Environmental Awareness (EA), Awareness of General Consequence (AC), and Pro-Environmental Behaviors (EB) Among College Students

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Abstract

This study was conducted to determine college students' environmental characteristics. It also aimed to find out the relationship between EA and AC, EA and EB, and, EB and AC. Using a Likert scale survey questionnaire administered to 266 Environmental Science students, descriptive analysis showed that the general population indicates a "fair level" of EA for seven (7) items, a "strongly agree" stand for five (5) items for (AC) and a practice of pro-environmental behaviors (EB) as "sometimes" for nine (9) items. Using Spearman-rho for nonparametric correlation, results showed that EA is positively correlated with AC, EA is positively correlated with EB, and AC is positively correlated with EB. With a "fair level of awareness," presence of "moderately agree" and "neutral" stand for AC, and "sometimes" for practice of EB, there is a need for a continuous environmental education and creation of some school programs to increase awareness.

Keywords: awareness of consequence; correlation; environmental issue; pro-environmental behavior; student's awareness.

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1.Introduction

Based on the Philippine's Republic Act No. 9512 [1], the Department of Education (DepEd), the Commission on Higher Education (CHED), the Technical Education and Skills Development Authority (TESDA), and the Department of Social Welfare and Development (DSWD), along with the Department of Environment and Natural Resources (DENR), the Department of Science and Technology (DOST) and other related agencies, shall integrate environmental education in the school curricula at all levels, whether public or private, including barangay daycare, preschool, non-formal, technical vocational, professional level, indigenous learning, and out-of-school youth courses or programs. Moreover, Environmental Education shall include environmental concepts and principles, environmental laws, the state of international and local environment, local environmental best practices and the threats of environmental degradation and their impact on human well-being. This course also tackles the responsibility of the citizens to the environment and the value of conservation, protection and rehabilitation of natural resources and the environment in relation to sustainable development. The role of science education is set towards acquiring knowledge, attitudes, skills and values about and for the environment. In relation with this, DepEd and DENR–Environment Management Bureau (DENR–EMB) have identified specific values and skills concerning the environment which should be developed among Filipino learners. One example is environmental awareness, in which students are honed to become critical thinkers about the causes and solutions of general environmental issues. This value involves both the domains of cognitive or knowledge on environmental issues and affective, or perception of one's impact on the environment. Several studies have shown that education is a key factor for increasing environmental awareness [2,3,4]. People from different countries across the globe are combating and minimizing the effects of serious environmental phenomena like global warming and ozone layer depletion. In addition, much attention has been given to the education sector in a bid to assess students' knowledge about the current status of the environment as well as to encourage them to take the lead in spreading awareness about the country's environmental problems. The students are important groups which may give different views on matters about the environment. Moreover, the students' perceptions of environmental problems and their respective reactions are very interesting to know.

In the light of such observations, this study sought to answer the following questions:

1.   What are the first year college students' awareness of local environmental issues (EA), general awareness of consequence (AC) and pro-environmental behaviors (EB)?

2.   Is there a relationship/correlation between EA and AC, EA and EB, and EB and AC? What is the strength of the relationship?

This study would assess the level of awareness of students on certain environmental issues and consequences. Furthermore, this study would be able to examine awareness on issues that are correlated to environmental behaviors so that necessary modifications could be done to improve the current environmental science curriculum at the collegiate level.

2.   Material and Method

2.1 The Research Design

The study used a mixed method design that combined quantitative and qualitative research techniques, methods, approaches, concepts, or language into a single study. The qualitative part involved a survey consisting of questions about students' awareness of local environmental issues and their awareness of consequence and environmental behaviors which was administered to each member of the sample population (N=266). Meanwhile, the quantitative design involved the use of Spearman-rho to determine if the relationship among the three parameters used in the study, namely, students' awareness of local environmental issues, general awareness of consequence, and whether pro-environmental behaviors are significant or not. The mixed method design was used because it combined the strength of both quantitative and qualitative research approaches. Reference [5] added that this design aimed to draw on the strengths and minimize the weaknesses of both types of research.

2.2 The Participants

A forty-item survey questionnaire using the Likert scale was administered to a sample population of 266 first year college students of the University of Perpetual Help System Dalta, Las Piñas Campus, Philippines. The University is one of the institutions that offer Environmental Science as a regular subject. The 266 participants came from the three college sections taking Environmental Science for the second semester of SY 2014–2015. The subject was not a pre-requisite to another course.

2.3 The Instrument

The survey questionnaire for this study was adapted from a previous study among high school students in 2018 [6]. A five-point Likert-type response scale with a section for agree or disagree response was used. It was composed of three sections: "Environmental Awareness on Issues" (EA), "General Awareness on Consequence" (AC), and "Pro- Environmental Behavior" (EB). The first two sections contained 10 questions which measured the students' level of knowledge about environmental issues and specific environmental consequences, respectively. The third section, which is the Pro-Environmental Behavior (EB), included 20 questions that directly measured their attitudes on various environmental concerns.

2.4 Scoring/Coding of Reponses

The first section, which sought to determine the students' environmental awareness on issues, included 10 questions about, among others, the recent typhoons which struck the Philippines and resulted to grave environmental destruction. The questions were scored by "1=Not Aware at All," "2=Poorly Aware," "3=Fairly Aware," "4=Moderately Aware," and "5=Highly Aware." The second part included 10 items about awareness on environmental protection, damage, and threats. These were scored by "1=Not at All," 2=Slightly Agree," "3=Neutral," "4=Moderately Agree," and "5=Strongly Agree". The last part included 20 questions about pro-environmental behaviors. The questions were scored by "1=Never", "2=Seldom", "3=Sometimes", "4=Most of the Time" and "5=Always."

3.Results and Discussion

Descriptive and inferential statistics were used to analyze the data of the study. The descriptive statistics determined the most frequent answers (mode) and the percentages corresponding to awareness on local environmental issues, awareness on consequence, and environmental behaviors. This statistic was used to describe the population and the general performance of the population. On the other hand, inferential statistics using Spearman-rho (r) involved the determination of the relationship among the variables involved in the study. This test was used to measure the strength of association between two variables, specifically between EA and AC, AC and EB, and AC and EB. The Statistical Package for the Social Sciences (SPSS) was the computer software used to analyze the collected data. Statistical analysis applied for this survey included descriptive analysis, frequency, and correlation.

3.1Awareness of Environmental Issues

In the study, knowledge on the local environmental issues to promote a specific level of awareness was assessed. When frequencies and their corresponding percentages were obtained, the students had a "fair level of awareness" on seven (7) out of the 10 items in the survey questionnaire (Table 1).

Table 1: Students' Responses to the Likert Scale Questionnaire about EA (N=266)

Response	Percentage									
	EA1	EA2	EA3	EA4	EA5	EA6	EA7	EA8	EA9	EA10
Not Aware	7.1	1.1	18.4	6.4	7.5	12.0	19.5	15.0	15.0	8.3
Poorly Aware	15.8	1.5	24.8	14.3	16.9	16.9	22.6	24.1	21.8	12.0
Fairly Aware	28.9	6.8	27.1	30.8	24.8	26.7	26.7	27.4	28.9	31.6
Moderately Aware	31.6	26.3	16.9	28.9	28.2	22.2	16.2	17.7	16.9	24.1
Highly Aware	16.2	63.5	12.8	18.4	22.2	21.8	15.0	15.4	15.8	24.1

The results showed that the students had a fair level of environmental awareness towards specific environmental issues, specifically on the concerns of forest cover loss (EA_3), coral reef condition (EA_4), US Ship guardian's destruction on the Tubbataha reef in 2013 (EA_6), collapse of Payatas landfill which killed about 300 people in 2000 (EA_7), Philippines as the world's center of marine biodiversity (EA_8), global recycling of plastic bags (EA_9), and extinction (EA_{10}). In terms of the percentages obtained, the fair level of awareness was highest for EA_{10} with 31.6%, followed by EA_4 with 30.8%, EA_9 with 29%, EA_8 with 27.4%, EA_3 with 27.1%, and EA_7 and EA_8, both with 26.7%. Having a "fair level of awareness" meant that the students have heard or read about local environmental issue numbers 3, 4, 6, 7, 8, 9, and 10. Reference [7] emphasized that knowledge of the issue implies a level of awareness. Some students were "moderately aware" about the issue on Typhoon Pablo in 2012 causing widespread destruction in Mindanao (EA_1) with 31.6%, and about the Philippines as third worldwide in overall vulnerability to disasters (EA_5) with 28.2%. Being "moderately aware" implied that the students know some details about the issues [8]. It was also noted with interest that 169 students or 63.5% of the population showed a "high level of awareness" about the issue on Typhoon Yolanda that hit the country last 2013 (EA_2). The

students were greatly aware that typhoon Yolanda, which devastated the Visayas region, particularly Leyte and Samar, and killed at least 6,300 people, was considered as the strongest tropical cyclone ever recorded in history. Reference [8] defined high level of awareness as students knowing the issue in detail with the desire to help if given the chance.

3.2 General Awareness of Consequence

Results in Table 2 revealed that majority of the respondents had a "strongly agree" stand on five (5) out of 10 cited environmental consequences. "Moderately agree" stand and "neutral" stand followed with three and two items, respectively. According to Reference [9], several studies that measured environmental awareness of consequence could be attributed to the subtle differences between awareness of consequences for the environment and environmental concern. These are often treated as interchangeable, but awareness is not necessarily translated into concern. Reference [10] differentiated different types of concern, namely, concern for the biosphere, concern for others, and concern for self.

Table 2: Students' Responses to the Likert Scale Questionnaire about AC (N=266)

Response	AC1	AC2	AC3	AC4	AC5	AC6	AC7	AC8	AC9	AC10
Not Agree	0.8	0	2.6	1.5	6.0	7.5	7.9	1.1	13.5	4.9
Neutral	7.9	4.1	12.0	13.2	25.6	30.5	26.3	13.9	30.8	32.3
Slightly Agree	3.0	4.1	5.3	3.0	11.3	13.2	13.9	6.8	14.7	11.3
Moderately Agree	18.4	18.8	33.1	30.8	33.8	33.8	33.5	33.1	23.7	24.4
Strongly Agree	69.5	72.6	45.9	50.8	21.8	13.5	18.0	44.4	16.5	26.3

The notions about environmental protection that got "strongly agree" responses from the students were as follows: provides better quality of life (AC_2) with 72.6%, beneficial to health (AC_1) with 69.5%, and gives better opportunities for recreation (AC_4) with 50.8 %. In addition, 45.9% strongly agrees that environmental damage generated in the Philippines harms people all over the world (AC_3), and 44.4% strongly agrees that environmental protection will make one a better person (AC_8). Meanwhile, 33.8% of the population had a "moderately agree" stand on claims that humans are changing the climate (AC_5) and that environmental threats to public health are greatly exaggerated (AC_6). This was followed by 33.5% saying that they knew the consequence involving the collapse of Payatas landfill killing many people in 2000 (AC_7). Some students had a "neutral stand" about the statements that "environmental protection prevents one from using non-biodegradable products" (AC_{10}) and "environmental issues shown in the TV/radio news are exaggerated" (AC_9). Having a "neutral" stand was a "safe answer" which could be attributed to attitudinal change. This attitudinal change maybe explained on the basis of changing views of individual as his/her role in the society changes with age [11]. Because older students become more involved in some activities such as political, economic, and social subsystems, they are prevented from making conservative actions on matters about the environment. In the present study, the students ranged from 16 to 17 years of age.

3.3 Pro-Environmental Behavior

Table 3 shows a variation on the students' pro-environmental behaviors. Firstly, nine (9) out of 20 items obtained a "Sometimes" behavior, eight (8) indicated an "Always" behavior, two (2) items had a "Never" behavior and one (1) item showed a "Most of the time" behavior. The "Sometimes" behavior had the highest percentage with 42.5 % of the population, responding that they sometimes purchase products with less or eco- friendly packaging (EB$_5$). This was followed by 38.3%, indicating that they sometimes pick up litter at school and at home even if they were not their own (EB$_{15}$), and 33.5%, stating that they sometimes purchase recycled products (EB$_{12}$). Moreover, 32% said they sometimes use scratch paper instead of new paper when possible (EB$_6$), donate unused clothes or things (EB$_8$), and repair damaged materials instead of throwing them out immediately (EB$_9$). Likewise, 29.3% of the respondents said they sometimes segregate the wastes in their home properly (EB$_{16}$), 27.8% does not usually use shower at home (EB$_{17}$), and 24.8% sometimes collects and sells recyclables (e.g. plastic bottles, glass, newspaper, used paper, metal scraps) to junk shops (EB$_{13}$).

Table 3: Students' Responses to the Likert Scale Questionnaire about EB (N=266)

Response	EB1	EB2	EB3	EB4	EB5	EB6	EB7	EB8	EB9	EB10
					Percentage					
Never	3.4	2.3	3.0	10.9	1.9	1.1	3.4	3.4	3.0	1.9
Seldom	3.4	3.0	9.4	13.9	10.5	9.8	7.5	13.9	15.4	9.4
Sometimes	9.0	24.4	29.7	22.9	42.5	32.0	24.1	32.0	32.0	27.4
Most of the Time	11.7	21.8	18.0	17.7	22.2	30.8	22.6	22.2	29.7	27.4
Always	68.0	47.7	38.3	33.8	22.2	25.6	41.0	25.6	19.2	30.1

Response	EB11	EB12	EB13	EB14	EB15	EB16	EB17	EB18	EB19	EB20
					Percentage					
Never	1.5	6.4	15.0	0.8	4.1	3.8	16.9	27.4	29.3	6.0
Seldom	8.3	18.0	19.5	4.1	20.7	11.7	19.2	17.3	16.9	8.6
Sometimes	27.1	33.5	24.8	30.8	38.3	29.3	27.8	20.7	22.2	16.5
Most of the Time	30.5	20.3	16.2	35.3	18.4	25.9	11.7	14.3	12.4	12.4
Always	31.6	20.7	23.3	26.3	15.8	25.9	20.7	16.9	16.5	53.8

Secondly, the highest percentage of the population showing an "always" behavior was 68% indicating that the respondents always switch off lights before going to sleep (EB$_1$). It was followed by 53.8% indicating that the students usually use containers to collect water when taking a bath (EB$_{20}$). 47.7% of the population chose to unplug electrical appliances when not in use (EB$_2$), and 41% opted to use eco-bags when buying from stores (EB$_7$). 38.3% of the population preferred to walk instead of riding a vehicle (EB$_3$) when travelling short distances, 33.8% chose to pour water into cups/glasses instead of letting it run when brushing teeth (EB$_4$), 31.6% preferred to reuse utensils instead of using disposables (EB$_{11}$) and 30.1% chose to reuse envelopes, folders, and paper clips (EB$_{10}$). The results suggest that EB$_1$, EB$_{20}$, EB$_2$, EB$_7$, EB$_3$, 3B$_4$, EB$_{11}$ and EB$_{10}$ were most likely the activities that they perform in their homes, community, and school. Lastly, of the population, 29.3% chose "Never" when asked if they immediately collect rainwater that can be used to clean the garage (EB$_{19}$), and 27.4% "never" used a bike instead of the family's motorcycle whenever mother asks for an errand (EB$_{18}$). Meanwhile, 35.3% of the population followed the school's waste segregation scheme "most of the time" (EB$_{14}$). On the contrary to the result of "always," EB$_{19}$, EB$_{18}$ and EB$_{14}$ were believed to be the activities students less likely to do. While the response of "Always" implied a positive behavior, majority of the students favored answering "Sometimes." More surprisingly, few students opted to answer "Never" and "Most of the time." Such results reveal that the

environmental awareness of students was not adequately translated to pro-environmental behavior. In relation to this, Reference [12] reported in his research that consumers who acknowledge awareness of environmental issues still do not take steps to purchase environmental-friendly products. However, it should be emphasized the need to improve these environmental behaviors and develop environment appreciation among students through active involvement of outside or field environmental preservation activities of the schools and communities which will cater the social or affective domains of environmental education. The study later bridged the gap between environmental awareness and behavior through eco-labels, text, or both over cleaning products. Several factors that might cause the value-action gap are demographic factors (gender, years of education), institutional factors, economic factors, social and cultural factors, and internal factors. Institutional factors may involve the presence of infrastructure for people to practice pro-environmental behavior, such as recycling centers and public transportation. Internal factors include motivation, altruistic and social values, and willingness to act [4]. Responses from the students involved in the study could have been influenced by these reasons.

3.4 The Relationship Between Level of Awareness, Consequence, and Pro-Environmental Behavior

The Spearman-rho test was used to observe the relationship between two specific variables. The significant level used was the confidence level of $P \leq 0.05$. For each item, the strength of the relationship and its significance were measured between awareness of issue and awareness of consequence, awareness of issue and pro-environmental behavior, and awareness of consequence and pro-environmental behavior. Each pair of items was also tested for correlation. A standard guide was used to determine the strength of correlation (Appendix E). As documented, p-values were different for each pair of items because there were students who opted not to answer some items. Nevertheless, the results were found to be reliable even with some missing systems.

3.4.1 Correlation of EA and AC

Results showed that majority of the items indicate that awareness of issues is positively correlated with awareness of consequence. As shown in Table 4, the strength of the linear association goes from very weak to moderately weak (r=0.1284 to 0.3663). While there were some items with no correlation (NR), the rest of the items showed significant relationship (Appendix A). Moreover, in all the discussions involving relationships/correlations, more focus was done for pairs of items involving moderately weak relationships, which have r-values between 0.25 to 0.40. All correlations within this range have been proven to be significant. The moderately weak relationship must be an interesting result to discuss since it implied a better strength of relationship than when having a weak or very weak relationship. This is the choice at the middle which is between strong and weak relationships. In statistics, the larger the value of the correlation coefficient, the stronger the relationship between the variables [13].

Table 4: Correlation Between EA and AC Using Spearman's Rho (N=266)

	AC1	AC2	AC3	AC4	AC5	AC6	AC7	AC8	AC9	AC10
EA1	NR	Weak	Weak	Very Weak	Moderately Weak	Weak	Weak	NR	Weak	Weak
EA2	Weak	Moderately Weak	Weak	Weak	NR	NR	NR	Very Weak	NR	Very Weak
EA3	NR	NR	Weak	NR	Moderately Weak	Weak	Weak	NR	Moderately Weak	Moderately Weak

EA4	NR	Weak	Weak	Weak	Weak	Moderately Weak	Weak	NR	Weak	Moderately Weak
EA5	NR	NR	Weak	Weak	Weak	Weak	Weak	Very Weak	Weak	Weak
EA6	NR	NR	Moderately Weak	Weak	Moderately Weak	Weak	NR	NR	Weak	Moderately Weak
EA7	NR	NR	Weak	Weak	Weak	Moderately Weak	Weak	NR	Weak	Moderately Weak
EA8	NR	NR	Weak	Weak	Moderately Weak	Moderately Weak	Weak	NR	Weak	Moderately Weak
EA9	NR	NR	NR	Very Weak	Weak	Moderately Weak	Moderately Weak	Very Weak	Moderately Weak	Moderately Weak
EA10	NR	Weak	Weak	Weak	NR	Very Weak	Weak	Very Weak	Weak	Moderately Weak

It is important to focus on the students' awareness on typhoons as AC_1 correlated with EA_2, and, AC_2 with EA_1 and EA_2 . The issue involved Typhoons Pablo and Yolanda's destructions and their relation to awareness on environmental protection in improving the quality of life. This sign of improvement can be attributed to resiliency among Filipinos who strive to return to their original way of living after being hit by typhoons. Reference [14] defined resiliency as the ability to overcome challenges of all kinds- among them trauma, tragedy, and personal crises caused by calamities such as typhoons and the like-and the ability to bounce back as stronger, wiser, and more personally powerful. Awareness on most of the environmental issues (EA_1, EA_2, EA_3, EA_4, EA_5, EA_6, EA_7, EA_8, EA_{10}) was significantly correlated to awareness of consequence pertaining to environmental damage (AC_3). Interestingly, the issue on the damage to Tubbataha reef due to a U.S. ship (EA_6) was significantly related ($r= 0.2585$) to AC_3 which infers that any destruction on the earth's natural resources may always lead to harming the humanity [15]. Reference [16] identified climate change as the consequence of the destruction of natural resources. Furthermore, climate change has the potential to alter sensitive aquatic and terrestrial ecosystems due to the increase in temperature, changes in precipitation, rise of sea level, and the increased frequency of extreme events brought about by natural phenomena. Similarly, awareness on most of the environmental issues (EA_1, EA_2, EA_4, EA_5, EA_6, EA_7, EA_8, EA_9, EA_{10}) was significantly correlated to awareness of consequence pertaining to environmental protection for better opportunities (AC_4). Reference [17] stated that the problems brought by environmental change and its destruction pose new challenges to public health. She added that environmental degradation contributes so much to human health threats worldwide. Meanwhile, awareness on the majority of the environmental issues (EA) was significantly correlated to awareness on consequence pertaining to climate change (AC_5), environmental threats (AC_6) environmental degradation (AC_7) and exaggeration in the media of issues (AC_9). In the first three types of awareness of consequence, Environmental Education is the key to address the different environmental issues. Reference [16] emphasized that education is needed to understand the impacts of climate change as all these issues should be properly addressed. Specifically, such issues as floods, deforestation, pollution, loss of biodiversity, etc. pose environmental threats and continuous Environmental Education should be done to address these issues. When natural habitats are destroyed or natural resources are depleted, the environment is degraded and Environmental Education is a must to address the issue on destruction of ecosystems, habitat destruction, the extinction of wildlife and pollution, among others. Reference [18] opined that the exaggeration by the media can be considered as a helpful tool in making every individual aware of the issue. Media can provide good information in stimulating sustainable behavior. Awareness on four environmental issues (EA_2, EA_5, EA_9, EA_{10}) was significantly correlated to awareness of consequence pertaining to environmental protection involving a better self. The researchers believed that being informed of the issues will make one a better person who knows how to protect the environment by doing good practices involving water and energy conservation, recycling, reforestation, among others. Most importantly, awareness on all the

environmental issues was significantly correlated to awareness of consequence pertaining to environmental protection by preventing use of non- biodegradable products (AC_{10}). Reference [19] emphasized that fish and other marine life forms often engulf plastics mistaking them as food. This leads to irritation or damage of their digestive system and if kept in the gut instead of passing through, the animal feels full. As a result, they do not eat, which leads to malnutrition or starvation. Using biodegradable products promotes safer and greener environment. Preserving nature is giving us protection by minimizing actions that could compromise the success of saving nature [20].

3.4.2 Correlation of EA and EB

Inference correlation analysis showed that there is a positive relationship between awareness of issues and pro-environmental behaviors. Table 5 below shows that the strength of the linear association goes from very weak to moderately weak (r=0.1237 to r=0.3289). While few had no correlation (NR), the rest of the items showed significant relationship (Appendix B). Based on the item-by-item analysis of the issues in the EA survey undertaken to determine which specific issues, and awareness of these, are correlated with pro-environmental behavior, the behaviors that are correlated with EA are EB_3, EB_7, EB_8, EB_{11}, and EB_{13} as seen in Table 5, These pro-environmental behaviors pertain to energy conservation and most items pertain to reusing and recycling. As these results show a positive relationship, the teaching and learning process of environmental education has a strong correlation to the environmental knowledge or awareness of the students. It follows that environmental awareness through education may lead to environmental behavior and actions.

Interestingly, environmental behaviors related to energy and water conservation, right purchase of products, repairs, other recycling behaviors, and waste segregation in school and at home are not significantly correlated with the awareness of the environmental issues included in the study.

Table 5: Correlation Between EA and EB Using Spearman's Rho (N=266)

	EB11	EB12	EB13	EB14	EB15	EB16	EB17	EB18	EB19	EB20
EA1	Weak	Weak	Very Weak	Very Weak	Weak	Weak	NR	NR	NR	Very Weak
EA2	Very Weak	NR	Very Weak	Weak	NR	NR	Very Weak	NR	Very Weak	NR
EA3	Weak	Weak	Weak	Weak	Weak	NR	Weak	Weak	Weak	NR
EA4	Weak	Weak	Weak	NR	Very Weak	NR	Weak	Weak	Weak	NR
EA5	Weak	Weak	Weak	NR	Very Weak	Very Weak	Very Weak	Weak	Weak	NR
EA6	Moderately Weak	Moderately Aware	Weak	Very Weak	Weak	Very Weak	Weak	Weak	Weak	NR
EA7	Weak	Moderately Aware	Weak	Weak	Weak	Very Weak	Weak	Moderately Weak	Moderately Weak	NR
EA8	Moderately Weak	Weak	Weak	NR	Weak	Very Weak	Weak	Weak	Weak	NR
EA9	Weak	Moderately Weak	Moderately Weak	Very Weak	Weak	Weak	Weak	Weak	Moderately Weak	Very Weak
EA10	Weak	Weak	Very Weak	NR	NR	NR	Weak	Weak	Weak	NR

	EB1	EB2	EB3	EB4	EB5	EB6	EB7	EB8	EB9	EB10
EA1	Very weak	Weak	Weak	Moderately Weak	Moderately Weak	Very weak	Weak	Weak	Weak	Moderately Weak
EA2	NR	Very weak	Weak	NR	NR	NR	Weak	Very weak	NR	NR
EA3	NR	NR	Weak	Moderately Weak	Weak	Weak	Weak	Weak	Weak	Weak

EA4	NR	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Moderately Weak	Moderately Weak
EA5	NR	Weak	Very weak	Very weak	Weak	Weak	Very weak	Weak	Weak	Very weak
EA6	NR	Weak	Weak	Moderately Weak	Moderately Weak	Moderately Weak	Weak	Weak	Moderately Weak	Moderately Weak
EA7	NR	Very weak	Weak	Moderately Weak	Moderately Weak	Weak	Moderately Weak	Weak	Moderately Weak	Weak
EA8	NR	NR	Weak	Weak	Weak	Weak	Weak	Very weak	Moderately Weak	Weak
EA9	NR	Weak	Weak	Moderately Weak	Weak	Weak	Moderately Weak	Moderately Weak	Moderately Weak	Weak

EA10		Moderately							
	NR	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak

The results suggest that EB$_3$, EB$_7$, EB$_8$, EB$_{11}$, and EB$_{13}$, were most likely the activities that they perform in their homes, community, and school. On the contrary, EB$_1$, EB$_2$, EB$_4$, EB$_5$, EB$_6$, EB$_9$. EB$_{12}$, EB$_{14}$, EB$_{15}$, EB$_{16}$, EB$_{17}$, EB$_{18}$, EB$_{19}$, and EB$_{20}$, were believed to

be the activities students less likely do by the respondents. Reference [21] emphasized the need to improve these environmental behaviors and develop environment appreciation among students through active involvement of outside or field environmental preservation activities of the schools and communities which will cater the social or affective domains of environmental education. Developing the environmental emotional intelligence of the students will positively affect environmental attitudes, intentions, and behavior [22]. Likewise, it is also believed that relation to nature is strongly related to environmental attitudes and behavior and weakly related to knowledge.

3.4.3 Correlation of AC and EB

Correlation analysis showed a positive relationship between awareness of consequence and pro-environmental behaviors. Table 6 shows that the strength of the linear association goes from very weak to strong (r=0.1202 to r=0.4309). Majority of the items showed significant relationship despite having few items with no correlation (NR) (see Appendix C).

Table 6: Correlation Between AC and EB Using Spearman's Rho (N=266)

	EB1	EB2	EB3	EB4	EB5	EB6	EB7	EB8	EB9	EB10
AC1	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
AC2	NR	NR	Very Weak	NR	NR	NR	NR	NR	NR	NR
AC3	NR	NR	Very Weak	NR	Very Weak	Weak	NR	Very weak	NR	Moderately Weak
AC4	NR	NR	Very Weak	NR	Weak	NR	NR	Weak	NR	Weak
AC5	NR	Very Weak	Weak	Weak	Moderately Weak	Very Weak	Very Weak	Weak	Weak	Very Weak
AC6	NR	NR	Weak	Very Weak	Moderately Weak	Weak	Very Weak	Weak	Weak	Very Weak
AC7	NR	Weak	NR	Weak	Moderately Weak	Weak	Weak	Weak	Weak	Very Weak
C8	NR	Weak	NR	NR	Weak	Weak	Weak	Weak	Weak	Weak
AC9	NR	Moderately Weak	Weak	Moderately Weak	Moderately Weak	Weak	Very Weak	Weak	Weak	Very Weak
AC10	NR	Weak	Weak	Moderately Weak	**Strong**	Moderately Weak	Moderately Weak	Moderately Weak	Moderately Weak	Moderately Weak

	EB11	EB12	EB13	EB14	EB15	EB16	EB17	EB18	EB19	EB20
AC1	Very Weak	NR	NR	Very Weak	NR	NR	NR	NR	NR	Very Weak
AC2	Weak	NR	NR	NR	NR	NR	NR	NR	NR	Weak
AC3	Moderately Weak	Weak	Weak	Very Weak	Weak	NR	NR	NR	NR	NR
AC4	Weak	Weak	Weak	Weak	Weak	NR	Weak	NR	Very Weak	Weak
AC5	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Very Weak	Very Weak
AC6	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak
AC7	Weak	Weak	Moderately Weak	NR	Weak	Moderately Weak	Weak	Weak	Weak	Weak
AC8	Weak	Moderately Weak	Weak	Weak	Weak	Weak	Weak	NR	Weak	Weak

			Moderately							
AC9	NR	Weak	Weak	NR	Weak	Weak	Weak	Weak	Weak	NR
AC10	Moderately Weak	Moderately Weak	Moderately Weak	Weak	Weak	Weak	Weak	Moderately Weak	Moderately Weak	NR

Like the other pairs of items for the relationship between awareness of issue and consequence and between awareness and pro-environmental behavior, some pairs of items involving awareness of general consequence and pro-environmental behavior showed NR. The number of "NR" for some pairs of items ranged from 1 to 6. Environmental behaviors that correlated with AC_1 are EB_{11}, EB_{14}, and EB_{20}. Similarly, AC_2 correlated with EB_3 EB_{11} and EB_{20}. These behaviors pertaining to energy conservation, reuse of utensils, following policies on school's waste segregation scheme and water conservation practices correlated to keeping a better quality of life and good health. Other environmental behaviors that correlated with AC_3 are EB_3, EB_5, EB_6, EB_8, EB_{10}, EB_{11}, EB_{14} and EB_{20}. The awareness on environmental damage in this case was translated to energy conservation, correct purchase of products, reuse of school materials, recycling, donating unused items, reuse, policies on school's waste segregation scheme and water conservation.. Likewise, the environmental behaviors that correlated with AC_4 are EB_3, EB_5, EB_8, EB_{10}, EB_{11}, EB_{12}, EB_{13}, EB_{14}, EB_{15}, EB_{17}, EB_{19}, and EB_{20}. The awareness on environmental protection was translated to energy conservation, correct purchase of products, donating unused items, reuse, recycling, follow policies on school's waste segregation scheme, pick-up litter in school and water conservation practices. Interestingly, it was only the practice on energy conservation (switching of lights) that did not correlate with awareness on climate change (AC_5) but all the rest of the behaviors significantly correlated with AC_5. Almost similarly, along with other energy conservation practice and water conservation practices, most of the behaviors significantly correlated with AC_6 (awareness on environmental threats), AC_7 (awareness on environmental degradation), AC_8 (awareness on environmental protection) and AC_9 (awareness on environmental issues through media). The general behaviors pertained to energy conservation, recycling, water conservation, practices in school and at home. Very importantly, an aspect of an environmental consequence specifically the media could affect the development of specific environmental behaviors. Reference [23] indicated that media use has an indirect influence on environmental behavior. This was through social norms, as coverage on recycling may constitute social pressure and increase people's intentions to recycle waste. Researchers also emphasized that televised public affairs news and nature documentaries positively predict people's pro-environmental behavior [24]. It was interesting to note that a strong correlation existed between AC_{10} and EB_5 involving an awareness on preventing the use of non- biodegradable products which was translated into a positive attitude of purchasing products with less or eco- friendly packaging. These pro-environmental behaviors observed indicate a green consumer behavior which involves the "purchase and use of products with lower environmental impacts, such as biodegradable materials, low energy usage and recycled or reduced packaging" [25]. Moreover, Reference [26] pointed out that a green consumer acts ethically, motivated not only by his/her personal needs but also by the respect and preservation of the welfare of the entire society. Except for an item each on energy conservation and water conservation, the awareness on preventing the use of non-biodegradable products was translated generally to most the environmental behaviors that pertained to energy conservation, recycling, water conservation, practices in school and at home.

5. Conclusions

This study provided information about students' environmental awareness, awareness of consequence, and pro-

environmental behaviors. The samples were obtained from a private university in Manila, Philippines where the ages ranged from 16 to 17 years. Overall, the participants were in the "fairly aware" level of environmental awareness, had a "strongly agree" stand on awareness of consequence (though moderately agree stand and neutral stand were also observed), and do environmental behavior "sometimes." The fair level of awareness implied having heard or read about a specific issue once while the environmental behavior as "sometimes" implied that student awareness was not translated to specific pro-environmental behavior.

6. Recommendations

The study also concluded that there is a significant relationship among the variables observed in the study. Each pair of variables was investigated for its strength of correlation. The strength of correlation between awareness of issue and awareness of consequence was found to be from very weak to moderately weak. Between awareness of issue and pro-environmental behavior, the strength was from very weak to moderately weak. Finally, the strength of correlation between awareness of consequence and pro-environmental behavior was from very weak to strong. With few items which showed no correlation, the results were not affected at all. To address the apparent lack of practice and awareness of students for environment-related behavior and issues, more effort should be provided by teachers for a continuous environmental education and for the enrichment of environmental theme in the curriculum. Possible areas where science can enhance environmental education include understanding the nature of pollutants and effective solutions to contamination, the chemical nature of greenhouse gases, reactions of ozone and other radicals, causes of acid deposition and its effects on the environment, and chemistry in water safety. Increasing awareness through symposiums, campaigns through poster-making, and community services should be conducted. Constant supervision and monitoring must be done by the teacher to keep the practice of recycling and conservation ingrained among students. Reference [27] emphasized that before one can begin promoting environmental awareness, there must be a thorough understanding of environmental issues. This can be done by being updated on environmental news and reading comprehensive materials about environmental threats. A more interactive approach by attending environmental seminars is also considered. Furthermore, incorporation of environmental issues in the locality may enhance education and translate to positive environmental behaviors (e.g., causes of flooding and its mitigation, nature of pollutants and solutions to pollution, chemistry in water safety, etc.). The researchers also recommend the inclusion of the effect of the important factors such as family income and type of school in the level of environmental awareness among students. Future studies can also take a larger number of population, suppose across year levels in college, to come up with a more varied analysis among diverse samples.

6. Limitations of the Study

The study has certain limitations. First, the respondents are limited to first year college students taking up Environmental Science class. The study was carried out in a single university in a single region and cannot be generalized, but the findings obtained can contribute to future researches. The results gathered give opportunities for future studies to other universities, other regions, and make a comparison of student's attitude, perception, and environmental behavior. Also, the study has yet to include social, economic and cultural factors with an impact on environmental decisions, establishing research and examining common topics and norms with positive impacts on nature.

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Table 7

Appendix A
Correlation Between EA and AC Using Spearman's Rho (N=266)

EA X AC		AC1	AC2	AC3	AC4	AC5	AC6	AC7	AC8	AC9	AC10
EA1	Correlation Coefficient	0.0940	0.1424	0.1796	0.1380	0.2825	0.2013	0.1810	0.0373	0.2153	0.1874
p-value	Sig. (2-tailed)	0.1278	0.0207	0.0035	0.0252	0.0000	0.0001	0.0032	0.5467	0.0004	0.0023
	N	264	264	262	263	261	261	264	263	263	263
EA2	Correlation Coefficient	0.1779	0.2560	0.2370	0.2200	0.1075	0.0370	0.0666	0.1362	0.0046	0.1284
	Sig. (2-tailed)	0.0038	0.0000	0.0001	0.0003	0.0838	0.5527	0.2822	0.0275	0.9403	0.0378
	N	263	263	261	262	260	260	263	262	262	262
EA3	Correlation Coefficient	-0.0591	0.0168	0.2080	0.1112	0.2596	0.1892	0.1687	0.0485	0.2648	0.2665
	Sig. (2-tailed)	0.3380	0.7852	0.0007	0.0712	0.0000	0.0021	0.0059	0.4322	0.0000	0.0000
	N	265	265	263	264	262	262	265	264	264	264
EA4	Correlation Coefficient	0.0594	0.1907	0.2434	0.1833	0.2338	0.2997	0.2327	0.1146	0.2144	0.3117
	Sig. (2-tailed)	0.3380	0.0019	0.0001	0.0030	0.0001	0.0000	0.0001	0.0641	0.0005	0.0000
	N	262	262	260	261	259	259	262	262	261	261
EA5	Correlation Coefficient	0.0275	0.0516	0.2149	0.2210	0.1647	0.1866	0.1605	0.1439	0.2360	0.2192
	Sig. (2-tailed)	0.6569	0.4037	0.0005	0.0003	0.0077	0.0025	0.0090	0.0196	0.0001	0.0003
	N	264	264	262	263	261	261	264	263	263	263
EA6	Correlation Coefficient	0.1156	0.2049	0.2585	0.2211	0.2592	0.2005	0.1132	0.0576	0.1650	0.2664
	Sig. (2-tailed)	0.0606	0.0008	0.0000	0.0003	0.0000	0.0011	0.0663	0.3522	0.0073	0.0000
	N	264	264	262	263	261	261	264	263	263	263
EA7	Correlation Coefficient	-0.0684	0.0355	0.1881	0.1535	0.2415	0.2577	0.1658	0.1067	0.2142	0.3663
	Sig. (2-tailed)	0.2675	0.5654	0.0022	0.0125	0.0001	0.0000	0.0068	0.0837	0.0005	0.0000
	N	265	265	263	264	262	262	265	264	264	264
EA8	Correlation Coefficient	-0.0588	0.0299	0.1690	0.2127	0.2904	0.2529	0.1990	0.1021	0.2113	0.2656
	Sig. (2-tailed)	0.3415	0.6281	0.0061	0.0005	0.0000	0.0000	0.0012	0.0985	0.0006	0.0000
	N	264	264	262	263	261	261	264	263	263	263
EA9	Correlation Coefficient	-0.0186	0.0280	0.0628	0.1490	0.1937	0.2894	0.3357	0.1300	0.2924	0.3191
	Sig. (2-tailed)	0.7652	0.6522	0.3142	0.0162	0.0018	0.0000	0.0000	0.0362	0.0000	0.0000
	N	261	261	259	260	258	258	261	260	260	260
EA10	Correlation Coefficient	0.0463	0.1915	0.2258	0.1693	0.0593	0.1484	0.1544	0.1299	0.1826	0.2973
	Sig. (2-tailed)	0.4526	0.0017	0.0000	0.0058	0.3390	0.0162	0.0118	0.0348	0.0029	0.0000
	N	265	265	263	264	262	262	265	264	264	264

significant

Not significant

Note: Awareness of issues is positively correlated with awareness of consequences

Table 8

Appendix B
Correlation Between EA and EB Using Spearman's Rho (N=266)

EA X EB		EB1	EB2	EB3	EB4	EB5	EB6	EB7	EB8	EB9	EB10	EB11	EB12	EB13	EB14	EB15	EB16	EB17	EB18	EB19	EB20
EA1	Corr. Coef.	0.1260	0.1681	0.2078	0.3289	0.2881	0.1289	0.1502	0.1783	0.1989	0.2614	0.2155	0.2258	0.1399	0.1227	0.1847	0.1604	0.1174	0.1041	0.1147	0.1456
p-value	Sig. (2-tailed)	0.0453	0.0063	0.0007	0.0000	0.0000	0.0367	0.0152	0.0041	0.0012	0.0000	0.0004	0.0002	0.0236	0.0491	0.0029	0.0101	0.0612	0.0965	0.0659	0.0193
	N	253	263	261	263	263	263	261	257	263	255	262	262	262	258	258	256	255	256	258	258
EA2	Corr. Coef.	0.0485	0.1277	0.1622	0.0457	0.1087	0.0315	0.1952	0.1300	0.0770	0.1161	0.1404	0.0927	0.1370	0.1610	0.1075	0.0835	0.1405	0.0548	0.1381	0.0994
	Sig. (2-tailed)	0.4438	0.0389	0.0086	0.4610	0.0789	0.6114	0.0016	0.0376	0.2144	0.0647	0.0233	0.1353	0.0269	0.0098	0.0855	0.1836	0.0252	0.3836	0.0268	0.1121
	N	252	262	261	262	262	262	260	256	262	254	261	261	261	257	257	255	254	255	257	257
EA3	Corr. Coef.	0.0153	0.0696	0.1720	0.2510	0.2226	0.2109	0.1539	0.1993	0.2392	0.2416	0.1873	0.2092	0.1860	0.1383	0.2034	0.1093	0.1829	0.1916	0.1755	0.0624
	Sig. (2-tailed)	0.8082	0.2601	0.0052	0.0000	0.0003	0.0006	0.0126	0.0013	0.0001	0.0001	0.0023	0.0006	0.0025	0.0260	0.0010	0.0804	0.0033	0.0020	0.0046	0.3171
	N	254	264	262	264	264	264	262	258	264	256	263	263	263	259	259	257	256	257	259	259
EA4	Corr. Coef.	-0.0151	0.1880	0.2137	0.2487	0.2137	0.2947	0.1740	0.2241	0.2609	0.3202	0.2264	0.2264	0.1960	0.0999	0.1480	0.0896	0.1811	0.2205	0.1647	0.0943
	Sig. (2-tailed)	0.8121	0.0023	0.0005	0.0000	0.0005	0.0000	0.0050	0.0003	0.0000	0.0000	0.0002	0.0002	0.0015	0.1107	0.0178	0.1537	0.0038	0.0004	0.0083	0.1325
	N	251	261	259	261	261	261	259	255	261	253	260	261	260	256	256	255	253	254	256	256
EA5	Corr. Coef.	0.0457	0.1819	0.1295	0.1493	0.1815	0.1962	0.1270	0.2197	0.1636	0.1488	0.1937	0.1541	0.1605	0.0805	0.1459	0.1300	0.1485	0.2197	0.1702	0.0238
	Sig. (2-tailed)	0.4693	0.0031	0.0366	0.0154	0.0031	0.0014	0.0403	0.0004	0.0078	0.0174	0.0016	0.0125	0.0093	0.1977	0.0191	0.0377	0.0177	0.0004	0.0060	0.7030
	N	253	263	261	263	263	263	261	257	263	255	262	262	262	258	258	256	255	256	259	258
EA6	Corr. Coef.	0.0351	0.1616	0.2410	0.2797	0.2726	0.2568	0.2319	0.2480	0.2830	0.2997	0.3288	0.2686	0.2492	0.1295	0.1895	0.0307	0.1601	0.2118	0.2102	0.1107
	Sig. (2-tailed)	0.5786	0.0086	0.0001	0.0000	0.0000	0.0000	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0376	0.0022	0.6254	0.0104	0.0006	0.0007	0.0760
	N	253	263	261	263	263	263	261	257	263	255	262	262	262	258	258	256	255	256	258	258
EA7	Corr. Coef.	0.0130	0.1250	0.1921	0.2779	0.3199	0.2467	0.2551	0.2446	0.3142	0.2348	0.2336	0.2930	0.2457	0.1809	0.2201	0.1493	0.2076	0.2964	0.3245	0.0438
	Sig. (2-tailed)	0.8371	0.0424	0.0018	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0001	0.0000	0.0001	0.0035	0.0004	0.0166	0.0008	0.0000	0.0000	0.4825
	N	254	264	262	264	264	264	262	258	264	256	263	263	263	259	259	257	256	257	259	259
EA8	Corr. Coef.	-0.0060	0.0673	0.1980	0.1886	0.2335	0.1923	0.1657	0.1263	0.2592	0.1955	0.2843	0.2253	0.2294	0.0867	0.1972	0.1308	0.2075	0.2058	0.1935	-0.0162
	Sig. (2-tailed)	0.9241	0.2770	0.0013	0.0021	0.0001	0.0017	0.0073	0.0430	0.0000	0.0017	0.0000	0.0002	0.0002	0.1650	0.0015	0.0364	0.0009	0.0009	0.0018	0.7957
	N	253	263	261	263	263	263	261	257	263	255	262	262	262	258	258	256	255	256	258	258
EA9	Corr. Coef.	0.0350	0.1533	0.1829	0.2584	0.2298	0.2133	0.2828	0.2703	0.3031	0.1960	0.1911	0.2655	0.2520	0.1489	0.1983	0.2347	0.2452	0.1652	0.2790	0.1441
	Sig. (2-tailed)	0.5806	0.0134	0.0032	0.0000	0.0002	0.0005	0.0000	0.0000	0.0000	0.0018	0.0020	0.0000	0.0000	0.0174	0.0015	0.0002	0.0001	0.0085	0.0000	0.0214
	N	251	260	258	260	260	260	258	254	260	252	259	259	259	255	255	253	252	253	255	255
EA10	Corr. Coef.	0.0744	0.1589	0.2518	0.1987	0.1639	0.1701	0.1550	0.1920	0.2303	0.1601	0.2342	0.2026	0.1338	0.1027	0.0793	0.0268	0.1808	0.1578	0.1607	0.0913
	Sig. (2-tailed)	0.2374	0.0097	0.0000	0.0012	0.0076	0.0056	0.0120	0.0020	0.0002	0.0103	0.0001	0.0009	0.0301	0.0992	0.2031	0.6689	0.0037	0.0113	0.0096	0.1429
	N	254	264	262	264	264	264	262	258	264	256	263	263	263	259	259	257	256	257	259	259

☐ significant

Not significant

Table 8

Appendix C
Correlation Between AC and EB Using Spearman's Rho (N=266)

EB X AC		EB1	EB2	EB3	EB4	EB5	EB6	EB7	EB8	EB9	EB10	EB11	EB12	EB13	EB14	EB15	EB16	EB17	EB18	EB19	EB20
AC1	Correl.Coef.	0.0449	0.0303	0.0714	-0.0741	0.0457	0.0074	-0.0287	-0.0409	-0.0311	0.0914	0.1519	-0.0654	-0.0890	0.1409	0.0218	-0.0080	0.0351	-0.0719	-0.1377	0.1451
	Sig. (2-tailed)	0.4764	0.6238	0.2494	0.2301	0.4600	0.9049	0.6438	0.5135	0.6146	0.1449	0.0137	0.2910	0.1500	0.0236	0.7277	0.8988	0.5769	0.2518	0.0270	0.0197
	N	254	264	262	264	264	264	262	258	264	256	263	263	263	258	258	256	255	256	258	258
AC2	Correl.Coef.	0.0223	0.0447	0.1437	0.0001	0.0676	0.0152	0.0643	0.0330	-0.0217	0.1142	0.1782	0.0215	0.0141	0.0942	0.0006	-0.0669	0.1156	-0.0068	-0.0369	0.2446
	Sig. (2-tailed)	0.7239	0.4692	0.0199	0.9983	0.2741	0.8056	0.2999	0.5983	0.7255	0.0682	0.0037	0.7286	0.8196	0.1313	0.9924	0.2860	0.0652	0.9139	0.5557	0.0001
	N	254	264	262	264	264	264	262	258	264	256	263	263	263	258	258	256	255	256	258	258
AC3	Correl.Coef.	-0.0313	0.1036	0.1260	0.0939	0.1361	0.1550	0.0178	0.1410	0.0823	0.2571	0.2707	0.2150	0.1891	0.1410	0.1556	-0.0110	0.0839	0.0074	0.0812	0.0912
	Sig. (2-tailed)	0.6200	0.0944	0.0423	0.1297	0.0276	0.0120	0.7755	0.0238	0.1844	0.0000	0.0000	0.0005	0.0022	0.0238	0.0127	0.8616	0.1825	0.9066	0.1953	0.1446
	N	253	262	260	262	262	262	260	257	262	255	261	261	261	257	256	254	254	254	256	257
AC4	Correl.Coef.	0.0302	0.0884	0.1423	0.0820	0.1764	0.0914	0.0429	0.1718	0.0969	0.1646	0.2228	0.1923	0.1774	0.2083	0.1741	0.0218	0.1514	0.1195	0.1212	0.2237
	Sig. (2-tailed)	0.6327	0.1529	0.0215	0.1848	0.0041	0.1393	0.4902	0.0058	0.1171	0.0084	0.0003	0.0018	0.0040	0.0008	0.0051	0.7289	0.0157	0.0566	0.0523	0.0003
	N	253	263	261	263	263	263	261	257	263	255	262	262	262	257	257	255	254	255	257	257
AC5	Correl.Coef.	0.0150	0.1415	0.1783	0.2264	0.3914	0.1451	0.1350	0.1656	0.2108	0.1355	0.2452	0.1871	0.2464	0.2454	0.2131	0.2265	0.1584	0.2372	0.1215	0.1252
	Sig. (2-tailed)	0.8135	0.0222	0.0040	0.0002	0.0000	0.0190	0.0299	0.0080	0.0006	0.0312	0.0001	0.0024	0.0001	0.0001	0.0006	0.0003	0.0118	0.0001	0.0527	0.0458
	N	251	261	259	261	261	261	259	255	261	253	260	260	260	255	255	253	252	253	255	255
AC6	Correl.Coef.	-0.0135	0.0870	0.2220	0.1410	0.3672	0.2162	0.1470	0.2228	0.2292	0.1315	0.2029	0.1518	0.2010	0.1565	0.2160	0.1781	0.1859	0.2800	0.2265	0.1872
	Sig. (2-tailed)	0.8311	0.1613	0.0003	0.0227	0.0000	0.0004	0.0179	0.0003	0.0002	0.0366	0.0010	0.0143	0.0011	0.0122	0.0005	0.0044	0.0030	0.0000	0.0003	0.0026
	N	251	261	260	261	261	261	259	256	261	253	260	260	260	256	256	254	253	254	256	256
AC7	Correl.Coef.	0.1164	0.1780	0.0891	0.1586	0.3422	0.2155	0.2277	0.2263	0.1882	0.1202	0.1549	0.2242	0.2606	0.0720	0.1614	0.2844	0.1597	0.1809	0.1794	0.1729
	Sig. (2-tailed)	0.0640	0.0037	0.1506	0.0098	0.0000	0.0004	0.0002	0.0002	0.0021	0.0547	0.0119	0.0002	0.0000	0.2495	0.0094	0.0000	0.0107	0.0037	0.0038	0.0054
	N	254	264	262	264	264	264	262	258	264	256	263	263	263	258	258	256	255	256	258	258
AC8	Correl.Coef.	0.0615	0.1303	0.0912	0.1093	0.1711	0.1445	0.1563	0.2368	0.1481	0.1452	0.1721	0.2848	0.2465	0.1760	0.1566	0.1961	0.1369	0.0767	0.1816	0.2212
	Sig. (2-tailed)	0.3298	0.0347	0.1418	0.0769	0.0054	0.0191	0.0114	0.0001	0.0162	0.0204	0.0052	0.0000	0.0001	0.0047	0.0119	0.0017	0.0292	0.2220	0.0035	0.0004
	N	253	263	261	263	263	263	261	257	263	255	262	263	262	257	257	255	254	255	257	257
AC9	Correl.Coef.	0.0392	0.2792	0.1681	0.2684	0.3344	0.2100	0.1438	0.2127	0.2157	0.1318	0.1178	0.2305	0.3057	0.0924	0.1763	0.2069	0.1989	0.2125	0.2414	0.0809
	Sig. (2-tailed)	0.5346	0.0000	0.0065	0.0000	0.0000	0.0006	0.0201	0.0006	0.0004	0.0351	0.0568	0.0002	0.0000	0.1397	0.0046	0.0009	0.0014	0.0006	0.0001	0.1963
	N	253	263	261	263	263	263	261	257	263	256	262	262	262	257	257	255	254	255	257	257
AC10	Correl.Coef.	0.0773	0.1704	0.1988	0.2612	0.4309	0.2685	0.2864	0.2743	0.3239	0.2260	0.2681	0.3726	0.3311	0.1918	0.2047	0.1819	0.1701	0.3494	0.3187	0.1111
	Sig. (2-tailed)	0.2206	0.0056	0.0012	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0020	0.0010	0.0036	0.0066	0.0000	0.0000	0.0753
	N	253	263	261	263	263	263	261	257	263	255	262	262	262	257	257	255	254	255	257	257

significant

Not significant

Note: Awareness of consequences is positively correlated with environmental behavior

APPENDIX D

Science-Based Social Issues Questionnaire (Adapted from P.N. dela Peña, A. M. Macale and N.N. Largo. (2018). Environmental Awareness and Pro-Environmental Behaviors of High School Students in Los Baños, Laguna. Journal of Nature Studies. 17(1), 56-67)

The purpose of this survey is to assess the awareness of students about science-related issues in the community. Your answers will be used for **research purposes only** and will be kept strictly confidential. Thank you for your time and participation.

Part I. Environmental Awareness

A.   Awareness on Issues: Please check the box corresponding to your level of awareness about the following issues. Refer to the description in each box.

Table 9

Issues	Not aware at all (I have never heard of this issue)	Poorly aware (I may have heard of this issue but I did not pay much attention to it)	Fairly aware (I have heard or read about this once)	Moderately aware (I know some details about the issue)	Highly aware (I know this issue in detail and I have the desire to help if given the chance)
1. In 2012, Typhoon Pablo caused widespread destruction in Mindanao, leaving thousands homeless and more than 600 fatalities.					
2. In 2013, Typhoon Yolanda, the strongest tropical cyclones ever recorded; devastated portions of the Philippines particularly in the Visayas (Leyte and Samar) killing at least 6,300 people. in that Philippines alone.					
3. The Philippines has lost more than half of its forest cover since the 1950s.					
4. Most of Philippine coral reefs are in poor to fair condition.					
5. Philippines ranks third worldwide in overall vulnerability to disasters (i.e. typhoons, earthquakes, landslides, volcanic eruptions).					
6. In January 17,2013, United States Ship Guardian ran aground on the Tubbataha Reef causing damage to the coral reef.					
7. In 2000, a landfill in Payatas collapsed and killed about 300 people, mostly waste scavengers.					
8. Philippines is the world's center of marine biodiversity.					
9. Only 1% of plastic bags produced globally are recycled.					
10. Over the next decade, thousands of species of plants and animals will become extinct.					

B.   **Awareness on Environmental protection, damage, threats, etc**

Using the scale from 1 (lowest) to 5 (highest), please rate the extent to which you agree with the following statements.

Table 10

Statement	1 Not at all	2 Slightly agree	3 Neutral	4 Moderately agree	5 Strongly agree
1. Environmental protection is beneficial to my health.					
2. Environmental protection will help people have a better quality of life.					
3. Environmental damage generated here harms people all over the world.					
4. Environmental protection provides me with better opportunities for recreation.					
5. Claims that we are changing the climate are greatly exaggerated.					
6. Environmental threats to public health have been exaggerated.					
7. While some local plants and animals may have been harmed by environmental degradation, over the whole Earth there has been little effect.					
8. Environmental protection will make me a better person.					
9. Environmental issues in the TV/radio news are exaggerated.					
10. Environmental protection prevents me from using non-biodegradable products.					

Part II. Environmental Behaviors

Please check the box corresponding to how often you do the indicated actions. Do not answer according what you think is the right behavior, but specify your **actual behavior.**

Table 11

Behavior	Never	Seldom	Sometimes	Most of the time	Always
1. I switch off lights before I go to sleep.					
2. I unplug electrical appliances when not in use.					
3. When travelling short distances, I walk instead of riding a vehicle.					
4. I pour water into cups/glasses instead of letting it run when brushing my teeth.					
5. I purchase products with less or eco-friendly packaging					
6. I use scratch paper instead of new paper when possible.					
7. I use eco-bags when buying from stores.					
8. I donate unused clothes or things.					
9. I repair damaged materials instead of throwing them out immediately.					
10. I reuse envelopes, folders, and paper clips.					
11. I reuse utensils instead of using disposables.					
12. I purchase recycled products (e.g. recycled tissue pulp, paper).					
13. I collect and sell recyclables (e.g. plastic bottles, glass, newspaper, used paper, metal scraps) to junk shops.					
14. I follow the school's waste segregation scheme.					
15. I pick up litter at school and home, even if it's not my own.					
16. I segregate the wastes in our home properly.					
17. I do not usually use our shower at home.					
18. I use my bike instead of the family's motorcycle whenever my mother asks for an errand.					
19. When it rains, I immediately collect rainwater that can be used to clean our garage.					
20. I usually use "*timba*" and "*tabo*" to collect water when I take a bath.					

APPENDIX E

Guide for determining the strength of correlation

Table 12

r	*interpretation of strength of correlation*
< 0.15	*very weak*
0.15 – 0.25	*weak*
0.25 – 0.40	*moderate*
0.40 – 0.75	*strong*
>0.75	*very strong*