



**A Study on Environmental Awareness
of Faculty, Staff, and Students
at Palawan State University - Palawan College of Arts and Trades**

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Abstract

The environment is crucial for human survival and well-being, and the current environmental crisis and degradation are putting a strain on the earth's resources. To preserve, conserve, and sustain natural resources, it is important to enhance environmental awareness among employees, personnel, and students in higher educational institutions. This study seeks to assess the level of environmental awareness at Palawan State University–Palawan College of Arts and Trades and to evaluate perceptions regarding environmental security and the future condition of the environment. The survey covered 1,843 respondents, with 87% of respondents being young adults, 56% females, and 94% students. A mixed-model approach, including descriptive statistics, multivariate statistics, and focus group discussions, was used to explore the respondents' awareness of environmental issues in their locality. The survey revealed that climate change is the most pressing current environmental concern and the most urgent environmental issue among the respondents, while the diversity of wildlife species is the most perceived current and future environmental condition among the education-related programs, political science, and criminology respondents. Most respondents were aware of environmental issues through the internet, with awareness-raising and education being the key and prominent solutions. Regular seminars, workshops, environmental campaigns, and community outreach programs are recommended to increase ecological awareness among faculty, staff, and students for sustainable development and economic growth in the future.

Keywords: *Environmental awareness, perceptions, Palawan faculty, staff, students*

Introduction

Human activities have had a profound and detrimental impact on the planet, resulting in catastrophic environmental changes. Public awareness serves as a critical catalyst within the environmental sector (Gonzaga, 2017). People are remarkably well-informed of local and worldwide environmental challenges, such as improper waste disposal, plastic pollution, and water pollution in rivers, lakes, and coastal areas, as well as air pollution from vehicles and industries, and flooding caused by poor drainage and land degradation (Earth Organization, 2023). Other worldwide environmental challenges are deforestation, coral reef destruction, climate change, typhoons, biodiversity loss, food and water scarcity, and increasing greenhouse emissions (National Academy of Science and Technology Philippines, 2020; United Nations Environment Programme, 2023). Moreover, environmental uncertainties are expected to worsen over time. Anthropogenic activities are the primary source of

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environmental degradation (Makhtar, S.Z. et al., 2021) and so environmental awareness is crucial (Gonzaga, 2016).

Education-based knowledge significantly influences changes in environmental behaviour (Gonzaga, 2017). More universities have settled on or established long-term goals of keeping and maintaining ecological balance and sustainable institutions (Tarraya et al., 2025). Education also serves as a vital tool in promoting sustainable development. In 1977, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) endorsed five goals of environmental education, which include awareness, knowledge, attitude, skills, and participation. In the Philippines, profound awareness on how to protect and conserve the environment is crucial through the implementation of the Environmental Awareness and Education Act of 2008 (RA 9512, 2008), specifically in the relevant organizations such as the Commission on Higher Education (CHED), Technical Education and Skills Development (TESDA), Department of Education (DepEd), Department of Environment and Natural Resources (DENR), and the Department of Science and Technology (DOST).

Educating people on environmental awareness aims to preserve, sustain, and improve nature and ecological balance by enhancing awareness of the effects of overpopulation on natural resources and basic human needs, addressing environmental challenges, and promoting proactive behaviour toward maintaining a stable and sustainable ecosystem. Schools are essential for environmental education, and the development of positive attitudes toward the environment should be emphasized because public awareness of these issues is crucial for implementing effective strategies and policies (Gherhes et al., 2022).

Technological advancements have introduced new ways of distributing environmental information (Ren & Zhao, 2023). Therefore, students need to stay informed and aware, as a vast amount of environmental knowledge is now widely accessible (El Senousy & Alsharoa, 2021).

There are several factors that influence the development of environmental consciousness among students. For example, students often obtain most of their information through social networks and the internet, making these platforms effective tools for promoting environmental awareness (Meyer, 2016; Hamid et al., 2017; Novotný et al., 2021). Another example will be, the university public relations team can effectively use media to convey university policies and contribute to their goal of becoming fully fledged green universities (Hamid et al., 2017). Studies have shown that females generally demonstrate greater environmental awareness and are more likely to participate in environmentally responsible practices compared to males (Meyer, 2016).

Moreover, a student's field of study can also impact their level of awareness. In other countries, for instance, students majoring in Humanities, Natural Sciences, "Mathematics," and "Informatics" demonstrate higher levels of emotional and behavioral factors related to environmental awareness compared to students in the domains of Healthcare, Social, Economic, and Legal Sciences (Novotný et al., 2021). In the Philippines, numerous studies have investigated the level of environmental awareness among students, yielding varied results. For instance, an example of this is by Rin (2012), where the students were observed a high level of science interest among first-year Bachelor of Secondary Education (BSEd) students at a state university, which correlated significantly with their awareness of environmental concerns and programs. Some studies revealed that students possess a high level of environmental awareness regarding climate change, pollution, waste management,

and environmental conservation, although their environmental practices do not always correspond to their level of awareness. Other studies also reported significant relationships between environmental awareness and pro-environmental behavior among Filipino students. (Toledo, 2024). Punzalan (2020) found that Filipino senior high school students demonstrated a good level of environmental awareness, which was positively associated with environmental practices. Similarly, Garcia and Luansing (2016) reported that graduating college students in Calbarzon generally exhibited high environmental awareness, with female students showing higher awareness levels than males. In addition, Toledo and Lingon (2024) observed that senior high school students showed high awareness of waste management, pollution, and climate change issues. Moreover, Lualhati (2019) discovered that Filipino pre-service teachers were generally unaware of environmental issues and policies; despite demonstrating a satisfactory level of environmental awareness, many students only exhibit moderate participation in environmental protection and conservation activities. This suggests that although students are knowledgeable about environmental issues such as climate change, pollution, waste management, and biodiversity conservation, their awareness does not always translate into consistent environmental action. Factors such as limited opportunities for involvement, lack of resources, insufficient institutional support, academic workload, and varying personal interests may influence their level of participation in environmental programs and activities. Consequently, strengthening environmental education and encouraging active engagement in sustainability initiatives are essential to promote more responsible environmental behavior among students.

Studies on environmental awareness in Palawan are notably scarce. Therefore, the primary objective of this study is to assess the level of environmental awareness among faculty, staff, and college students at the Palawan State University-Palawan College of Arts and Trades. Identifying the key factors influencing awareness among the participants are essential for formulating effective management strategies to address the research gap. The findings of this study could serve as a valuable resource in developing targeted interventions aimed at enhancing environmental consciousness among university students, staff, and faculty, thereby contributing to sustainable practices and conservation efforts in the region.

Statement of the Problem

The scarcity of studies on environmental awareness in the municipality of Cuyo, Palawan, emphasizes the urgent need to bridge the knowledge gap and gain insights into the communities' attitudes and perceptions toward environmental conservation and sustainability.

This study aims to determine the current level of environmental awareness among faculty, staff, and college students at the Palawan State University-Palawan College of Arts and Trades-Cuyo, and the factors that contribute to their awareness and implement targeted interventions to enhance environmental consciousness and promote sustainable practices.

Specifically, this study seeks to answer the following:

1. What is the level of awareness of the faculty, staff, and students on environmental issues?
2. What are the perceptions of the faculty, staff, and students on the current and the future state of the environment?
3. What are the sources of environmental information they often use?
4. Which courses offered in the university contribute to the students' environmental awareness and perceptions?

The objectives of this study are designed to comprehensively assess the level of environmental awareness among faculty, staff, and college students at Palawan State University - Palawan College of Arts and Trades in Cuyo Island. The specific objectives of the study are as follows:

1. To extensively determine the level of awareness of faculty, staff, and college students of environmental issues and concerns.
2. To examine the perceptions on the current and future state of the environment among the faculty, staff, and college students.
3. To identify the sources of environmental information that are often used to acquire environmental awareness across the university.
4. To propose solutions to mitigate problems related to environmental issues and concerns.

Methodology

Research Design

The study used a mixed-model approach, including descriptive statistics, multivariate statistics, and focus group discussions. A mixed model approach was used to explore participants' awareness of environmental issues in their locality. First, a structured survey was administered to obtain necessary data such as demographic information, perceptions of environmental conditions, sources of environmental information, and perceived solutions to the issues. The target respondents were across different courses, age groups, and academic disciplines of Palawan State University—Palawan College of Arts and Trades (PSU-PCAT). Descriptive statistics were incorporated in the analysis, such as the frequency and distribution of responses. A multivariate statistical approach was also utilized to determine a possible association between demographic profiles and perceptions of environmental conditions. Multiple correspondence analysis is defined as an extension of correspondence analysis to analyze two or more categorical variables simultaneously. It involves predicting joint variables based on random choices of marginal variables, allowing for symmetrical analysis of the variables involved (Science Direct, 2001). Second, several Focus Group Discussions (FGD) whose objectives were to present the initial result and findings of the survey and gather more first-hand information and deeper understanding on the level of environmental awareness of the faculty, staff, and students.

There were two of note-takers and one recorder while conducting the FGD. The procedure of the FGD conducted is as follows: To initiate the Focus Group Discussion (FGD), the researcher first obtained formal permission from the Campus Dean. Subsequently, a schedule was established for the FGD. A permission letter, signed by the researcher and endorsed by the thesis adviser, was then submitted to the campus dean. Prior to the FGD, participants were provided with consent forms to sign, signifying their voluntary participation. On the scheduled date, the FGD commenced with the researcher assuming the role of facilitator. The session began with attendance verification and the collection of signed consent forms. The researcher then introduced the objectives of the research and the specific goals of the FGD. Finally, the FGD discussion took place, allowing participants to share their insights and experiences.

Respondents

The target respondents were the faculty, staff, and college students from the Education Department, BA Political Science, BS Criminology, Business Administration and Bachelor of Industrial Technology who are officially enrolled in the First Semester,

Academic Year 2022-2023, at Palawan State University—PCAT. The age range of the respondents is from 17 to 65 years old, indicating their interest in the subject matter. From the total respondents, 87% are young adults (17–25 years old), 8% are adults (26–44 years old), 4% are middle-aged (45–49 years old), and 1% are seniors (60–65 years old). Gender is also well represented, with male respondents composing 44% and females are 56%. Students made up 94% of the total respondents of the study that came from educational institutions or youth-focused organizations., while 6% are staff and faculty of the school.

Among student respondents, 20% are coming from a Bachelor of Industrial Technology (BIT I, II, III, IV), followed by Bachelor of Science in Hospitality Management (BSHM I, II, III, IV) and Bachelor of Secondary Education (BSED I, II, III, IV) at 15% and 14%, respectively. Most respondents aim to become technically proficient and improve their work environment, while few pursue Bachelor of Science in Entrepreneurship (BSE) courses for economic development, as indicated in Figure 2. This diversity in educational backgrounds enriches the study by providing a comprehensive view of how different fields influence environmental awareness and attitudes.

Instrumentation and Data Collection Procedure

The survey instrument used in this study was adopted from the CCI survey instrument with permission from the co-authors of the CCI horizon scan; some were added to the self-questionnaire with permission of the co-authors of the CCI horizon scan. The survey questionnaire comprised six parts with 32 questions, such as the following: 1. the current biggest environmental concern in the Philippines; 2. urgency of environmental issues in the Philippines; 3. perception on the environment; 4. perception of the future condition of the environment; 5. sources of environmental information, 6. solutions to environmental issues, and 7. personal information. The respondents were allowed to answer the first question about the current biggest environmental concern in the Philippines, choose from a set of environmental issues, with the second question allowing them to select exactly five items. Meanwhile, numbers 3 and 4 listed above required respondents to select their perceptions of the issues or problems provided. All items, except one, required answering among the four choices: a) Yes, b) No, c) I don't know, and d) No opinion. The fifth part of the survey asked participants to select the sources of environmental information. Part 6 solicited perceived solutions to the environmental issues that society should prioritize. They were to select five items from the 16 provided options about the solutions to environmental issues. The last part of the survey allowed respondents to input their demographic profile.

The respondents were given 15 to 20 minutes to answer the survey. The survey forms were administered both online via Google Forms and face-to-face to the respondents. The survey was administered from 26 October 2022 to 21 February 2023, and the retrieval in hard copy started on 11 November 2022 and continued until 21 February 2023. The survey yielded a total of 1,843 responses.

Analysis of Data

Descriptive analysis of survey respondents

Counts were employed to determine the number of occurrences of specific responses. Frequency distributions were then constructed to present the distribution pattern of categorical variables. This helped in determining which categories are most and least prevalent, making the interpretation easier.

Multiple Correspondence Analysis (MCA):

Multivariate Multiple Correspondence Analysis (MCA) was employed in the analysis of categorical data to explore any relationship with the survey responses of the twenty-one questions on perceptions of environmental security and seven questions on perceptions of the future condition of the environment. MCA is a multivariate technique developed for categorical variables, enabling the exploration of complex associations within a dataset. In MCA, a sequence of transformations is needed to calculate the coordinates of qualitative variable categories and the coordinates of observations in a representation space optimized for a criterion centered on inertia. Overall inertia is equivalent to the average number of categories minus one. When executing XLSTAT software version 2023, multiple outputs are typically produced, such as a multiple correspondence analysis, Eigenvalues, and results for the variables: principal coordinate (variables), standard coordinate (variables), and contributions (variables). XLSTAT was used to carry out MCA in this study. The biplots produced from MCA illustrate the symmetrical plots with eigenvalues, observable variables, and active variables to significantly enhance the data, specifically the demographic profiles such as age, sex, and position, as well as the course of the respondents to be interpreted under "Yes," "No," "No Opinion," and "I don't know." The symmetrical plot also includes the percentage across both axes to represent the data. Each point in the plot represents a category, and the proximity of points indicates similarity and dissimilarity between categories. To interpret symmetric plots, clusters or trends are identified, and the contribution of variables to the overall inertia needs to be interpreted.

Focus Group Discussion

The gathered answers of the students, faculty, and staff from the Focus Group Discussions (FGD) were consolidated and incorporated into the different parts of the survey questionnaires, such as Part II, the biggest environmental concerns; Part III, the urgency of environmental issues; Part IV, perception of the current condition of the environment; Part V, perception of the future state of the environment; Part VI, sources of environmental information; and Part VII, solutions to environmental issues.

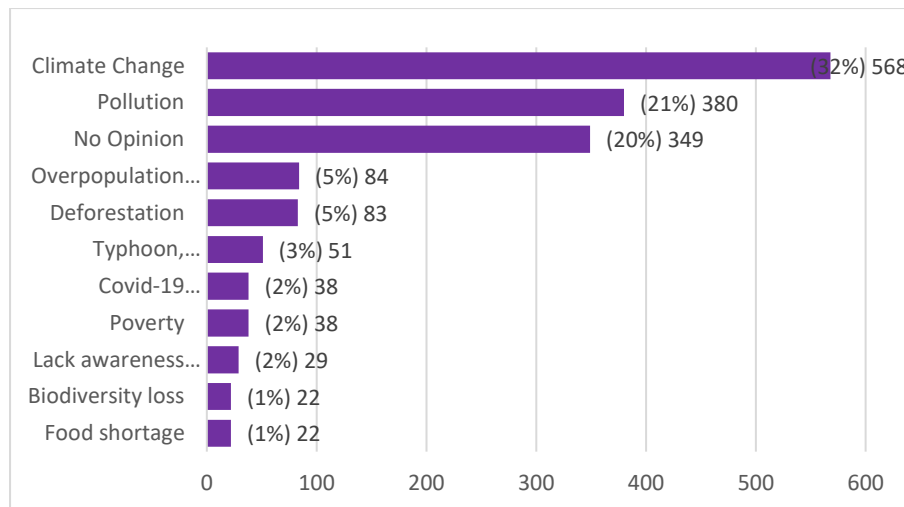
Results

Climate change is among the most critical and significant environmental concerns in the Philippines (32%), as shown in Figure 1 below. This is a consequence of the intensifying heat and erratic weather patterns that are gripping the planet (Intergovernmental Panel on Climate Change, 2023). These changes are unprecedented and far removed from the climate they once knew (FGD). Experts from the FGD said that humans, animals, and plants face new challenges for survival through climate change because its impact affects terrestrial and marine life (Shivanna, 2022). On land, extreme heat indexes and storms impact agricultural production; however, in marine life, rising sea levels, heat waves, and warmer waters force marine animals to relocate to more suitable locations (Prieto, N.G. et al., 2019).

Climate change was also the most urgent environmental issue, gaining 91.2% responses due to public awareness, followed by pollution (79%) and rapid population growth (43.8%), as indicated in Figure 2. Climate change is one of the issues that cannot be avoided or controlled in the modern world due to its intense impact on the environment, like high temperature, drought due to high heat index, wildfires, changes in rainfall patterns, strong typhoons, and floods, which are more frequent than seen before (Intergovernmental Panel on Climate Change, 2023).

Figure 1

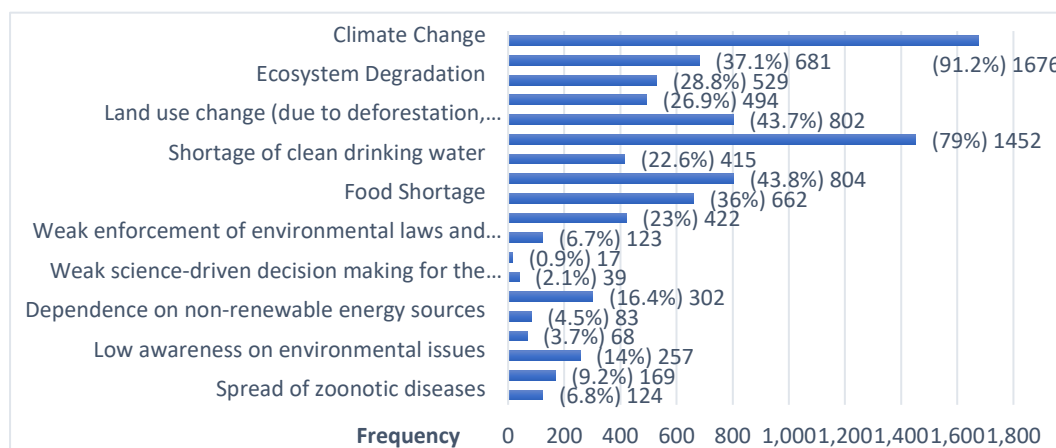
The Current Biggest Environmental Concern in the Philippines (N = 1,843)



Additionally, the environmental condition before cannot be returned or reverted to a natural state, and its unexpected effects on the economy and impact not only on human life, but also on other lower forms of life as well is the country's top priority concern (World Health Organization, 2023). It affects the life of an individual to secure agriculture for food and industrial production, secure health for medicine, and cure confidence on how to overcome the observed inflation rate due to the use of fossil fuels as the main source of energy for the different establishments in both the private and public sectors to produce income and varied products essential to humans (Food and Agriculture, 2023). Interestingly, climate change also affects marine ecosystems, which causes ocean acidification, resulting in the widespread death of coral reefs (United Nations Environment Programme, 2022). This acidity decreases ocean pH, affecting shrimp, oyster, and fish larvae's development, food security, and livelihood (Ranada 2014). Ocean acidification also affects food chains and the economy and can interact with other climate-related stressors like ocean warming and deoxygenation, which can have more combined effects (A New Government website, NSW Government, 2024).

Figure 2

The Urgency of Environmental Issues in the Philippines (N = 1,837)

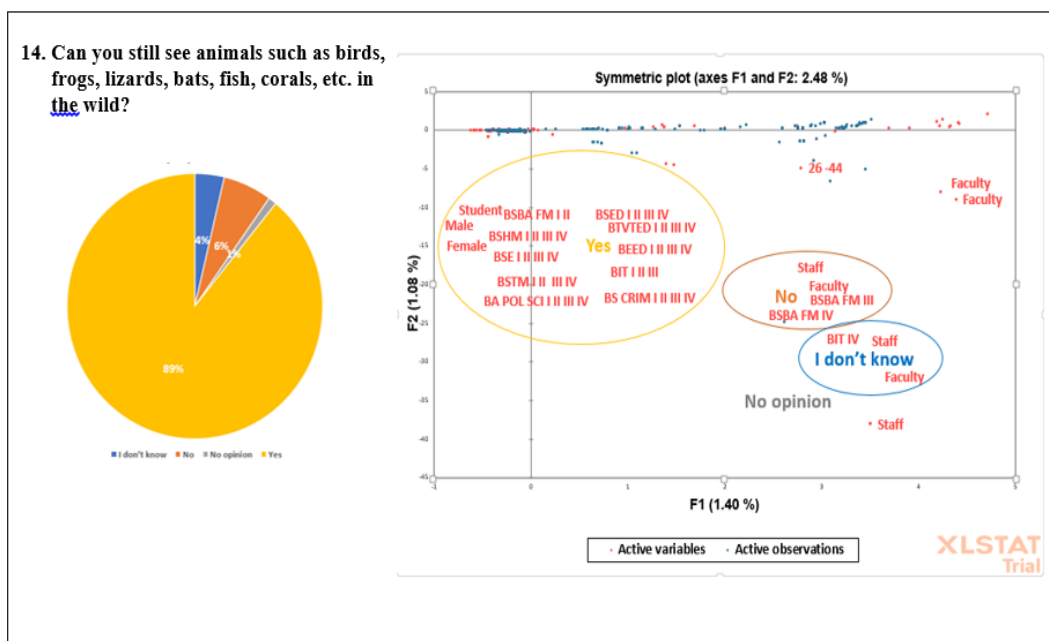


Furthermore, 79% of responses identified the second urgent environmental issue in the country is the pollution. Solid waste, water, and air pollution are the types of pollution observed in the country. Solid waste, in particular, like plastic ends up in the ocean; this plastic waste is eaten by fish, which in turn are eaten by humans. According to the FGD, based on the special coverage of Atong Arroyo, there was a test conducted on the human feces, and it was found out that it contains chemicals from plastic waste (Schwabl, P., et al., 2019; National Institute of Health, 2021). This finding must be given action and attention by the government authorities. Moreover, land use change, rapid population growth, and biodiversity loss are interconnected with one another (Convention on Biological Diversity, 2022) and were also identified by the respondents as another urgent environmental concern. These findings suggest that there is already a high level of community awareness and successful dissemination of environmental education, reducing the perceived urgency for further action in these areas (Monroe, M. C., et al. (2019).

Based on the result of the Multiple Correspondence Analysis (MCA) utilizing XLSTAT software, among the 21 questions surveyed from the respondents for the perception on the current condition of the environment, Q14 (89%) obtained the highest percentage as illustrated in Figure 5 wherein the majority of the affirmative answers were associated with male and female students notably coming from Bachelor of Science in Business Administration majoring in Financial Management (BSBA-FM) first year and fourth year, Bachelor of Science in Hotel Management (BSHM) levels I-IV, Bachelor of Science in Entrepreneurship (BSE) levels I-IV, Bachelor of Science in Tourism Management (BSTM) levels I-IV, Bachelor of Arts in Political Science (BA Pol Sci) levels I-IV, Bachelor of Secondary Education (BSED) levels I-IV, Bachelor of Technical-Vocational Teacher Education (BTVTED) levels I-IV, Bachelor of Elementary Education (BEED) levels I-IV, Bachelor's in Industrial Technology (BIT) levels I-III and, Bachelor of Science in Criminology (BS Crim) levels I-IV believe they can still see animals in the wild indicating a positive outlook for local biodiversity. This suggests that wildlife must be protected and conserved for future generations by preventing destruction of habitats.

Figure 3

Result of the Multiple Correspondence Analysis for perception on the existence of animals such as birds, frogs, lizards, bats, fish, corals, etc. that can still be seen in the wild



Results show the education programs, BSED, BEED, and BTVTED, are more likely to affirm the fertile soil condition for farming/gardening (78%), as indicated in Figure 3, which reveals Q4 as the second highest percentage on the perception of the current environmental condition, followed by the Q3 clean air condition (77%) in Figure 5, Q1 cleanliness of bodies of water suitable for use (67%) in Figure 6, and 64% of the education students confirmed the existence of forests or forest patches in their vicinity in Q2, as illustrated in Figure 7. They also affirm zoonotic diseases, land conversion and degradation; satisfaction with the existing environmental laws, illegal fishing, sea sand hauling, mangrove cutting, the kaingin system, and localities threatened by floods, typhoons, or landslides. Additionally, levels I-IV of BA Pol Sci, BS Crim, BSHM, BSE, and BSTM all perceived the existence of wildlife, fertile soil conditions for farming/gardening, clean air conditions, clean bodies of water suitable for use, and forests in the vicinity.

Figure 4

Result of the Multiple Correspondence Analysis for perception on the soil fertility for farming/gardening in their locality

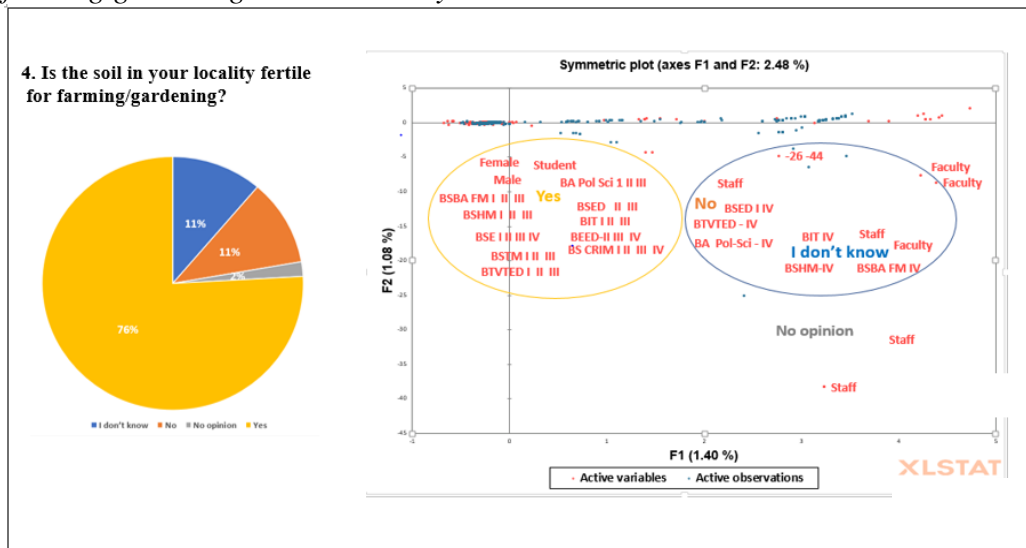


Figure 5

Result of the Multiple Correspondence Analysis for perception on the presence of clean air in the locality

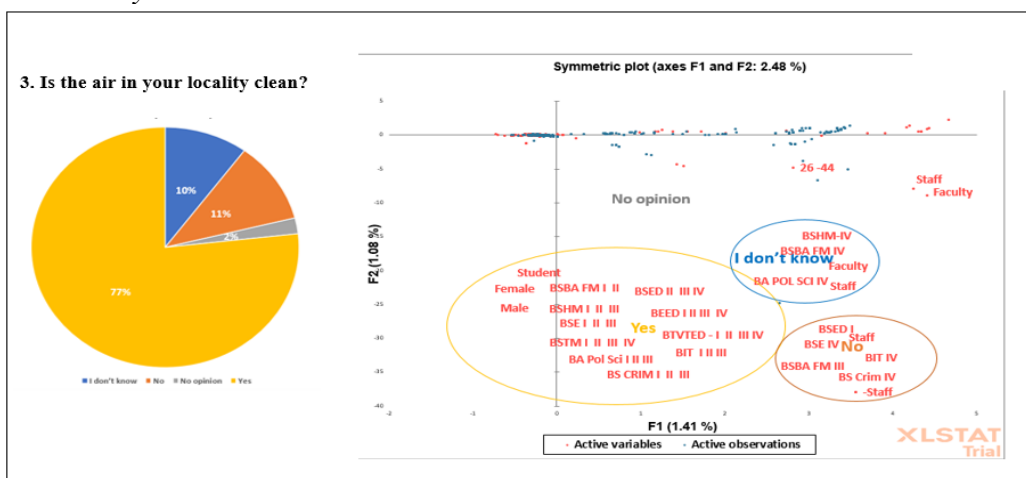


Figure 6

Result of the Multiple Correspondence Analysis for perception on the bodies of water (i.e., river, stream, creek, lake, sea) in the locality are clean for bathing, washing clothes, or household use

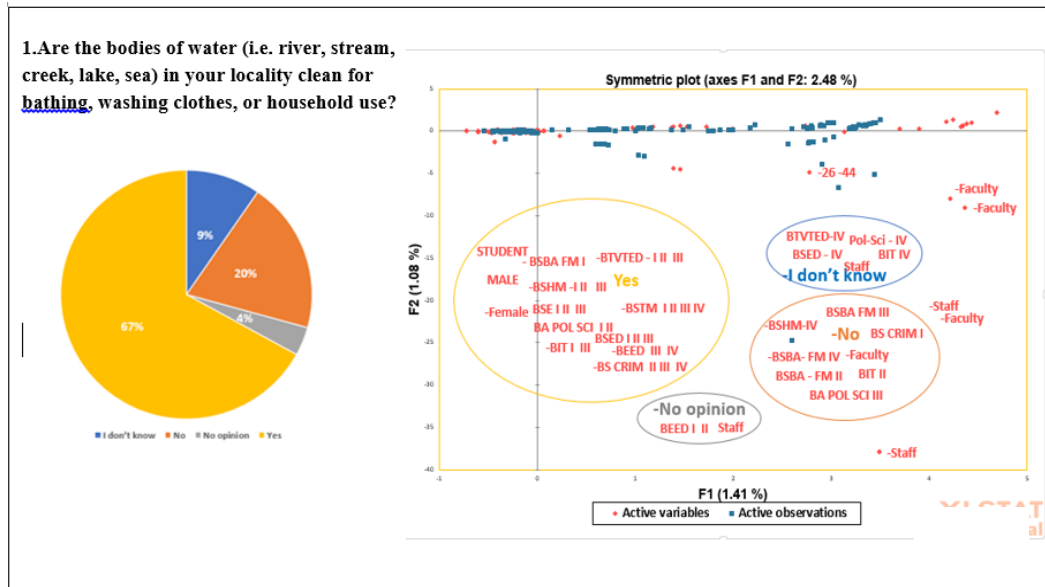
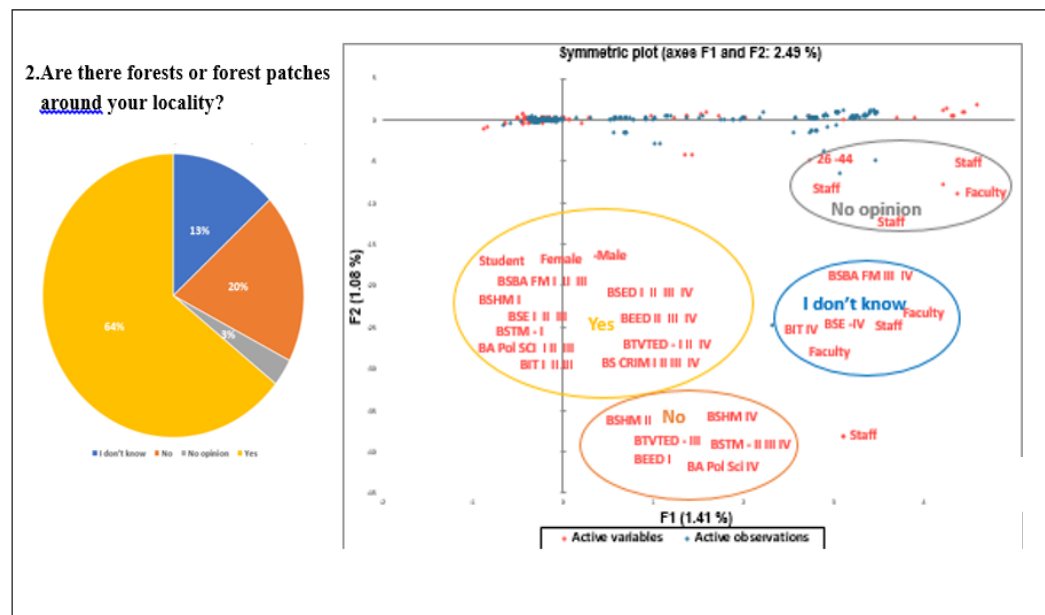


Figure 7

Result of the Multiple Correspondence Analysis for perception on the presence of forests or forest patches around the locality



Meanwhile, students from Bachelor of Secondary Education (BSED) levels I-IV, Bachelor of Technical-Vocational Teacher Education (BTVTED) levels I-IV, Bachelor of Science in Business Administration majoring in Financial Management (BSBA-FM) levels I-III, Bachelor of Science in Hotel Management (BSHM) levels I-III, Bachelor of Science in Entrepreneur (BSE) levels I-IV, and Bachelor of Science in Tourism Management (BSTM)

levels I-IV. Bachelor of Science in Criminology (BS Crim) levels I-IV, Bachelor of Industrial Technology I-III, and Bachelor of Arts in Political Science (BA Pol Sci) levels II, III, and IV affirmed the occurrence of drought, illegal logging, clam collection, hunting of endangered species, and transportation of banned species of lumber in their locality. However, they were less likely to recognize natural disaster threats and hunger resulting from food insecurity. Interestingly, they are likely to engage in sustainable consumption regularly, indicating a proactive approach to environmental stewardship.

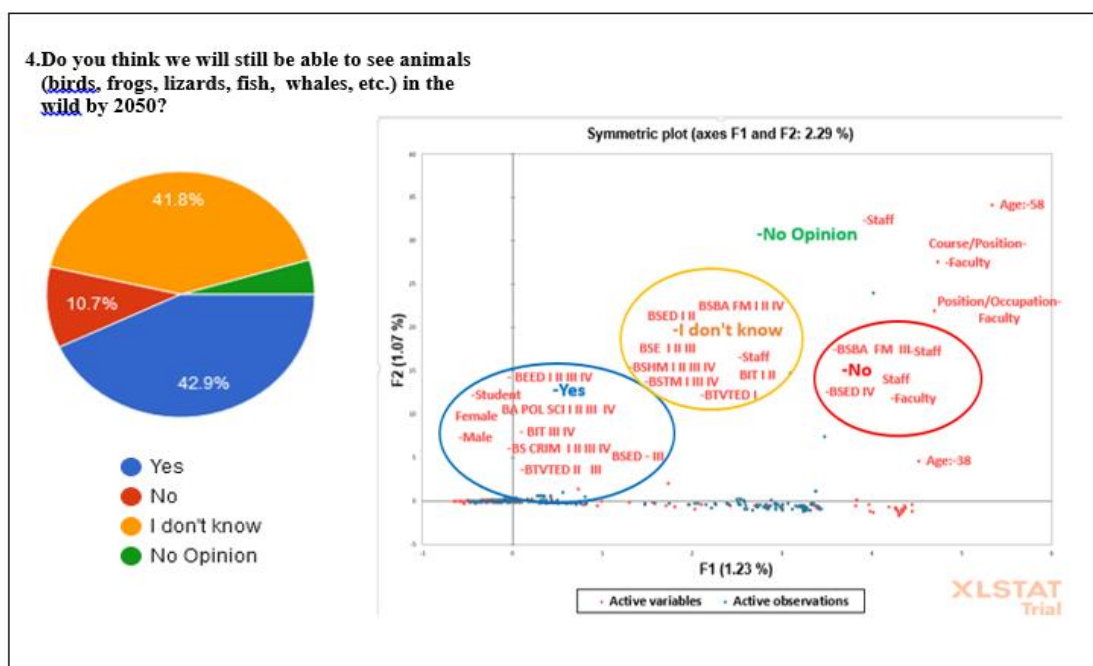
As compared to students, faculty and staff often exhibited uncertainty or a lack of clear opinions on several questions, such as forest condition; the presence of illegal logging, illegal fishing, clam collection, hunting of endangered species, sand hauling, transportation of banned species of lumber, dumping of garbage and human waste in the coastal area, land conversion and degradation, drought, visibility of animals in the wild, and the impact of zoonotic diseases. This indicates potential gaps in knowledge or engagement with environmental topics among staff and faculty.

Perceptions of Future Trends

Among the seven questions on the perception of the future conditions of the environment, O4 revealed the highest percentage, 42.9%, as illustrated in Figure 8, based on the MCA result. The affirmative answers were associated with male and female students coming from Bachelor of Elementary Education (BEED) levels I-IV, Bachelor of Arts in Political Science (BA Pol Sci) levels I-IV, Bachelor of Science in Industrial Technology (BIT) third- and fourth-year, Bachelor of Science in Criminology (BS Crim) levels I-IV, Bachelor of Secondary Education (BSED) third-year, and Bachelor of Technical-Vocational Teacher Education (BTVTED) second- and third-year students who have a positive outlook; they believe that wildlife will still be observable in their natural habitats by 2050.

Figure 8

The result of the multiple correspondence analysis for perception on the existence of animals (birds, frogs, lizards, fish, whales, etc.) can still be seen in the wild by 2050

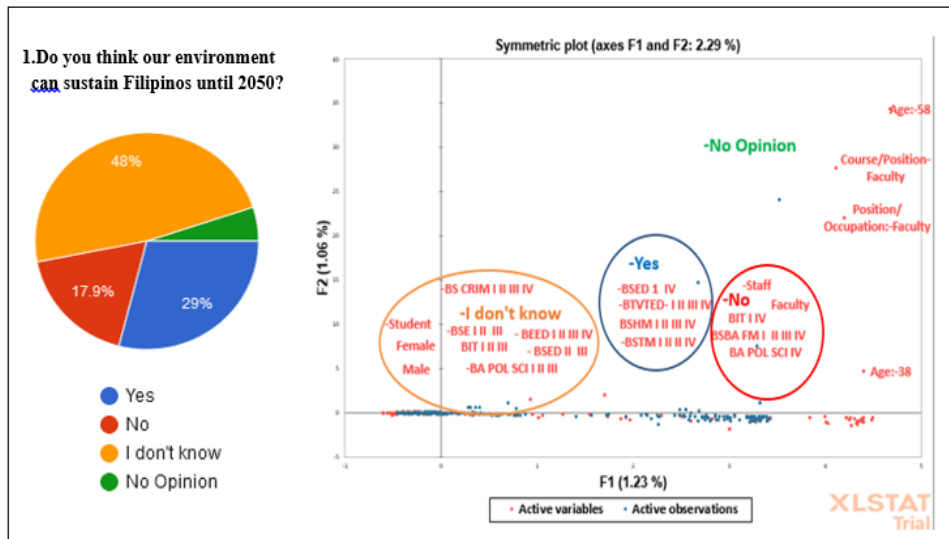


In contrast, a Bachelor of Science in Business Management majoring in Financial Management (BSBA –FM) levels I-IV, Bachelor of Secondary Education (BSED) levels I, II,

and IV, Bachelor of Science in Entrepreneurship (BSE) levels I-III, Bachelor of Science in Hotel Management (BSHM) levels I-IV, Bachelor of Science in Tourism Management (BSTM) levels I-III and IV, Bachelor of Science in Industrial Technology (BIT) levels I-II, and Bachelor of Technical-Vocational Teacher Education (BTVTED) first year, as well as faculty and staff, have a negative outlook on the issue. No specific categorical variable is associated with the "No Opinion" response.

Figure 9

Result of the Multiple Correspondence Analysis for perception on the environment can sustain Filipinos until 2050



Almost all the programs, including the faculty and staff, lacked knowledge or showed potential knowledge gaps on the following perceptions: Q1 environmental sustainability in Figure 9 above, Q2 accessibility of clean water in Figure 10 below, clean air in Q4 (Figure 11 below) wildlife and forest existence (Q5; Figure 12 below), Q6 availability of enough food in Figure 13, water and space/shelter, and Q7 quality of life by 2050 as indicated in Figure 13 below.

Figure 10

The perception on the accessibility of clean water to Filipinos by 2050

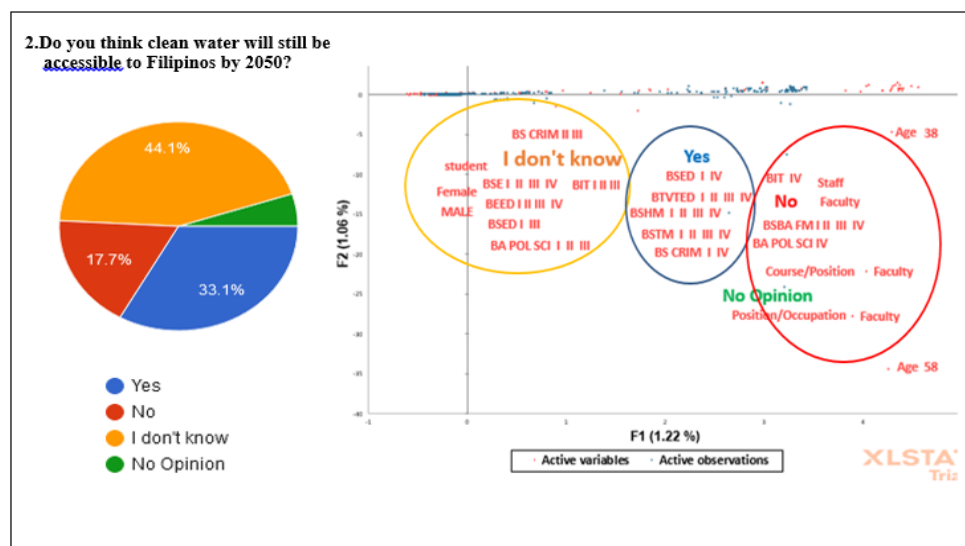
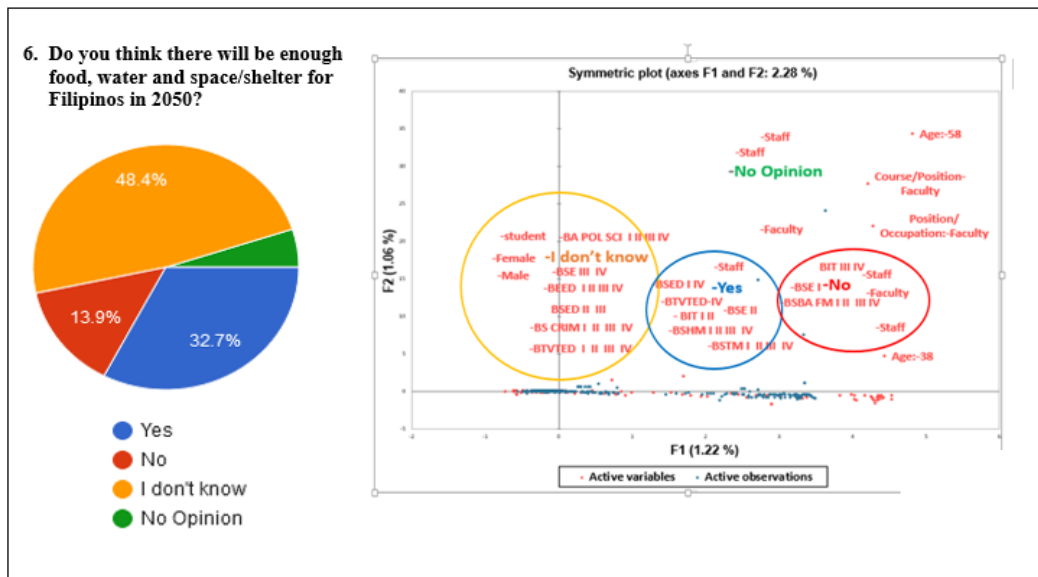


Figure 13

Result of the Multiple Correspondence Analysis for perception on the abundance of food, water, and space/shelter for Filipinos in 2050



This suggests the need for prompt implementation of Republic Act No. 8749, the Clean Air Act, controlling air pollution; Republic Act No. 9275, the Clean Water Act, providing a good quality of water; Presidential Decree No. 705, the Forestry Code; and Republic Act No. 9147, the Wildlife Act, providing conservation and protection of wildlife (Doria, B.D. et al., 2019) to have a sustainable and good quality of life in the future.

Figure 14

Result of the multiple correspondence analysis for perception on the improvement of the quality of life by 2050

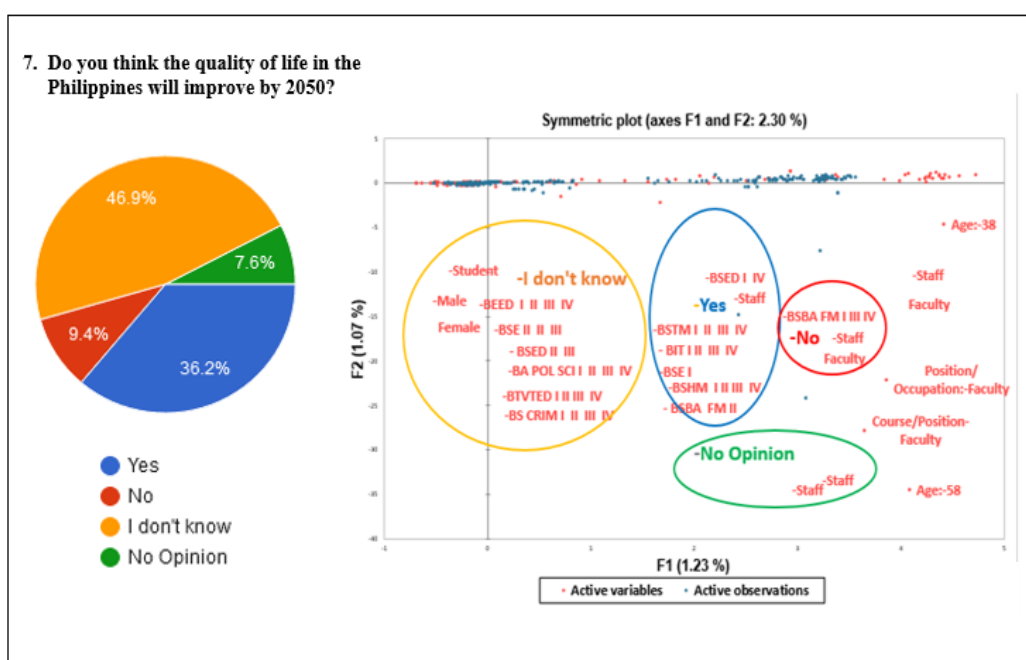
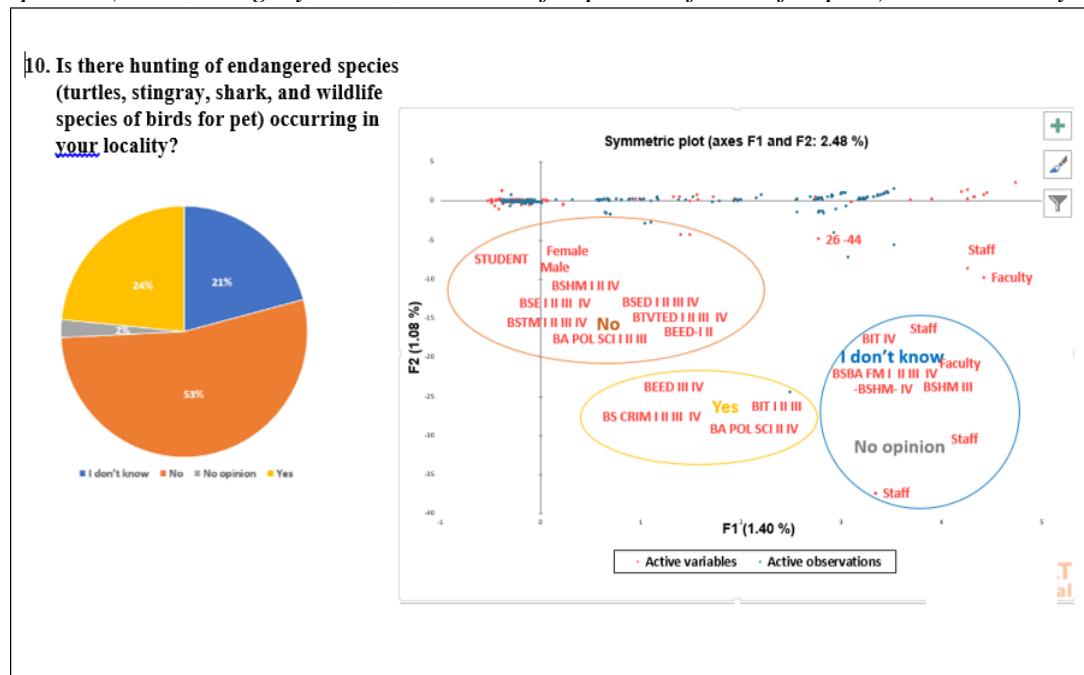


Figure 15

Result of the Multiple Correspondence Analysis for perception on the hunting of endangered species (turtle, stingray, shark, and wildlife species of birds for pets) in the locality



Sources of environmental information

The findings reveal that various sources of information significantly influence the environmental awareness of the respondents. As presented in Table 1, the Internet emerged as the most frequently identified source of environmental information, with 82% (1,462) of respondents relying on digital platforms such as YouTube, Facebook, TikTok, and Google. This indicates that online media and social networking platforms play a major role in rapidly disseminating environmental knowledge and increasing public awareness, particularly among young adults and students who are highly exposed to digital technology.

Educational institutions ranked second, with 75% (1,341) of respondents identifying schools as important sources of environmental information through science subjects, textbooks, actual experiences, seminars, symposiums, and environmental activities conducted in collaboration with the school and Local Government Unit (LGU). This finding highlights the important role of formal education in strengthening environmental literacy and promoting environmentally responsible behavior among students and the academic community.

Traditional media, particularly television, was also identified as a major source of environmental information by 72% (1,289) of respondents. Programs such as National Geographic Channel, GMA, ABS-CBN News, weather forecasts, TV Patrol, KMJS, 24 Oras, and Discovery Science continue to provide accessible environmental news, scientific information, and disaster-related updates to the public. This suggests that television remains an influential medium for environmental communication despite the rapid growth of digital platforms.

These findings support previous studies emphasizing the importance of digital media, formal education, and mass media in promoting environmental awareness. Meyer (2016), Hamid et al. (2017), and Novotný et al. (2021) reported that students commonly obtain environmental information through social media and the internet, making these platforms effective tools for environmental education and advocacy. Likewise, United Nations Educational, Scientific and Cultural Organization (2021) emphasized that schools and

educational institutions are essential in developing environmental literacy and sustainable practices.

Overall, the results demonstrate that both digital platforms and traditional educational approaches are effective in enhancing environmental consciousness. The integration of online information campaigns, school-based environmental education, and media communication may further strengthen public understanding and participation in environmental protection and sustainability initiatives.

Table 1
Sources of Environmental Information

Sources of Environmental Information	Number of responses (n)	Percentage %	Rank
Internet	1,462	82 %	1
School	1,341	75 %	2
Television	1,289	72 %	3
Radio	914	51 %	4
Family	866	48 %	5
Government Agencies	735	41 %	6
Friends	696	39 %	7
Books	688	38 %	8
Magazines	529	30 %	9
Non-Government Agencies	319	18 %	10

Note The total number of responses (N = 1,791), the number of responses (n), percentage, and rank of each source of environmental information.

Respondents' Proposed Solutions to Environmental Issues

The findings indicate that the respondents considered raising environmental awareness and strengthening environmental education as the highest priority action in addressing environmental problems, with 79.3% (1,433) of the responses reflected in Table 2. This suggests that respondents recognize the importance of public knowledge and education in promoting responsible environmental behavior and encouraging community participation in environmental protection initiatives.

The result highlights the significant role of Information Education Campaigns (IEC), seminars, workshops, training programs, and environmental organizations in improving public understanding of environmental issues. During the focus group discussion (FGD), participants emphasized that the Local Government Unit (LGU) should spearhead environmental information dissemination not only among students but also within local communities and organizations. Strengthening partnerships among schools, LGUs, and environmental agencies may further enhance environmental literacy and sustainable practices.

In addition, respondents identified preserving and restoring ecological integrity as another important solution to environmental issues, obtaining 66.8% (1,027) of the responses. Suggested environmental activities included coastal clean-up drives, tree planting, and mangrove rehabilitation programs, which promote sustainable environmental management and biodiversity conservation. These activities not only help restore damaged ecosystems but also encourage active community involvement in environmental stewardship.

The findings are consistent with previous studies emphasizing the importance of environmental education and community-based conservation programs in addressing environmental challenges. The United Nations Educational, Scientific and Cultural Organization (2021) stressed that environmental education is essential in developing sustainable behavior and strengthening public participation in environmental conservation. Similarly, the United Nations Environment Programme (2023) emphasized that ecological restoration activities such as reforestation, mangrove planting, and community clean-up programs are effective strategies for improving environmental sustainability and ecosystem resilience.

Overall, the findings suggest that addressing environmental issues requires a comprehensive and collaborative approach that combines environmental education, active community participation, ecological restoration, and strong institutional support from the LGU and educational institutions.

Table 2
Perceived Solutions to Environmental Issues

Solutions to Environmental Issues	Number of responses (n)	Percentage (%)	Rank
Awareness-raising and education	1,433	79.3 %	1
Protection and restoration of ecosystem integrity	1,207	66.8 %	2
Promote positive environmental behavior	957	52.9%	3
Waste reduction and management	812	44.9 %	4
Smarter enforcement of environmental laws and policies	619	34.2%	5
Sustainable land use planning	617	34.1%	6
Prevention of the spread of zoonotic diseases (malaria, dengue, CoVid)	494	27.3 %	7
Species management and recovery	484	26.8%	8
Increased investments in the environment	427	23.6%	9
Increased research that informs environmental management	379	21 %	10

Note The total number of responses (N=1,808), number of responses (n), percentage (%) and rank to solve environmental issues that should be prioritized.

Discussion

This study utilized a mixed-model approach incorporating descriptive statistics, multivariate statistical analysis, and focus group discussions (FGD) to examine the respondents' level of awareness regarding environmental issues and concerns within their locality. Data were gathered primarily through a structured questionnaire administered both through face-to-face surveys and online via Google Forms to ensure wider participation and accessibility. The study involved a total of 1,843 respondents, representing a complete census of the faculty, staff, and students of Palawan State University–Palawan College of Arts and Trades. The respondents ranged in age from 17 to 65 years old. In terms of age distribution,

87% were classified as young adults, 8% as adults, 4% as middle-aged individuals, and 1% as older adults. Female respondents comprised 56% of the total population, while males accounted for 44%. Most of the respondents were students, comprising 94% of the total participants, with many coming from education-related programs and youth-oriented academic organizations. The remaining respondents were faculty members and non-teaching staff of the institution. The large number of student respondents reflects the strong involvement of young individuals in environmental awareness and sustainability-related concerns, emphasizing the important role of higher educational institutions in promoting environmental consciousness and responsible environmental behavior among the academic community.

Biodiversity loss and food shortage obtained the lowest responses (1%) among the environmental concerns identified by the respondents, as presented in Figure 3. This finding suggests that many individuals in the community have limited awareness of the relationship between environmental degradation, biodiversity decline, and food security. The respondents may not fully recognize how unsustainable practices in the use of natural resources can negatively affect ecosystem stability and the long-term availability of food and livelihood resources.

This result is comparable to the findings of previous studies indicating that public awareness is often concentrated on more visible environmental problems such as climate change, pollution, and flooding, while issues related to biodiversity conservation and food sustainability receive less attention. United Nations Environment Programme (2023) emphasized that biodiversity loss remains one of the least understood environmental crises despite its major role in maintaining ecosystem services, food production, and human survival. Similarly, Food and Agriculture Organization (2022) reported that biodiversity is essential for food security, sustainable agriculture, and ecological resilience, yet awareness and conservation efforts remain insufficient in many local communities.

The findings also support the study of Punzalan (2020), which revealed that although students and community members may possess general environmental awareness, their understanding of biodiversity conservation and sustainable resource management remains limited. In the present study, this knowledge gap indicates the need for more comprehensive environmental education initiatives and stronger community engagement programs.

To address this concern, the Local Government Unit (LGU), particularly in Cuyo Island, should strengthen environmental information dissemination through seminars, conferences, workshops, and community-based environmental campaigns in every barangay. Assessments of marine protected areas should also be intensified to promote biodiversity conservation and sustainable resource utilization. Moreover, reviewing and increasing budget allocation for environmental programs may help improve public awareness, conservation practices, and community participation in protecting natural resources.

Respondents demonstrated limited awareness of alien and invasive species, which obtained only 0.9% of the responses regarding urgent environmental concerns, as shown in Figure 4. This indicates that many respondents are unfamiliar with invasive species present in their locality and their possible effects on native biodiversity, ecosystem stability, and human well-being.

This finding is consistent with studies showing that invasive alien species are among the least recognized environmental threats despite being major drivers of biodiversity loss and species extinction. International Union for Conservation of Nature (2024) emphasized that invasive species negatively affect native ecosystems, ecosystem services, and local economies. Similarly, Convention on Biological Diversity (2022) reported that islands and coastal communities are highly vulnerable to invasive species due to trade, transportation, and human activities.

In the case of Cuyo Island, the introduction of invasive species may occur through the continuous transport of goods and resources from nearby provinces and cities such as Iloilo, Coron, and Manila. Therefore, early detection, proper identification, regular monitoring, and rapid eradication measures are essential to minimize the spread and impact of invasive alien species in the locality. Community participation, stricter biosecurity measures, and collaboration between the LGU, environmental organizations, and educational institutions are also essential to protect the biodiversity and ecological integrity of Cuyo Island.

Hunting and trading of endangered species such as turtles, stingrays, sharks, and native bird species kept as pets (Q10) obtained the lowest response rate (24%) among the respondents' perceptions of the current environmental condition in the country, as presented in Figure 17. This finding suggests that many respondents may have limited awareness regarding the ecological importance and conservation status of these wildlife species. The study further confirmed that certain species of stingrays and parrotfish were being sold in the Cuyo marketplace, indicating the continued exploitation of vulnerable marine species within the locality.

The findings are comparable to previous studies reporting that illegal wildlife trade, destructive fishing practices, and overexploitation of marine resources remain persistent environmental problems in many coastal communities in the Philippines. The International Union for Conservation of Nature (2024) emphasized that overfishing, habitat destruction, and illegal wildlife exploitation are among the leading causes of biodiversity decline and species extinction worldwide. Similarly, the Food and Agriculture Organization (2022) noted that destructive fishing methods such as dynamite fishing, cyanide fishing, and compressor fishing severely damage coral reef ecosystems and reduce fish populations, threatening both biodiversity and food security.

The low awareness observed in this study may indicate insufficient environmental education and weak enforcement of conservation policies within the community. Vendors, fishermen, and residents may not fully recognize the ecological significance of protecting threatened marine species and the long-term consequences of unsustainable fishing practices. Continued exploitation of these species could eventually result in declining fish catches, loss of marine biodiversity, and disruption of ecosystem balance, which may directly affect the livelihood of local fishing communities.

These findings support the need for stricter implementation of environmental laws such as Republic Act No. 9147, or the Wildlife Resources Conservation and Protection Act and Republic Act No. 8550 or the Philippine Fisheries Code. Strengthening environmental awareness campaigns, conducting regular coastal monitoring, and promoting sustainable fishing practices are essential to protect marine biodiversity and conserve fisheries resources. Collaboration among the LGU, environmental agencies, educational institutions, and local communities is also necessary to improve compliance with conservation regulations and ensure the sustainable management of marine ecosystems in Cuyo Island.

For the perception of the future state of the environment, only 20.3% of the respondents believed that the country would still have clean air by 2050 if current environmental practices continue, as shown in Figure 10. This finding reflects public concern regarding the increasing effects of air pollution, industrialization, urbanization, and dependence on fossil fuels. Respondents may perceive that environmental degradation and poor waste and emission management could further worsen air quality in the future if no immediate intervention is implemented.

This finding is comparable to other studies indicating growing public concern over declining air quality and its impact on environmental and human health. World Health Organization (2024) emphasized that exposure to particulate matter (PM), including sulfates, nitrates, ammonia, black carbon, mineral dust, and other pollutants, contributes to respiratory

diseases, cardiovascular illnesses, and environmental degradation. Similarly, United Nations Environment Programme (2023) reported that emissions from transportation, industrial activities, and fossil fuel combustion remain major contributors to global air pollution and climate change.

The respondents' perception also aligns with findings from previous environmental studies showing that communities are increasingly aware of the long-term consequences of pollution and climate-related environmental problems. National Aeronautics and Space Administration (2024) noted that continuous greenhouse gas emissions and air pollutants contribute to rising global temperatures, poor air quality, and climate instability. In addition, studies have shown that urban communities often associate future environmental deterioration with increasing industrial emissions, traffic congestion, and unsustainable energy consumption.

To achieve cleaner air by 2050, respondents suggested adopting environmentally responsible practices such as conserving energy, utilizing renewable energy sources, reducing fossil fuel consumption, using bicycles or eco-friendly transportation, and promoting proactive environmental behavior. These recommendations support global sustainability initiatives encouraging cleaner energy systems and sustainable lifestyles. Strengthening environmental policies, improving public transportation, regulating industrial emissions, and intensifying environmental education campaigns may further help mitigate air pollution and promote a healthier and more sustainable environment for future generations.

For the sources of environmental information, Table 1 reveals that Non-Government Organizations (NGOs) were among the least utilized sources of environmental information, with only 18% of respondents referring to them. This finding suggests that many respondents may have limited awareness, exposure, or familiarity with the environmental programs and advocacies conducted by NGOs. Compared with social media, schools, and television, NGOs appear to have less visibility and influence in disseminating environmental information within the community.

This finding is comparable to previous studies showing that digital media and educational institutions are more commonly accessed sources of environmental information than civic or non-government organizations. Meyer (2016) and Novotný et al. (2021) reported that students and young adults rely more heavily on internet-based platforms and formal education for environmental knowledge because these sources are more accessible and frequently encountered in daily life. Similarly, the United Nations Educational, Scientific, and Cultural Organization (2021) emphasized that environmental education programs are more effective when information is integrated into schools, community activities, and digital communication platforms.

The low utilization of NGOs may also indicate limited community engagement and insufficient environmental outreach programs at the local level. However, NGOs play an important role in environmental conservation, community empowerment, biodiversity protection, and climate change advocacy. According to the United Nations Environment Programme (2023), collaboration between local governments, educational institutions, and non-government organizations is essential in strengthening public environmental awareness and promoting sustainable practices.

To address this gap, the Local Government Unit (LGU) should intensify Information Education Campaigns (IEC) by inviting NGOs as resource speakers during seminars, workshops, conferences, and environmental activities. Strengthening partnerships among NGOs, schools, and local communities may help improve public

Increased research that informs environmental management obtained only 21% of the responses and was identified as one of the lowest-rated solutions to environmental issues, as presented in Table 2. This finding suggests that respondents may have limited awareness of

the important role of scientific research in addressing environmental problems and developing sustainable management strategies. Although environmental education and awareness campaigns were highly prioritized, fewer respondents recognized that research-based information is essential in understanding the causes, impacts, and possible solutions to environmental degradation.

This finding is comparable to previous studies, indicating that environmental research is often undervalued by communities despite its significant contribution to environmental conservation and policy development. The United Nations Environment Programme (2023) emphasized that scientific research provides evidence-based strategies necessary for biodiversity conservation, climate change mitigation, pollution control, and sustainable resource management. Similarly, the United Nations Educational, Scientific, and Cultural Organization (2021) highlighted that research and innovation are essential components of sustainable development because they help identify environmental risks and guide environmental decision-making.

The findings also support studies showing that limited public understanding of environmental research may reduce community participation in scientific and conservation initiatives. Research activities help identify factors contributing to environmental destruction, assess ecological conditions, and develop effective strategies to preserve biodiversity and maintain ecosystem balance. Without adequate research, environmental management programs may become less effective and poorly informed.

To strengthen environmental management, educational institutions and local government units should encourage more research initiatives related to environmental conservation and sustainability. Financial support, scholarships, research grants, and institutional funding may be provided to students, faculty members, and staff conducting environmental studies. Partnerships with public and private organizations may also help expand research opportunities and promote evidence-based environmental programs. Strengthening research culture within the institution may contribute to improved environmental policies, better conservation practices, and increased public awareness regarding environmental issues.

Conclusion

Climate change was identified by the faculty, staff, and college students as one of the most critical and pressing environmental concerns in the Philippines. Although the respondents generally demonstrated a high level of environmental awareness and were able to recognize climate change as an urgent national issue, the findings also revealed noticeable gaps in knowledge regarding other environmental concerns. This indicates the need for more comprehensive environmental education initiatives to strengthen public understanding, bridge existing knowledge gaps, and encourage more proactive participation in environmental conservation and sustainability efforts. Nevertheless, the results suggest that environmental awareness programs and information dissemination at Palawan State University–Palawan College of Arts and Trades have been effective in promoting environmental consciousness among faculty, staff, and students.

The existence of wildlife was identified by the respondents as the most perceived current and future environmental condition. This perception was commonly associated with male and female students aged 17–25, particularly those enrolled in education-related programs such as Bachelor of Secondary Education (BSED), Bachelor of Technical-Vocational Teacher Education (BTVTED), Bachelor of Elementary Education (BEED), BA Political Science, and BS Criminology, as well as business-related courses including BSHM,

BSE, and BSTM. These groups demonstrated a relatively higher level of awareness regarding current environmental issues and conditions. However, despite their awareness of present environmental concerns, many respondents across different academic programs remained uncertain about the future state of the environment.

Additionally, the respondents primarily acquired their awareness of current environmental conditions and environmental issues through the internet (82%) and schools (75%). These findings highlight the significant role of digital platforms and formal education in increasing public understanding of environmental challenges through online communication, academic instruction, and collaborative learning activities.

To address critical environmental concerns such as biodiversity loss, food shortage, invasive alien species, endangered wildlife, and declining air quality in the future, stronger environmental education, research initiatives, and effective policy implementation are essential to promote conservation, sustainability, and responsible environmental practices within the community.

The respondents' perspectives regarding possible solutions varied; however, awareness-raising and environmental education emerged as the most effective and highly preferred approaches in addressing environmental problems. This finding emphasizes the importance of public education in developing environmental consciousness and encouraging active community participation in environmental protection efforts. Furthermore, the respondents believed that preserving and restoring ecological integrity through conservation activities and sustainable environmental management practices, and ecosystem restoration programs are necessary to maintain ecological balance and support long-term environmental sustainability.

Recommendations

The data and conclusions presented in this study lead to several important recommendations. First, Information Education Campaigns (IEC) on environmental awareness should be spearheaded among the tertiary education constituents of Cuyo Island to strengthen environmental literacy and encourage sustainable practices within the community. Environmental awareness programs, seminars, workshops, and advocacy campaigns may help improve understanding of critical environmental concerns and promote active participation in conservation activities.

The findings of the study may also serve as a guide for the municipality in developing policies, ordinances, and environmental initiatives aimed at preserving the natural resources of Cuyo Island. In support of this, the allocation of funds for environmental concerns should be reviewed and strengthened to ensure the effective implementation of environmental programs, conservation projects, and sustainability initiatives. Furthermore, marine protected areas in Cuyo Island should be continuously assessed and monitored to evaluate their effectiveness in conserving marine biodiversity and maintaining ecosystem stability. In addition, there is a need to intensify information dissemination regarding alien and invasive species and other pressing environmental concerns among students, faculty, and staff of Palawan State University–Palawan College of Arts and Trades. This initiative may be conducted by the Palawan Council for Sustainable Development, Department of Environment and Natural Resources, and Bureau of Fisheries and Aquatic Resources in collaboration with the Local Government Unit (LGU), which should allocate sufficient funding for these activities.

Moreover, the Commission on Higher Education should develop targeted interventions and environmental education programs that promote environmental consciousness and sustainable practices on campus. Strengthening environmental education

within higher education institutions may encourage students and academic communities to become more environmentally responsible and proactive in addressing environmental challenges. The lessons learned from Palawan State University–Palawan College of Arts and Trades also be utilized by Far Eastern University and other educational institutions to enrich environmental education initiatives, strengthen research collaborations, and promote environmental advocacy. Communication campaigns may specifically target academic programs with lower levels of environmental awareness to further improve environmental understanding and participation.

Finally, the findings of this study may serve as valuable references for future researchers conducting studies on environmental awareness in diverse populations and academic settings. The results may contribute to the development of evidence-based interventions, environmental policies, and sustainability programs that support long-term environmental conservation and community resilience.²

AUTHOR INFORMATION

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² **AI Declaration** This paper was completed with assistance from QuillBot and Grammarly for checking grammar. XLSTAT software was used to facilitate all output data. The author carefully examined and evaluated every output to guarantee accuracy and integrity.

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