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Climate Change Awareness and Knowledge Among Select Community Colleges: Basis for Sustainable Intervention

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ABSTRACT

This study sought to ascertain the variables influencing students' understanding of climate change who were enrolled in the National Service Training Program (NSTP) at several community colleges in Misamis Oriental. The study also sought to pinpoint the informational resources that were most easily accessible to students and had an impact on their level of climate change awareness. The research design for the study is descriptive-correlational and causal-comparative. No matter their demographic makeup, the three community colleges in Misamis Oriental that were chosen for the study included students who were quite aware of climate change's challenges. The top three main sources of information are radio, television, and the internet. Ecosystem viability, the degree of public knowledge of climate change, and information availability are all strongly correlated. Since their P-values are below the significance level, awareness and information accessibility substantially impact students' ecological viability.

Keywords: Climate Adaptation, National Service Training Program, Climate Change Awareness

INTRODUCTION

The countries and patrons of the future are thought to be students. Their actions and choices will unavoidably have an impact on the environment. In addition to adopting responsible environmental practices for themselves, students can affect the ecological knowledge, attitudes, and actions of their peers, families, and the larger community, this makes them essential agents of social change in society. People and communities will be inspired to adopt new attitudes and behaviors toward the climate change disaster by educating the next generation about issues related to the crisis, including water and land degradation. Moreover, the Initiatives to avoid and reduce the impact of climate change through education may assist kids, young people, and adults to obtain a better awareness of the influence of global warming on their possibilities to enjoy their fundamental human rights. Climate change adaptation in the nation must take into account students' comprehension of the issue. Fernandez and Shaw (2013) contend that catastrophe risk reduction measures must take into account young people's awareness of climate change. This is essential since young people are among the disadvantaged groups in society who suffer the most from disasters (Gaillard &Pangilinan, 2010; Anderson, 2005); (Anderson, 2005). A great resource for risk communication, education, advocacy, and action-oriented risk reduction initiatives would be neglected if they were left out of the disaster risk reduction procedures, endangering their safety from disasters. In order to assist themselves and others, Peek (2008) asserts that youth's knowledge, creativity, energy, excitement, and social networks could be utilized during various stages of disaster risk reduction (DRR) activities. Mitchell, Tanner, and Haynes (2009) noted an NGO engaged in community risk mapping and mitigation efforts have a significantly stronger capacity to take part in DRR. They also stated that these young people used their understanding of DRR to encourage local planners and school administrators to move their schools from high-risk landslide areas to safer locations. The Theory of Environmentalism and the Theory of Ecocentrism, on which the study was founded, provide context for why the study is important and how the researcher hopes to close a gap in the body of knowledge.

FRAMEWORK

The figure displays the connections between the independent variables and the dependent variable. Because of their level of knowledge and the accessibility to information sources on climate change, students enrolled in the National Service Training Program at the selected community colleges in Misamis Oriental are the independent variables of the study. Nevertheless, the study's dependent variable is ecosystem viability, which is defined as knowledge of climate change in terms of its causes, effects, and mitigation.

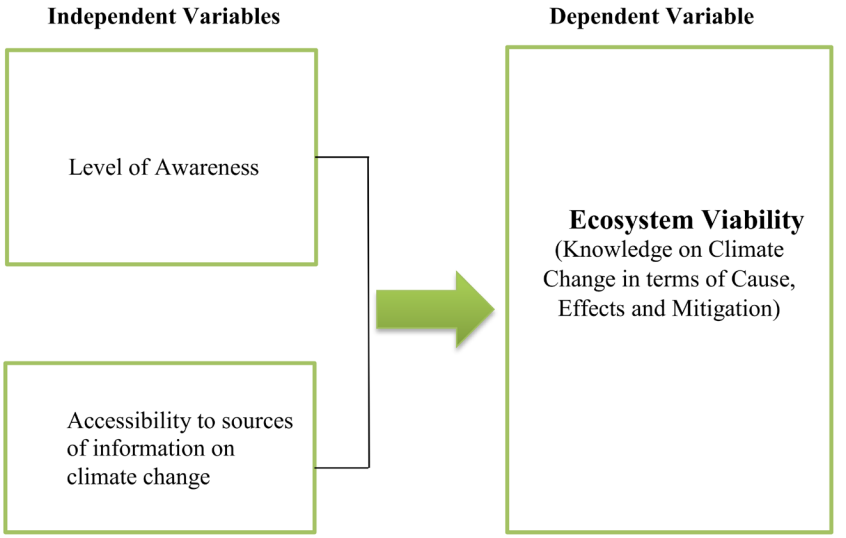

Figure 1. The schematic presentation of the study where the independent and dependent of the study interplay.

OBJECTIVES OF THE STUDY

The following are the objectives of the study. Specifically, the study addressed the following questions: (a) What is the student's general level of awareness of climate change?; (b) What are the students' sources of information on Climate Change? (c) What is the student's level of knowledge on Ecosystem Viability in terms of Cause, Effects, and Mitigation; (d) Is there a significant relationship between ecosystem viability in terms of Awareness and Accessibility; and (e) Which variables best influence ecosystem viability?.

METHODS

Causal-comparative and descriptive-correlational research designs were used in the study. It used statistical analysis to explore its relationship with other factors and characterize the current state of the study's variables (Creswell, 2013). The City College of El Salvador, located in El Salvador City, Opol Community College, located in Opol, Misamis Oriental, and Tagoloan Community College, located in Tagoloan, Misamis Oriental, were the subjects of the study. The distribution of respondents for the study is shown in the table below. School A (El Salvador City College), School B (Opol Community College), and School C (Tagoloan Community College).

Table 1

Distribution of Respondents of the Study

SCHOOLS	PLACE	NUMBER OF RESPONDENTS
A	El Salvador City, Misamis Oriental	100
B	Municipality of Opol, Misamis Oriental	100
C	Municipality if Tagoloan, Misamis Oriental	100
	Total	300

A personal data sheet, a level of awareness questionnaire, a self-assessment questionnaire, and a cause, effect, and mitigation questionnaire were among the three sets of adopted and modified survey tools utilized in the study. The Liceo de Cagayan University served as the site for the pilot study. The researcher tested the validity of the instruments in a pilot study with 30 randomly selected students to determine their clarity, applicability, and reliability as well as to determine how long it would take to fill out the research tools. The Office of the Vice President for Research, Publication, and Extension evaluated the dependability of the instrument. The researchers will begin sending the surveys to the study's participants after they have successfully completed and passed the test. The researcher sent a letter of authorization to the dean of the school of graduate studies to authorize the conduct of the study in order to collect the data. Another letter was then sent for review and approval to the Vice President's Office for Research, Publication, and Extension. A letter of authorization was then submitted to each of the schools involved in the study—City College of El

Salvador, Opol Community College, and Tagoloan Community College. The researcher and his colleagues distributed survey questionnaires at each community college. The surveys were then obtained in order to tabulate and analyze the data. The following statistical measures were utilized to manage the data acquired for this study: Problems No. 1 and 3, Mean, and Standard Deviation. Frequency and percentage were utilized to arrange and rank the data for problem number 2. Person r correlation was utilized to correlate the relevance of the variables for problem number 4. Finally, in order to identify the variable determining the ecosystem viability, multiple linear regression was employed for problem number 5.

RESULTS AND DISCUSSION

This chapter discusses the results of the data obtained from the instrument used in the study. The data were collected and processed and then interpreted to respond to the problems posed in introdcution of the study.

What is the student's general level of awareness of climate change?

Table 2

Student's general level of awareness on climate change

Statement	Mean	SD	Verbal Description
1.Climate change is happening	4.38	.879	Very Aware
2. Climate change manifests in diverse ways in the world	3.84	.930	Very Aware
3. We are already experiencing the impacts of climate change	4.39	.864	Very Aware
4. I see climate change to be of immediate and urgent concern	4.05	.964	Very Aware
5. Climate change is a threat to sustainable development	3.96	1.08	Very Aware
6. There are climate change research agencies at both National and global levels that I know.	3.29	1.10	Moderately Aware
Overall Mean	**3.99**	**0.97**	**Very Aware**

The mean and standard deviation of students' overall climate change awareness is shown in Table 2. Students who said "there are climate change research agencies at both national and global levels" received the lowest mean score (M=3.29, SD=1.10, Moderately Aware), while those who said "students

have already experienced the impacts of climate change" received the highest mean score (M=4.39, SD=0.864, Very Aware). In spite of this, the student's total mean score on the six statements measuring their general awareness of climate change was (M=3.99, SD=0.97), which is considered to be Very Aware. According to studies by Acquah (2011), Hasan and Akhter (2011), Olajide (2011), and Adebayo (2013), students with higher levels of education are more likely to be aware of climate change. The results support this hypothesis. Hasan and Akhter (2011) demonstrated in a different study by Brulle, Carmichael, and Jenkins (2011) that those with less education are more likely to perceive climate change as a threat since they are more likely to have lower incomes and be extremely exposed to its effects.

What are the student's sources of information on Climate Change?

Table 3

Student's sources of information on Climate Change

Sources of Information	f	%	Rank
1. Television	281	93.7	1st
2. Internet	267	89.0	2nd
3. Radio	251	83.7	3rd
4. Newspapers	225	75	4th
5. Subject in School	200	66.7	5th
6. Books	178	59.3	6th
7. Research Reports	151	50.3	7th
8.Friends	146	48.7	8th
9. Magazines	124	41.3	9th
10. Seminars and workshops	99	33.0	10th
11. Periodicals	26	8.7	11th
12. Pamphlets	20	6.7	12th
13. Others	9	3.0	13th

The frequency and proportion of students who consulted sources of information on climate change are shown in Table 3. According to the results, of the sources of information listed, television came out on top (F=2.81 and 97.3%), followed by internet sources (F=2.67 and 89%), radio (F=251 and 83.7%), newspapers (F=225 and 75%), subjects in school (F=200 and 66.7%), books with (F=178 and 59.3%), research reports (F=151 and 50.3%), responses

from friends (F=146 and 48.7%), magazines (F=Others, with (F=9 and 3.0%), came in last. This study has found that respondents' sources of information about climate change are either few or unfavorable. Out of 100 respondents, just seven students (or 7%) support climate change. Based on the study's findings, a piece of informational communication material was created to raise students' awareness levels. This is also in line with a study from Belize (2016), which revealed that respondents believed that radio and television were the best media to use to communicate with them about climate change.

What is the student's level of knowledge on Ecosystem Viability in terms of cause, effects, and mitigation?

Table 4

Student's level of knowledge on Ecosystem Viability in terms of the Causes of Climate Change

Statement	Mean	SD	Verbal Description
1. Climate Change is caused by Deforestation.	4.59	.562	Strongly Agree
2. Climate change is caused by combustion of fossil fuels.	4.27	.842	Agree
3. Climate Change is caused by poor agricultural practices (e.g. Fertilizers)	3.71	1.10	Agree
4. Climate Change is caused by air pollution from industries.	4.66	.581	Strongly Agree
5. Climate Change is caused by poor management of waste.	4.45	.789	Agree
Overall Mean	**4.33**	**0.776**	**Agree**

The mean and standard deviation of students' understanding of ecosystem viability in relation to climate change causes are shown in Table 4. The two statements that "climate change is driven by deforestation and air pollution from industry" had the highest mean values (M=4.66 and M=4.59, SD=0.581, respectively), indicating a strong consensus. Contrarily, the claim that poor agricultural practices, such as the usage of fertilizers, are to blame for climate change received the lowest mean score (M=3.71, SD=1.10), indicating agreement. The entire mean score was nevertheless (M=4.33, SD=0.776). This indicates that, in terms of the cited factors, students concur with the concept of climate change. According to the same study by Milicent (2010), the combustion of fossil fuels came in last on the list, with support from only 70% (n = 63) of respondents.

Deforestation emerged as the most significant cause of climate change, supported by 92% (n = 83) of the respondents, followed by industrial pollution, supported by 90% (n = 80). On the other hand, afforestation and the reduction of air pollution were ranked first and second, respectively, while the use of renewable energy as a climate change mitigation strategy came in at number three, backed by 90% (n = 81) of the respondents.

Table 5

Student's level of knowledge on Ecosystem Viability in terms of the Effects of Climate Change

Statements	Mean	SD	Verbal Description
1. Climate Change leads to rise in sea levels.	4.10	.944	Agree
2. Climate Change leads to food shortages.	4.21	.902	Agree
3. Climate Change is associated with the increased frequencies of droughts and floods.	4.30	.821	Agree
4. Climate Change will lead to expansion of rivers and lakes.	3.94	1.04	Agree
5. Climate Change has led to increase food availability.	3.25	1.31	Undecided
6. Climate Change leads to shrinking of lakes and rivers.	3.94	.990	Agree
7. The current climate change has been caused by factors other than human activities.	4.18	.935	Agree
8. Climate Change is an issue of global concern.	4.63	.707	Strongly Agree
Overall	4.07	0.95	Agree

The average and range of students' knowledge of the effects of ecosystem viability are shown in Table 5. The statement "Climate Change is an issue of global concern" received the highest mean value (M=4.63, SD=0.707), indicating a strong agreement, while the statement "Climate Change has led to increasing food availability" received the lowest mean value (M=3.25, SD=1.31 Undecided), indicating a lack of agreement. The overall mean score, however, was (M=4.07, SD=0.95), indicating a high level of understanding and agreement with the effects of climate change. According to the report, which was supported by the UNFCCC in 2007, developing nations are more at risk from the effects of climate change since they have less access to institutions, financial resources, and people resources with higher levels of education. A global concern, climate change, will affect billions of people over the coming decades, especially those in developing nations, who will experience water scarcity, food insecurity, and higher health risks.

Table 6

Student's level of knowledge on Ecosystem Viability in terms of the Mitigation of Climate Change

Statements	Mean	SD	Verbal Description
1. We cannot mitigate climate change by using renewable energy sources (e.g. hydro-power, geothermal, solar, and wind) instead of fossil fuel.	3.50	1.04	Agree
2. We cannot mitigate climate change through organic farming.	3.26	1.10	Undecided
3. Use of land-fills instead of open damp sites does not provide a mitigation option for Climate Change.	3.50	1.00	Agree
4. We cannot mitigate climate change by minimizing air pollution from industries.	3.48	1.26	Undecided
5. We can mitigate climate change by planting more trees.	4.22	1.06	Agree
Overall Mean	**3.52**	**1.09**	**Agree**

The mean and standard deviation of students' knowledge on ecosystem viability in terms of mitigation are shown in Table 6. The statement "we can prevent climate change by planting more trees" had the highest mean score (M=4.22, SD=1.06) indicating agreement based on the student's understanding. The lowest mean value was obtained for the claim that organic farming cannot help to slow down climate change (M=3.26, SD=3.26 Undecided). The entire mean score was nevertheless (M=3.52, SD=1.09). This indicates that there is widespread support among students for the idea of climate change and its mitigating factors. These conclusions that increased student awareness can lessen the effects of climate change are supported by the research of Adebayo (2013). Additionally, the study's findings support the idea that increasing tree cover can slow down global warming.

Is there a significant relationship between ecosystem viability, level of awareness of climate change, and the accessibility of information?

Table 7

The significant relationship between ecosystem viability, level of Awareness of climate change, and the accessibility of information

Variables	N	R	Sig. (P-value)	Interpretation
Ecosystem Viability and Awareness on Climate Change	300	0.445	0.00	Significant
Ecosystem Viability and Accessibility of Information	300	0.185	0.001	Significant

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

Table 7 shows the significant relationship between ecosystem viability, level of awareness of climate change, and the accessibility of information. Both Awareness (0.00 <0.05) and accessibility of information (0.001 <0.05) have a significant relationship to students' ecosystem viability since their P-values are lower than the level of significance of 0.05. This means that the higher the awareness and accessibility to information, the higher the ecosystem viability for students. The study's findings concur with those of Apilado and Calvo (2015), who found that people tend to have negative attitudes toward the phenomenon as a result of their lack of awareness and understanding of climate change. As a result, the creation of information communication material may aid in raising their level of awareness and providing them with new facts that will probably encourage a better attitude.

Which of the independent variables best influence ecosystem viability?

Table 8

Summary of Multiple Regression Analyses for Variables Influencing Students' Ecosystem Viability

Variable	Unstandardized Coefficients		Standardized Coefficients	T	P-value	Interpretation
	B	Std. Error	Beta			
(Constant)	2.461	0.231		10.65	0.00	
Awareness	**0.345**	**0.044**	**0.426**	**7.81**	**0.00**	**Significant**
Accessibility	0.114	0.131	0.049	0.87	3.85	Not Significant
R = 0.452	R^2 = 0.204		Adjusted R^2=0.190		F=15.069	Sig.=0.000

Table 8 presents the Summary of Multiple Regression Analyses for Variables influencing students' ecosystem viability. The R-value of 0.452 indicates a moderate positive correlation between the predictor variables and the students' ecosystem viability. The R2 value of 0.204 indicates that the predictors explain 20.4% of the variability of the ecosystem viability of the students. Meanwhile, the P-value of 0.00 implies that there is a significant relationship between the predictor variables and the students' ecosystem viability. Furthermore, the regression output above shows that the predictor variables, namely accessibility (0.385 >0.05), are statistically not significant because their P-values are greater than the significance level of 0.05. This means that these predictor variables do not significantly contribute to the ecosystem viability of the students. On the other hand, awareness (0.00 <0.05) is statistically the predictor variable that best influences ecosystem viability since the P-value is lesser than the significance level of 0.05. This implies that this predictive variable significantly contributed to the ecosystem viability of the students. Moreover, based on the values of B coefficients, the regression equation model of the study is Ecosystem Viability = 2.461 +0.345 (awareness) +0.114 (accessibility).

CONCLUSIONS

The students at each institution exhibit very high levels of knowledge of climate change, according to the analysis of the data gathered from the NSTP students in the three selected community colleges in Misamis Oriental. They are well aware that climate change is already occurring, manifesting itself in various ways, and that it poses a threat to sustainable development. Students are already seeing its immediate effects. The most significant major sources of information that might have influenced students' level of awareness of climate change were radio, television, and the internet, according to the respondent's access to information sources.

Students' understanding of the causes, effects and mitigating factors brought on by climate change was strong in terms of ecosystem viability. Students held that deforestation and industrial air pollution were the main contributors to climate change. Another problem is how students perceive climate change. Ecosystem viability, the degree of climate change awareness, and information availability are all significantly correlated. Furthermore, varying awareness has the greatest impact on the ecosystem.

RECOMMENDATIONS

From the conclusions drawn, the following measures are hereby recommended:

1. The high level of awareness may be sustained by integrating climate change awareness through National Service Training Program (NSTP) and other minor subjects; and
2. Their accessibility to sources of information may be expanded to other areas by conducting environmental seminars, forums, and symposiums.

Environmental seminars and activities alike may focus on addressing air pollution and deforestation to sustain or reinforce their knowledge of Climate Change issues.

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