LA SALLE GREEN HILLS
Learning Community 6

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Developing a Social Behavioral Change Communication Plan on the Solid Waste Management of Selected BASECO Compound Residents of Manila City

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APPROVAL SHEET

This research entitled, "**DEVELOPING A SOCIAL BEHAVIORAL CHANGE COMMUNICATION PLAN ON THE SOLID WASTE MANAGEMENT OF SELECTED BASECO COMPOUNDS RESIDENTS OF MANILA CITY**" prepared and submitted by Jillian Casey Adarayan, Santiago Luis C. Donato, Andre Joseph P. Reyes, and Juan Rafael B. Santiago in partial fulfillment of the requirements of PRACTICAL RESEARCH or INQUIRIES, INVESTIGATIONS, AND IMMERSION have been examined and hereby recommended for approval and acceptance.

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Date: February 3, 2025

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ABSTRACT

The research aims to create a Social Behavioral Change Communication (SBCC) Plan in order to improve the solid waste management of selected residents from the BASECO Compound, City of Manila. The Theory of Planned Behavior (TPB) by Ajzen (1985) was used in the study to analyze the variables that affect the intentions of the residents towards solid waste management, which include personal attitudes, subjective norms, and perceived behavioral control. With the utilization of a pre-experimental design, 30 household heads aged 25-61 were selected for the pre-test, intervention, and post-test. The primary intervention within the social behavioral change communication plan is a workshop that consists of activities such as a keynote talk from an invited DENR representative, community planning among residents, a waste segregation game, and a pledge of environmental stewardship. Results show that there is a significant increase in the intentions of the participants after the implementation of the SBCC plan, with total mean scores increasing from 3.53 to 3.87 for personal attitudes, 3.25 to 3.67 for subjective norms, and 3.47 to 3.66 for perceived behavioral control. The p-values were <.001, <.001, and 0.046 respectively, indicating a significant difference between level of intention. The SBCC Plan displayed potential as an effective strategy aimed to increase awareness and encourage collective action towards solid waste management. The study highlights the significance of communication in spreading awareness regarding the environment, serving as a guide for future research to increase community participation within the context of environmental action.

KEYWORDS: BASECO, Social Behavioral Change Communication (SBCC), Theory of Planned Behavior (TPB), solid waste management, environmental action, communication plan

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INTRODUCTION

Background of the Study

Solid waste management is identified as an environmental action that is comprised of the collection and disposal of discarded solid material. This practice involves the treatment and transportation of the collected waste, which is done through proper segregation and recycling (Nathanson, 2024). Environmental action is defined as efforts in carrying out practices aimed to address environmental challenges. These activities manifest both directly and indirectly, in efforts such as changing personal practices in pursuit of achieving sustainability, sharing information through various platforms, taking civic action and participating in environmental preservation and preparedness initiatives (National Oceanic and Atmospheric Administration, 2022). In the Philippines, a lack of discipline in waste management is considered a challenge for the waste-free National Capital Region with over 11,000 kilograms of waste produced every day and projecting a total waste production rate of 13,310 kilograms a day or 4,668,592 tons a year (Ferreras, 2024). Manila Bay is a natural port located within the country faced with plastic contamination, which houses the BASECO Compound, the largest urban poor community among five barangays within the port area of Manila City. BASECO is mostly composed of informal settlers who reside in structures surrounded by waste and garbage. (World Vision, 2023). This area faces congestion which leads to an unsanitary environment, contributing to inefficient waste disposal management (Castro et al., 2021) as a point where trash accumulates (Gonzaga et al., 2021). In a community cleanup conducted within the area in 2021, around 550 sacks of garbage were collected (Castro et al., 2021). The solid waste mismanagement within BASECO also serves as a factor in disasters, wherein residents believe that the presence of garbage in waterways contribute to the occurrence of flooding (Navarra, 2016). Navarra (2016) also highlights that the community is disadvantaged due to income inequality, leading to lower infrastructure and poor living conditions which consequently increases vulnerability. Additionally, Valenzuela et al. (2020) revealed that most residents gravitate towards being concerned about existing socio-economic demands rather than environmental action and risk management. Despite the insights gained within previous literature, there is an apparent gap as these studies lack exploration on the implementation of community-driven strategies aligned with solid waste management.

As environmental consequences persist, the need for studies regarding communication strategies increases as the cultivation of societal participation in environmental initiatives is essential (Zhuang, 2024). REL Southwest (n.d.) defines a communication plan as a systematic guide that serves as a basis in consistently disseminating important messages and objectives. In line with this, Social and Behavioural Change Communication (SBCC) is a strategy to be implemented that fosters changes in attitudes and promotes responsibility and administration of individuals, families, communities, and institutions. It facilitates behavioural change through utilizing various communication channels, messages, and activities to reinforce actionable behaviors and empowers communities to take ownership of their practices by involving them in the implementation and construction of communication strategies (Adu-Asare, 2024). This study aims to provide a communication plan using SBCC that is comprised of a workshop and an infographic brochure to aid

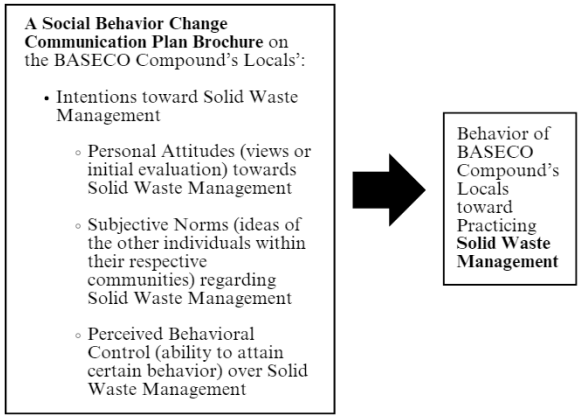
in the promotion of solid waste management in the BASECO compound. This strategy is essential in highlighting crucial information towards a selected audience in order to reach intended outcomes (University of Reading, 2020).

A proposed workshop program is a key component in increasing the solid waste management of the BASECO residents through incentivization sourced from selected non-government organizations. Workshops are effective for the youth and adults, establishing intergenerational knowledge aimed towards collective decision making and leadership in climate action (Hayward et al., 2018, Danby and Mason, 2011, and Thiery et al., 2021 as cited in Atkinson, 2021). Following its documentation, it would be included as a segment in the physical infographic brochure as the means of releasing the communication plan. In a study by Areeprasert et al. (2023), infographics improved the waste separation behaviors of the participants in terms of the subjective norms, perceived behavioral control, and intentions through the help of its thorough quality of design elements. Hence, the infographic brochure will be used to document the conducted activity and ensure long-term impact of the communication plan.

Theoretical Framework

The study will be using the Theory of Planned Behavior (TPB) proposed by the psychologist Icek Ajzen in 1985. The TPB is a cognitive theory that aims to explain that an individual's decision to participate in a specific behavior such as doing so or stopping an action can be implied by their intention to engage in such behavior. Ajzen (1991, as cited in Brookes 2023) stated that the stronger the intention to attend in a particular behavior, then the more likely they are to act upon it. According to TPB, the intentions are classified through: *personal attitudes, subjective norms, perceived behavioral control, and intentions.* The study seeks to evaluate the influence of a social behavioral change communication plan in the participants' inclination towards solid waste management by applying the Theory of Planned Behavior (TPB). Conclusively, the theory assists the study in responding to the respondents' human behavior toward the environment by framing and suggesting appropriate courses of action in managing solid waste.

Conceptual Framework



The researchers will be able to analyze and categorize the constructs of solid waste management through utilizing the Theory of Planned Behavior (TPB) by Ajzen (1985). This concept establishes three primary components which will be used in examining the intentions of the BASECO residents towards solid waste management: their views or initial evaluation (personal attitudes), ideas of the other individuals within their respective communities (subjective norms), and belief in their ability to attain certain behavior (perceived behavioral control). The study hypothesizes that higher levels of these values entail stronger intention, increasing the likelihood of behavior towards solid waste management. Potential relationships will be examined using a quantitative analysis to identify the degree of influence each variable

has to resident participation. A communication plan to address these variables will be devised in accordance with the research goal of influencing the intentions of the target community, leading to desirable solid waste management to take place.

Statement of the Problem

The study aims to contribute to filling in the gap of testing the locals' intentions toward spearheading solid waste management through the following research questions:

1. What is the demographic profile of the respondents in terms of:
   1.1 Age
   1.2 Educational background
   1.3 Sex

2. How can the locals' level of intention toward solid waste management be described in terms of:
   2.1 Personal attitudes
   2.2 Subjective norms
   2.3 Perceived behavioral control

3. Is there a significant difference among the respondents' level of intention toward solid waste management before and after the implementation of the communication plan?

Hypothesis

The study's null hypothesis states that there is no significant difference provided by the communication plan on the selected residents of BASECO Compund's level of intention toward solid waste management. However, the alternative hypothesis suggests that there is a significant influence provided by the communication plan on the selected residents of BASECO Compund's level of intention toward solid waste management.

Scope and Delimitation

The study intends to dwell on the nature of a social behavioral change communication plan as a means of promoting a common goal for the local community and public welfare in the environment. The researchers will be focusing on Manila City, specifically in BASECO Compound considering its concerning state, vulnerable locals, and unsustainable condition. Thirty (30) residents of BASECO within the age range of 25-61 will be selected by the researchers to serve as the research sample. Moreover, solid waste management is to be quantified and measured with the use of the researchers' own constructed survey questionnaire taking reference from the Second Minnesota Report Card on Environmental Literacy and the Resident's Preference for Urban Green Space Types and their Ecological-Social Services in China. This study will use a pre-experimental method to identify the cause and effect relationships between the variables of the study.

The study will only focus on the four variables of the Theory of Planned Behavior (TPB) that are limited to: personal attitudes, subjective norms, perceived behavioral control, and intentions of the residents. The study is narrowed down to the effects of a Social Behavioral Change Communication (SBCC) plan in relation with environmental action towards solid waste management; this concept that drives the personal and collective efforts of the residents, specifically the residents within BASECO Compound, Manila.

Significance of the Study

As BASECO continues to be a depressed area in Manila, managing mitigation by tackling weaknesses in environmental action towards solid waste management through proper communication is essential.

Channeling environmental action through the researchers' Social Behavioural Change Communication plan would greatly fill in the gap of testing locals' intentions toward taking action in their community. Focusing on locals for the intervention lays a solid foundation for them to continue the environmental change their area calls for. This exercises their social responsibility to be inclined towards caring for the environment they are situated in through thoughts, words, and actions. Failure to work in the direction of addressing a lack in community involvement may entail a downward trend in the quality of response to ecological disasters. Ultimately, the beneficiaries of the study includes the locals in the community they are in, the local government, non-government organizations (NGOs) involved in the execution of the plan, as well as future researchers who wish to delve into developing communication plans of the like to encourage environmental action.

Review of Related Literature

Nguyen et al. (2023) focuses on the behavior and perspectives of residents using the Social Practice theory, investigating factors that affect and influence waste management practices within individuals, which includes social structures and government coordination efficacy. The study emphasizes unsustainable practices such as littering to be results of lacking social responsibility within individuals. In relation to the solid waste management in BASECO, the ideas emphasized by the study presents the influence of social structures institutions in behavioral change. However, the study is only limited to exploring resident perspectives, and does not address how to go about developing holistic frameworks through the utilization of resident behavior.

Brotosusilo et al., (2020) explores factors that affect solid waste management participation within individuals in Jakarta. The study identifies social community activities, education level, and per capita expenditure (PCE) as variables that influence engagement. Individual efforts in environmental preservation serve as starting points for transformation, in which behavioral shifts lead to habits being exemplified within a familial and communal level, significantly changing the way individuals perceive household waste management through citizen involvement (Ruliana et al., 2019, as cited in Brotosusilo et al., 2020). The study underscores how raising consciousness regarding environmental concern on a personal and communal level entails effective waste management within the community, as well as the role of external empowerment. While the study highlights the relation of perceived capability to participation, there is a gap in the exploration of concrete programs related to citizen empowerment programs for solid waste management in the context of local communities such as BASECO.

Arias & Trujillo (2020) showcases how perceived effectiveness of environmental concern influences willingness towards finding accessible behavior, in which positive attitudes towards individual effort leads to consistently practicing waste management actions through simpler means such as using reusable shopping bags. However, the discussion present in the article is limited to how these measures affect wide-scale action within communities that are highly exposed to environmental consequences. The study highlights how the cultivation of individual action opens opportunities for a wider-scale contribution towards resolving environmental issues. Insights regarding how analyzing pro-environmental efforts relates to other factors concerning attitudes are limited, as they are grounded within the context of perceived consumer effectiveness (PCE). The exploration of other variables may aid in the development of sustainable waste management strategies.

Yamtana et al. (2023) discusses the effects of policies concerning waste management, community participation, and technology in waste treatment technology with regards to the levels of environmental pollution in West Java. Results show that policy enforcement greatly impacts solution formulation, such as the promotion of recycling and renewable energy programs. Policy structures that advocate practices of sustainable waste management are essential (Hertati, 2023, as cited in Yamtana et al., 2023), and strict imposition of regulations concerning waste disposal and the incentivization of recycling have displayed reduced pollution in numerous regions (Yalcintas et al., 2023, as cited in Yamtana et al., 2023). Similarly, findings present the importance of community participation as an essential factor that improves skills, in which community empowerment towards taking initiative aids in the promotion of inclusive solutions. The value of community participation should be recognized by policymakers and integrated into waste management strategy formulation in order to achieve sustainable outcomes. Additionally, technology also plays a vital role in waste management, which includes composting and material recovery which are able to lower the effects of pollution. On the other hand, the influence of social norms must be addressed through various campaigns, in which the modification of existing norms could potentially be modified with the help of community engagement.

Zhuang (2024) explores the role of social media in promoting environmental communication and public participation towards environmental issues. The study focuses on information cocoons, which limits the perspectives of individuals regarding these issues, causing misunderstandings regarding environmental protection. Furthermore, the need for research to delve into strategies for communication is highlighted, wherein pursuit of societal mobilization towards the promotion of participation and responsibility is needed in order to develop an equal and broad environment that is protected, as even small-scale practices such as plastic reduction are encouraged. The potential of social media as a platform for developing collective consciousness and effort is emphasized. Additionally, strategies involved in encouraging public participation were discussed, which includes information dissemination from various perspectives and the presentation of positive effects of environmental actions. Nonetheless, there is a gap in the exploration of these strategies within the context of solid waste management, as well as in various local communities. The study also focuses on Generation Z feedback analysis, and does not account for other demographics.

Abubakar et al. (2022) analyzes the effects of solid waste management practices towards the health of individuals and the environment within cities of the Global South. Solid waste mismanagement is highlighted as a global challenge towards the degradation of the environment. With numerous low-income nations collecting only around 10% of suburban garbage, environmental and health-related concerns such as increased cases of diarrhea and respiratory diseases arise, especially to individuals who live near garbage sites. Common issues were identified, such as mixing hazardous and household waste, the lack of proper waste collection facilities, and the use of improper methods such as incinerators that are open-air and non-engineered landfills. These effects contribute to air and water pollution, land degradation, methane emission and other harmful chemicals that may cause disease, especially within the marginalized sector. Recommendations for more efficient solid waste management were discussed, such as the use of an integrated approach, strengthening environmental regulations, raising public

awareness, and using new technology to minimize the negative effects of current systems. A gap exists within the aspect of identifying how specific countries within the Global South affects choosing solid waste management approaches that would be appropriate and consistent within local contexts.

Navarra (2016) highlights the challenges faced by BASECO residents as a community vulnerable to disasters such as flooding and storm surges. The study emphasizes the importance of communal unity in resilience amidst unstable income, infrastructure, and opportunities. Local initiatives and collective action towards addressing disaster brought upon by environmental challenges. Small efforts were also given attention, including small-scale home renovation, environmental cleaning, and tree planting. With many BASECO residents voicing their interest to contribute to solutions, there is a belief that the government must exercise similar levels of effort in order to decrease community vulnerability, in which the government is expected to initiate proper waste disposal, ensuring drainages are clear. There exists a gap regarding the lack of long-term solutions that are focused towards addressing the root causes of vulnerability. Community solutions are often only temporary or reactionary measures. A deeper analysis on the wider-scale ecological effects of local solutions is also lacking.

Molina & Catan (2021) discuss the level of knowledge and practices on solid waste management of senior high school students from a state college in Zamboanga. Results show that the students have sufficient knowledge regarding the definition of solid waste, effects of mismanagement, prohibited activities, school initiatives, and overall significance of solid waste management. However, knowledge regarding laws and regulations are low. Television, radio, social media, and their parents served as primary sources of information regarding the matter. Ineffective strategies in disseminating information regarding solid waste management leads to lessened awareness and participation within the public when it comes to solid waste management programs (Nolasco et al., 2019, as cited in Molina & Catan, 2021). In line with this, it is recommended that schools and various organizations should strive towards strong dissemination of information regarding the legal fields of solid waste management through the aforementioned platforms. Nonetheless, there is a gap in identifying the long-term effect of communicating through education towards waste management practices. Additionally, school initiatives on spreading awareness about the concrete effects of laws and regulations on a wider scale of society were not totally explored.

Limon et al. (2020) focuses on beliefs and practices of chosen households in a rural municipality in the Philippines regarding solid waste management. Results revealed issues faced by citizens practicing traditional and modern solid waste management. It was also discovered that participant knowledge regarding solid waste management was low, and results yielded low reusing and recycling habits. While households tend to be prepared to participate in waste management, there is a need for guidance and assistance from the local government. Collaboration between residents and authorities is essential towards improving solid waste management and minimizing unsustainable practices, which could be done through initiatives such as workshops and campaigns. However, information regarding the long-term effect of these programs towards the attitudes of the residents towards waste management is limited.

Versoza et al. (2024) focuses on the level of awareness and practices in solid waste management of 399 households within coastal

barangays in Mati, Davao Oriental. Knowledge and practices regarding solid waste management were measured, as well as how they are affected by socio-demographic variables. While findings show a moderate level of awareness and experience, knowledge regarding laws and regulations, particularly Republic Act 9003 and local ordinances about solid waste management. The study highlights how unfamiliarity with legal and regulative solid waste management conditions presumably serve as an obstacle towards resident conformity with regards to solid waste management practices within coastal communities. Despite having identified the effects of socio-demographic variables, there remains a gap in a deeper analysis regarding the effect of interventions specific to communities, as well as how these would directly help improve solid waste management practices in a wider context.

Adefris et al. (2023) highlights the challenges brought upon by the absence of regular solid waste segregation. The study emphasizes how the lack of segregation practices within developing countries such as Ethiopia contributes to health and environmental issues amidst increased waste generation. The findings within this literature reinforces the significance of regular segregation and the need for efforts to raise awareness in pursuit of improving solid waste management, especially in areas such as BASECO that are vulnerable to environmental consequences. While the study is able to identify household segregation practices,there is a gap in applying the findings in order to develop strategies and interventions that involve necessary incentivization towards solid waste management, especially in urban communities that house larger populations and quantities of trash.

Libao et al. (2018) explores the effects of littering to flooding in Barangay Lalayat, San Jose, Batangas. The study shows that the flooding present in the area is caused by clogged canals due to improper waste disposal. Results also highlight the negative effects of flooding, such as health risks, environmental degradation, and lifestyle disruption among residents. Libao et al. (2018) highlights effective drainage systems and cleaning of waterways as essential community solutions, as the accumulation of water during drainage clogging is what leads to flooding, causing water flow to be stopped as it rises instead. The participants believe that the flooding issue serves as a hindrance to their community ties, in which factors such as livelihood and property are affected. While flooding being a primary issue faced by communities is explored in literature, research regarding advocacies for innovative programs or strategies regarding waste management to solve flooding is still lacking.

Kalra (2019) underscores the importance of community participation towards waste management. It presents the significance of stakeholders such as the government, citizens, NGOs, and other organizations towards providing effective and efficient solutions for waste issues. Additionally, the study also delves into success stories from various countries such as Singapore, Japan, Netherlands, and India, which have proved the effectiveness of community participation in waste management. For resources to be carried into efficient waste management systems, the local government needs to ensure that the residents are willing to cooperate and that they understand waste mismanagement consequences. The analysis shows that a community willing to participate is essential in order to develop organized and sustainable systems in waste management. While the study cites success stories within the realm of community participation in other countries, there is limited exploration in various contexts, especially in areas where there is a low level of willingness to participate. The study was also

unable to delve into specific variables that affect community willingness towards supporting environmental programs.

METHODOLOGY

Research Design

The researchers employed a quantitative approach, a process involving the analysis of collected numeric data (Bhandari, 2023). This approach was carried out as the solid waste management of BASECO residents were measured using the Theory of Planned Behavior (TPB) by Ajzen (1985), and the degree of influence were evaluated to establish interpretations. The study used an experimental design which tests a hypothesis and determines the effect of an independent variable on a dependent variable (Bevans, 2019). In line with this, a pre-experimental research design, particularly a one-group pretest-posttest was utilized as the study had one single group consisting of 30 selected BASECO residents from the sample who will undergo the intervention. These individuals were not from a pre-established or naturally occurring group, only residents from different backgrounds put into one sample. This research design is appropriate as there was no control group present, and it was used to measure the effects of the intervention (Manifold, n.d.).

Population and Sampling

The study's sample consists of 30 selected residents from the BASECO Compound of Manila following the age range of 25-61. This category follows the age of maturity, in which these individuals have a higher level of rationality regarding behavior strategy compared to the youth, which is in line with standards for the inclusion criteria (Dyussenbayev, 2017). Additionally, Singh (2023) states that a minimum of 30 participants is recommended in quantitative studies in order to ensure a reliable, balanced and adequate interpretation. BASECO Compound residents were purposely chosen due to their experiences in their community as BASECO is affected by solid waste pollution. By choosing residents of BASECO, the researchers viewed different kinds of perspectives from people who have experienced these challenges firsthand.

Inclusion criteria required at least 3 years of residency in BASECO in order to substantially back up the gathered answers that reflect the community's experiences. Furthermore, the selected participants were aimed to be the heads of their respective families to facilitate diverse representation, reasonable insights, and effective discourse as household heads are believed to hold a meaningful amount of influence on family behavior and decisions in developing countries (Morakinyo et al., 2015, as cited in Nwankpa et al., 2024). While exclusion basis included those who have had less years of residency and experience particularly considering the solid waste concerns of the compound.

Instrumentation

The researchers made use of a survey questionnaire as instrumentation. As stated by Hellevik (2019), survey questionnaires are a technique used by researchers to collect data from participants through a series of questions designed to gather specific information such as the respondent's beliefs, opinions, behaviors on a certain subject and personal background. Survey questionnaires are specifically made to be confidential and to reduce bias.

The survey questionnaire contains a series of categorized questions using the Likert scale to answer.

- Questions 1-5 are adapted from the Second Minnesota Report Card on Environmental Literacy (Questions 26-29) to dwell on personal attitudes.
- Questions 6-10 are adapted from the Second Minnesota Report Card on Environmental Literacy (Questions 9-18) to measure subjective norms.
- Questions 11-15 are adapted from the Resident's Preference for Urban Green Space Types and their Ecological-Social Services in China (Questions 3-7) to focus on perceived behavioral control.
- Questions 16-20 are adapted from the Second Minnesota Report Card on Environmental Literacy as well (Questions 17, 21, 25, 29-32) in order to evaluate the intentions.

Statistical Treatment

The data collected in alignment with the measurement of the locals of BASECO Compound's solid waste management based on the variables of the Theory of Planned Behavior (TPB) were analyzed using descriptive and inferential statistics. Descriptive statistics, specifically acquiring the frequency and percentage, targeted the paper's first research inquiry on the demographics of the locals. However, the second research question used obtaining mean scores for statistical treatment. With the sample of the study being normally distributed, the mean is a reliable measure for the data (Turney, 2022). The ordinal data derived from the Likert scale-based questions were measured using the mean to arrive at the average.

When analyzing the third research question in the research however, a paired t-test was used given its comparative nature. To identify whether there was a significant difference in the solid waste management through the level of intention among the same participants pre and post-intervention, the parametric test, paired t-test, was utilized given the normality of data in the study (McClenaghan, 2024).

Data Gathering Procedure

In order to have gathered data, the researchers followed the procedure of:

1. Asking for consent from the school administration, specifically Learning Community 6 (LC6), in order for the researchers to be able to contact the barangay administration of BASECO, Manila under the La Salle Green Hills contact information as a representation of the researchers.
2. After contacting the barangay administration, 30 participants who meet the criteria of: 25-61 years old and head of the household who currently live in BASECO Compound, Manila will be scouted to participate in the researchers' communication plan.
3. The following participants will receive a letter of invitation with detailed information regarding the discussion with a consent form that will include the Data Privacy Act of 2012 to ensure their safety and privacy security.
4. Prior to their participation in any activity related to the communication plan, the participants will be answering a pre-test questionnaire to establish a baseline for the standards included in the evaluation of data.
5. The participants will be participating in the workshop program as the first stage of the communication plan.
6. The whole process and documentation of the workshop program will be included in the infographic brochure that the selected BASECO residents will receive following the publication of the material.

7. After the infographic brochure's distribution, the selected BASECO residents will be answering the same questionnaire as before—as a post-test. This will determine the outcome of the communication plan.
8. By the end of the data gathering process, the researchers will compare the pre and post-test results using the statistical method, paired t-test or the Wilcoxon Matched-Pairs Signed-Rank Test. This will provide results that will determine whether or not there would be an identified improvement in the level of intention toward solid waste management within the selected residents in BASECO Compound, Manila.
9. The extracted data will be stored in a Microsoft Excel Software exclusive for the researchers' view and access only. This is to ensure the confidentiality of the respondents' answers and protect their privacy.

Ethical Guidelines and Informed Consent

Throughout the data gathering procedure, the researchers would be guided by ethical guidelines as decreed by the Republic Act 10173—the Data Privacy Act of 2012. This is to ensure the fundamental right of the respondents to their privacy. Confidentiality of personal and sensitive information is to be held at the highest degree. Furthermore, any discourse between the researchers and the respondents inside and outside of the survey questionnaire are to ensure that there will be no harm dealt. In any instance, the respondents hold the right to decline participation with their personal wellbeing the priority.

RESULTS

This section contains the conclusions from the acquired data, which are grouped together in order to address the research questions. Personal Attitudes, Subjective Norms, and Perceived Behavioral Control are the key variables in determining relevant results and data reinforced by data analysis.

Presentation of Data

Demographic Profile

The demographic profiles of the respondents are: age, educational attainment, and sex. The respondents' ages are classified into three brackets: 25-40, 41-50, and 51-61. The educational attainment levels are: No Formal Education, Elementary, and Secondary/High School. Sex is divided into two categories: Male and Female.

Table 1: Demographic Profile in terms of Age

Table 1 shows that 15 of the respondents are aged 41-50 that is 50.00% of the total respondents. 9 of the respondents are aged 51-61 with 30.00%. And 6 are aged 25-40 covering 20.00% of the total respondents.

Age	Frequency	Percentage
25-40	6	20.00%
41-50	15	50.00%
51-61	9	30.00%

Table 2: Demographic Profile in terms of Educational Attainment

Table 2 displays that 15 of the respondents obtained Elementary-level

education which covers the 50.00% of the total respondents. 8 respondents attained Secondary or High School level that is the 26.67% of the total respondents. And 7 respondents with no formal education covers the 23.33% of the total respondents.

Educational Attainment	Frequency	Percentage
No Formal Education	7	23.33%
Elementary	15	50.00%
Secondary/High School	8	26.67%

Table 3: Demographic Profile in terms of Sex

Table 3 shows that 13 of the respondents are male covering 43.33% of the total respondents. While 17 of the respondents are female which is 56.67%% of the total respondents.

Sex	Frequency	Percentage
Male	13	43.33%
Female	17	56.67%

Pre-test Results

The pre-test results exhibit positive feedback towards their Personal Attitudes, Subjective Norms, and Perceived Behavioral Control in Solid Waste Management. The mean score for Personal Attitudes is 3.526, Subjective Norms at 3.254, while 3.466 for Perceived Behavioral Control; all interpreting that respondents "Strongly Agree" with each variable. These scores indicate that the respondents generally "Agree" with the statements suggesting that there is a positive baseline prior to the intervention.

*Table 4: Personal Attitudes on Solid Waste Managemen*t

	Mean	Verbal Interpretation
1. *Nararamdaman kong personal na responsibilidad ang kumilos upang mabigyang solusyon ang mga isyu sa basura sa aming lugar. (I feel a personal responsibility to do an action that can mitigate solid-waste issues in my community)*	3.47	Strongly Agree
2. Nararamdaman ko na ang aking mga gagawin ayon sa tamang pagtapon ng basura ay may posibleng	3.50	Strongly Agree

	epekto sa mga isyung kapaligiran. *(I feel that my choice of action towards solid-waste management will impact environment al issues.)*		
3.	Naniniwala ako na ang bawat aksyon ay maaaring makaapekto sa mga isyu sa basura. *(I believe that individual actions can make an impact on solid-waste management issues.)*	3.53	Strongly Agree
4.	Naniniwala ako na ang pagsasagawa ng mga mas epektibong batas at regulasyon ukol sa tamang pagtapon ng basura ay mas makababuti sa kapaligiran. *(I believe that implementati on of stronger regulations about proper waste management will result in a better environment.)*		
5.	Naniniwala ako na ang pagtutulunga n at kolektibong aksiyon sa tamang pagtapon ng basura ay makatutulon g sa pagbawas ng mga isyung pangkapaligi ran. *(I believe that collective actions regarding proper waste management will help in mitigating environment al* issues.)	3.60	Strongly Agree
	Total	**3.526**	**Strongly Agree**

Table 4 yields a total mean of 3.526, which has a verbal interpretation of “Strongly Agree”. This shows that pre-intervention, participants possess a positive perspective

towards their responsibility towards proper solid waste management. Items that identify the importance of collective action (3.60) and the belief that each action affects environmental issues (3.53) also carry high mean scores. This shows that the participants are highly aware of the effects of their individual and collective contributions before the intervention was carried out.

Table 5: Subjective Norms on Solid Waste Management

		Mean	**Verbal Interpretation**
6.	Ang maling pagtapon ng basura ay ang madalas na sanhi ng mga isyung pangkalikasan sa BASECO. *(Improper waste management is the most common cause of environmental issues in BASECO.)*	3.37	Strongly Agree
7.	Ang pinakamadalas na nangyaring kalamidad sa BASECO ay ang pagbaha dahil sa pag-ipon ng basura sa mga kanal at daluyan ng tubig. *(Floods are the most experienced natural disaster in BASECO because of accumulated trash in drainages and waterways.)*	3.20	Strongly Agree
8.	Sa kasalukuyan, hindi pa rin sapat ang mga solusyon tungkol sa pag-ipon ng basura sa BASECO. *(There is still no effective solution for accumulated trash in BASECO.)*	3.17	Strongly Agree
9.	Ang kakulangan sa kaalaman patungkol sa tamang pagtapon ng basura ay ang dahilan ng mga isyung pangkalikasa	3.23	Strongly Agree

n sa BASECO. *(The lack of knowledge on proper waste management possibly causes environmental issues in BASECO.)*		
10. Hindi naisasagawa ang maayos na pamamahala sa basura dahil sa mga panlipunang kaugalian. *(Social norms prevent the adoption of solid-waste management.)*	3.30	Strongly Agree
Total	**3.254**	**Strongly Agree**

The results in Table 5 hold a total mean of 3.254, which highlights a high level of awareness regarding the relation of social norms and solid waste management in BASECO pre-intervention. The data in particular were able to identify high mean scores in the items regarding the lack of knowledge in proper waste disposal as a cause of environmental issues (3.23), and the hindrance of solid waste management adoption due to social norms (3.30).

Table 6: Perceived Behavioral Control on Solid Waste Management

	Mean	**Verbal Interpretation**
11. Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng The Clean Air Act of 1999 na pumipigil sa polusyon sa hangin ay sapat. *(The current laws and regulations in BASECO preventing air pollution like The Clean Air Act of 1999 are adequate.)*	3.43	Strongly Agree
12. Ang mga kasalukuyang batas at regulasyon sa BASECO na pumipigil sa polusyon katulad ng Ecological Solid Waste Management Act galing sa plastik ay sapat. *(The*	3.50	Strongly Agree

	current laws and regulations in BASECO preventing plastic pollution like the Ecological Solid Waste Management Act are adequate.)		
13.	Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng Philippine Clean Water Act of 2004 na nagpapababa ng basura na nakaka-apekto sa kontaminasyon sa tubig ay sapat. *(The current laws and regulations in BASECO preventing plastic pollution like the Philippine Clean Water Act of 2004 that aims to reduce the waste that contaminate*	3.30	Strongly Agree
	s water are adequate.)		
14.	Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng Philippine Environmental Code (1977) na nagbibigay gabay sa pangangalaga sa kapaligiran sa tulong ng solid-waste management ay sapat. *(The current laws and regulations in BASECO like the Philippine Environmental Code of 1977 that gives a guide in taking care of the environment including solid-waste management are adequate.)*	3.63	Strongly Agree
15.	Ang mga kasalukuyang batas at regulasyon sa BASECO	3.47	Strongly Agree

katulad ng Local Government Code of 1991 na nagbibigay responsibilidad para sa mga Local Government Units (LGU) na mamahala sa tamang pagtapon ng basura ay sapat. *(The current laws and regulations like the Local Government Code of 1991 that gives tasks to the Local Government Units (LGUs) for solid-waste management are adequate.)*		
Total	**3.466**	**Strongly Agree**

The results of Table 6 under perceived behavioral control hold a total mean of 3.466, which show that the participants are confident in the effectiveness of existing solid waste management laws and regulations in BASECO. The highest mean scores are from the items stating that the Philippine Environmental Code of 1977 is a sufficient guide for environmental care (3.63), and that the Ecological Solid Waste Management Act is adequate in preventing plastic pollution (3.50). The data shows that the participants recognize that existing laws allow individuals to manage solid waste properly pre-intervention.

Post-test Results

The post-test results show that there is an improvement in the respondents' Personal Attitudes, Subjective Norms, and Perceived Behavioral Control. The total mean score for Personal Attitudes is at 3.872, Subjective Norms at 3.674, and 3.658 for Perceived Behavioral Control all arranged at "Strongly Agree". This indicates that the respondents' scores raised and the intervention had a positive effect upon them.

Table 7: Personal Attitudes on Solid Waste Management

	Mean	**Verbal Interpretation**
1. Nararamdaman kong personal na responsibilidad ang kumilos upang mabigyang solusyon ang mga isyu sa basura sa aming lugar. *(I feel a personal responsibility to do an action that can mitigate solid-waste*	3.90	Strongly Agree

	issues in my community.)		
2.	Nararamdaman ko na ang aking mga gagawin ayon sa tamang pagtapon ng basura ay may posibleng epekto sa mga isyung kapaligiran. *(I feel that my choice of action towards solid-waste management will impact environmental issues.*	3.87	Strongly Agree
3.	Naniniwala ako na ang bawat aksyon ay maaaring makaapekto sa mga isyu sa basura. *(I believe that individual actions can make an impact on solid-waste management issues.)*	3.83	Strongly Agree
4.	Naniniwala ako na ang pagsasagawa ng mga mas epektibong batas at regulasyon ukol sa tamang pagtapon ng basura ay mas makababuti sa kapaligiran. *(I believe that implementation of stronger regulations about proper waste management will result in a better environment.)*	3.90	Strongly Agree
5.	Naniniwala ako na ang pagtutulungan at kolektibong aksiyon sa tamang pagtapon ng basura ay makatutulong sa pagbawas ng mga isyung pangkapaligiran. *(I believe that collective actions regarding proper waste management will help in mitigating environmental issues.)*	3.86	Strongly Agree
Total		**3.872**	**Strongly Agree**

In Table 7, there is an observable increase in the level of understanding regarding personal views and attitudes towards solid waste management, with a total mean of 3.872, which is higher than the pre-test results (3.526). The highest mean scores can be

extracted from the items regarding the personal responsibility to act in order to provide solutions for waste issues within the community, and the belief that creating more effective laws and regulations regarding proper waste management would benefit the environment, with both having scores of 3.90. Results show that post-intervention, the level of awareness regarding personal responsibility has increased.

Table 8: Subjective Norms on Solid Waste Management

		Mean	**Verbal Interpretation**
6.	Ang maling pagtapon ng basura ay ang madalas na sanhi ng mga isyung pangkalikasan sa BASECO. *(Improper waste management is the most common cause of environmental issues in BASECO.)*	3.63	Strongly Agree
7.	Ang pinakamadalas na nangyaring kalamidad sa BASECO ay ang pagbaha dahil sa pag-ipon ng basura sa mga kanal at daluyan ng tubig. *(Floods are the most experienced natural disaster in BASECO because of accumulated trash in drainages and waterways.)*	3.77	Strongly Agree
8.	Sa kasalukuyan, hindi pa rin sapat ang mga solusyon tungkol sa pag-ipon ng basura sa BASECO. *(There is still no effective solution for accumulated trash in BASECO.)*	3.70	Strongly Agree
9.	Ang kakulangan sa kaalaman patungkol sa tamang pagtapon ng basura ay ang dahilan	3.70	Strongly Agree

	ng mga isyung pangkalikasan sa BASECO. *(The lack of knowledge on proper waste management possibly causes environmental issues in BASECO.)*		
10.	Hindi naisasagawa ang maayos na pamamahala sa basura dahil sa mga panlipunang kaugalian. *(Social norms prevent the adoption of solid-waste management.)*	3.57	Strongly Agree
Total		**3.674**	**Strongly Agree**

Results in Table 8 have seen an increase in the level of understanding regarding how social norms affect the adoption of solid waste management, with a total mean of 3.674 compared to the value of 3.254 from the pre-test. The highest means are present in the items regarding trash accumulation in drainages as a primary cause of floods (3.77), and the lack of effective solutions for accumulated trash in BASECO (3.70). The data present a more consistent understanding of the need for concrete solid waste management solutions within the community post-intervention.

Table 9: Perceived Behavioral Control on Solid Waste Management

		Mean	**Verbal Interpretation**
11.	Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng The Clean Air Act of 1999 na pumipigil sa polusyon sa hangin ay sapat. *(The current laws and regulations in BASECO preventing air pollution like The Clean Air Act of 1999 are adequate.)*	3.60	Strongly Agree
12.	Ang mga kasalukuyang batas at regulasyon sa BASECO na pumipigil sa polusyon	3.73	Strongly Agree

	katulad ng Ecological Solid Waste Managemen t Act galing sa plastik ay sapat. *(The current laws and regulations in BASECO preventing plastic pollution like the Ecological Solid Waste Managemen t Act are adequate.)*		
13.	Ang mga kasalukuyan g batas at regulasyon sa BASECO katulad ng Philippine Clean Water Act of 2004 na nagpapabab a ng basura na nakaka-apek to sa kontaminasy on sa tubig ay sapat. *(The current laws and regulations in BASECO preventing plastic pollution*	3.63	Strongly Agree

	like the Philippine Clean Water Act of 2004 that aims to reduce the waste that contaminate s water are adequate.)		
14.	Ang mga kasalukuyan g batas at regulasyon sa BASECO katulad ng Philippine Environmen tal Code (1977) na nagbibigay gabay sa pangangalag a sa kapaligiran sa tulong ng solid-waste management ay sapat. *(The current laws and regulations in BASECO like the Philippine Environment al Code of 1977 that gives a guide in taking care of the environment including solid-waste*	3.70	Strongly Agree

management are adequate.)		
15. Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng Local Government Code of 1991 na nagbibigay responsibilidad para sa mga Local Government Units (LGU) na mamahala sa tamang pagtapon ng basura ay sapat. *(The current laws and regulations like the Local Government Code of 1991 that gives tasks to the Local Government Units (LGUs) for solid-waste management are adequate.)*	3.63	Strongly Agree
Total	**3.658**	**Strongly Agree**

Post-intervention, results in Table 9 show that there is an increase in the value participants give to existing laws and regulations towards preventing pollution and enabling proper solid waste management, with a total mean score of 3.658. The mean of 3.73 for the Ecological Solid Waste Management Act and 3.70 for the Philippine Environmental Code show a higher level of acceptance and acknowledgement for established regulations. The total mean is an increase from the value of 3.466 from the pre-test.

Statistical Analysis

The statistical analysis reveals that there is a significant difference between the pre-test and post-test scores of the respondents in terms of their Personal Attitudes, Subjective Norms, and Perceived Behavioral Control. The figures will show the results of both surveys implying that their personal and collective impact on environmental action had improved after the intervention.

Figure 1: Personal Attitudes

			statistic	df	p	Mean difference
Paired Samples T-Test						
Pre-Test Scores (PA)	**Post-Test Scores (PA)**	**Student's t**	-4.07	29.0	<.001	-0.347

Note. H_a $\mu_{Measure\ 1 - Measure\ 2} \neq 0$

	N	Mean	Median	SD
Descriptives				
Pre-Test Scores (PA)	30	3.53	3.70	0.462
Post-Test Scores (PA)	30	3.87	4.00	0.238

Figure 1 shows a Mean score of 3.53 in the pre-test, and 3.87 in the post-test. Using the p value, it can be stated that there is a significant difference between the pre-test and post-test scores of the respondents in terms of

their Personal Attitudes with a Mean difference of -0.347.

Figure 2: Subjective Norms

			statistic	df	p	Mean difference
Paired Samples T-Test						
Pre-Test Scores (SN)	**Post-Test Scores (SN)**	**Student's t**	-3.71	29.0	<.001	-0.420

Note. H_a $\mu_{Measure\ 1 - Measure\ 2} \neq 0$

	N	Mean	Median	SD
Descriptives				
Pre-Test Scores (SN)	30	3.25	3.20	0.592
Post-Test Scores (SN)	30	3.67	4.00	0.408

Figure 2 shows a mean score of 3.25 in the pre-test and 3.67 in the post-test. Using the p value, it can be stated that there is a significant difference between the pre-test and post-test scores of the respondents in terms of their Subjective Norms with a Mean difference of -0.420.

Figure 3: Perceived Behavioral Control

			statistic	df	p	Mean difference
Paired Samples T-Test						
Pre-Test Scores (PBC)	**Post-Test (PBC)**	**Student's t**	-2.09	29.0	0.046	-0.193

Note. H_a $\mu_{Measure\ 1 - Measure\ 2} \neq 0$

	N	Mean	Median	SD
Descriptives				
Pre-Test Scores (PBC)	30	3.47	3.60	0.479
Post-Test (PBC)	30	3.66	3.90	0.464

Figure 3 shows a Mean score of 3.47 in the pre-test and 3.66 in the post-test. Using the p value, it can be stated that there is a significant difference between the pre-test and post-test scores of the respondents in terms of their Perceived Behavioral Control with a Mean difference of -0.193.

Interpretation

Based on the results of the pre-test and post-test, there was an observable increase in the level of intention of the selected BASECO residents in terms of solid waste management after the implementation of the communication plan. Due to time constraints, only the workshop part of the intervention was carried out, which included a keynote talk delivered by the invited DENR representative to gauge personal attitudes, community planning for subjective norms, a waste segregation game for perceived behavioral control, and a pledge for general intentions.

Regarding personal attitudes on solid waste management, participants exhibited high mean scores both in the pre-test and post-test. Nonetheless, the mean score has seen an increase from 3.53 to 3.87 post-intervention, with both falling under the verbal interpretation of "Strongly Agree". In the pre-test, the highest mean score is present in the responses to the statement *"I believe that collective actions regarding proper waste management will help in mitigating environmental issues"* (3.60), followed by *"I believe that individual actions can make an impact on solid-waste management issues"* (3.53). For the post-test, These scores show a high level of awareness with regards to how the presence of individual responsibility and collective action impacts proper solid waste management. The majority's strong agreement is in accord with Zhuang (2024), which showcases the weight of communal unity in driving action within ecological causes, as well as with Brotosusilo et al. (2020), a study that suggests having awareness of one's personal actions significantly influences effective solid waste management. In the post-test, the highest means were present in *"I feel a personal responsibility to do an action that can mitigate solid-waste issues in my community"* (3.90) which saw the highest improvement

from 3.47, and *"I believe that implementation of stronger regulations about proper waste management will result in a better environment" (3.90)*. These align with Nguyen et al. (2023), wherein the study's use of the theory of Social Practice highlighted that the lack of personal responsibility and coordination with the local government may lead to inconsistencies with practices such as proper waste management, and emphasize the importance of observing strict regulations to ensure a decline in pollution and creation of inclusive solutions like recycling as pointed out by Yamtana et al. (2023).

Upon analyzing the results under subjective norms, high mean scores were also present in both the pre-test and post-test, yielding total means of 3.25 and 3.67 respectively, both verbally translating to "Strongly Agree." These results signify a high level of awareness regarding how social norms affect solid waste management. For the pre-test, the highest mean scores were present in "*Improper waste management is the most common cause of environmental issues in BASECO"* (3.37), and *"Social norms prevent the adoption of solid-waste management"* (3.30). The findings align with Abubakar et al. (2022), in which their study connects improper waste management to the continuous degradation of the environment and increase in health complications, as well as with results found in Limon et al. (2020), which found that solid waste management was limited as their residents experienced a lack of support from their local government and community. Post-intervention, the highest means could be found in *"Floods are the most experienced natural disaster in BASECO because of accumulated trash in drainages and waterways"* (3.20), *"There is still no effective solution for accumulated trash in BASECO"* (3.17), and *"The lack of knowledge on proper waste management possibly causes environmental issues in BASECO"* (3.23). These findings mirror the assertions by Navarra (2016) which highlight the vulnerability of BASECO to floods due to accumulated waste, the reactive nature of initiatives within the community which urges for sustainable and systematic plans to address the root cause of issues brought upon by trash, as well the findings in a study by Molina & Catan (2021) which identifies low awareness on solid waste management as a direct reason that explains limited participation. This stresses the significance of having more campaigns and promotions in order to increase the awareness of the residents, which also serves as a form of solution to minimize solid waste mismanagement.

The case is similar for perceived behavioral control, wherein mean scores were high across the pre-test and post-test. The total mean scores of 3.47 and 3.66 suggest a high level of acknowledgement for existing laws and regulations, both verbalizing into "Strongly Agree". In the pre-test, the highest scores were seen in *"The current laws and regulations in BASECO preventing plastic pollution like the Ecological Solid Waste Management Act are adequate"* (3.50), and *"The current laws and regulations in BASECO like the Philippine Environmental Code of 1977 that gives a guide in taking care of the environment including solid-waste management are adequate"* (3.63). For the post-test, the highest means were in "*The current laws and regulations in BASECO preventing plastic pollution like the Ecological Solid Waste Management Act are adequate"* (3.73), and *"The current laws and regulations in BASECO like the Philippine Environmental Code of 1977 that gives a guide in taking care of the environment including solid-waste management are adequate"* (3.70). These results prove to be significant as Versoza et al. (2024) suggests that not being aware of these regulations may be a prominent obstacle to effective compliance of residents in

contributing to solid waste management. The turnout may indicate a current development in the spread of learning to residents regarding government initiatives through these policies.

Upon statistical analysis, it could be concurred that there is a significant difference between the pre-test and post-test scores of the participants in terms of Personal Attitudes, Subjective Norms, and Perceived Behavioral Control, with the p-values being less than 0.05 across all variables. The p-values were <.001, <.001, and 0.046 respectively. This means that there is a significant difference between the respondents' level of intention toward solid waste management before and after the implementation of the communication plan, rejecting the null hypothesis and accepting the alternative hypothesis. For personal attitudes, the total mean score rose from 3.53 to 3.87, with a mean difference of -0.347. In terms of subjective norms, the increase was from 3.25 to 3.67 with a mean difference of -0.420. Lastly, the total mean went up from 3.47 to 3.66 under perceived behavioral control with a mean difference of -0.193. These results align with the findings of Brotosusilo et al. (2020), which identified individual understanding towards environmental issues as a factor that raises participation in solid waste management, as well as the role of social community activities in influencing engagement which was present in the activity catered for personal attitudes within the workshop. Similarly, the changes within subjective norms and perceived behavioral control solidify the ideas of empowerment and social norms as mentioned by Yamtana et al. (2023), in which it is said that the presence of policies that support waste management positively affect resident behavior. It is evident that the Social Behavioral Change Communication Plan was effective in promoting behavioral change, in which the respondents gained new perspectives and accomplished the intervention with newfound responsibility through different channels of communication, which was a workshop within this context. It was able to facilitate behavioral change through various activities as cited in Adu-Asare (2024). The results show that intergenerational knowledge aimed towards collective action was established, which reinforces Hayward et al. (2018), Danby and Mason (2011), and Thiery et al. (2021) as cited in Atkinson (2021).

DISCUSSION

This study is aimed at analyzing the effect of a Social Behavioral Change Communication plan on the level of intention of selected BASECO residents towards proper solid waste management using the Theory of Planned Behavior (Ajzen, 1991) through analyzing their personal attitudes, subjective norms, and perceived behavioral control on solid waste management. The communication plan contained a worksop program consisting of activities each catered towards the theoretical values.

With the conducted intervention, the activities served as the mediums of communication aimed to facilitate social and behavioral change towards proper solid waste management. While the infographic brochure was not implemented due to time constraints, the workshop still served to be effective in initiating change regardless of the pre-existing high awareness levels before the intervention as displayed by the significant increase in the mean scores.

The keynote talk given by the DENR representative served as an aid in providing knowledge to the participants regarding the current environmental situation in their community, as well as the significance of proper solid waste management and the necessity of solutions in the form of

interventions such as the workshop being conducted on the day. The brief discussion was vital in strengthening their personal attitudes towards their responsibility in environmental action, which resulted in the mean increase of 3.53 to 3.87 post-intervention.

The community planning in which the participants gathered to discuss vulnerable areas and challenges faced by BASECO highlighted the importance of community participation in providing solutions. Through collective planning, their understanding of the influence of social norms in solid waste management was deepened, which was evident in the mean scores rising from 3.25 towards 3.67.

The segregation game in which participants had to categorize cutout pictures of common waste items in the area under the classifications given by RA 9003 (Ecological Solid Waste Management Act of 2000) helped in raising their awareness towards existing laws and regulations, as well as their confidence in properly following them. The activity helped in mobilizing perceived behavioral control, raising the mean score from 3.47 to 3.66 in the post-test.

The pledge between residents that was carried out contained their promises of acting towards solid waste management, highlighting their general intentions to act as a part of the solution within their community.

Overall, the activities were able to push for Social Behavioral Change among participants, displaying how effective communication and interactive forms of information dissemination serves as a crucial step in promoting long-term changes within the community.

Conclusion

The study explored how the implementation of a Social Behavioral Change Communication plan affects the level of intention of selected BASECO residents towards solid waste management through Icek Ajzen's Theory of Planned Behavior. The locals' level of intention pre and post-intervention could be described as strong upon assessment of personal attitudes, subjective norms, and perceived behavioral control. Results show that there is a significant difference among the level of intention in terms of personal attitudes, subjective norms, and perceived behavioral control before and after the communication plan was carried out, displaying an increase in the participants' level of intention from the pre-test to the post-test. Findings highlight the significance of communication strategies and interactive workshop activities in mobilizing solid waste management.

Recommendations

The researchers recommend the implementation of communication plans in communities that face similar challenges in terms of solid waste management. Communication plans may be utilized as information dissemination and education strategies to push for certain agendas depending on the context. Additionally, future interventions may explore the implementation of infographics and other visual aids as part of the communication plans in pursuit of maintaining long-term impact, serving as supplementary aids for interactive workshops.

Future research may also explore the intersection of resident demographics and intentions to delve deeper into the dynamics of demographic variables and individual behavior within the context of solid waste management and environmental action. Lastly, follow-up

studies may be conducted to measure the long-term efficacy of conducted workshop activities.

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APPENDIX A:

Invitation Letters to ABM-R Strand Coordinator and Barangay Captain

December 3, 2024

Mr. Harold A. Diokno
ABM-R Strand Coordinator
La Salle Green Hills Senior High School

Dear Mr. Diokno,

Greetings in St. La Salle!

We are a group of Grade 12 students consisting of Jillian Casey Adarayan, Santia
Luis C. Donato, Andre Joseph P. Reyes, and Juan Rafael B. Santiago from section 12
undertaking a research entitled "Developing a Social Behavioral Chan
Communication Plan on the Solid Waste Management of Selected BASEC
Compound Residents of Manila City". We are humbly asking for your permission
conduct the needed surveys and workshop program for the study.

Attached are the validation certificates and research instrument sheets for yc
reference. We assure you that all safety protocols specified in our attachments wou
be followed and that adult supervision would be constant and recorded during testin

We are looking forward to our request and would merit your positive response.
Thank you very much!

Respectfully yours,

Juan Rafael B. Santiago
Leader

Joanna Marie B. Santiago
Parent

Noted by

Ms. Guia D. Gonzales, LPT, MAEd
Inquiries, Investigation and Immersion (III) Teacher

Approved by

Mr. Harold A. Diokno
Strand Coordinator, ABM-R

December 3, 2024

Ms. Diana Espinosa
Chairwoman of Barangay 649, BASECO Port Area
Manila City
Dear Ms. Espinosa,

Greetings in St. La Salle!

We are a group of Grade 12 students consisting of Jillian Casey Adarayan, Santiago Luis C. Donato, Andre Joseph P. Reyes, and Juan Rafael B. Santiago from section 12G, undertaking a research entitled "Developing a Social Behavioral Change Communication Plan on the Solid Waste Management of Selected BASECO Compound Residents of Manila City". We are humbly asking for your permission to conduct the needed surveys and workshop program for the study. We would also like to seek your assistance for scouting the thirty (30) needed participants for our study, preferably heads of households aged 25-61.

Attached are the validation certificates and research instrument sheets for your reference. We assure you that all safety protocols specified in our attachments would be followed and that adult supervision would be constant and recorded during testing.

We are looking forward to our request and would merit your positive response.
Thank you very much!

Respectfully yours,

Juan Rafael B. Santiago
Leader

Joanna Marie B. Santiago
Parent

Noted by

Ms. Guia D. Gonzales, LPT, MAEd
Inquiries, Investigation and Immersion (III) Teacher

Approved by

Mr. Harold A. Diokno
Strand Coordinator, ABM-R

APPENDIX B:

Letter for Instrumentation Validation

Research Title: Developing a Social Behavioral Change Communication Plan on the Solid Waste Management of Selected BASECO Compound Residents of Manila City

Santiago, Adarayan, Donato, Reyes
12- G

I. INTRODUCTION

BASECO Compound, the largest urban poor community in the port area of Manila, faces severe challenges related to solid waste management, contributing to its vulnerability to both natural and man-made disasters (World Vision, 2023). Inefficient drainage and sewage systems, combined with widespread income inequality and unstable infrastructure, have resulted in improper waste disposal practices that exacerbate flooding, pollution, and health risks in the area. Research reveals that residents often prioritize immediate socio-economic concerns over environmental actions, responding reactively rather than proactively to these issues (Valenzuela et al., 2020; Navarra, 2016).

Solid waste mismanagement remains a critical problem in BASECO, as residents grapple with the overwhelming volume of garbage generated. Despite occasional communal efforts like cleanup drives, sustainable strategies that align with long-term environmental goals are lacking. To address this gap, this study aims to develop a Social and Behavioural Change Communication (SBCC) plan focusing on solid waste management. The plan includes a workshop and an infographic brochure designed to engage the community, promote proper waste segregation, and empower residents to adopt sustainable waste management practices. Through this initiative, the study seeks to highlight the importance of proactive environmental behavior and its role in improving living conditions and resilience in BASECO.

II. OBJECTIVES/RESEARCH PROBLEM

A. Research Questions:

1. What is the demographic profile of the respondents in terms of:
   a. Age
   b. Educational background
   c. Income
2. How can the locals' level of intention toward solid waste management be described in terms of:
   a. Personal attitudes
   b. Subjective norms
   c. Perceived behavioral control
3. Is there a significant difference among the respondents' level of intention toward solid waste management before and after the implementation of the communication plan?

III. VARIABLES

A. The independent variable of this research is the Social and Behavioral Change Communication (SBCC) plan intervention comprising a workshop and infographic brochure, while the dependent variable to be measured is the environmental action of the BASECO residents through solid waste management.
B. Each variable is crucial to the study as the communication plan —the independent variable—will be able to provide assessment and will highly affect the overall performance and measurability of the dependent variable—the solid waste management of the BASECO Compound residents through the sub-variables: personal attitudes, subjective norms, and perceived behavioural control that may promote their intentions towards environmental action.

IV. RESPONDENTS/SAMPLE

A. The study will involve 30 residents of BASECO Compound, aged 25-61, selected for their maturity and firsthand experience with solid waste pollution. This age group aligns with inclusion criteria for rational behavior strategies (Dyussenbayev, 2017). Furthermore, the selected participants are aimed to be the heads of their respective families to facilitate diverse representation, reasonable insights, and effective discourse as household heads are believed to hold a meaningful amount of influence on family behavior and decisions in developing countries (Morakinyo et al., 2015, as cited in Nwankpa et al., 2024). A sample size of 30 ensures reliable and balanced data, as recommended in quantitative studies (Singh, 2023). Residents were purposely chosen to provide diverse perspectives on their community's challenges.

V. INSTRUMENT

A. The survey questionnaire will be composed of 20 questions separated into four parts mainly focused on the participants': personal attitudes (1-5), subjective norms (6-10), perceived behavioural control (11-15), and intentions (16-20).
B. **Questions 1-5** and **6-10** are adapted from the Second Minnesota Report Card on Environmental Literacy **(Questions 26-29** and **9-18)**. While questions in **11-15** were adapted from the Resident's Preference for Urban Green Space Types and their Ecological-Social Services in China (**Questions 3-7**), and **questions 16-20** adapted from the Second Minnesota Report Card on Environmental Literacy as well **(Questions 17, 21, 25, 29-32)**. These questions are to be answered using the Likert scale.

The sample survey questionnaire is:

Mga Katanungan *(Questions)*	4 Lubos na sumasang-ayon *(strongly agree)*	3 Sumasang-ayon *(agree)*	2 Hindi sumasang-ayon *(disagree)*	1 Lubos na hindi sumasang-ayon *(strongly disagree)*
1. Nararamdaman kong personal na responsibilidad ko ang kumilos upang masolusyonan ang mga isyu sa basura sa aming lugar. *(I feel a personal responsibility to do an action that can mitigate solid-waste issues in my community)*				
2. Nararamdaman ko na ang aking mga gagawin ayon sa tamang pagtapon ng basura ay may posibleng epekto sa mga isyung kapaligiran. *(I feel that my choice of action towards solid-waste management will impact environmental issues.)*				
3. Naniniwala ako na ang bawat aksyon ay maaring makaapekto sa mga isyu sa basura. *(I believe that individual actions can make an impact on solid-waste management issues.)*				
4. Naniniwala ako na ang pagsasagawa ng mga mas epektibong batas at regulasyon ukol sa tamang pagtapon ng basura ay mas makabubuti sa kapaligiran. *(I believe that implementation of stronger regulations about proper waste management will result in a better environment.)*				
5. Naniniwala ako na ang pagtutulungan at kolektibong aksiyon sa tamang pagtapon ng basura ay makatutulong sa pagbawas ng mga isyung pangkapaligiran. *(I believe that collective actions regarding proper waste management will help in mitigating environmental issues.)*				
6. Ang maling pagtapon ng basura ay ang madalas na sanhi ng mga isyung pangkalikasan sa BASECO. *(Improper waste management is the most common cause of environmental issues in BASECO.)*				
7. Ang pinakamadalas na mangyaring kalamidad sa BASECO ay ang pagbaha dahil sa pag-ipon ng basura sa mga kanal at daluyan ng tubig. *(Floods are the most experienced natural disaster in BASECO because of accumulated trash in drainages and waterways.)*				
8. Sa kasalukuyan, hindi pa rin sapat ang mga solusyon tungkol sa pag-ipon ng basura sa BASECO. *(There is still no effective solution for accumulated trash in BASECO.)*				
9. Ang kakulangan sa kaalaman patungkol sa tamang pagtapon ng basura ay ang dahilan ng mga isyung pangkalikasan sa BASECO. *(The lack of knowledge on proper waste management possibly causes environmental issues in BASECO.)*				
10. Hindi naisasagawa ang maayos na pamamahala sa basura dahil sa mga kasanayan at kaugalian. *(Social norms prevent the adoption of solid-waste management.)*				
11. Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng The Clean Air Act of 1999 na pumipigil sa polusyon sa hangin ay sapat. *(The current laws and regulations in BASECO preventing air pollution like The Clean Air Act of 1999 are adequate.)*				
12. Ang mga kasalukuyang batas at regulasyon sa BASECO na pumipigil sa polusyon katulad ng Ecological Solid Waste Management Act galing sa plastik ay sapat. *(The current laws and regulations in BASECO preventing plastic pollution like the Ecological Solid Waste Management Act are adequate.)*				
13. Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng Philippine Clean Water Act of 2004 na nagpapababa ng basura na nakaka-apekto sa kontaminasyon sa tubig ay sapat. *(The current laws and regulations in BASECO preventing plastic pollution like the Philippine Clean Water Act of 2004 that aims to reduce the waste that contaminates water are adequate.)*				
14. Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng Philippine Environmental Code (1977) na nagbibigay gabay sa pangangalaga sa kapaligiran sa tulong ng solid-waste management ay sapat. *(The current laws and regulations in BASECO like the Philippine Environmental Code of 1977 that gives a guide in taking care of the environment including solid-waste management are adequate.)*				
15. Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng Local Government Code of 1991 na nagbibigay responsibilidad para sa mga Local Government Units (LGU) na mamahala sa tamang pagtapon ng basura ay sapat. *(The current laws and regulations like the Local Government Code of 1991 that gives tasks to the Local Government Units (LGUs) for solid-waste management are adequate.)*				
16. Madalas akong nagtatapon ng basura sa tamang tapunan upang mapabuti ang pagsasagawa ng kalat o basura sa aming lugar. *(I regularly practise trash segregation to improve the waste management in our community.)*				
17. Madalas akong naglilinis at nagsusuri sa mga kanal upang mapabuti ang pamamahala ng mga basura o kalat sa aming lugar. *(I regularly clean and check my drainage holes to improve the waste management in our community.)*				
18. Handa akong mag-ambag ng gawain upang mapabuti ang pamamahala ng basura sa aming lugar. *(I am willing to contribute efforts to improve the solid waste management system in our community.)*				
19. May malaking tyansa na makikilahok ako sa mga programang magpapabuti sa kalagayan ng *solid waste management* sa aming komunidad. *(I am likely to participate in programs that aim to improve the solid waste management system in our community.)*				
20. Handa akong sumuporta sa mga gawain at sektor ng kalikasan na nagsusulong ng tamang pamamahala ng basura. *(I am willing to support initiatives and environmental sectors that promote proper solid waste management.)*				

VI. *STATISTICAL TREATMENT*

The data collected in alignment with the measurement of the locals of BASECO Compound's solid waste management based on the variables of the Theory of Planned Behavior (TPB) are to be analyzed using the mean, median and mode. These measures of central tendency are to target the paper's first research inquiry on the demographics of the locals as strengthened by the Central Limit Theorem. However, the second research question will be limited to using the mean for statistical treatment. With the sample of the study being normally distributed, the mean is a reliable measure for the data (Turney, 2022). The ordinal data derived from the Likert scale-based questions are well-measured using the mean to arrive at the average.

When analyzing the third research question in the research however, a paired t-test or a Wilcoxon Matched-Pairs Signed-Rank Test will be used given its comparative nature. To identify whether there is a significant difference in the solid waste management through the level of intention among the same participants pre and post-intervention will depend on these options for statistical treatment. These tests are similar as they focus on two related groups but differ in usage when considering the normality of data; the paired t-test is used for parametric, while the Wilcoxon Matched-Pairs Signed Rank Test is for non-parametric (McClenaghan, 2024).

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Navarra, N. (2016). Surmounting the Risk: Community Ties of Compound in Managing Risk. Journal in Urban and Regional Planning. https://journals.upd.edu.ph/index.php/SURP/article/download/6846/5936/

Valenzuela, V.P.B., Esteban, M. & Onuki, M. Perception of Disasters and Land Reclamation in an Informal Settlement on Reclaimed Land: Case of the BASECO Compound, Manila, the Philippines. Int J Disaster Risk Sci 11, 640–654 (2020). https://doi.org/10.1007/s13753-020-00300-y

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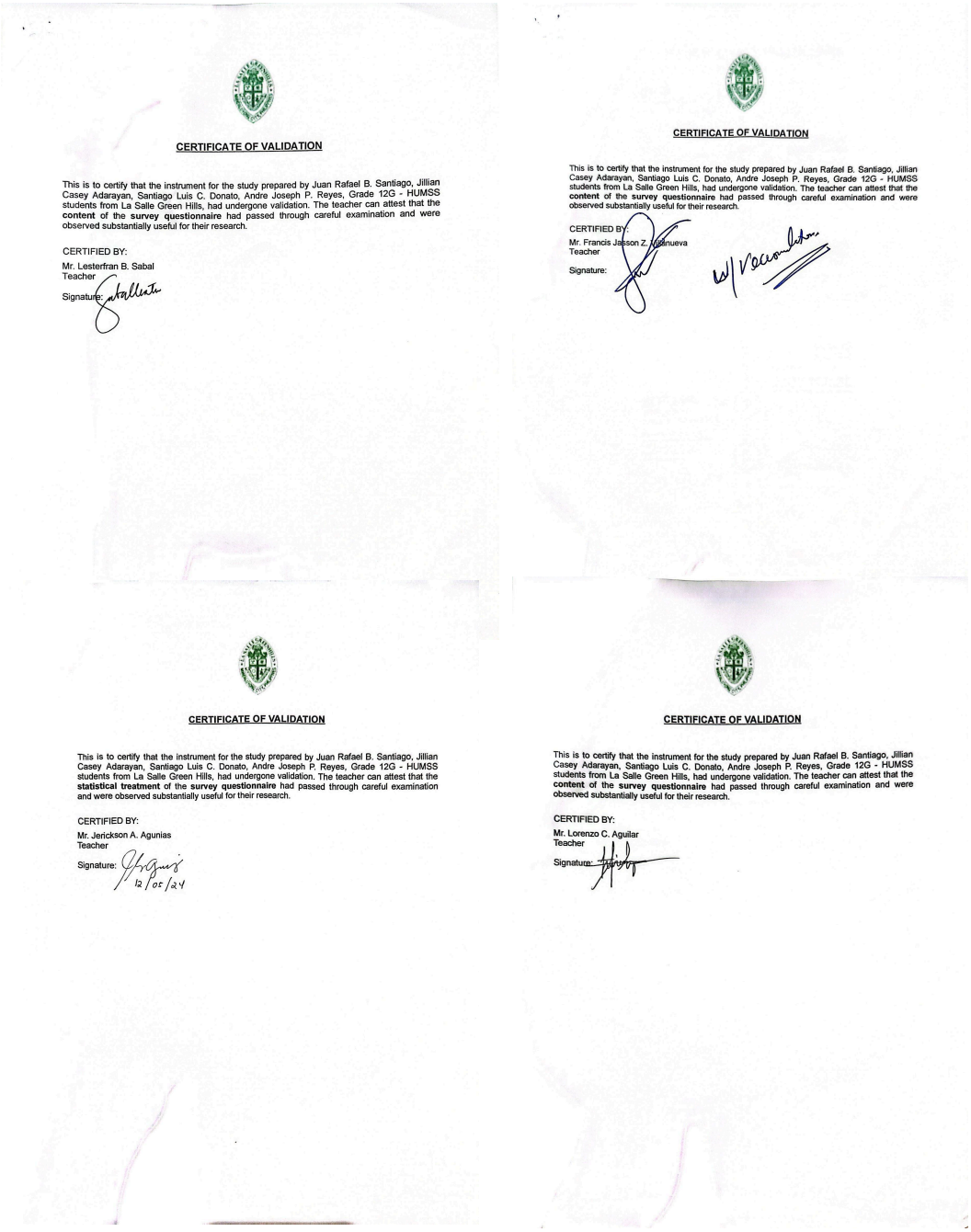
APPENDIX C:

Certifications of Validation



CERTIFICATE OF VALIDATION

This is to certify that the instrument for the study prepared by Juan Rafael B. Santiago, Jillian Casey Adarayan, Santiago Luis C. Donato, Andre Joseph P. Reyes, Grade 12G - HUMSS students from La Salle Green Hills, had undergone validation. The teacher can attest that the **content** of the **survey questionnaire** had passed through careful examination and were observed substantially useful for their research.

CERTIFIED BY:

Mr. Lesterfran B. Sabal
Teacher

Signature:

CERTIFICATE OF VALIDATION

This is to certify that the instrument for the study prepared by Juan Rafael B. Santiago, Jillian Casey Adarayan, Santiago Luis C. Donato, Andre Joseph P. Reyes, Grade 12G - HUMSS students from La Salle Green Hills, had undergone validation. The teacher can attest that the **content** of the **survey questionnaire** had passed through careful examination and were observed substantially useful for their research.

CERTIFIED BY:

Mr. Francis Jasson Z. Villanueva
Teacher

Signature:

CERTIFICATE OF VALIDATION

This is to certify that the instrument for the study prepared by Juan Rafael B. Santiago, Jillian Casey Adarayan, Santiago Luis C. Donato, Andre Joseph P. Reyes, Grade 12G - HUMSS students from La Salle Green Hills, had undergone validation. The teacher can attest that the **statistical treatment** of the **survey questionnaire** had passed through careful examination and were observed substantially useful for their research.

CERTIFIED BY:

Mr. Jerickson A. Agunias
Teacher

Signature:
12/05/24

CERTIFICATE OF VALIDATION

This is to certify that the instrument for the study prepared by Juan Rafael B. Santiago, Jillian Casey Adarayan, Santiago Luis C. Donato, Andre Joseph P. Reyes, Grade 12G - HUMSS students from La Salle Green Hills, had undergone validation. The teacher can attest that the **content** of the **survey questionnaire** had passed through careful examination and were observed substantially useful for their research.

CERTIFIED BY:

Mr. Lorenzo C. Aguilar
Teacher

Signature:

APPENDIX D:

Survey Questionnaire

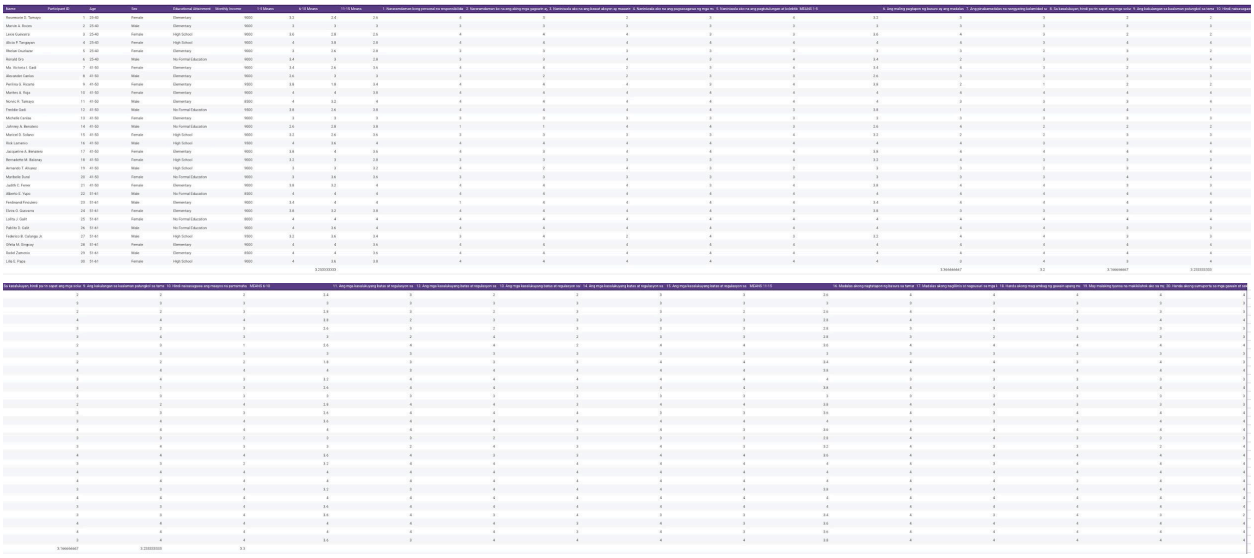
Mga Katanungan *(Questions)*	4 Lubos na sumasang-ayon *(strongly agree)*	3 Sumasang-ayon *(agree)*	2 Hindi sumasang-ayon *(disagree)*	1 Lubos na hindi sumasang-ayon *(strongly disagree)*
1. Nararamdaman kong personal na responsibilidad ang kumilos upang mabigyang solusyon ang mga isyu sa basura sa aming lugar. *(I feel a personal responsibility to do an action that can mitigate solid-waste issues in my community)*				
2. Nararamdaman ko na ang aking mga gagawin ayon sa tamang pagtapon ng basura ay may posibleng epekto sa mga isyung kapaligiran. *(I feel that my choice of action towards solid-waste management will impact environmental issues.)*				
3. Naniniwala ako na ang bawat aksyon ay maaaring makaapekto sa mga isyu sa basura. *(I believe that individual actions can make an impact on solid-waste management issues.)*				
4. Naniniwala ako na ang pagsasagawa ng mga mas epektibong batas at regulasyon ukol sa tamang pagtapon ng basura ay mas makababuti sa kapaligiran. *(I believe that implementation of stronger regulations about proper waste management will result in a better environment.)*				
5. Naniniwala ako na ang pagtutulungan at kolektibong aksiyon sa tamang pagtapon ng basura ay makatutulong sa pagbawas ng mga isyung pangkapaligiran. *(I believe that collective actions regarding proper waste management will help in mitigating environmental issues.)*				
6. Ang maling pagtapon ng basura ay ang madalas na sanhi ng mga isyung pangkalikasan sa BASECO. *(Improper waste management is the most common cause of environmental issues in BASECO.)*				
7. Ang pinakamadalas na nangyaring kalamidad sa BASECO ay ang pagbaha dahil sa pag-ipon ng basura sa mga kanal at daluyan ng tubig. *(Floods are the most experienced natural disaster in*				

BASECO because of accumulated trash in drainages and waterways.)				
8. Sa kasalukuyan, hindi pa rin sapat ang mga solusyon tungkol sa pag-ipon ng basura sa BASECO. *(There is still no effective solution for accumulated trash in BASECO.)*				
9. Ang kakulangan sa kaalaman patungkol sa tamang pagtapon ng basura ay ang dahilan ng mga isyung pangkalikasan sa BASECO. *(The lack of knowledge on proper waste management possibly causes environmental issues in BASECO.)*				
10. Hindi naisasagawa ang maayos na pamamahala sa basura dahil sa mga panlipunang kaugalian. *(Social norms prevent the adoption of solid-waste management.)*				
11. Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng The Clean Air Act of 1999 na pumipigil sa polusyon sa hangin ay sapat. *(The current laws and regulations in BASECO preventing air pollution like The Clean Air Act of 1999 are adequate.)*				
12. Ang mga kasalukuyang batas at regulasyon sa BASECO na pumipigil sa polusyon katulad ng Ecological Solid Waste Management Act galing sa plastik ay sapat. *(The current laws and regulations in BASECO preventing plastic pollution like the Ecological Solid Waste Management Act are adequate.)*				
13. Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng Philippine Clean Water Act of 2004 na nagpapababa ng basura na nakaka-apekto sa kontaminasyon sa tubig ay sapat. *(The current laws and regulations in BASECO preventing plastic pollution like the Philippine Clean Water Act of 2004 that aims to reduce the waste that contaminates water are adequate.)*				
14. Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng Philippine Environmental Code (1977) na nagbibigay gabay sa pangangalaga sa kapaligiran sa tulong ng solid-waste management ay sapat. *(The current laws and regulations in BASECO like the Philippine Environmental Code of 1977 that gives a guide in taking care of the environment including solid-waste management are adequate.)*				

15. Ang mga kasalukuyang batas at regulasyon sa BASECO katulad ng Local Government Code of 1991 na nagbibigay responsibilidad para sa mga Local Government Units (LGU) na mamahala sa tamang pagtapon ng basura ay sapat. *(The current laws and regulations like the Local Government Code of 1991 that gives tasks to the Local Government Units (LGUs) for solid-waste management are adequate.)*				
16. Madalas akong nagtatapon ng basura sa tamang tapunan upang mapabuti ang organisasyon ng kalat sa aming lugar. *(I regularly practise trash segregation to improve the waste management in our community.)*				
17. Madalas akong naglilinis at nagsusuri sa mga kanal upang mapabuti ang pamamahala ng mga basura o kalat sa aming lugar. *(I regularly clean and check my drainage holes to improve the waste management in our community.)*				
18. Handa akong mag-ambag ng gawain upang mapabuti ang pamamahala ng basura sa aming lugar. *(I am willing to contribute efforts to improve the solid waste management system in our community.)*				
19. May malaking tyansa na makikilahok ako sa mga programang magpapabuti sa kalagayan ng *solid waste management* sa aming komunidad. *(I am likely to participate in programs that aim to improve the solid waste management system in our community.)*				
20. Handa akong sumuporta sa mga gawain at sektor ng kalikasan na nagsusulong ng tamang pamamahala ng basura. *(I am willing to support initiatives and environmental sectors that promote proper solid waste management.)*				

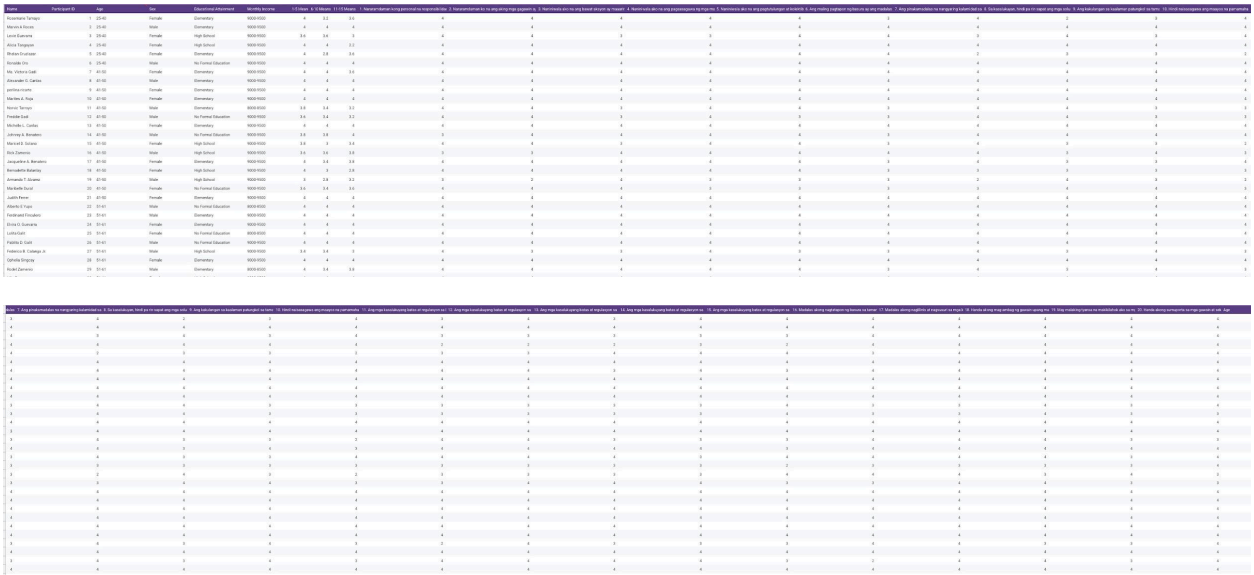
APPENDIX E:

Pre-test Responses



APPENDIX F:

Post-test Responses



APPENDIX G:

Documentation of Pre-test, Intervention, and Post-test

LA SALLE GREEN HILLS

S.Y. 2024-2025