

# ENVIRONMENTAL AWARENESS AND ECO-FRIENDLY PRACTICES AMONG STUDENTS: BASIS FOR A PROPOSED WASTE MANAGEMENT PROGRAM

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## Abstract

Education is vital in fostering environmental awareness and encouraging eco-friendly practices among students. This descriptive correlational research determines the relationship between environmental awareness and eco-friendly practices of students in the Iloilo State University of Fisheries Science and Technology Main Campus Tiwi Site as the basis for a proposed waste management program. The respondents randomly selected 128 first-year students from the Fisheries, Marine Biology, and Education programs using stratified proportionate random sampling. Part 1 of the instrument was the Environmental Awareness Questionnaire (EAQ) adopted from Sra (2020), which determines the students' environmental awareness, and Part 2 assessed the extent to which students engage in eco-friendly practices. The findings of the study revealed that students are somewhat aware of the environmental concepts and issues in terms of environmental pollution, depletion of the ozone layer, acid rain, global warming, and environmental laws. The results indicated that students frequently adopted various environmentally conscious behaviors daily. Respondents' high level of environmental awareness is related to their engagement in sound ecological practices. The researcher recommends creating waste management programs that will raise students' awareness of and understanding of the environment and give them the tools they need to make sustainable decisions in their daily lives.

**Index Terms:** Waste Generation and Disposal, Environmental Education, Responsible Waste Management, Sustainable Practices, Recycling, Composting.

## INTRODUCTION

The rapid deterioration of the environment is a serious concern. People need to realize the value of ecological consciousness and education's role in fostering it now more than ever. Environmental awareness has already been presented in our incredibly automated, data-driven, technologically sophisticated, and highly modernized world.

Education serves as a cornerstone for transforming society towards environmental sustainability. It collaborates effectively with government initiatives, civil society efforts, and private sector actions (Global Education Monitoring Report Team, 2016). By shaping values and perspectives, education equips individuals with the necessary skills and tools to tackle unsustainable practices.

Schools, where students spend a significant amount of their time, hold immense value in fostering environmental awareness. Investing in environmental education programs should begin as early as possible in a child's schooling (Adejoke et al., 2014). As mandated by Republic Act 9512 of 2008, environmental education encompasses a comprehensive range of knowledge. This includes environmental concepts and principles, applicable environmental laws, the current state of the environment (local and international), best practices for sustainable living, the potential consequences of

environmental degradation on human well-being, the role of citizens in environmental stewardship and the importance of conserving, protecting, and rehabilitating natural resources.

Environmental awareness entails comprehending and appreciating the natural world, encompassing the contemporary challenges faced in its protection. This knowledge includes the interconnectedness of all living things, emphasizing the imperative to preserve our planet for future generations. A profound understanding of the environment empowers individuals to mitigate their environmental impact through waste reduction, resource conservation, and active engagement in environmental protection and restoration initiatives (Earth Reminder, 2022).

Environmental concerns like pollution, climate change, and resource depletion highlight the critical need to raise awareness and promote eco-friendly behaviors among students. Universities, where future leaders are shaped, offer a crucial platform for environmental education programs. Environmental awareness and eco-friendly practices among university students played an important role in achieving the Sustainable Development Goals (SDGs) set forth by the United Nations. This research contributes to achieving Goal 13 of the SDGs (Climate Action) as it emphasizes the importance of both climate change education and promoting actions that lessen its impact.

This study on environmental awareness and eco-friendly practices among students provides crucial insights for designing impactful waste management programs, promoting comprehensive environmental education, and encouraging youth participation in sustainability initiatives. The findings can inform broader environmental efforts across the community. Building upon this knowledge, the proposed environmental education program aims to directly address the identified gaps in student awareness and practices. By promoting eco-friendly behavior among university students, this program aligns with several Sustainable Development Goals (SDGs) and paves the way for a more sustainable future.

### **Statement of the Problem**

This study aimed to determine the relationship between environmental awareness and eco-friendly practices of students in the Iloilo State University of Fisheries Science and Technology Main Tiwi Site for the School Year 2023-2024 as the basis for a proposed environmental education program.

Specifically, the study sought to answer the following questions:

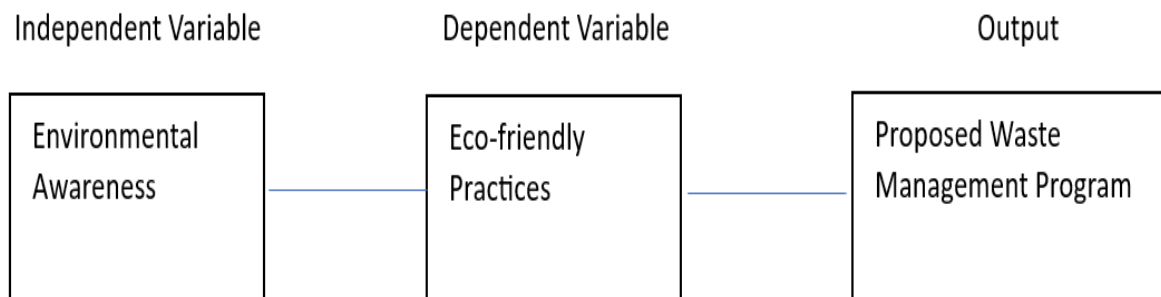
1. What is the level of environmental awareness of the respondents?
2. What is the level of eco-friendly practices of the respondents?
3. Is there a significant relationship between environmental awareness and the eco-friendly practices of the respondents?
4. What waste management program can be proposed based on the findings of the study?

## Theoretical Framework

This study was anchored on the National Environmental Awareness and Education Act of 2008 (RA 9512), which promotes environmental awareness through education. Aligned with the State's policy of ecological protection and youth development, RA 9512 emphasizes national awareness of natural resources' role in economic growth and the importance of environmental conservation for sustainable development.

## Conceptual Framework

The study focused on understanding the levels of environmental awareness and eco-friendly practices among university students, aiming to develop a targeted environmental education program. Addressing environmental challenges requires informed and responsible individuals, making university students a crucial demographic for fostering sustainable behaviors.



## REVIEW OF RELATED LITERATURE

Studying environmental issues has attracted people's concern worldwide due to the rapid increase in environmental degradation due to different environmental threats or problems. Most of the burning environmental problems are occurring due to human activities. Therefore, educating the masses to create environmental awareness and understanding is critical to preventing and curing all environmental problems (Bhowmik & Verma, 2019).

As outlined by the Greenation Foundation (2021), environmental awareness entails comprehending the fragility of our ecological systems and fostering the imperative to safeguard them. Promoting this awareness, though a seemingly modest endeavor, holds immense potential for creating a more sustainable future for subsequent generations. Initiating small changes in our lives is one easy way to live more environmentally aware. An individual's most minor action could affect the environment, and it will have a good impact if it's done collectively.

Grimmette (2014 cited in Punzalan, 2020) recognized the effects of environmental problems on youth and suggested endorsements to educate the youth with the concept of environmental education programs such as forming environmental awareness, building an association with the environment, and shifting the views and opinions of youth on the environment.

The study showed a significant positive effect in the three programs associated with the camp curriculum, including the human influence on the water cycle, the significance of animals to humans, and disbursing time to fix problems present in nature.

Punzalan (2020) proved that what the students know about environmental problems can be transformed into actions that allow them to solve these issues with their existing knowledge. This means that the respondents' high level of environmental awareness has a connection to their good ecological practices.

The study of Gonzaga (2016) on the Awareness and Practices in Green Technology of Bachelor of Education students at the Philippine Normal University Visayas revealed a moderate level of awareness but a low extent of practices in green technology among the participants. There was also a positive correlation between the level of understanding and the extent of practices obtained from the responses.

Awareness of environmental issues that are directly experienced is correlated to more pro-environmental behaviors. Local problems are more influential in shaping environmental behavior than regional or national issues. Integrating local environmental issues into education can lead to a deeper understanding and encourage positive environmental behaviors. By focusing on relevant topics like causes and mitigation of flooding, the nature of pollutants and pollution solutions, or the chemistry behind water safety, students can connect classroom learning to real-world problems in their community (dela Pena et al., 2018).

Integrating environmental education into the curriculum of all school levels can attain excessive influence on the understanding, practices, and attitudes of students toward environmental protection. It would help the students distinguish indications of exercising environmental sustainability and conservation with proper environmental teaching (Raman, 2016).

The results of the study of Lalamonan and Comighid (2020) revealed that the level of respondents' awareness of SWM Practices as perceived by the teachers and students was very high, and the extent of implementation of these practices was very great. In addition, a significant relationship was noted between the levels of awareness and the extent of implementation of SWM Practices.

## **METHODOLOGY**

### **Research Design**

This study utilized the descriptive-correlational research method. Descriptive, in the sense that information is collected from a group of people to describe some aspects or characteristics of the population of which that group is a part (Fraenkel, 2023). The correlation research method was used to find out the direction and extent of the relationship between variables of the population under study (Yanson et al., 2019). It is establishing the relationship among two or more variables.

## Respondents

The respondents of this research were randomly selected 128 first-year students of the Fisheries, Marine Biology, and Education programs of the ISUFST Main Tiwi Site, a state higher education institution in Tiwi, Barotac Nuevo, Iloilo, Philippines, for the year 2023-2024. The questionnaire examined students' current knowledge of the environment and pro-environmental practices. Stratified proportionate random sampling was utilized in determining the respondents from each course.

The computation of the sample size was guided by GPower (Faul et al., 2007), using the "Exact" test family with an alpha level of 0.05, a beta level of 0.80, and a medium effect size ( $d = 0.3$ ). Based on these parameters, GPower recommended a minimum sample size of 84 participants.

## Research Instrument

Part 1 of the instrument was the Environmental Awareness Questionnaire (EAQ) adopted from Sra (2020), which was utilized to determine the environmental awareness of the students. The questionnaire measured the students' awareness of the environment, environmental pollution, and main environmental issues like depletion of the ozone layer, acid rain, and global warming.

There are 45 statements in the questionnaire. There are 15 items about the environment, 11 items regarding environmental pollution, 6 for the depletion of the ozone layer, 4 items about acid rain, 4 items about global warming, and five items about environmental laws. Part 2 of the survey assessed the extent to which students engage in eco-friendly practices. Students indicated their level of agreement with each statement using a Likert scale.

The questionnaire had undergone validation and reliability testing. Science teachers validated the questionnaire for content validation. KR 21 was used to determine the reliability coefficient of Part 1 of the instrument and Cronbach alpha was used to determine the reliability of Part 2.

The reliability coefficient of 0.7 is generally considered acceptable for research purposes (Tavakol & Dennick, 2011). The internal consistency of Part 1 and Part 2, as measured by the reliability coefficient, was .756 and .778, respectively.

To determine the level of students' environmental awareness, the researcher employed the following scale of means and their corresponding descriptions:

Mean Score	Descriptive Rating
32 – 45	Extremely Aware
27- 31.99	Moderately Aware
18 - 26.99	Somewhat Aware
9 – 17.99	Slightly Aware
0 – 8.99	Not Aware

The following scale of means and their description were utilized to determine the eco-friendly practices of the respondents:

Means of Scale	Descriptive
4.20 – 5.00	Always
3.40 – 4.19	Often
2.60 – 3.39	Sometimes
1.80 – 2.59	Seldom
1.00 – 1.79	Never

### **Data Gathering Procedure**

The researcher obtained permission to conduct the study from the Vice President for the Academic Affairs office, following the established protocol through the Deans. To ensure informed participation, the researcher personally administered the questionnaire to the respondents and explained the study's nature and objectives. In the conduct of the study, ethical issues were given utmost consideration. All data collected was kept confidential.

### **Data Analysis Procedure**

The data gathered were tallied, recorded, and analyzed using appropriate statistical tools. Mean, standard deviation, and Pearson  $r$  were used.

## **RESULTS AND DISCUSSION**

### **Level of Environmental Awareness**

The study's findings revealed that students are somewhat aware of the environment ( $M=22.48$ ,  $SD = 5.838$ ). This indicates some familiarity with environmental concepts, but it also highlights a potential need for improvement in environmental education programs. Students need more understanding and basic awareness about the environment in terms of environmental pollution, depletion of the ozone layer, acid rain, global warming, and environmental laws. Students have a basic understanding of environmental concepts but lack in-depth knowledge about specific issues or solutions.

They can identify basic environmental concepts but lack a deeper understanding of the causes, consequences, and potential solutions related to environmental issues. Limited environmental awareness may hinder students' ability to make informed choices regarding their impact on the environment, potentially leading to increased consumption, waste generation, and unsustainable practices.

These findings emphasize the potential need for more comprehensive environmental education programs. By addressing the identified knowledge gaps, such programs can equip students with the knowledge, skills, and critical thinking necessary to become responsible environmental stewards and contribute to a more sustainable future.

The findings agree with the results of the study of Basu and Sengupta (2015), who found that Indian university students had limited knowledge of specific environmental issues like pollution and climate change despite expressing positive environmental attitudes. The results of the study conform to the findings of Sahu, Roy, Monika & Rajkiran (2015), who found that the overall level of awareness was average. Similarly, the average score of the environmental awareness levels of the students who participated in the study of Yilmaz and Erkal, (2016) has been reported. The findings of the study are consistent with the results revealed by Singh (2015) that the undergraduate students of District Ambala possessed good average level of environmental awareness. Table 1 presents the results.

**Table 1: Level of Environmental Awareness of the Respondents**

Course	Mean	SD	Description
Education	26.00	3.930	Somewhat Aware
Fisheries	24.92	4.298	Somewhat Aware
Marine Biology	16.43	3.686	Slightly Aware
Mean	22.48	5.838	Somewhat Aware

Legend: 32 – 45 Extremely Aware; 27- 31.99 Moderately Aware; 18 - 26.99 Somewhat Aware

9 – 17.99 Slightly Aware; 0 – 8.99 Not at all Aware

### Level of Eco-Friendly Practices

The results revealed that students often engage in eco-friendly practices ( $M = 3.68$ ,  $SD = .487$ ). This implies that students are willing to take sustainable action and contribute to environmental sustainability and resource conservation. They are responsible for working towards a safer and cleaner environment for the future. They consistently engaged in practices to minimize their environmental impact, with a mean of 4.61 ( $SD = .695$ ) for actions like turning off lights and unplugging unused appliances. Additionally, they demonstrated responsible waste disposal behavior with a mean of 4.25 ( $SD = .742$ ), minimizing littering. To avoid leftover consumption and water wastage, students actively reduce food and water waste, with a mean of 4.04 ( $SD = .911$ ). Sustainable transportation is frequently chosen ( $M = 3.86$ ,  $SD = 1.077$ ) for opting to walk for short distances.

Reusable water bottles are the preferred choice ( $M = 3.86$ ,  $SD = 1.100$ ), indicating a conscious effort to reduce plastic use. Responsible solid waste management is often practiced ( $M = 3.63$ ,  $SD = .929$ ) for recycling and reusing non-biodegradable materials. From reducing plastic and styrofoam ( $M = 3.29$ ,  $SD = .858$ ) to embracing composting ( $M = 3.27$ ,  $SD = 1.123$ ) and eco-bags ( $M = 3.20$ ,  $SD = 1.128$ ). Tree planting plays a role in student efforts, with a mean of 2.75 ( $SD = .955$ ) showing some participation in community greening and contributing to cleaner air.

Students' frequent engagement in eco-friendly practices contributes significantly to environmental sustainability, positively impacting the environment. Students are often seen as change agents and role models within their communities. Their adoption of eco-friendly practices can inspire and influence others, leading to a broader ripple effect of positive environmental change.

The findings of this study align with those of Rogayan and Nebrida (2019), where respondents reported frequently practicing taking action to solve environmental problems.

**Table 2: Level of Eco-Friendly Practices of the Respondents**

	<b>M</b>	<b>SD</b>	<b>Description</b>
1. I turn off the lights and unplug appliances when not in use to reduce electricity consumption.	4.61	.695	Always
2. When traveling short distances, I walk instead of riding in a vehicle.	3.86	1.077	Often
3. I plant trees in the vacant areas in the community to prevent soil erosion and get more oxygen to breathe.	2.75	.955	Sometimes
4. I avoid the use of plastic and styrofoam, which cause harm not only to the environment but also to human health	3.29	.858	Sometimes
5. I avoid throwing garbage anywhere.	4.25	.742	Always
6. I avoid eating with leftovers and wasting drinking water	4.04	.911	Often
7. I use eco-bags when buying from stores.	3.20	1.128	Sometimes
8. I practice composting, which produces partially decomposed organic material used in gardening to improve soil and enhance plant growth	3.27	1.123	Sometimes
9. I recycle and reuse non-biodegradable materials to lessen solid wastes	3.63	.929	Often
10. I use reusable water bottles or tumblers instead of buying bottled water in the canteen or stores	3.86	1.100	Often
Mean	3.68	.487	Often

Legend: 4.20 – 5.00 Always; 3.40 – 4.19 Often; 2.60 – 3.39 Sometimes; 1.80 – 2.59 Seldom 1.00 – 1.79 Never

**Relationship between Level of Environmental Awareness and Eco-Friendly Practices**

The results of the study revealed that there is a positive correlation between students' environmental awareness and their level of eco-friendly practices ( $r = .242, p = .026$ ). The findings of the study indicate that respondents' high level of environmental awareness is related to their engagement in sound ecological practices. Students with a strong awareness and understanding of environmental concerns seem to be more likely to practice sustainable alternatives like walking for short distances, turning off the lights, and unplugging appliances when not in use, potentially indicating a connection between environmental knowledge and action. Students refrain from throwing garbage anywhere, having fully understood the impact of littering on the environment and human health. The more students learn about the environment, the less likely they are to use things that have harmful effects to the environment like plastic bags and styrofoam containers. Students with a higher understanding of environmental issues appeared to be more likely to use reusable water bottles.

The findings echo those of Pardo (2012), who identified a strong and positive relationship between environmental awareness and practices among students at the University of the Northern Philippines. Pardo's research indicated that students with a high level of environmental awareness were more likely to integrate the seven key environmental



education messages into their daily lives. This suggests that fostering environmental awareness can be an effective strategy for promoting pro-environmental behaviors. Moreover, this also agrees with Punzalan (2020), who revealed that the level of environmental awareness of senior high school students is significantly and substantially related to their extent of ecological practice. The study by Rogayan and Nebrida (2019) found a moderate correlation between students' awareness of environmental concepts and issues and their practices to solve environmental problems and possess a high degree of commitment, which supports the present study's findings.

**Table 3: Relationship between Level of Environmental Awareness and Eco-Friendly Practices**

	R	Sig
1. I turn off the lights and unplug appliances when not in use to reduce electricity consumption	.219*	.045
2. When traveling short distances, I walk instead of riding in a vehicle.	.379**	.000
3. I plant trees in the vacant areas in the community to prevent soil erosion and get more oxygen to breathe.	-.017	.876
4. I avoid the use of plastic and styrofoam, which cause harm not only to the environment but also to human health	.771*	.032
5. I avoid throwing garbage anywhere.	.233*	.033
6. I avoid eating with leftovers and wasting drinking water	-.144	.301
7. I use eco-bags when buying from stores.	.126	.253
8. I practice composting, which produces partially decomposed organic material used in gardening to improve soil and enhance plant growth	.046	.678
9. I recycle and reuse non-biodegradable materials to lessen solid wastes	.062	.577
10. I use reusable water bottles or tumblers instead of buying bottled water in the canteen or stores	.313*	.004
Mean	.242*	.026

p\* < .05, \*\* p < .001

## CONCLUSIONS

Students possess a moderate level of awareness concerning the environment, but their understanding is limited. This indicates a potential need for deeper education and engagement in environmental topics. They frequently engage in eco-friendly practices. Awareness of environmental issues is correlated to more pro-environmental behaviors. Students understand the basic principles of environmental sustainability and choose practices that support it.

Students who understand the importance of sustainability seem to be more likely to choose practices that support it. This highlights the need for more comprehensive environmental education programs to equip individuals with the knowledge and motivation to take action.

By deepening their understanding of environmental challenges and solutions, students will be empowered to become even more active participants in building a sustainable future.

## **RECOMMENDATIONS**

1. Provide assistance and opportunities for students to attend sustainability workshops, read articles about climate change, and engage in discussions about environmental challenges.
2. Students could create environmental clubs or organizations that take the lead on eco-friendly activities, both on campus and in the broader community.
3. The institution may provide further educational initiatives and support to enhance students' collective efforts and maximize their positive contributions.
4. The researcher suggests creating a Waste Management Program that will attempt to both raise students' awareness of and understanding of the environment and give them the tools they need to make sustainable decisions in their daily lives, based on the summary of findings.

## **PROPOSED WASTE MANAGEMENT PROGRAM**

### **Rationale**

Environmental awareness and eco-friendly practices are increasingly important as we face the challenges of climate change, pollution, and resource depletion. University students are a vital group to target for environmental education, as they are at a critical stage in their development and are more likely to adopt sustainable habits.

This program provides a dynamic and comprehensive framework for empowering university students to become informed, engaged, and effective green agents. By combining theoretical knowledge with practical learning opportunities, fostering critical thinking and problem-solving skills, and promoting responsible action and advocacy, this program equips students with the tools and motivation to create a more sustainable future for themselves and their communities.

### **Program Outcomes:**

1. Enhanced campus-wide understanding of waste management challenges.
2. Improved student knowledge and abilities in waste reduction, reuse, and recycling.
3. Increased student participation in sustainable waste management practices.

**Program Duration:** Semester-long program (12 weeks), consisting of seminars and community engagement projects/ activities.

### **Program Components:**

#### **Week 1-2: Introduction to Environment and Environmental Issues**

Introduction to the concept of environment and environmental issues

1. Climate change
2. Biodiversity and conservation

3. Pollution and waste management
4. Sustainable resource use
5. Environmental laws and policies

*Activity 1: Seminar - Earth Matters: Exploring Environmental Issues and Taking Action*

Guest speaker: A local environmental leader shares their experiences and insights.

*Activity 2: Eco-Film Festival and Discussion*

Watch and discuss environmental documentaries or films to raise awareness and spark critical thinking.

*Activity 3: See it Green: Environmental Infographics*

Design environmental education materials.

### **Week 3-4: Understanding Sustainability Principles**

Explore foundational sustainability concepts (ecological, social, economic) and their application in various contexts.

*Activity 1: Footprint Analysis*

Calculate your individual or household's ecological footprint, which measures the amount of natural resources consumed. Tools like online calculators or paper-based worksheets are available.

*Activity 2: Branch Out & Grow: Community Planting Event.*

Organize community planting events.

*Activity 3: "Plastic-Free Challenge" week*

Encourage students and staff to bring reusable alternatives and raise awareness about sustainability.

### **Week 5-6: Sustainable Plastic Bag Reduction**

Educate students about the environmental impact of single-use plastic bags and eco-bags' benefits.

*Activity: Seminar-Workshop - Eco-Bag Exploration*

Resource Speaker: A local entrepreneur or environmental activist who promotes sustainable alternatives shares their experiences and insights.

### **Week 7 - 8: Community Outreach**

Cultivate within students an understanding of the importance of composting and its contribution to environmental well-being.

*Activity: Community Composting Campaign*

Plan a community outreach campaign to promote composting awareness and encourage broader participation.

### *Activity: Compost Crusaders: Engaging Students in Promoting Composting*

Partner with schools or community centers to set up and maintain on-site composting bins for cafeteria waste or yard trimmings.

### **Week 9 – 10: Tree Planting Initiatives**

Provide opportunities to address pressing environmental challenges, foster a sense of community responsibility, and contribute to a more sustainable future for present and future generations.

#### *Activity 1: Campus Tree Planting Day*

Organize a university-wide event where students, faculty, and staff unite to plant trees on campus—partner with the campus grounds department or local environmental organizations for guidance and resources.

#### *Activity 2: Adopt-a-Tree Program*

Allow student organizations or residence halls to "adopt" a specific tree on campus, taking responsibility for its care and maintenance throughout the year. This fosters a sense of ownership and builds connections to the natural environment.

### **Week 11-12: Critical Thinking and Environmental Communication**

Learn effective communication strategies for raising awareness, advocating for change, and engaging diverse audiences.

#### *Activity: Develop a centralized waste management information hub*

Create a dedicated webpage or online portal that serves as a one-stop shop for all waste management information.

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