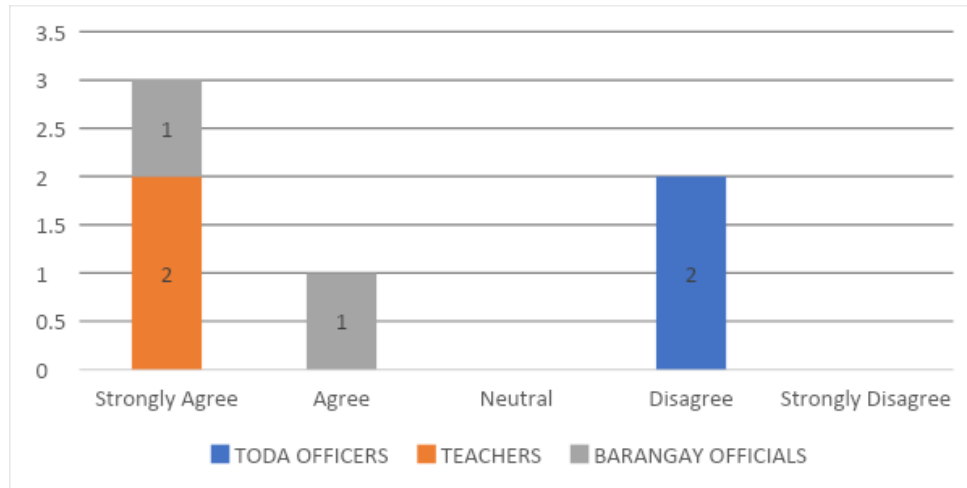


Figure 3. Garbage scattered is disturbing

Figure 4 illustrates that most informants (66.66%) strongly agree that improper waste disposal is a significant threat to the environment and public health. Improper waste disposal can lead to water and air pollution, as well as disease-carrying pests. However, a minority (16.67%) strongly disagreed, and another minority (16.67%) disagreed, suggesting varying perspectives that warrant consideration. These findings align with Wolff's (2018) study. Before delving into how legislation guides healthcare waste management, let's outline key principles of waste management. The overarching goal is to prevent harm to human health and the environment throughout the entire waste lifecycle, from creation to disposal.

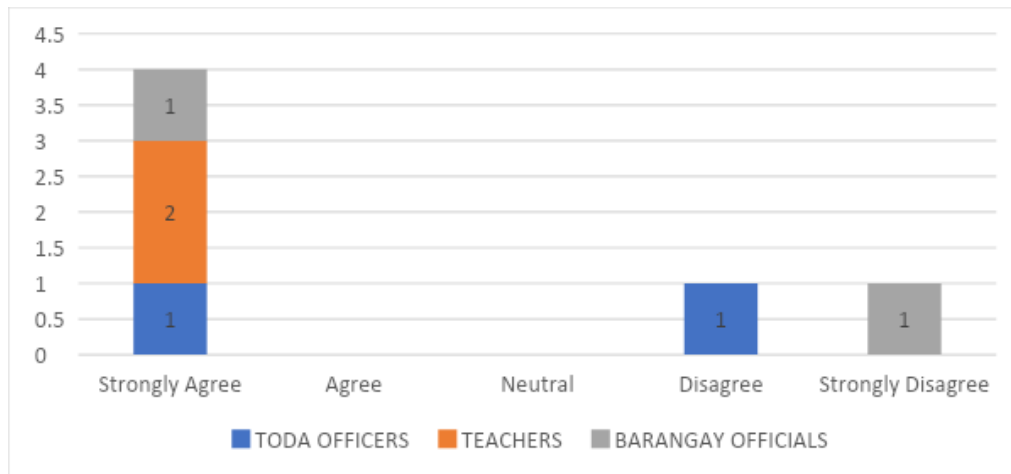


Figure 4. Adverse impact of Improper waste disposal

The results in Figure 5 reveal that 50% of the informants strongly agreed, while another 50% agreed, that residents and key leaders must possess knowledge on proper waste management and segregation in their community and households. Neglecting this aspect of waste management can lead to severe environmental and health issues. These findings align with Husna et al.'s study in 2020, emphasizing the need for both

government and the community, as primary waste producers, to actively participate in household waste management. Every household should contribute to waste handling since they generate it. Collaborative waste management efforts, involving government, private sector, and the community, can significantly enhance public health and environmental hygiene. Raising environmental awareness is essential for all groups, as they contribute to and are affected by pollution.

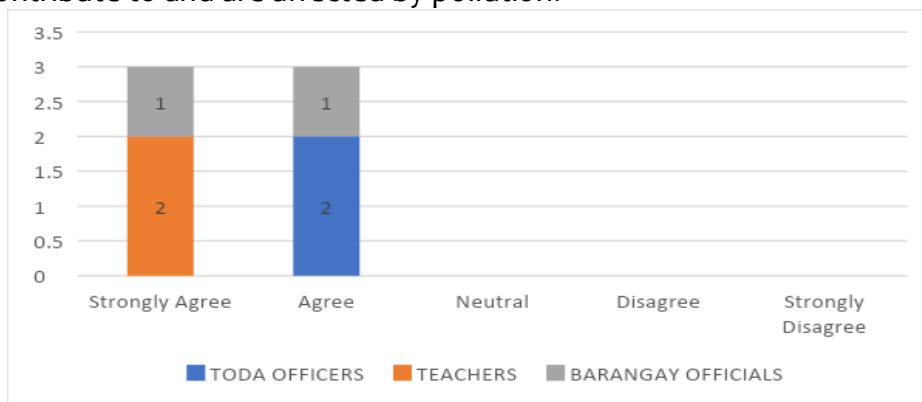


Figure 5. Importance of Waste Management

Figure 6 illustrates that the new waste disposal policy in the community enjoys significant support. Out of six informants, 83.33% strongly agreed, while 16.67% agreed with the policy. This aligns with Luyon's 2021 study, which noted the establishment of the National Solid Waste Management Commission (NSWMC) under Republic Act (RA) 9003, also known as the Ecological Solid Waste Management (ESWM) Act of 2000. RA 9003 mandated the creation of Solid Waste Management (SWM) boards across the country to develop and implement waste management policies of the Environmental Management Bureau - Department of Environment and Natural Resources (2018).

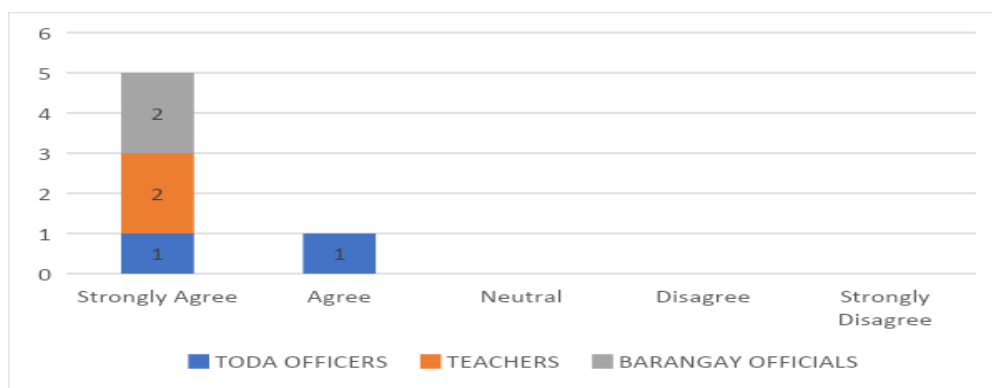


Figure 6. Acceptance of new waste disposal policy

In Figure 7, 100% of the informants (3 out of 6) strongly agreed to share their knowledge about waste separation, indicating a heightened environmental consciousness and responsibility. This aligns with Lecciones et al.'s (2022) study, emphasizing the importance of community perspectives in effective waste management programs. Structural factors, such as inadequate waste collection and recycling

infrastructure, outweigh micro-level issues like laziness and lack of awareness, leading to low recycling rates.

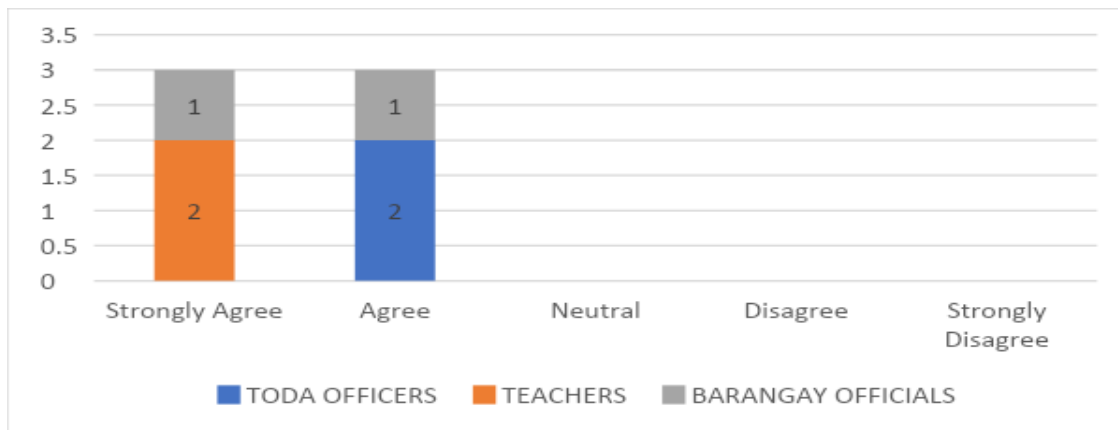


Figure 7. Willingness to educate others on proper waste segregation

Most of the respondents or 83% of informants believe in the importance of the 5Rs (Refuse, Reduce, Reuse, Repurpose, and Recycle) for effective waste management, while only one respondent agrees. This suggests a limited understanding and implementation of the 5Rs in waste management. This aligns with Sztangret's (2021) research, demonstrating the importance of the Municipal Waste Re-Value Concept built on evolving concepts like 3R, 4R, 4RVOGES, and 5R, with a focus on Re-use as a strategic component in organizational structure.

Based on Figure 8, four out of six informants (67%) strongly supported waste segregation, while two out of six informants (33%) agreed with it. Many respondents showed a willingness to implement the 5Rs (Reduce, Reprocess, Reuse, Recycle, and Recover) in their daily lives for environmental sustainability, as advocated by Tony (2022). Emphasizing the 5Rs is essential for the circular economy concept, replacing the "end-of-life" approach for a more sustainable future.

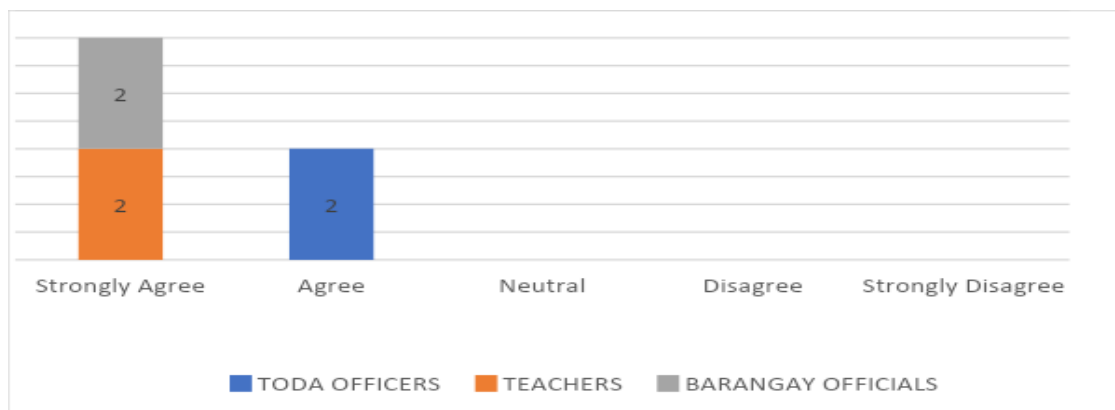


Figure 8. Willingness to practice waste segregation through 5Rs

In Figure 9, 67% of the six informants strongly agree to share their knowledge about waste separation through the 5Rs approach. Meanwhile, 17% agree, and another 17% remain neutral. This aligns with Tony's (2022) study, which underscores the importance of the 5Rs (Reduce, Reprocess, Reuse, Recycle, and Recover) for a sustainable and environmentally friendly approach. Therefore, it's crucial to focus on adopting the 5Rs for a circular economy, replacing the traditional "end-of-life" approach.

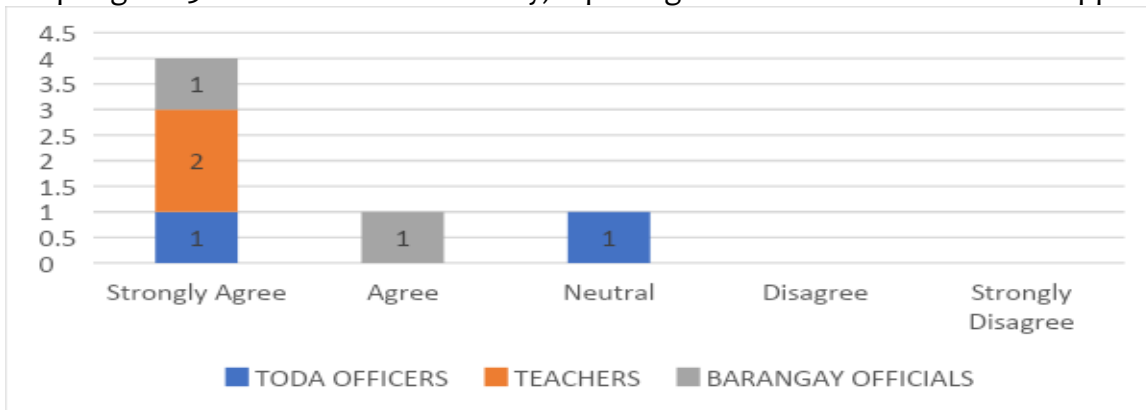


Figure 9. Willingness to share knowledge on the 5Rs for waste reduction

Figure 10 illustrates that 83.33% of respondents strongly supported the idea that applying the 5Rs for waste prevention enhances the environment, leading to sustainable development, while 16.67% disagreed. Tony (2022) also reinforced this notion in the "5 Rs' Criteria" article, showcasing the benefits and challenges of reusing aluminum-based sludge to promote a sustainable environment. Using alum sludge as a resource rather than as waste is seen as a valuable management alternative, aligning with legal requirements and the "end-of-waste" concept.

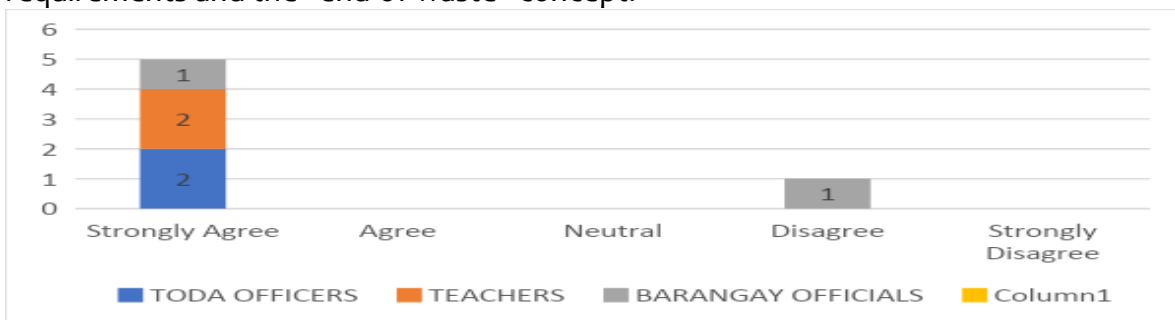


Figure 10. 5Rs and waste prevention are for sustainable development

Figure 11 illustrates that 17 out of 28 respondents (60.71%) make a fair effort in waste segregation. Additionally, 5 out of 28 respondents (17.86%) excel in segregation, along with those who display a significant effort in waste segregation. Only 1 out of 28 respondents (3.57%) practices excellent waste management at home. Encouraging more people to adopt responsible waste management is essential for a cleaner and healthier environment. These findings align with Balwan et al.'s study (2022), which defines waste

management as the process from production to disposal, encompassing collection, segregation, transportation, processing, recycling, treatment, and proper disposal.

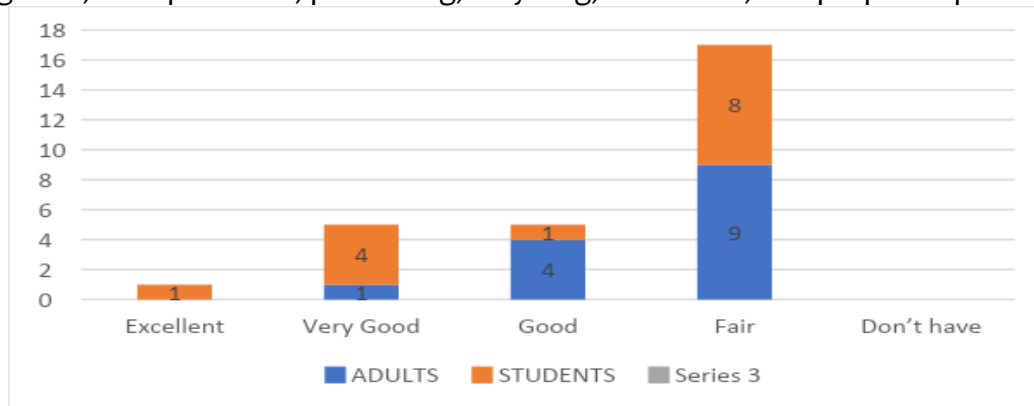


Figure 11. Level of segregation of waste at home

Based on the data in Figure 12, 50% strongly agree that local government should handle solid waste collection and disposal, while 42.86% simply agree. Only 3.57% disagree or strongly disagree, indicating diverse beliefs regarding local government responsibilities. Sztangret's (2021) study supports this, highlighting the role of municipal waste entities in pro-ecological projects with strategic significance. These projects involve tasks aligned with concepts like 3R, 4R, 4RVOGES, and 5R, with a focus on reuse points within organizational structures.

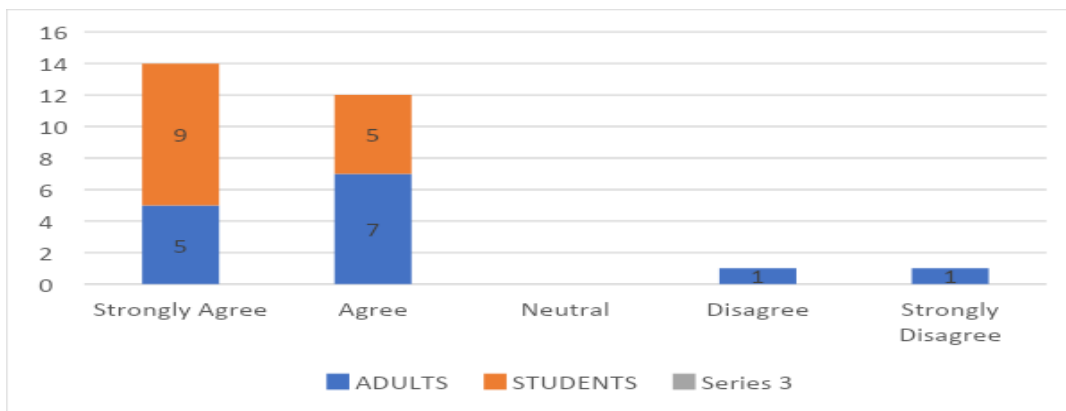


Figure 12. Authorities are responsible for solid waste collection

In Figure 13, 12 out of 28 respondents (43%) considered solid waste a minor concern in their community, with 7 participants (25%) expressing neutrality, 4 (14%) in disagreement, and 2 (7%) in strong disagreement. However, 3 respondents (11%) strongly prioritized addressing the waste issue in their community. These varying opinions provide valuable insights into community environmental concerns. The study was supported by A Community Solid Waste Program - Hesperian Health Guides (2022), highlighting the importance of community awareness to initiate projects addressing their needs and resources.

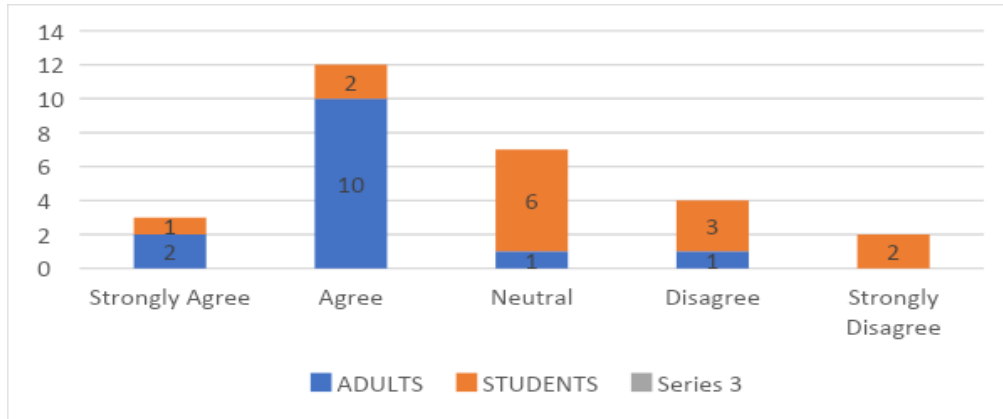


Figure 13. Solid waste is not a serious problem

According to Figure 14 data, 13 out of 28 respondents (46.42%) were neutral about reducing household waste for the environment. Three (10.71%) disagreed, while seven (25%) agreed, and five (17.86%) strongly agreed. This underscores the need for more education on waste reduction and environmental sustainability. Lecciones et al. (2022) supported this study, emphasizing global waste issues, improper disposal, and low recycling rates. Effective waste management must address community perspectives, collection services, infrastructure, and barriers to sustainability, with structural factors outweighing micro-level issues like laziness and awareness.

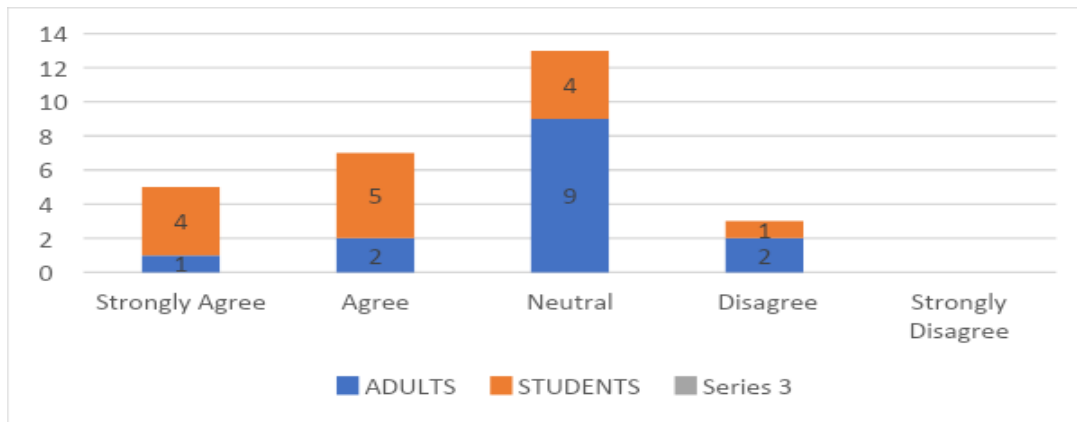


Figure 14. Reduction of household waste benefits the environment

As presented in Figure 15, out of 28 respondents, 12 (42.85%) agreed that households contribute to the waste problem, while 6 (21.42%) disagreed, mainly students. However, 6 (21.24%) respondents are neutral about it; 3 (10.71%) strongly agreed, and the remaining 1 (3.57%) strongly disagreed about it. This study aligns with Husna et al. (2020) in emphasizing the role of government, communities, and individuals in waste management. Households must play their part since they are waste producers. Collaborative waste management efforts can significantly benefit public health and the environment. All stakeholders, including the government, the private sector, and the community, should raise environmental awareness and work together to reduce pollution.

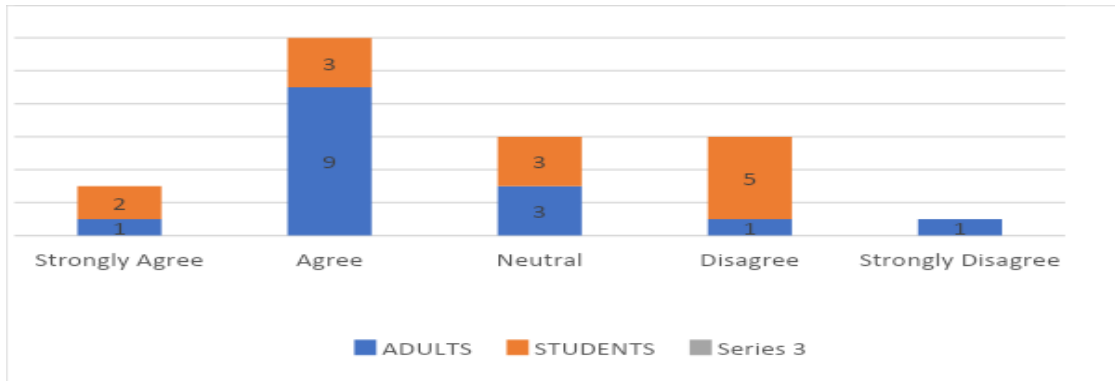


Figure 15. Household contributes to the waste problem

In Figure 16, 20 out of 28 respondents (71.43%) strongly agreed that improper waste disposal has serious negative consequences for public health and the environment. Additionally, 4 respondents (14.29%) agreed with this statement, while 2 (7.14%) were neutral, and another 2 (7.14%) had a different perspective. This aligns with Husna et al.'s (2020) study, which suggests that active participation in environmental awareness activities helps individuals evaluate the harmful effects of their actions on both the environment and human health.

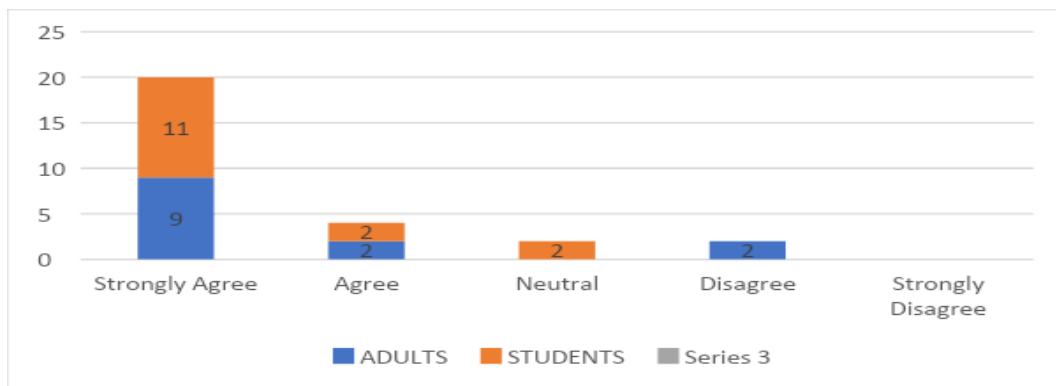


Figure 16. Improper waste disposal has adverse effects

According to Figure 17, out of 28 respondents, 9 (32.14%) disagreed with the statement that they lack enough space at home for separate waste bins, while 7 (25%) agreed with it, all being adults. Another 7 (25%) had a neutral stance, and 3 (10.71%) strongly disagreed, but 2 participants strongly agreed, suggesting potential waste management challenges. These results indicate a need for further exploration of factors influencing waste separation willingness and potential barriers. These findings align with Balwan et al. (2022), who describe waste management from production to disposal.

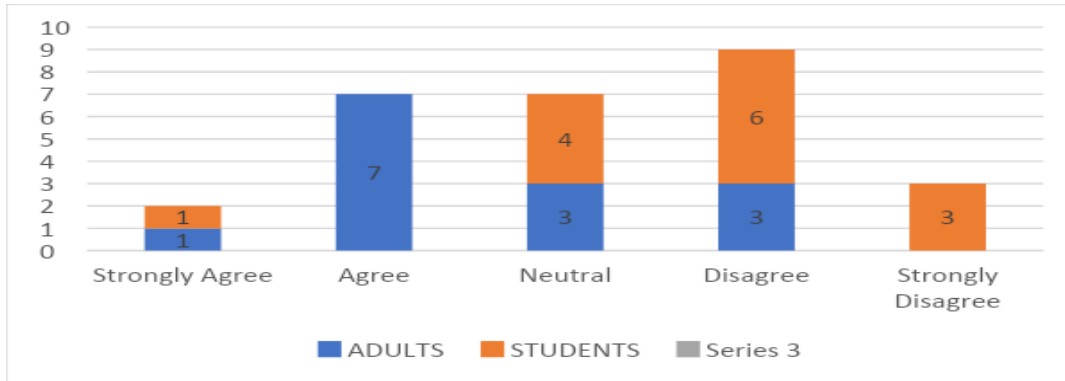


Figure 17. Not enough space at home for a separate trash bin

Based on Figure 18, it can be observed that out of 28 respondents, 14 (50%) exhibited a neutral attitude towards waste segregation. On the other hand, 8 of them represent the 28. 57% disagree that waste segregation takes too much of their time; 4 (14.29%) thought it is time-consuming, but the remaining 2 (7.14%) strongly disagreed with the idea that waste segregation takes too much time. These findings underscore the need for increased awareness and education on waste segregation to promote environmental cleanliness. Molina and Catan (2021) also support the importance of involving students in solid waste management practices, including segregation, reduction, reuse, recycling, and disposal.

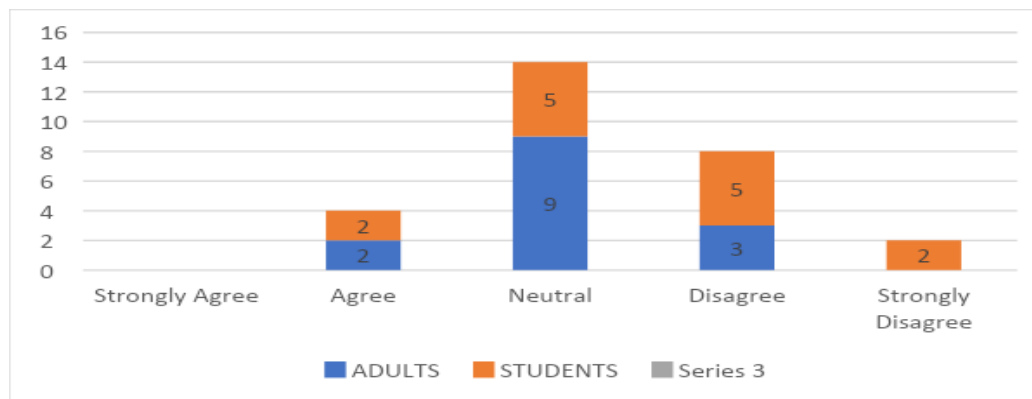


Figure 18. Waste segregation is time-consuming

Among 28 respondents, 53.57% disagreed with the idea of placing all waste in the same bin, while 14.29% expressed a contrasting view. About 10.71% were neutral on this matter, and the remaining 21.42% strongly disagreed (as shown in Figure 19). Notably, adults were observed to be more diligent in segregating waste, even though it was time-consuming. This observation aligns with the practices advocated by the NSWMC, including waste diversion, source segregation, and the shift to sanitary landfills, aiming for a 25% reduction in solid waste disposal through reuse, recycling, and composting. Various waste management approaches and technologies have emerged in response to the garbage crisis, driven by renewed policy focus and initiatives.

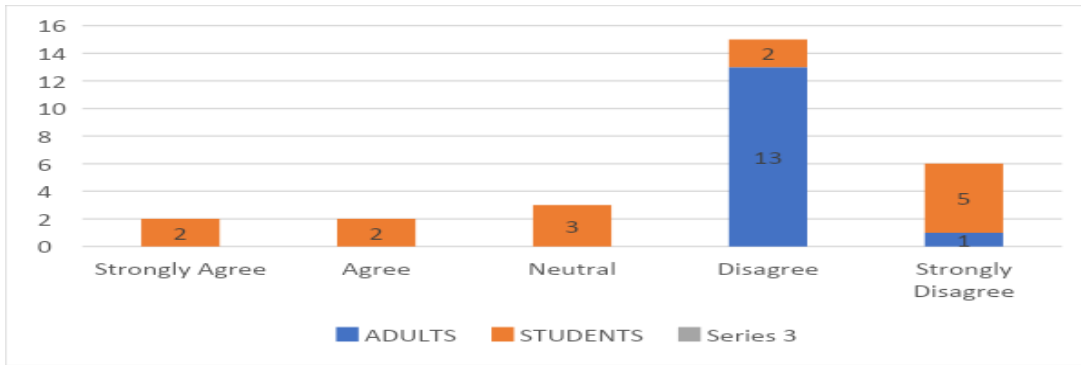


Figure 19. It is easier to put all waste in the same bin

In Figure 20, 46.43% of 28 respondents agreed they were responsible for waste generation in their community. 28.57% strongly agreed, while 21.43% remained neutral. This aligns with Molina and Catan’s (2021) study on solid waste management understanding. Their research emphasizes the importance of student support and participation in waste segregation, reduction, reuse, recycling, and disposal.

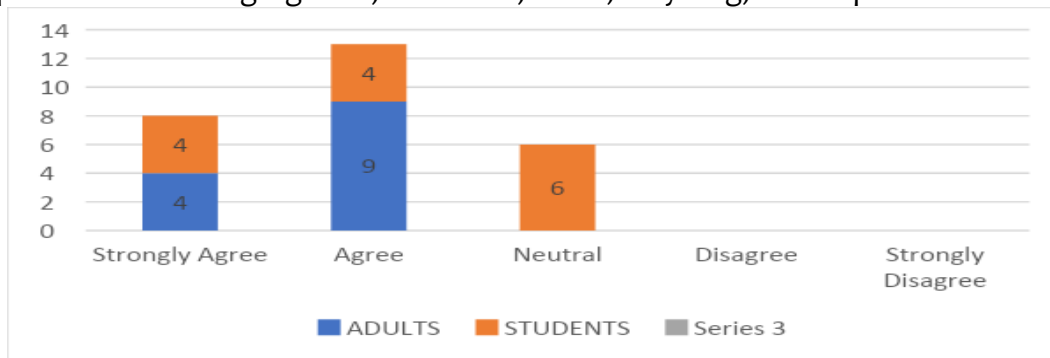


Figure 20. Residents are responsible for the generation of waste

In Figure 21, out of 28 respondents, 25 (89.29%) strongly support teaching proper waste disposal in the community, with the remaining 3 (10.71%) also in agreement. This aligns with the findings of Lecciones et al. (2022), indicating that effective waste management must incorporate community perspectives, address structural issues like waste collection services and recycling infrastructure, and prioritize sustainability over micro-level factors such as personal responsibility and awareness.

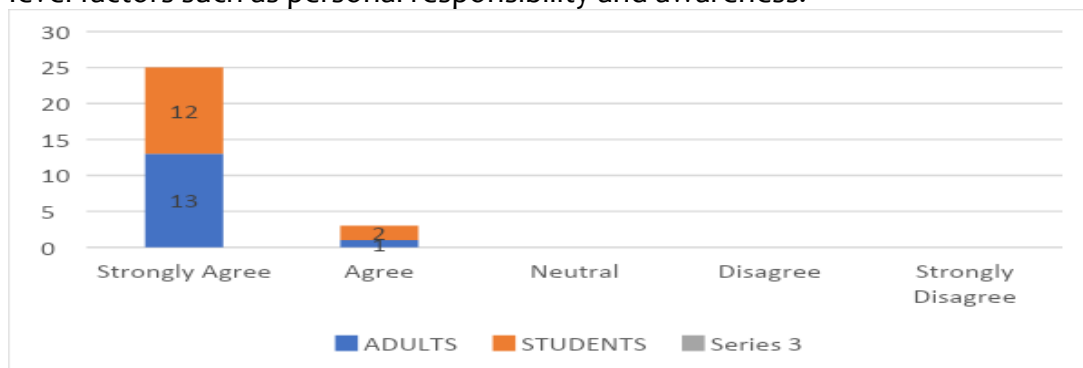


Figure 21. Waste disposal should be taught in the community

Figure 22 demonstrates that out of 28 respondents, 17 (60.71%) of them were strongly determined to learn more; 7 (25%) of them were willing; 3 (10.71%) were just neutral about it; and 2 (7.14%) were not willing to learn about waste collection and disposal. These results align with Dayrit's (2019) study, which emphasizes the need to shift from the traditional 3Rs (Reduce, Reuse, Recycle) to the more comprehensive 5Rs (Redesign, Reduce, Reuse, Recover, Recycle). Responsibility for waste management should be assigned to various stakeholders, including industry, government, commerce, and consumers. A holistic approach to plastic, considering its functions and life cycle, is essential. This approach should include redesigning plastic for recyclability and implementing efficient waste plastic recovery in a closed-loop system. Industry should prioritize recyclability and internalize the costs associated with waste, recycling, and disposal.

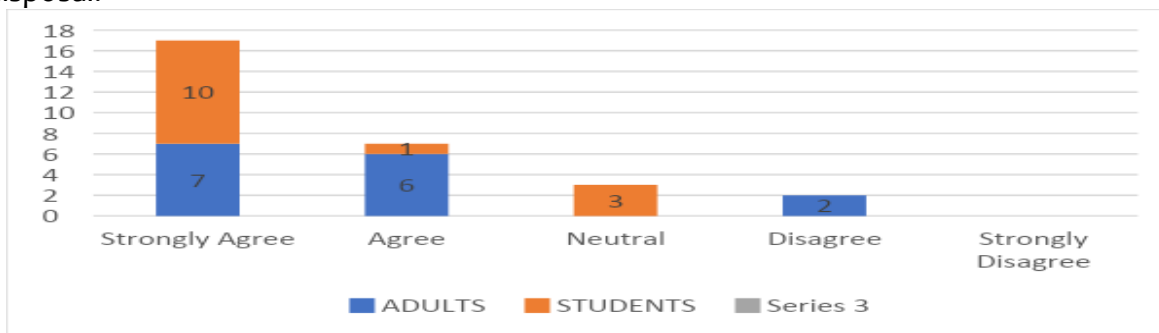


Figure 22. Respondents are willing to seek more information on waste services

DISCUSSION

Waste management plays a pivotal role in our society, and the 5Rs strategy (Refuse, Reduce, Reuse, Repurpose, and Recycle) offers a promising framework to tackle this pressing issue. This research delved into the perceptions, attitudes, and practices of community members in Barangay Santa Lucia, Nagcarlan, Laguna, Philippines, concerning the 5Rs strategy. The study uncovered a positive outlook among community members who believed that this strategy could enhance community safety and mitigate garbage pollution. However, it became apparent that the strategy's success hinges on residents' cooperation and is accompanied by several potential challenges, including ignorance, information deficits, lack of participation, competing priorities, and concerns about time commitment.

Notwithstanding these obstacles, the study identified a strong interest in the 5Rs strategy within the community. Both researchers and respondents offered valuable insights to sustain the integration of the 5Rs approach into the development of Barangay Santa Lucia, which are as follows:

Effective Information Dissemination: Community leaders should take the lead in providing comprehensive information about the 5Rs strategy to residents. This can be accomplished through seminars, workshops, and other informative activities.

Community Engagement: Active resident participation in the implementation of the 5Rs strategy is vital. Community-based organizations should be established to champion and advocate for the strategy's principles.

Personal Responsibility: Each resident must exercise self-discipline for the 5Rs strategy to prosper. This involves adhering to the strategy's regulations and making conscientious efforts to minimize waste production.

The study's findings hold significant implications for policymakers and community leaders. Policymakers should develop policies and initiatives that support the integration of the 5Rs strategy. Concurrently, community leaders should take an active role in promoting and advocating for the strategy among residents. By fostering collaboration between policymakers, community leaders, and residents, Barangay Santa Lucia can serve as an exemplary community for the successful application of the 5Rs strategy.

CONCLUSIONS

In summary, waste management remains a pressing concern in Barangay Santa Lucia, Nagcarlan, and Laguna, as it does in many other communities. The 5Rs strategy, comprising Refuse, Reduce, Reuse, Repurpose, and Recycle, was introduced as a means to enhance waste management practices within this community. This essay has provided a thorough examination of the outcomes, with a focus on the perceptions, attitudes, and practices prevalent among community members.

A notable finding was the optimism displayed by community members regarding the potential of the 5Rs strategy to create a safer environment with reduced garbage pollution. However, a significant caveat emerged during the investigation: the success of this strategy hinges heavily on the active cooperation of residents. Various obstacles, including ignorance, a lack of information, low community involvement, competing priorities among residents, and concerns about the time-consuming nature of the strategy, were identified as potential barriers.

The research revealed that residents were not uniformly adhering to the 5Rs principles in their waste disposal practices, indicating a disconnect between knowledge and behavior.

Furthermore, the study highlighted a significant disparity in awareness levels regarding the 5Rs strategy. While a portion of key informants actively shared their knowledge with the community, a significant percentage remained unaware. Similarly, a low percentage of respondents in focus group discussions were informed about the 5Rs.

In conclusion, this study underscores the critical need to not only promote the 5Rs strategy but also to address the challenges that may impede its effective implementation.

To ensure the continued application of the 5Rs, it is recommended that well-managed awareness campaigns and educational programs be instituted to inform the entire community about the strategy and its potential benefits. Active community engagement is vital, and it is imperative to address barriers such as ignorance and competing priorities. Only through this comprehensive approach can the 5Rs strategy genuinely bring about a positive impact on waste management in Barangay Santa Lucia and similar communities.

RECOMMENDATIONS

Waste management is a pressing concern in Barangay Santa Lucia and beyond. Our researchers propose a dual strategy: one for the community and another for policymakers. The community plan emphasizes the 5Rs (Refuse, Reduce, Reuse, Repurpose, and Recycle) to manage waste effectively.

1. **Promote Education and Awareness:** Encourage community involvement in educational programs and awareness campaigns on the 5Rs (Refuse, Reduce, Reuse, Repurpose, and Recycle) approach to waste management through workshops, seminars, and community meetings.
2. **Conduct Training:** Organize sessions on effective 5Rs waste management, covering practical methods to reduce, reuse, recycle, refuse, and compost.
3. **Support Community Initiatives:** Foster local initiatives for waste management, including recycling centers, composting facilities, and community waste collection efforts.
4. **Utilize Peer Influence:** Motivate community members by showcasing individuals who excel in practicing the 5Rs as role models and mentors.
5. **Offer Compliance Incentives:** Consider providing rewards or recognition to individuals and households consistently following the 5Rs to encourage more people to participate.

On the policymaker's side, the recommendations stress the importance of supportive laws, public awareness initiatives, and economic incentives for waste reduction and recycling. These efforts should be reinforced with robust monitoring, cooperation with non-governmental organizations, and community involvement.

1. **Strengthen Regulations:** Review and reinforce waste management laws to promote the 5Rs approach and provide clear guidance for waste reduction and recycling.
2. **Boost Public Awareness:** Allocate resources to promote the 5Rs method through media and community outreach, educating citizens on its benefits.
3. **Offer Incentives and Penalties:** Consider tax incentives for waste reduction and recycling, while imposing fines for non-compliance with regulations.
4. **Establish Monitoring:** Create a system to assess waste management program effectiveness and adjust strategies based on data.

5. Collaborate with NGOs: Partner with NGOs and local groups supporting the 5Rs method to leverage their insights and resources for government initiatives.

By following these recommendations, the community and policymakers can work together to improve waste management and promote the 5Rs method, fostering a cleaner, more sustainable environment.

IMPLICATIONS

The 5Rs strategy for community development focuses on perceptions, attitudes, and practices.

Perceptions: Community members believe that implementing the 5Rs strategy can make their community safer and reduce garbage pollution. Success depends on residents' cooperation, but obstacles like ignorance, lack of information, and competing priorities may hinder its effectiveness.

Attitude: Key informant interviews and focus group discussions revealed a positive attitude toward the 5Rs, especially among adults and students. They are interested in waste management and disposal services that benefit the community, although adults are more actively engaged in waste segregation.

Practices: Despite awareness of the 5Rs, some residents still use alternative waste disposal methods. The study underscores the importance of adopting the 5Rs for effective waste management.

Awareness: Community leaders and prominent individuals have shared knowledge of the 5Rs through seminars, but some residents remain unaware. Effective management of waste programs is crucial to ensure widespread awareness and adoption.

In summary, sustaining the application of the 5Rs in Barangay Santa Lucia, Nagcarlan, Laguna, relies on addressing obstacles, promoting positive attitudes, and increasing awareness among residents.

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DECLARATIONS

Conflict of Interest

All authors declared that they have no conflicts of interest.

Informed Consent

All participants were appropriately informed and voluntarily agreed to the terms with full consent before taking part in the conduct of the experiment.

Ethics Approval

The Laguna University Research Ethics Committee duly approved this study in August 2022 after it conformed to the local and international accepted ethical guidelines.

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Jammil Pineda, a recent graduate of Laguna University, holds a Bachelor of Arts degree in Communication, a testament to her dedication and academic achievements. In her third year, she distinguished herself as an active member of the Communication Circle organization, a prestigious student association within the Communication Department. Her academic pursuits and research interests have been focused on addressing and understanding community challenges, with a particular emphasis on those that directly impact her community.

Samantha Gwyneth Bonsol earned her Bachelor of Arts in Communication from Laguna University. During her internship at LB Times in UPLB, she authored a diverse range of articles that showcased her writing prowess. Her passion for research lies in the realm of community-based approaches, with a mission to empower communities, drive policy reform, and elevate knowledge. She does this by acknowledging and cherishing

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Mennard Amorante obtained his Bachelor of Arts in Communication from Laguna University, where he honed his passion for effective communication. His journey truly began during his internship as a Public Information Officer (P.I.O) in Santa Cruz, Laguna. He is dedicated to addressing and resolving the challenges that his locality faces, demonstrating his deep-rooted sense of responsibility and a genuine desire to effect positive change.

Roel L. Fucio is a dedicated scholar who deeply cares about protecting the environment. He completed his Bachelor of Science degree in Forestry specializing in Social Forestry and then pursued a Master of Science degree in Environmental Science at the University of the Philippines Los Baños. His research focuses on utilizing technologies, like Remote Sensing and Geographic Information Systems (GIS) to address issues related to Land Use Change and environmental sustainability. Through his work, he demonstrates a commitment to understanding. Mitigating the impacts of human activities on our planet makes him an invaluable contributor, to the field of environmental science.