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Assessing the Stakeholders' Level of Awareness in Environmental Education in Coastal Schools: Basis for an Action Plan

Ma. Abegail Calayag Carangan
Barihan Elementary School, City of Malolos, Bulacan, Philippines
Corresponding author email: *maabegail.calayag@deped.gov.ph*

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Abstract

Aim: This study aimed to determine the level of awareness of the stakeholders in coastal schools regarding environmental education, which will serve as a basis for crafting an action plan for the school's environmental education program.
Methodology: This study utilized a descriptive type of research using a questionnaire to determine the level of awareness of stakeholders towards environmental education. The research was conducted at 5 schools in City of Malolos with a total of 430 respondents. Convenience sampling was employed to select the respondents according to their accessibility, geographical proximity, and availability at a given time.
Results: The researcher found out that there are environmental programs administered by coastal schools such as Clean and Green, Solid Waste Management, 3R's, Tree Planting, and YES-O. However, schools yet being hindered by problems including lack of budget, discipline, environmental awareness, and energy recovery facility (ERF). With further assessments and analyses, results showed an overall mean of 4.17 implying that the stakeholders are aware of environmental education in terms of: waste management, pollution, water conservation, and climate change. The researcher also rejected the null hypothesis and discovered that there is a significant difference on stakeholders' perception in terms of position, type of stakeholder, and awareness with p-values less than 0.05 level of significance. Hence, the action plan should include initiatives like education and outreach program, partnerships and collaboration, community engagement, sustainability initiatives, and monitoring and evaluation to further enhance the awareness of the school stakeholders.
Conclusion: The study of environmental awareness provides essential insights into the current level of knowledge towards the environment and can help inform policies and actions aimed at protecting the environment. However, some issues arose during the focus group discussion, which needs to be addressed to help the community—the lack of environmental awareness among stakeholders. The study's emphasis on the need for further attempts to address these gaps in knowledge and attitudes through education and awareness-raising is one of its most significant components.

Keywords: climate change, environmental education, environmental awareness, pollution, solid waste management, stakeholders, water conservation

INTRODUCTION

The role of the schools is very crucial to educate and develop environmentally-aware conscious stakeholders. The growing concern with environmental issues and their impact on general awareness is one of the most noticeable phenomena of the last two decades (Sivamoorthy, Nalini & Satheesh Kumar, 2013). The threat of environmental problems should no longer be underrated. Rogayan (2019) reiterated that the earth is now suffering from innumerable afflictions caused by egregious human activities that were relentlessly denuding the environment. The challenge for everybody is to take the wheel of action and move towards a common cause in preserving life on earth.

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The educational institutions should reinforce a vigorous campaign to minimize the damage generated. Thus, the education sector is faced with challenges and is expected to initiate changes in giving environmental education. It is therefore essential that man has adequate knowledge about the environment in which they live. It depends in no small measure, present and future generations to survive, for it requires and contributes significantly to the implementation of environmental education (Ogoc, 2019).

In the Philippines, the Department of Education (DepEd), the Commission on Higher Education (CHED), and the Technical Education and Skills Development Authority (TESDA), in coordination with the Department of Environment and Natural Resources (DENR), the Department of Science and Technology (DOST) and other relevant agencies, in consultation with experts on the environment and the academe, lead the implementation of public education and awareness programs on environmental protection and conservation through collaborative inter-agency and multi-sectoral effort at all levels (RA 9512, 2008). Under this act, the DepEd urges all the public and private schools to play the lead role in promoting environmental awareness (D.O. No. 52, s. 2011). Furthermore, this study seeks to inculcate RA 8491, also known as the "Flag and Heraldic Code of the Philippines" where Filipino learners can stimulate one of the Deped's core values which is makakalikasan or nature-loving.

Environmental Education (EE) is a demanding endeavor in schools, often in conflict with the dominant purposes, structures, and schooling practices (Stevenson as cited in Fassio and Karrow, 2013). The kind of learning promotes environmental literacy and develops the skills needed to be environmentally responsible. It refers to education efforts that increase public awareness, concern, and knowledge about environmental issues and provide critical thinking, problem-solving, and decision-making skills needed to make responsible decisions about the environment.

Likewise, EE is a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems and which has the knowledge, attitudes, commitments and skills to work individually and collectively towards the solution of current problems and prevention of new ones (Jain & Raghunathan as cited in Puri & Joshi, 2017).

As agreed with Sola (2014), EE is also a learning process that facilitates enhancing people's awareness and knowledge about the environment and the associated challenges and developing adequate skills to counter the existing challenges, and improve attitudes, motivations, and commitments to undertake decisions and appropriate actions. Moreover, Teksoz et. al (2012) explained that environmental education makes people conscious of ecological protection and develops pro-environmental behaviors, which is essential in alleviating the present global environment behaviors needed to mitigate global environmental problems.

As to Majumder (2017), only individuals with environmental literacy, awareness, and sensibility would reduce ecological problems. Therefore, environmental education has been a meaningful way to educate students about environmental issues in identifying and challenging environmental concerns at all educational levels.

Furthermore, EE can help students rethink the correlation between humans and the environment, begin to understand their environment, be aware of environmental problems, and consider environmental issues related to their lives (Buldur and Ömeroglu, 2018; Lai, 2018). It is considered very important in this decade to enhance the mental awareness of ordinary people. It is deemed to help develop a good quality of life and generate ideas and practices for maintaining a sustainable environment (Laiphrakpam et al., 2018). Adequate environmental education facilitates achieving a sustainable future for humanity at global and local levels. It is imperative to implement effective education and awareness-raising programs. Undertaking education and awareness efforts would help to reach a range of various sectors of society.

EE will help to create awareness about the environment among the people so that they have the knowledge, skills, attitudes, motivation, and commitment to collectively work and solve the current environmental problems (Shil et al., 2013). Also, the objectives of EE include awareness, knowledge, attitudes, skills, and participation. As Ernst and Theimer (2011) cited, people's awareness has a powerful tool in the environmental

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sphere. Information through education has a significant impact on altering behavior (as mentioned in Gonzaga, 2016).

Awareness encourages every individual to gain understanding and sensitivity to the environment and its problems. EE seeks to develop a population aware of and concerned about the environment and the issues that beset it. Through EE, people acquire the knowledge, attitudes, commitments, and skills to work individually and collectively to solve current problems and prevent new ones (as cited in Puri and Joshi, 2017). Awareness and sensitivity to the environment and environmental challenges are environmental education objectives (EPA, 2016).

People should really have a good grasp of environmental issues and challenges including waste management, pollution, water conservation, and climate change. Primarily, it is critical to evaluate how school waste is managed. Particularly in small towns, the amount of waste created by those who work or attend school may be much more significant than the overall amount produced at home (Rada et al., 2016). Waste management is a process that involves handling, processing, disposing of, or recycling waste. As stated by Mahat et al. (2016), the goal of waste management is to lessen environmental contamination and significant waste. Likewise, the three Rs of waste management are reduced, recycled, and reused. Affandy et al. (2017) predict that the 3R strategy will result in lower waste volumes.

When it comes to pollution, it is the contamination, desecration, soiling, spoiling, and destruction. A component that should not be there or one with a high concentration is contamination material. Things that are alive would suffer (Karatas & Karatas, 2016). Environmental pollution is a serious problem that puts the welfare of people in danger (Khan & Ghouri, 2011). Pollution contaminates the air, land, and water's physical, chemical, and biological properties. Orencio and Fuiji (2013) also stated that human-caused hazards, such as pollution and illegal environmental operations, are signs of social risks. Moreso, Joseph, et al. (2016) found that most participants in the settings were aware of the risks associated with using plastic bags. In reducing the community's use of plastics, it is necessary to raise knowledge about the use of alternative methods and to put regulations into place effectively.

In addition, water conservation is also an important concern that everyone should understand. The decrease in water waste is one of the critical advantages of environmental consciousness about water conservation. People are more likely to take action to minimize their water usage, such as fixing leaks and turning off taps, when they know how important water conservation is. The need for water is increasing, while supply is anticipated to decline owing to population expansion and climate change, making water conservation a global issue (Chang, 2016). Also, due to population increase, climate change, and dwindling water supplies, water resource management has evolved into a more complex problem over time (Sahin et al., 2017).

On top of these, several research papers have amply demonstrated the tendency of global warming. Hosen et al. (2020) claim that the Earth's recent rapid warming is the reason why record-breaking temperatures have only been attained in the last ten years. Climate change increases current vulnerability by posing new dangers and increasing resource instability over time and space (Eriksen et al., 2015). Since the effects of climate change in some locations cannot be understated, all facets of society are becoming more conscious of it (Lirag & Estrella, 2017). It is like the mother of all disasters so humans must take actions and prioritize environmental health.

Education is the only way to address the already well-known risks posed by climate change. If environmental education and climate change awareness initiatives are included in all levels of education, people will unquestionably take action where they can (Natividad-Franco et al., 2022). When young people are highly aware of climate change, their participation in catastrophe risk reduction initiatives may increase. But it appears that there is little information available regarding their comprehension level. Youth's awareness of climate change must be considered in climate change adaptation in the country. Youth's awareness of climate change must be integrated even in formulating a disaster risk reduction plan. This is necessary as the youths are among the marginalized sector of society that bears much of the impacts of disasters (Barreda, 2018).

Henceforth, this study aims to determine the level of awareness of the stakeholders in coastal schools regarding environmental education, which will serve as a basis for crafting an action plan for the school's environmental education program.

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Theoretical/Conceptual Framework

The study is anchored on the Social Learning Theory of Bandura (1925), as cited in Cherry (2018), a psychologist who formulated a theory that he called Social Learning Theory. For Bandura, learning, in general, is a complex process that can be affected or influenced by so many factors. When he developed this theory, he suggested that observation, modeling, and imitation play a major role in learning. Bandura's theory combines elements from two existing theories: namely behavioral theories and cognitive theories. As posited in behavioral theories, learning is acquired by conditioning or thru experience, while cognitive theories state that learning is acquired thru psychological influences such as memory and attention.

The researcher used the given theory for it is stipulated in the DepEd Order No. 52 s. 2011, environmental education should be taught and integrated into related areas. In this way, the stakeholders' minds were conditioned, and they realized the importance of environmental education in their daily life.

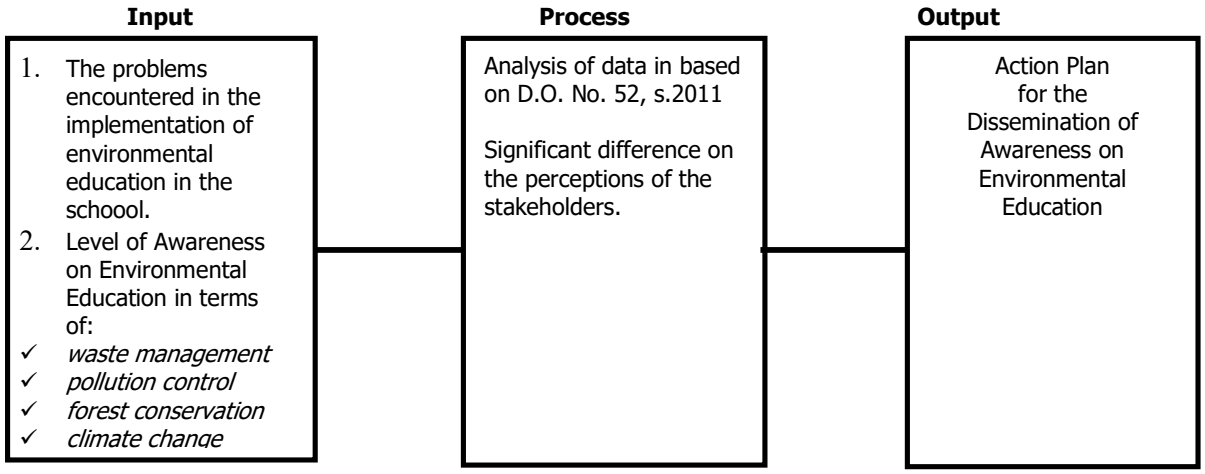

Figure 1. The paradigm of the Study

As can be gleaned from figure 1, the framework presented is an IPO, the Input-Process-Output. In the input box, the data were the problems encountered in the implementation of the DepEd programs on environmental education in school and the assessed level of awareness of stakeholders.

Regarding the process, it analyzed the data based on DepEd Order No. 52, s. 2011 and determine if there are significant differences in stakeholders' perceptions.
Lastly, the output framework is the plan of action crafted based on the analyzed data during the course.

Research Questions

This study aimed to know the coastal schools stakeholder's level of awareness towards environmental education.

Specifically, it sought to answer the following research questions:

1. What are DepEd programs on Environmental Education in schools?

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2. What are the problems encountered in implementing the Environmental Education programs in schools based on DepEd programs on Environmental Education?
3. What is the level of awareness of the stakeholders in schools on environmental education as perceived by teachers, parents, and pupils in terms of:
   3.1 waste management;
   3.2 pollution;
   3.3 water conservation; and
   3.4 climate change?
4. Is there a significant difference in the perceptions of the stakeholders on environmental education?
5. What plan of action may be proposed based on the result of the study?

Hypotheses

Given the stated research problem, the following hypotheses were tested on 0.05 level of significance:
Hypothesis 1: There is a significant difference in the perceptions of stakeholders on environmental education in terms of position.
Hypothesis 2: There is a significant difference in the perceptions of stakeholders on environmental education in terms of Stakeholder type.
Hypothesis 3: There is a significant difference in the perceptions of stakeholders on environmental education in terms of awareness.
Null Hypothesis: There is no significant difference between the perceptions of stakeholders on environmental education.

METHODS

Research Design

The study utilized a descriptive type of research. Atmowardoyo (2018) defined descriptive analysis as a method used to describe the existing phenomena as accurately as possible, and this phenomenon is observed in the study is accessible. Its purpose is to observe, describe, and document the different aspects of a situation as it naturally occurs. This research is more concerned with what rather than how or why something has happened. Observation and survey are the tools to gather data (as cited by Nassaji, 2015).

Population and Sampling

Schools Division of Malolos has of five (5) coastal schools which became the subject of the study. The respondents of the study are the stakeholders in Masile Elementary School, Namayan Elementary School, Caliligawan Elementary School, CMIS-Babatnin and Pamarawan Elementary School. They are the teachers, parents, and pupils enrolled in the School Year 2021-2022. The study was limited to coastal schools as it is an excellent opportunity to further highlight the environmental challenges they faced in the local community and invite them to help, search for, and be part of the environmental solutions.

The study's respondents are shown in the table below:

Table 1.
Respondents of the Study

Bay School	Number of Teacher Respondents	Number of Parent Representative	Number of Learners (Grades 4-6)
Masile Elementary School	7	15	40
Namayan Elementary School	7	15	40
Caliligawan Elementary School	4	10	15
CMIS-Babatnin	8	15	80
Pamarawan Elementary School	14	15	150
Grand Total	**40**	**65**	**325**

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The selection of respondents was through a convenience sampling method. Convenience sampling is a nonprobability or nonrandom sampling where members of the target population that meet specific practical criteria, such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate, are included in the study (Donyei as cited in Etikan, 2016).

Instrument

The study adopted a questionnaire from the study of Labog (2017) entitled *Teachers' Integration of Environmental Awareness and Sustainable Development, w*hich was published in Asia Pacific Journal Multidisciplinary Research, Volume 5, number 3, 102-110 August 2017 Part II. The instrument was subjected to validation from experts in DENR, environment advocate priests, and high school subject teachers.

Data Collection

The mode of data gathering is the survey method. Initially, before the collection of data, the researcher did the following procedures:

1. The researcher submitted a letter of request to the Schools Division Superintendent of Malolos- Dr. Norma P. Esteban, CESO V, to the Public School District Supervisor, Mr. Rommel C. Cruz.
2. With the approval of the Schools Division Superintendent of Malolos and the District Supervisor of District 7 Malolos, the researcher personally distributed the questionnaire to the respondents.
3. The researcher collected all the respondents' questionnaires to check whether all the questions are addressed.

Treatment of Data

The data gathered were organized and processed through the Statistical Package for Social Sciences (SPSS). As one of the rules followed in the use of the software, the formula of the statistical tools used were not reflected anymore since the computer did not follow the steps in the manual computation. The frequency, mean, and percentage distribution were used to describe the profile of the respondents, and to see the significant difference among the level of awareness of stakeholders; the t-test was used.

Ethical Considerations

This research firmly adhered to the ethical standards in terms of content, valuing of respondents (confidentiality issues), and the right to know and not to amend the stated purpose of the study. The study also complied with the proper guidelines in terms of the research format (RA no.48, series 2016 - References: DepEd Order No. 43, s. 2O15; DepEd Order No. 4, s. 2016).

The APA format was the basis for writing the citation and references in the technical part of the research. The research paper also followed the standards set by the Division to meet existing guidelines and format for quality research, such as the Regional Memorandum no. 59 series of 2016, Reformulated Regional Research Agenda and Call for Research Proposals amending the DepEd Order No. 16, series of 2017, or the Research Management Guidelines.

RESULTS AND DISCUSSION

1. The DepEd programs on Environmental Education in Schools.

The following are the DepEd programs on Environmental Education in Schools based on stakeholders' focus group discussion that involves Grades 4-6 learners, teachers and parents.

1.1 Clean and Green. A "Clean and Green" program aims to advance environmental sustainability and raise community living standards. This program can be implemented at different levels, including local government entities, educational institutions, and private businesses.

The program often entails initiatives like promoting waste reduction and recycling, public area cleaning and beautification, and raising environmental awareness. These initiatives are frequently carried out with the assistance of neighborhood volunteers and regional partners. The Clean and Green Program aims to create cleaner, healthier, and more sustainable communities by encouraging environmental responsibility and community participation.

1.2 Solid Waste Management. The process of gathering, moving, treating, and disposing of solid waste in an environmentally responsible way is known as solid waste management. Since improperly managed solid waste can result in pollution, health risks, and the spread of disease, this procedure is crucial for preserving public health and the environment. Solid waste management involves several steps, such as (1) *Waste generation*. It is the

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first step of the waste cycle, during which industries, enterprises, and households produce waste. (2) *Collection*. Trash is gathered from homes and businesses and brought to a specified collection location. (3) Transport. To ensure proper disposal, the collected material is subsequently taken to a waste treatment plant. (4) *Treatment*. Waste is treated to reduce its volume and harmful impact on the environment. This can be done through processes such as composting, recycling, and incineration. (5) *Disposal*. The final stage of solid waste management involves the disposal of the treated waste to minimize its environmental impact.

Local governments, commercial organizations, or community-based initiatives can all handle solid waste management. Combining waste reduction, reuse, and recycling is the most efficient way to manage solid waste since it lowers the amount of garbage that needs to be treated and disposed of.

Individuals, organizations, and governments must work together to accomplish sustainable waste management practices. Efficient solid waste management is necessary to maintain public health and the environment.

1.3 Tree Planting. Planting new trees in a defined place, such as a forest, park, or another public area, is known as "tree planting," which aims to stop deforestation, advance ecological sustainability, and increase biodiversity. By capturing carbon dioxide from the atmosphere through photosynthesis, planting trees can also aid in lowering carbon emissions and preventing climate change.

Individuals, organizations, and governments can carry out tree planting. In some cases, tree planting initiatives may involve community participation and can be a way to engage and educate local communities about the benefits of trees and the environment. Tree planting is vital for promoting environmental sustainability, preserving natural habitats, and combating climate change. It is a valuable contribution to a healthier and more sustainable planet.

1.4 3R's. 3R stands for "Reduce, Reuse, and Recycle," which are the three key principles of waste management aimed at reducing the amount of waste generated and promoting more sustainable consumption patterns.

Reduce. The first principle of 3R is to reduce the waste generated in the first place. This can be achieved by using less material, minimizing the use of disposable products, and making sustainable lifestyle choices, such as walking or biking instead of driving a car.

Reuse. The second principle of 3R is to reuse products and materials to extend their lifespan. This can be done by repairing, refurbishing, or repurposing items rather than throwing them away.

Recycle. The third principle of 3R is to recycle materials to conserve resources and reduce waste. This involves collecting, sorting, and processing waste materials such as paper, plastics, and metals to create new products.

1.5 YES-O. The Youth for Environment in Schools Organization (YES-O) is a school-based co-curricular organization established to serve as a significant venue for learners' actions and movements towards safeguarding, protecting, and conserving the environment. Since its introduction in 1993, YES-O has been used in both public and private schools all across the Philippines. To assist them in creating and putting into action environmental projects in their schools and communities, the program offers teachers and learners training and tools.

The program's four main goals are to increase learner environmental awareness and consciousness, to encourage learner participation in environmental protection and conservation activities, to foster learner leadership and teamwork, and to strengthen the relationship between schools and the community in environmental management.

Learners have the chance to take part in projects including planting trees, cleaning up the shore, sorting and recycling rubbish, and other environmental initiatives through YES-O. To further advance ecological awareness and education, the program hosts yearly activities, including the YES-O National Youth Camp and the YES-O Environmental Quiz Bee.

The 3R approach to waste management promotes a circular economy in which resources are conserved, and waste is minimized. It is a sustainable approach that helps reduce human activities' environmental impact, save natural resources, and reduce greenhouse gas emissions.

Implementing the 3R principles can be done individually, such as by using a reusable water bottle, repairing or donating old clothes, or separating recyclable materials from non-recyclable waste. The principles can also be applied at a larger scale, such as in industry and government policies, to promote more sustainable production and consumption patterns.

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2. The Problems Encountered in Implementing the Environmental Education Programs in schools based on DepEd Programs.

The following are the problems met in implementing the Environmental Education Programs in schools based on stakeholders' focus group discussion that involves Grades 4-6 learners, teachers and parents.

Table 2: Problems encountered in implementing the environmental education programs in schools based on DepEd Programs
Themes
1. No sufficient funding to carry out the programs
2. Insufficient environmental awareness and action
3. People in the community lack discipline
4. No adequate facility for garbage disposal

2.1 Lack of Budget for Proper Implementation. Budget constraints frequently make it challenging to implement environmental programs in schools. Implementing conservation strategies, including habitat restoration, pollution reduction, and waste management, is necessary. Without the required funding, these actions might not be implemented, leading to continuous environmental deterioration. Moreso, environmental education and public awareness programs are essential for altering behavior and motivating people to make environmentally responsible decisions. These initiatives might not be able to reach as many people without sufficient funding, which could impede the advancement of environmental sustainability.

2.2 Lack of Environmental Awareness and Implementation. They didn't acquire enough environmental information. Hence, it is challenging for them to appreciate the value of sustainable practices and environmental protection. Environmental degradation is accelerated by destructive practices like littering, utilizing non-biodegradable materials, and overusing natural resources. Likewise, the lack of environmental awareness can increase cancer, pulmonary disorders, and other health issues resulting from a lack of awareness and efforts to treat these problems. Thus, a multifaceted strategy incorporating education, media coverage, incentives for sustainable activities, and cultural and societal change is needed to overcome the lack of environmental awareness. People and communities can cooperate to promote sustainability and save the world for future generations by raising public awareness and engaging with environmental issues.

2.3 Lack of Discipline in the Community. People are less inclined to think about how their actions will affect others when they do not have a strong feeling of community which may result in careless behavior that disregards other people's needs and well-being. They throw waste and garbage anywhere if they don't see trash bins. There may be little motivation to change when people are not penalized for their unruly behavior. Due to a culture of impunity, disrespectful conduct may become accepted as usual. Moreso, they lack the intense feeling of community may make people less likely to think about how their actions will affect others. It may result in careless behavior that disregards other people's needs and well-being.

2.4 No Proper Energy Recovery Facility (ERF) for Waste Management. There is no Energy Recovery Facility (ERF) on the islands; hence, people in the community throw garbage at the river most of the time. An ERF is a waste-to-energy facility that turns waste into energy using technologies like incineration or gasification. Without an ERF, trash could be disposed of in landfills, which could have detrimental effects on the environment due to the emission of leachate and methane gas. The community may require additional energy sources to meet its needs if trash is not being used as a source of energy. This could result in a rise in the consumption of fossil fuels.

3. Level of Environmental Awareness of Stakeholders in Schools on Environmental Education as perceived by teachers, parents, and learners.

Living in the coastal areas for a very long time poses risks for a potential lack of environmental awareness since people living there have difficulty going into the city to buy goods or avail services. Despite that, the respondents in the coastal areas contributed a lot of insight into this research in terms of the following aspects: waste management, pollution, water conservation, and climate change.

3.1 Waste Management. One of the difficulties that many nations face is managing solid waste. Poor solid waste management will result in several issues with socioeconomic, environmental, and health implications. Science education is incorporated with solid waste management ideas thanks to R.A. No. 9003 and the educational institution's role as a change agent (Molina & Catan, 2021).

Table 3

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Descriptive Measures of the Level of Environmental Awareness of Stakeholders (Grade 4-6 Learners, Teachers and Parents) in terms of Waste Management

Indicator	Mean	Verbal Interpretation
There is a local waste management practice at home and in the School.	4.31	Aware
There are segregation management and disposal of solid waste in the School.	4.61	Very Much Aware
There is a proper waste management practice in schools, homes, and communities.	4.19	Aware
There is waste segregation using containers for biodegradable, non-biodegradable waste, and hazardous waste in School.	4.64	Very Much Aware
There is a regular assessment of waste management procedures to ensure compliance with the set standards.	4.00	Aware
There are government programs on waste management in the community.	4.32	Aware
There are new techniques in waste management that are based on professional research.	3.62	Aware
There are seminars provided about waste management.	3.61	Aware
Weighted Mean	**4.16**	**Aware**

Very Much Aware 4.5 – 5.00, Aware 3.59 – 4.49, Moderately Aware 2.50 – 3.49, Slightly Aware 1.50 – 2.49, Not Aware 1.00 – 1.49

As can be gleaned in Table 3, the criterion measures the stakeholders' awareness in terms of proper waste disposal and other conservation measures concerning litter. Overall, a weighted mean of 4.16 in this criterion showed that the stakeholders have optimal awareness of the waste management methods. Notably, they are very much aware of segregation management (4.61) and hazardous waste (4.64). However, they rate low on the awareness of the new waste management techniques (3.62) and seminars about waste management (3.61).

Similar to the result of Natividad-Franco et al. (2022), it was stated that the local community and schools on the coast are currently putting waste segregation systems in place at home and School. However, to increase their understanding of environmental education, it is vital to highlight seminars on waste management.

3.2 Pollution. The act of introducing damaging materials or goods into the environment is known as pollution. It has detrimental effects on the air, water, and soil and is a significant global issue. There are numerous sorts of pollution, including noise pollution, soil contamination, water pollution, and air pollution. Many different human activities, such as industrial processes, transportation, waste disposal, and natural occurrences like wildfires and oil spills, are sources of pollution. Pollution can have disastrous repercussions on both the environment and human health.

Table 4

Descriptive Measures of the Level of Environmental Awareness of Stakeholders (Grade 4-6 Learners, Teachers and Parents) in terms of Pollution

Indicator	Mean	Verbal Interpretation
The schools have concrete data and information about the effects of pollution on human health.	4.13	Aware
Counteracting the effects of pollution in simple ways.	4.16	Aware
The waste pollutants generated in schools are explained well.	4.12	Aware
Activities are provided in understanding the concepts and ways to minimize pollution.	3.99	Aware
Encouragement on the use of eco-friendly products such as Eco bags as an alternative to plastic is done.	4.51	Very Much Aware
There is participation in outreach programs that orients the community in minimizing the generation of air, water, and land pollutants like not burning plastics, dry leaves, and rice hays.	4.45	Aware
There are guidelines for minimizing the emission or generation of pollutants.	4.51	Very Much Aware
There is a regular assessment of pollution in the community.	3.89	Aware

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Weighted Mean	**4.22**	**Aware**

Very Much Aware 4.5 – 5.00, Aware 3.59 – 4.49, Moderately Aware 2.50 – 3.49, Slightly Aware 1.50 – 2.49, Not Aware 1.00 – 1.49

This criterion measures the stakeholders' awareness in terms of counteracting the effects of pollution and knowledge of environmental pollution. Overall, a weighted mean of 4.22 in this criterion showed that the stakeholders have optimal awareness of environmental pollution and their prevention methods. Notably, they are very much aware of the encouragement of eco-bags as an alternative to plastics (4.51) and the guidelines for minimizing the emission or generation of pollutants (4.45). However, they rate low on the awareness of the activities provided in understanding concepts and ways to reduce pollution (3.99) and regular assessment of pollution in the community (3.89). Similar to the findings of Joseph et al. (2016), who found that most participants in the settings were aware of the risks associated with using plastic bags. In reducing the community's use of plastics, it is necessary to raise knowledge about the use of alternative methods and to put regulations into place effectively.

3.3 Water Conservation. Water conservation and saving are generally associated with managing water resources under scarcity. The word "water conservation" is used in this document to refer to any policy, managerial strategy, or user behavior that strives to protect, preserve, or otherwise manage the water resource while preventing its degradation, especially of its quality. (Pereira et al., 2012). Likewise, it refers to using water wisely and preventing needless waste of this precious resource. Ensuring the water supply's sustainability entails deliberate efforts to limit water usage, particularly in areas where water is scarce. There are various ways to conserve water, including fixing leaks, installing low-flow fixtures, growing drought-tolerant plants, employing effective irrigation techniques, and using less water for routine tasks like washing dishes, brushing teeth, and taking showers. Along with agricultural strategies that maximize water use for crop production, it also covers industrial practices that use less water in manufacturing operations. Individuals, companies, and governments may contribute to preserving water resources for future generations and avoiding water shortages during droughts and other water-related catastrophes by practicing water conservation.

Table 5
Descriptive Measures of the Level of Environmental Awareness of Stakeholders (Grade 4-6 Learners, Teachers and Parents) in terms of Water Conservation

Indicator	Mean	Verbal Interpretation
There is information on the importance of river trees to human life.	3.94	Aware
The school community is involved in tree planting in identified tree-less areas on riverbanks with proper coordination from LGU.	4.44	Aware
Everyone is responsible for reporting to the proper authority on illegal reclamation of water activities.	4.45	Aware
There are sea/river conservation activities.	4.48	Aware
There is information dissemination on sea/river preservation.	4.09	Aware
There are different programs in water conservation by different national and local environmental-related offices.	4.45	Aware
There is a participation in an information campaign on sea/river conservation.	4.03	Aware
Everyone is encouraged to join civic organization on sea/river conservation that are in compliance to DepEd policies.	4.38	Aware
Weighted Mean	**4.28**	**Aware**

Very Much Aware 4.5 – 5.00, Aware 3.59 – 4.49, Moderately Aware 2.50 – 3.49, Slightly Aware 1.50 – 2.49, Not Aware 1.00 – 1.49

The table shows the criterion that measures the stakeholders' awareness in terms of water conservation. Overall, a weighted mean of 4.28 in this criterion showed that the stakeholders have optimal awareness of the water conservation methods. Particularly, they are optimally aware of the different programs in water conservation by various national and local environmental-related offices (4.45) and proper authority on illegal reclamation of water activities (4.45). However, they rate lower on the information on the importance of river trees to human life (3.94).

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Similar to the study of Amahmid et al. (2019), the findings indicated that water-related themes are covered in the curricula using multi- and interdisciplinary approaches, with the sciences and geography being most heavily involved; nevertheless, there aren't many field trips or extracurricular activities. Although learners had positive opinions toward the water, their regular water use did not reflect such attitudes. Water-related issues should be taught in accessible ways employing values-driven education and innovative approaches, field trips, and school life activities to make curricula more effective in influencing learners' attitudes and behavior about water consumption and conservation.

3.4 Climate Change. Climate change is one of the twenty-first century's most significant ecological and socioeconomic issues (Dietz et al., 2020). The mother of all externalities, it is also the biggest, most complicated, and riskiest environmental issue. People are affected by climate change in the places where they live, work, and play, even if they have little control over it (Change, 2016). The effects include rising sea levels, altered precipitation patterns, increased frequency and severity of extreme weather events, ocean acidification, and coral bleaching (Nurse et al., 2014).

Table 6

Descriptive Measures of the Level of Environmental Awareness of Stakeholders (Grade 4-6 Learners, Teachers and Parents) in terms of Climate Change

Indicator	Mean	Verbal Interpretation
There is a positive attitude among my teachers/pupils toward risk reduction and disaster preparedness.	4.44	Aware
There are updates on current global issues like the effects of climate change on biodiversity, agriculture, lands, bodies of water, and human life.	4.34	Aware
There is allotted time for giving concrete examples and sharing experiences related to climate change.	3.70	Aware
There is a climate change awareness and information campaign on climate change.	4.37	Aware
Everyone participates in information dissemination about climate change in the School and community.	4.16	Aware
There are pilot activities about climate change education by implementing activities in the community for scientific observation.	3.85	Aware
There are invited resource speakers to enhance the knowledge and skills of the students about climate change and disaster preparedness.	3.69	Aware
There are regular forums and seminars conducted on climate change by resource speakers from DENR, the Department of Agriculture, and other related government and nongovernmental agencies.	3.57	Aware
Weighted Mean	**4.02**	**Aware**

Very Much Aware 4.5 – 5.00, Aware 3.59 – 4.49, Moderately Aware 2.50 – 3.49, Slightly Aware 1.50 – 2.49, Not Aware 1.00 – 1.49

As can be gleaned from Table 6, it measures the stakeholders' awareness in terms of counteracting the effects of climate change. Overall, a weighted mean of 4.02 in this criterion showed that the stakeholders have optimal awareness of the climate change mitigation methods. Particularly, they are optimally aware of climate change awareness and information campaigns (4.37) and updates on current global issues like the effects of climate change on biodiversity, agriculture, lands, bodies of water, and human life (4.34). However, there is a low occurrence of regular forum and seminars conducted on climate change by resource speakers from DENR, Department of Agriculture and other related government and nongovernmental agencies (3.57) and few resource speakers to enhance knowledge and skills of the learners about climate change and disaster preparedness (3.69).

Integrating climate change education into formal education institutions is one of the most significant and efficient ways to build capacities for addressing climate catastrophe. This results from multiplier effects, whereby families and communities profit when individuals share what they have learned, particularly about adaptation and mitigation (Mochizuki and Bryan 2015). According to Kagawa and Selby (2010), education about climate change, as referenced in Stevenson et al. (2017), investigates local and global mitigation and adaptation methods and how

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these efforts interact with one another. Several proponents of inspiring and motivating individuals to take individual actions to slow down climate change believe that the key to effective learning is to draw connections to learners' daily lives.

Summary. The most prominent awareness among the four indicators is water conservation (4.28), since the locale of the study is used to weather conditions that are inclement. Having lived in the coastal areas for too long, it is quite obvious that water conservation in island is a must. The next prominent item is the pollution (4.22) by which the criteria share a common threshold with water conservation.

Table 7

Summary of Descriptive Measures of the Level of Environmental Awareness of Stakeholders (Grade 4-6 Learners, Teachers and Parents) in the four environmental components

Component	Mean	Verbal Interpretation
Waste Management	4.16	Aware
Pollution	4.22	Aware
Water Conservation	4.28	Aware
Climate Change	4.02	Aware
Overall	**4.17**	**Aware**

Very Much Aware 4.5 – 5.00, Aware 3.59 – 4.49, Moderately Aware 2.50 – 3.49, Slightly Aware 1.50 – 2.49, Not Aware 1.00 – 1.49

2. Difference in the Perceptions of the Respondents in Environmental Awareness

In order to measure the differences among the perceptions of the respondents, the researcher used a One-way Analysis of Variance test. The following were the decisions made.

Differences in terms of Position. The p-value of 0.031 in the F-ratio of 1.94 shows a significant difference among the perceptions of the respondents. This means that position is a specific discriminating factor for the perceptions regarding environmental awareness.

Table 8

Analysis of Variance on the Difference in the Perceptions of the Respondents in Environmental Awareness in terms of Position

ANOVA Table		Sum of Squares	df	Mean Square	F	Sig.
Environmental Awareness * Position	Between Groups	7213.023	12	601.085	1.94	0.031
	Within Groups	68789.17	222	309.861		
	Total	76002.2	234			

Differences in terms of Stakeholder type. The p-value of 0.000 in the F-ratio of 8.911 shows a significant difference among the perceptions of the respondents. This means that stakeholder type is a specific discriminating factor for the perceptions regarding environmental awareness.

Table 9

Analysis of Variance on the Difference in the Perceptions of the Respondents in Environmental Awareness in terms of Stakeholder Type

ANOVA Table		Sum of Squares	df	Mean Square	F	Sig.
Environmental Awareness * Stakeholder	Between Groups	5422.05	2	2711.025	8.911	0.00
	Within Groups	70580.15	232	304.225		

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	Total	76002.2	234

Differences in terms of Awareness. The p-value of 0.031 in the F-ratio of 1.94 shows a significant difference among the perceptions of the respondents. This means that school is a specific discriminating factor for the perceptions regarding environmental awareness.

Table 10

Analysis of Variance on the Difference in the Perceptions of the Respondents in Environmental Awareness

ANOVA Table		Sum of Squares	df	Mean Square	F	Sig.
Environmental Awareness * School	Between Groups	6242.985	4	1560.746	5.146	0.001
	Within Groups	69759.21	230	303.301		
	Total	76002.2	234			

Due to this, the researcher rejects the null hypothesis and concludes that there is a significant difference in the environmental awareness of the respondents when grouped according to their demographic characteristics.

Implications

People living in coastal areas just like the respondents of this study have varying environmental awareness in terms of demographic characteristics. As expected, teachers are more aware other than the other stakeholders, just as reported in this study. It is important that a specific program is always done to spread environmental awareness not just in the accessible areas of City of Malolos, Bulacan but also to those coastal areas, specifically the islands which are still under the jurisdiction of the city.

The dissonance among the respondents must be mitigated for the additional protection of the people living in coastal areas since they are more vulnerable to the effects of climate change, to which every human in this world contributes.

3. Action Plan to Enhance Environmental Awareness among Stakeholders.

Raising environmental awareness among coastal communities is vital to preserving and restoring coastal ecosystems. The following suggested actions will help coastal communities become more environmentally conscious.

Table 11. Action Plan to Enhance Environmental Awareness among Stakeholders

No.	Activity	Objective	Budget	Date
1.	*Education and Outreach Program*	It aims to develop and implement education and outreach programs that engage and inform coastal community members about the importance of coastal ecosystems, their role in protecting them, and the potential impacts of human activities on the environment. It includes workshops, seminars, public events, and outreach campaigns using social media and other communication tools.	Php 10,000.00	June-July
2.	*Partnerships and Collaboration*	It aims to expand the scope and efficiency of the educational programs, form partnerships and collaborations	Php 5,000.00	

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		with nearby community organizations, schools, and companies. These collaborations can also support local environmental issues identification and address.		
3.	*Community Engagement*	It aims to involve locals in environmental conservation efforts by organizing volunteer programs, clean-up drives, and other practical events that highlight the effects of environmental deterioration and the value of preservation.		
4.	*Sustainability Initiatives*	It aims to promote and support sustainable practices such as reducing waste and plastic use, supporting eco-tourism, and responsible fishing practices. It can also involve creating incentives for businesses to adopt environment-friendly practices and initiatives.	Php 5,000.00	
5.	*Monitoring and Evaluation*	It aims to assess the overall impact of the programs and suggest areas for improvement by routinely monitoring and evaluating the success of the outreach and education programs, sustainability initiatives, and community involvement efforts.	Php 5,000.00	

Increasing environmental awareness in coastal communities and advocating for the protection and conservation of coastal ecosystems can be accomplished through a thorough and ongoing strategy that involves education, community involvement, collaborations, and sustainability projects.

Summary, Conclusions, and Recommendations

Environmental awareness is a crucial topic in today's world as the impact of climate change and environmental degradation is becoming increasingly apparent. The study of environmental awareness provides essential insights into the current level of knowledge towards the environment and can help inform policies and actions aimed at protecting the environment. However, some issues arose during the focus group discussion, which needs to be addressed to help the community—the lack of environmental awareness among stakeholders. Though the figures state that there was a good level of environmental awareness, during the focus group discussion, they mentioned that they are not that aware of environmental issues and they lack discipline; perhaps their education is an indicator of their knowledge and awareness regarding the environment.

The study's emphasis on the need for further attempts to address these gaps in knowledge and attitudes through education and awareness-raising is one of its most significant components. This could entail encouraging more sustainable behaviors and actions and offering more information and resources on specific environmental challenges.

It draws attention to the necessity of ongoing education and awareness-raising campaigns designed to close knowledge and awareness gaps and encourage more sustainable behaviors and actions. Hence, people can work toward a more sustainable future and save this world for future generations by increasing awareness and promoting more sustainable activities.

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Environmental education is a powerful technique for raising environmental consciousness among people and communities. Here are some suggestions for utilizing environmental education to raise environmental awareness:

1. **Encourage Outdoor learning and field trips**. Learners may engage with nature and get a deeper understanding of the environment through field trips and outdoor learning. To do this, you might plan excursions to parks, wildlife preserves, and other outdoor areas where you can see and discover the local flora and fauna.
2. **Use interactive teaching methods**. It is possible to utilize interactive teaching techniques to make learning about the environment more interesting and productive. These techniques include games, simulations, and hands-on activities. Learners who use these techniques may feel a stronger connection to environmental issues.
3. **Promote environmental stewardship**. Environmental education can be utilized to inspire learners to take ownership of their environmental impact and to foster environmental stewardship. This could entail planning neighborhood clean-up programs or motivating children to embrace sustainable habits like recycling and conserving energy.
4. **Involve the community**. Environmental education ought to extend outside of the classroom. Participating in the larger community can increase understanding of environmental challenges and encourage group action. Organizing community events like environmental fairs, lectures, and workshops may be necessary.
5. **Provide opportunities for hands-on learning**. Hands-on learning can help to reinforce the concepts learned in environmental education. This could involve activities such as gardening, composting, and building birdhouses.

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