
Environmental Awareness and Practices of Senior High School Students: Input for School Ecological Management Plan

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ABSTRACT

The role of the schools is very critical to the development of students who are environmentally aware and environmentally conscious. This descriptive-correlational study sought to measure the level of awareness and practices of senior high school students of Dalwangan National High School, Division of Malaybalay City, Region X. Findings revealed that the students are very aware on environmental concepts and state of environment; and moderately aware in environmental issues and problems. They often practice taking actions to solve environmental problems and sometimes practice the need to possess a high degree of commitment. The study found out that there is a moderate correlation between students' awareness on environmental concepts and issues and their practices to solve the environmental problems and possess a high degree of commitment. The study recommends that information dissemination programs regarding environmental concepts, state of the environment, ecological issues and problems could be sustained by the school to keep the ecological awareness of the students high. Environmental advocacies and eco-movement may likewise be institutionalized in the school through student organizations like YES-O and Science clubs. The crafted ecological management plan is recommended for implementation to increase the degree of commitment of students towards ecological conservation.

Keywords:

environmental education, environmental awareness, environmental practices, environmental issues. ecological management plan

INTRODUCTION

One of the most noticeable phenomena of the last decade is the growing concern with environmental issues and their impact on the general awareness. In the era of globalization, we face many social upheavals including environmental dilemmas. Rogayan (2019) reiterated that the earth is now suffering from innumerable afflictions at the present time caused by the tremendous human activity that has unceasingly denounced the environment. The challenge for everyone is to take the wheel of action and move towards a common cause in the preservation of life on earth.

Environmental awareness can be defined as the understanding and appreciation of environmental theories and realities and the significance of environmental issues such as pollution, deforestation, overpopulation, energy crisis and so on. The promotion and

appreciation of the environment in order to improve personal and social life will also take great account of environmental awareness. In addition, environmental awareness can improve the esthetic sense of the individual in nature in order to appreciate its beauty. (Panth, Verma, & Gupta, 2015). Another definition sited by (Panth et al., 2015) that environmental awareness can be understood through environmental education which has been viewed as an important way to educate students about environmental issues and concerns, thus, several studies on environmental education were focus their subjects on students' environmental awareness and attitude.

Education for Sustainable Development of the United Nations Educational, Scientific and Cultural Organization (UNESCO) reiterates that education is an indispensable tool for sustainable development. Environmental education is a mechanism aimed at developing a world population that is aware of and concerned about the overall environment and its associated problems, and has the awareness, attitudes, commitments and skills to work individually and collectively to address current problems and prevent new ones (Jain & Raghunathan, cited in Puri & Joshi, 2017).

In various countries around the world, strong environmentalism between students and people generally continues to develop. As one thing, India has become one of the world's fastest-growing countries in addressing its environmental problems and improving its environmental quality. (Sivamoorthy, Satheesh & Nalini Kumar, 2013). The environmental issues have become a matter of great concern for many parties. But many people in Ethiopia seem to have poor awareness about environmental issues (Hailu, 2016). In Turkey, the level of environmental awareness among high school students is high, as one study reveals (Anilan, 2014). The level of environmental awareness and practices on recycle

In the Philippines, the Department of Education (DepEd), the Commission for Higher Education (CHED) and the Technical Education and Skills Development Authority (TESDA), in collaboration with the Department of Environment and Natural Resources (DENR), the Department of Science and Technology (DOST) and other relevant agencies, in conjunction with environmental experts and the academy, lead the process.

Moreover, one of the Philippines' science education objectives is to develop students who are environmentally conscious and environmentally friendly. Each year's June month is declared the Philippine Environment Month by Presidential Proclamation No. 237, which was signed by then President Corazon C. Aquino in 1998. During the celebration, many important events are being celebrated, such as the World Environment Day on 5 June, the Philippine Eagle Week on 4-10 June and the Filipino Arbor Day on 25 June (Environment and Natural Resources Department, 2016).

People's consciousness of environmental field has been recognized as a powerful tool. Information through education has an important impact to alter behaviour (as cited in Gonzaga, 2017). Several researches were carried out to determine students' environmental awareness and activities at different levels. Global studies have focused primarily on the environmental awareness and practices of college students (Sivamoorthy, Nalini & Satheesh Kumar, 2013; Sharma, 2016), the environmental awareness of tertiary students in relation to their study stream and area of residence (Singh, 2015), the level of understanding, behaviour and participation of college students in environmental activities (Bhat et al., 2016), and in environmental activities (Singh, 2015).

Educating our students on environmental awareness may be a great help in breaking down knowledge on how to practice sustainability and conservation in the community. Integrating environmental education into the curriculum at all levels of school promotes undue impact on students' awareness, skills and dedication to environmental protection (Raman, 2016). In fact, the big determinations in the field of environmental education are now the goals of most western universities (Mead, 2013).

Furthermore, (Bhatia, 2013) stipulated that knowledge of the environment can be gained in an organization or community where environmental sustainability was a practice. Solid waste management, energy conservation, reforestation, methods of family planning and related environmental management practices were some examples.

The main focus of this study was to find out the level of environmental awareness and practices among Dalwangan National High School senior high school, and suggested an ecological management plan for the next school year.

FRAMEWORK OF THE STUDY

The research was anchored in the 2008 National Environmental Awareness and Education Act better known as Law 9512 of the Republic. RA 9512 states: Section 2, “consistent with the policy of the State to protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature, and in recognition of the vital role of the youth in nation building and the role of education to foster patriotism and nationalism, accelerate social progress, and promote total human liberation and development, the state shall promote national awareness on the role of natural resources in economic growth and the importance of environmental conservation and ecological balance towards sustained national development.” Agencies such as the Department of Education (DepEd), the Higher Education Commission (CHED), the Technical Education and Skills Development Authority (TESDA), the Department of Social Welfare and Development (DSWD) shall therefore be integrated in coordination with the Department of Environment and Natural Resources (DENR), the Department of Science and Technology (DOST) and other relevant agencies.

In addition, environmental awareness covers environmental values and ideals, environmental legislation, the status of the international and local climate, local environmental best practices, the challenge of environmental degradation and its impact on human well-being, the duty of humans to the ecosystem and the importance of nature conservation, preservation and regeneration.

RESEARCH QUESTIONS

This study investigates the environmental awareness and practices of senior high school students of Dalwangan National High School for the school year 2019-2020 as an input for school ecological management plan. Specifically, the study sought answers to the following questions:

1. What is the level of environmental awareness of the senior high school students of Dalwangan National High School?

In terms of these dimensions:

- 1.1 Environmental Concepts and State of Environment
- 1.2 Environmental Issues and Problems
2. What are the practices of the senior high school students of Dalwangan National High School?

In terms of these dimensions:

- 2.1 Practice of the Need to take Actions to Solve Environmental Problems
- 2.2 Practices on the Need to Possess a High Degree of Commitment
3. What is the relationship between the level of environmental awareness and practices of the senior high school students of Dalwangan National High School?

SCOPE AND LIMITATION

The unit of analysis of this study is focused on Dalwangan National High School for the school year 2019-2020. The study analyzed the relationship between the environmental awareness and practices of senior high school students as a basis for proposed ecological management plan.

The proponents adopted the Environmental Awareness and Practices questionnaire by Rogayan&Nebida (2017) and was revised by the researchers based on few principles related to the study. For the analysis of data, the researchers used mean and standard deviation to analyzed the level of environmental awareness and practices of senior high school students, correlational was also used to analyzed the relationship between the level of awareness and practices of the students. The quantitative results were backed up with qualitative data elicited through focus group interview. After gathering the quantitative data, a proposed school ecological management plan was crafted for the following school year.

RESEARCH METHODOLOGY

The study utilized a descriptive-correlational research which sought to find the relationship of the respondents' environmental awareness and environmental practices through the survey-questionnaire.

a. Sampling

The study involved 80 Grade 11 Senior High students divided into 46 girls and 34 boys of Dalwangan National High School from Division of Malaybalay city, Region X. The study used purposive sampling technique. Grade 11 students were chosen as they are already immersed with the school setting and can still have one school year to participate in the activities included in the proposed ecological management plan.

b. Data Gathering Procedure

The researchers secured approval from the school principal to conduct the study. For ethical considerations, parental consent was secured to ensure the protection of the respondents since they are minors. Upon approval, survey-questionnaires were distributed to the respondents. The respondents were given 10 to 15 minutes to respond and then the researchers collected all the accomplished survey questionnaires on the same day. Select respondents were asked for a focus group discussion (FGD) to validate the findings obtained from the survey

questionnaires. The researchers also conducted participant observation and documentary analysis on the environmental practices of the students.

c. Instruments

In order to gather the data on the environmental awareness and practices among the Senior High School students, the researchers used an adopted survey questionnaire with an overall Cronbach alpha value of 0.92. The instrument measured the students’ Awareness of Environmental Concepts and the State of Environment (Part I), Awareness of Environmental Issues and Problems (Part II), Practices on the Need to Take Actions to Solve Environmental Problems (Part III) and Practices on a High Degree of Commitment (Part IV). A focus group discussion (FGD) guide which contains semi-structured questions was likewise used. To interpret the level of Environmental Awareness and Practices of the students the following scale was used: Highly Aware (HA) 4.50 – 5.00; Very Aware (VA) 3.50 – 4.49; Moderately Aware (MA) 2.50 – 3.49; Slightly Aware (SA) 1.50 – 2.49; Totally Unaware 1.00 – 1.49.

DISCUSSION OF RESULTS

Level of Environmental Awareness of Science Students

1.1 Awareness of Environmental Concepts and the State of Environment.

The respondents are “Very Aware” in environmental concepts and state of the environment as revealed by the overall mean of 3.77 and standard deviation of 0.18 (Table 1).

The top items include the following Rainforests are the world’s most biologically diverse ecosystems (M=4.06); global warming is brought about by rising levels of heat-trapping gases, known as greenhouse gases, in the atmosphere (M=4.03); the ozone layer of the atmosphere protects life on Earth by absorbing harmful ultraviolet radiation from the Sun. (M=4.2). This implies that the respondents are very aware about the importance of rainforests in the balance of life, causes of global warming, and the role of ozone layer in the protection of life.

Meanwhile, the respondents are “Moderately Aware” about the desertification and its effects on economic productivity (M=3.29). The findings are consistent with the study of Singh (2015) which concluded that the undergraduate students possessed a good average level of environmental awareness.

Table 1. Respondents’ Awareness of Environmental Concepts and State of Environment

Statement	Mean	SD	Description	Rank
1. Agenda 21 is a plan of the United Nations in which large developing countries promised to develop their industries with an eye towards protecting the environment.	3.28	1.36	MA	10
2. Rainforests are the world’s most biologically diverse ecosystems.	4.06	1.03	VA	1
3. Global warming is brought about by rising levels of heat-trapping gases, known as greenhouse gases, in the atmosphere.	4.03	1.05	VA	3
4. The ozone layer of the atmosphere protects life	4.2	0.93	VA	2

on Earth by absorbing harmful ultraviolet radiation from the Sun.

5. Sustainable development means increasing standards of living without destroying the environment.	3.58	1.08	VA	5
6. Desertification is the decline in the biological or economic productivity of the soil in dry and semi-dry areas resulting from various factors including human activities.	3.29	1.10	MA	9
7. Acid rain is a form of air pollution in which airborne acids produced by electric utility plants and other sources fall to Earth in distant regions.	3.51	1.04	VA	8
8. Indigenous peoples are those who have inhabited and made their living directly off the same environment for hundreds or thousands of years.	3.98	0.95	VA	4
9. There is only one percent of all the water in the world that is available for drinking.	3.56	1.10	VA	6.5
10. According to the Philippine constitution, it is the state's primary duty to protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature.	3.56	1.08	VA	6.5
TOTAL	3.71	0.12	VA	

Legend: Highly Aware (HA) 4.50 – 5.00; Very Aware (VA) 3.50 – 4.49; Moderately Aware (MA) 2.50 – 3.49; Slightly Aware (SA) 1.50 – 2.49; Totally Unaware 1.00 – 1.49.

1.2 Awareness of Environmental Issues and Problems.

The respondents are “Moderately Aware” in environmental issues and problems with an overall mean of 3.49 and a standard deviation of 0.12.

In particular, the indicators with highest means include the following: The Central Visayas is severely battered by Typhoon Yolanda which is considered as one of the world's strongest typhoon in history. (M=4.16); Bohol is greatly affected by a strong earthquake which caused colossal destructions in the province's old-age churches and other structures. (M=3.72).

The findings of the study are consistent with the results of the previous studies of Sahu, Roy, Monika & Rajkiran (2015) which found out that the overall level of awareness was found to be average. Number of students with high level of awareness is found to be extremely low whereas number of students with low level of awareness is found to be fairly high

The results of the study, however oppose the findings of Anilan, 2014; Milos & Cicek, 2014; Singh, 2015; Garcia & Luansing, 2016; Sharma, 2016; Puri & Joshi, 2017 that environmental awareness of the students is high.

Meanwhile, the respondents show “Moderately Aware” in the following: The environment is confronted with a myriad of environmental issues and problems at present (M=3.44), Ormoc City experienced one of the severest landslides in history which killed thousands of people (M=3.48), A total of 700 people were killed and hundreds were injured in Aurora landslide in

2004 (M=3.24), Major mine spill took place in 2005 which contaminated several bodies of water and caused fish kill in Albay Gulf (M=3.02), Rice crisis happened in 2008 and continued landlessness and backward agriculture occurred (M=3.24) and Palawan clamored to the people in a signature campaign to never allow mining in the province which is considered as the country's last ecological frontier (M=3.36)

Table 2. Respondents' Awareness of Environmental Issues and Problems

Statement	Mean	SD	Description	Rank
1. The environment is confronted with a myriad of environmental issues and problems at present.	3.44	1.09	MA	6
2. There is an attempt to establish a coal-fired power plant in Subic Bay which can affect can pose threats to the environment and the health of the people.	3.53	1.04	VA	4
3. The Central Visayas is severely battered by Typhoon Yolanda which is considered as one of the world's strongest typhoon in history.	4.16	0.86	HA	1
4. Bohol is greatly affected by a strong earthquake which caused colossal destructions in the province's old-age churches and other structures.	3.72	1.12	VA	2
5. Ormoc City experienced one of the severest landslides in history which killed thousands of people.	3.48	1.15	MA	5
6. A total of 700 people were killed and hundreds were injured in Aurora landslide in 2004.	3.24	1.25	MA	9
7. Major mine spill took place in 2005 which contaminated several bodies of water and caused fish kill in Albay Gulf.	3.02	1.15	MA	10
8. Rice crisis happened in 2008 and continued landlessness and backward agriculture occurred.	3.24	1.24	MA	8
9. Palawan clamored to the people in a signature campaign to never allow mining in the province which is considered as the country's last ecological frontier.	3.36	1.12	MA	7
10. Climate change is very evident in every part of the globe like the extreme heat experienced by Australia and excessive coldness in Canada.	3.69	1.10	VA	3
TOTAL	3.49	0.12	MA	

Legend: Highly Aware (HA) 4.50 – 5.00; Very Aware (VA) 3.50 – 4.49; Moderately Aware (MA) 2.50 – 3.49; Slightly Aware (SA) 1.50 – 2.49; Totally Unaware 1.00 – 1.49.

The study refutes the supports the study of Bhat et al. (2016) which indicated that the students due to problems of population explosion, exhaustion of natural resources and pollution of environment are not having enough awareness and skills for identifying and solving environmental problems.

Level of Environmental Practices of Science Students

2.1 Practices of the Need to Take Actions to Solve Environmental Problems.

The respondents “Often” practice the need to take actions to solve environmental problems as revealed by the overall mean of 3.93 and standard deviation of 0.16 (Table 3).

Top items include: turn off the lights and unplug appliances when not in use to save electricity (M=4.21); Harness solar energy, a radiation produced by nuclear fusion reactions deep in the Sun’s core (M=4.2); Avoid the use of plastic and Styrofoam which cause harm not only to the environment but also to human health (M=4.16).

Meanwhile, the respondents “Sometimes” practice the following: lessen the use of detergents for they tend to create foam in gutters and in sewage-disposal plants and even appeared in naturally occurring ground and surface waters (M=3.45) and practice the science of composting which produces partially decomposed organic material used in gardening to improve soil and enhance plant growth (M=3.37).

Table 3. Respondents’ Practice of the Need to take Actions to Solve Environmental Problems

Statement	Mean	SD	Description	Rank
1. Turn off the lights and unplug appliances when not in use to save electricity.	4.21	0.82	AL	1
2. Harness solar energy, a radiation produced by nuclear fusion reactions deep in the Sun’s core.	4.2	0.84	AL	2
3. Plant endemic trees in the vacant areas in the community to prevent soil erosion and get more oxygen to breathe.	4.04	0.99	OF	4
4. Avoid the use of plastic and Styrofoam which cause harm not only to the environment but also to human health.	4.16	0.96	OF	3
5. Avoid throwing garbage anywhere and learn the science of segregation of solid wastes.	4.00	1.00	OF	5
6. Keep a good food ethics and avoid eating with leftovers and wasting drinking water.	3.73	1.19	OF	9
7. Lessen the use of detergents for they tend to create foam in gutters and in sewage-disposal plants and even appeared in naturally occurring ground and surface waters.	3.45	1.26	SO	10
8. Practice the science of composting which produces partially decomposed organic material used in gardening to improve soil and enhance plant growth.	3.83	1.12	OF	6
9. Recycle and reuse non-biodegradable materials to lessen solid wastes.	3.75	1.21	OF	7.5

10. Use reusable water bottles or tumblers instead of buying bottled water in the canteen or stores. 3.75 1.19 OF 7.5

TOTAL 3.93 0.16 OF

Legend: Always (AL) 4.50 – 5.00; Often (OF) 3.50 – 4.49; Sometime (SO) 2.50 – 3.49; Seldom (SE) 1.50 – 2.49; Never (NE) 1.00 – 1.49

The study corroborates the findings of Sivamoorthy, Nalini & Kumar (2013) that the level of awareness is high but the practice level is moderate among college students.

2.2 Practices of the Need to Possess a High Degree of Commitment.

The respondents “Sometimes” practice the need to take possess a high degree of commitment as revealed by the overall mean of 3.32 and standard deviation of 0.14.

Table 4. Respondents Practices on the Need to Possess a High Degree of Commitment

Statement	Mean	SD	Description	Rank
1. Discuss with friends and relatives about environmental issues and concerns that confront the community and the country as a whole.	3.45	0.85	SO	3
2. Lobby for relevant laws on environmental conservation with the support of your political leaders especially the congressman.	3.47	1.14	SO	2
3. Write articles in the newspaper which encourage people to take part in responding to the different environmental problems.	3.2	0.81	SO	8.5
4. Organize an environment forum or symposium with your fellow youth and the community people.	3.30	0.92	SO	6
5. Write an appeal to your political leaders regarding environmental concerns of your community.	3.33	1.12	SO	5
6. Ask the support of the media in exposing anomalies and irregularities which led to the destruction of the environment.	3.2	1.16	SO	8.5
7. Deliver a talk or discourse about environmental literacy to heighten the awareness of the people.	3.12	1.20	SO	10
8. Volunteer to organizational groups which help for the preservation and conservation of the environment.	3.48	1.04	SO	1
9. Encourage everyone to be ambassadors of the environment in their respective communities specifically your fellow youth.	3.21	1.17	SO	7
10. Support initiatives and programs on environmental conservation like the National Greening Program of the present administration.	3.43	1.10	SO	4
TOTAL	3.32	0.14	SO	

Legend: Always (AL) 4.50 – 5.00; Often (OF) 3.50 – 4.49; Sometimes (SO) 2.50 – 3.49; Seldom (SE) 1.50 – 2.49; Never (NE) 1.00 – 1.49.

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The respondents “Sometimes” practice the following: Volunteer to organizational groups which help for the preservation and conservation of the environment (M=3.48); Lobby for relevant laws on environmental conservation with the support of your political leaders especially the congressman (M=3.47), Discuss with friends and relatives about environmental issues and concerns that confront the community and the country as a whole (M=3.45) and Support initiatives and programs on environmental conservation like the National Greening Program of the present administration (M=3.43).

This study supports the claim of Puri& Joshi (2017) that the green attitude of the students is clearly visible in their action which is step towards Education for Sustainable Development (ESD). On the other hand, the findings of the study opposed the results of the previous studies that the environmental practices of the students are high (Puri& Joshi, 2017).

Relationship between Environmental Awareness and Environmental Practices of Science Students

Table 5 shows the correlation between environmental awareness and environmental practices.

There was a significant positive moderate correlation between awareness of environmental concepts and awareness of environmental issues ($r=0.508$; $p=0.01$) which implies that as the awareness of environmental concepts increase, the awareness of environmental issues will likely increase.

The awareness of environmental concepts was significantly positively related to practices on the need to solve environmental problems as revealed by the r-value of 0.43 ($p=0.001$).

Table 5. Correlation Coefficients among the Variables of Environment Awareness and Practices

Variables	1	2	3	4
1. Awareness of Environmental Concepts	-			
2. Environmental Issues and Problems	0.508*	-		
3. Practice of the Need to take Actions to Solve Environmental Problems	0.434	0.538*	-	
4. Practices on the Need to Possess a High Degree of Commitment	0.202*	0.091*	0.507*	-

*Correlation is significant at the 0.01 level (2 - tailed)

This suggests that as the awareness of environmental concepts increases, the practices on the need to solve environmental problems will also increase. Additionally, results of the correlation revealed that the awareness of environmental issues and problems was moderately

related with the practices on the need to solve environmental problems ($r=0.538$; $p=0.01$). This means that students who are aware of environmental issues were more likely to practice the need to solve environmental problems.

The students' awareness of environmental concepts was significantly positively related to practices on the need to possess a high degree of commitment ($r=0.202$; $p=0.01$) which implies that as the students' awareness of environmental concepts increase, the practices on the need to possess a high degree of commitment will likely increase.

A statistically significant correlation was likewise noted between awareness of environmental issues and the practices on the need to possess a high degree of commitment ($r=0.091$; $p=0.01$). This means that the students who are aware of environmental issues will more likely to practice the need to possess a high degree of commitment. The practices on the need to solve environmental problems was significantly positively correlated with the practices on the need to possess a high degree of commitment ($r=0.507$; $p=0.01$).

This implies that the students who practice on the need to solve environmental problems were more likely to practice on the need to possess a high degree of commitment. The findings corroborate previous studies (Gonzaga, 2016; Marpa&Juele, 2016) that the level of awareness and extent of practices were positively correlated to a moderate degree.

The findings also support the results of Pardo (2012), Marpa and Juele (2016) which revealed that there is a significant relationship between the level of awareness and extent of practice of the students. This means that the high school students' environmental awareness is related to their practices.

Meanwhile, the findings Rogayan Jr. and Nebrida (2019) revealed a moderate correlation between students' awareness on environmental concepts and issues and their practices to solve the environmental problems and possess a high degree of commitment.

Meanwhile, the study of Sharma (2016) counter the result of the present study that there exists no significant correlation between environmental awareness and environmental practice. College students are aware of the environmental issues but when they are going to practice it they fail. Owens, (2000) in his study stated that increase in knowledge and awareness did not lead to pro-environmental behavior.

CONCLUSIONS AND RECOMMENDATIONS

The study concluded that the Senior High School students of Dalwangan National High School are very aware of environmental concepts and state of the environment; and in environmental issues and problems. The respondents often practice the need to take actions to solve environmental problems while they sometimes practice the need to possess a high degree of commitment. There is a significant high positive relationship between environmental awareness and environmental practices. There are significant relationships among the variables of environmental awareness and environmental practices. There are varied authentic activities included in the proposed ecological management plan. The study recommends that information dissemination programs regarding environmental concepts, the state of the environment, ecological issues and problems must be sustained by the school to keep the awareness of the students high. Environmental advocacies and eco-movement must be institutionalized in the school through the YES-O Club and/or Science club to increase the

degree of commitment of students towards biodiversity conservation. The crafted ecological management plan is recommended for implementation to increase the degree of commitment of students towards ecological conservation.

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