

Awareness and Attitude Towards Climate Change of Selected Senior High Students in Cavite, Philippines

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Abstract - *In this paper, the researchers aimed to assess the awareness level and attitude of senior high school students in one academic institution in the Philippines towards climate change. This descriptive research surveyed 276 Grade 12 students, aged 16-19 years old, from different track and strands. Majority of the respondents were 18-19 years old (n=175) with almost equal male to female ratio. Results of the study revealed moderate to high level of awareness on issues concerning climate change. Senior high school students moderately to strongly agree on their role in addressing problems about climate change. Students became aware of climate change through several sources like television, internet, and from school. Majority of them look for further information about climate change by searching through the internet, watching television and from reading books. The high awareness level and strong positive attitude of senior high school students towards issues and concerns about climate change is a good indication that they are more likely to express willingness to act on this global problem. Raising awareness and promoting positive attitude about climate change should be one of the basic courses during early childhood education. The research findings provide an assessment on students' awareness and attitude towards climate change that could help curriculum designers integrate environmental education in the K to 12 curriculums.*

Keywords: *climate change, awareness, attitude, senior high school*

INTRODUCTION

Climate change awareness starts in school [1]. McCaffrey, Berberco and Scott [2] pointed out that schools need new strategies and resources to address young people's lack of knowledge about the world. According to The United Nations Educational, Scientific, and Cultural Organization or UNESCO [3], education, awareness-raising and informed decision-making played an essential role in increasing adaptation and mitigation capacities of communities, thus a need to support countries to integrate climate change education in their education system. In the study conducted by Ezeudu, Ezeudu and Sampson [4], senior secondary students possess low awareness towards climate change. Their respondents also have low attitude towards climate change. Besides this, Dal, Alper, Sonmez and Cokelmez [5] noted that teachers are unfamiliar on how to educate their students about issues on climate change. Carr, Buggy and McGlynn [6] report that students' knowledge of climate change is rife with misunderstandings, inaccuracies, and in some cases, a general lack of knowledge. Hence, students do not develop awareness and positive attitude towards climate change.

It is without a doubt that climate change is one of the emerging global concerns. Impact of climate change will be felt most by developing countries. Kreft, Eckstein, and Melchior [7] reported that Philippines are among the most vulnerable in terms of climate risk. Evidence of climate change in the Philippines are already felt: visible shifting of seasons, more intense typhoons, and the absurd rising of ocean level [8]. Furthermore, studies have indicated that there is a rising mean temperature in the Philippines [9]. Undeniably, the Philippines is affected by climate change and the need for proper information dissemination about this overwhelming situation should be one of the thrusts of the government especially the education sector.

Proper environmental education and awareness can help eliminate and overcome environmental problems in the future. Assessing students' perceptions on environmental issues will help us understand students' scientific literacy [10] which is considered an important asset for developing responsible decision-makers that will promote sustainable development in the future [11]. With all these reasons, there is a need to assess the

level of awareness and attitude towards climate change among the young.

In this paper, the researchers attempted to find out the attitude of the students towards climate change, to raise climate change awareness, and to establish positive attitude towards climate change thus, making the students take the frontline in battling rapid climate change.

OBJECTIVES OF THE STUDY

The objective of the study is to assess the awareness level and attitude of selected Grade 12 Academic Track students of the Lyceum of the Philippines University – Cavite International School (Academic Year 2017-2018). Also, the research aimed to identify the demographic profile of the respondents in relation to age, gender and strand under the Academic Track. Lastly, find the sources of information the respondents use about climate change.

An understanding of the respondent’s awareness and attitude towards climate change is important for government and educational sector to develop curriculum that will enhance climate change literacy. Further, an idea of the public awareness among the future generation is important in improving disaster risk management and resiliency on the possible adverse effect of climate change.

METHODS

Nature of Research

The study used a descriptive-qualitative research design to describe and assess the level of awareness and attitude of students on climate change. Only Grade 12 senior high school students under the Academic Track were selected as respondents of the study. Strands under the Academic Track include: Science, Technology, Engineering, and Mathematics (STEM), Accountancy, Business and Management (ABM), Humanities and Social Sciences (HumSS), and General Academic Strand (GAS).

Sampling Design

The total number of Grade 12 students, 887, was provided by the university registrar. Stratified random sampling was used to obtain representatives from different tracts/strands under the Academic tract. The researchers used a 5% margin and obtained 276 respondents.

Survey Instrument

A survey instrument from previously used and researched awareness surveys [6, 4] were modified to

suit the respondents. The survey instrument was simplified, and a translated Filipino version was provided in every item.

The definitive version of the survey consists of 25 statements with four parts: Part I- participant’s profile, Part II- awareness towards climate change (15 statements), Part III- attitude towards climate change (10 statements), and Part IV- sources of climate change information.

The survey was conducted during the month of February 2018 using Google forms. Students were given free time to answer the survey. Student’s name was considered optional in observance of Data Privacy Act of 2012. Participation to the study was voluntary and consent was sought prior to conducting the study. Only the researchers have access to the responses made by each participant.

Statistical Treatment

A four-point Likert scale was used to quantify responses. Each response was given value [12]: strongly agree = 4, agree = 3, disagree = 2, and strongly disagree = 1. Means of responses were used to interpret results and were given verbal interpretation. Means ranging from 1.00-1.75 were interpreted as “not all aware or strongly disagree”, 1.76-2.50 “slightly aware or disagree”, 2.51-3.25 “moderately aware or agree”, and 3.26-4.00 “extremely aware or strongly agree”.

Chi-square, at 95% level of significance, was used to analyse the responses.

RESULTS AND DISCUSSION

Table 1. Distribution of sample size per stratum (Participants’ profile)

Stratum	Stratum Size	Computed Sample Size
ABM	219	68
GAS	24	8
HumSS	112	35
STEM	532	165
Total	887	276

The total population and breakdown of respondents per strand was provided by the university registrar of LPU Cavite. A total of 276 respondents from 4 different strands were chosen as respondents of the study Table 1. With a large population of students, majority of the respondents were from STEM strand while only eight respondents were from GAS due to its small population.

Table 2. Age and gender distribution of respondents per stratum (N=276)

Age	Strand/Frequency				Total
	ABM	GAS	HumSS	STEM	
16-17	35	2	8	56	101
18-19	33	6	27	109	175
Gender					
Male	18	2	11	108	139
Female	50	6	24	57	137

Respondents' age ranged from 16-19 years old of which 175 are 18-19 years old Table 2. Majority of the STEM and HumSS are within this age group. On the same table, male to female ratio is almost equal with 139 and 137 respondents respectively. Majority of STEM were males while ABM, GAS and HumSS were mostly females.

Awareness towards climate change

Table 3. reports the awareness level of respondents about climate change. Means from responses to 15 statements showed moderately to extreme awareness. Respondents showed moderate awareness to majority of the statements. Similarly, respondents showed extreme awareness statements 1, 10, 11, and 13. These shows that respondents were extremely aware that climate change; is changing through time, can damage the ozone layer, can cause more floods and drought, and can be stopped by people using renewable resources. The moderate to extreme awareness suggests that the respondents have a prior knowledge on the effect of climate change.

The quality of climate change awareness is very important as this affect the behaviour, quality of response and reactions of people [13]. When people are aware of issues, like climate change, they behave towards the resolution of these issues. Improving climate literacy and understanding of climate change are vital to promote public engagement, support for climate action and literacy [14]. On this ground, the role of educational institutions in promoting awareness on climate change is vital. The formative years of high school education is very important as students have the capacity to mould the society into being climate change literate [15]. However, there are still students who do not have enough knowledge and awareness towards climate change [16]. The moderate to extreme awareness of respondents in this study is a good indication that in the future they will take positive actions on the effect of climate change.

Table 3. Awareness level of respondents

Statement	Mean	Verbal interpretation
1. Climate is dynamic and is always changing through time	3.29	Extremely aware
2. Climate in weather condition over an extended period is climate change.	3.04	Moderately aware
3. Climate does not mean the same thing as weather.	2.99	Moderately aware
4. Climate change comes with rise in sea level.	2.92	Moderately aware
5. Climate changed for millions of years.	2.91	Moderately aware
6. Cutting down trees causes climate change.	3.00	Moderately aware
7. Acid rain causes climate change.	3.13	Moderately aware
8. More garbage/waste causes climate change.	3.05	Moderately aware
9. Burning fossil fuels causes climate change.	3.11	Moderately aware
10. Damage to the ozone layer causes climate change.	3.34	Extremely aware
11. Climate change can cause more floods and drought.	3.33	Extremely aware
12. Climate change can cause polar ice caps and glaciers to melt.	3.20	Moderately aware
13. People can help stop climate change by using more renewable resources of energy.	3.30	Extremely aware
14. People can help stop climate change by planting more trees.	2.98	Moderately aware
15. People can help stop climate change by using more electricity.	3.16	Moderately aware

Attitude towards climate change

Mean response of students towards climate change ranged from 2.61 to 3.57 Table 4. Students expressed strong agreement to statements 1, 2, and 4. This shows that students firmly believe that climate change is a big problem, that climate change is true, and that immediate actions should be done about it. Furthermore, students showed moderate agreement on the rest of the statements about climate change. In addition, their positive response to statements about

climate change suggest that they recognize themselves as participants in mitigating the effect of climate change.

Table 4. Respondents’ attitude towards climate change

Statement	Mean	Verbal interpretation
1. I believe climate change is a very big problem.	3.49	Strongly agree
2. I believe climate change is true.	3.48	Strongly agree
3. There is still time to prepare for climate change problems.	3.19	Moderately agree
4. I believe that immediate actions should be done about climate change.	3.57	Strongly agree
5. I am preparing myself for the effects of climate change.	3.12	Moderately agree
6. I always ask questions about climate change.	2.65	Moderately agree
7. I read news and updates about climate change.	2.88	Moderately agree
8. I am spreading information about climate change.	2.61	Moderately agree
9. I am seriously concerned with climate change.	3.16	Moderately agree
10. I will participate in climate change related activities.	3.06	Moderately agree

Results of the study is similar with the results of Flores [17] in which a greater number of favourable attitudes to act before the effects of climate change were identified among high school students in Mexico City. The same sentiment is also revealed among Guyanese where majority of the people surveyed were hopeful that something could be done about climate change [18].

The positive attitude of the respondents is a revealing sign that they are willing to take part in the solution on the problem of climate change. Students should be exposed to the dangers of climate change early enough to help them develop positive attitude towards the environment and reduce the dangers associated with climate change [19]. In a recent survey, the high school students considered climate change as their number one global concern [20]. They also believe that humans are responsible for climate change;

thus, immediate actions should also be done against climate change [21].

Role of Age and Gender

Statistical analysis showed no significant differences among respondents’ awareness and attitude towards climate change with respect to age and gender. However, in study published by Nuccitelli [22], it was found out that there is a rising climate change generation gap in America. Americans who deny the existence of climate change were mostly adults, while those who accept it were the youth. Bugge-Henriksen and Harker-Schuch [23] reported that high school students from Austria and Denmark, 16-17 years old, are knowledgeable enough about climate change. On a more recent study, millennials show more concern about climate change than other generations [24]. Understanding the perception of the youth helps in understanding the overall view of the general population [25].

In terms of gender, awareness and attitude of the respondents did not significantly differ. Buggy et al. (2015) also reported no significant relationship between the climate change awareness of male and female students. However, studies have shown that women play a key role not only in livelihood but also in sustainable solutions to climate change [26]. On the research conducted by UNICEF [27], female students in Montenegro have higher level of knowledge about climate change unlike the less familiar male students. Females have more positive attitudes toward environmental issues and are more concerned about the environment than males [28]. Females have also been noted to be active on the activities for environmental protection [29]. Gender is a crucial issue in climate change because it is important in influencing and in raising general climate change awareness in the family [30].

Sources of climate change information

Part of the research was to identify respondents’ sources of information about climate change Table 5. Majority of the respondents gained initial information about climate change through books (n=110), school (n=204), internet (n=245) and television (n=253). They also get information from peers (n=100) and relatives (n=77). This could suggest that close friends and family contribute to their basic knowledge about climate change. Also, media outlets like newspaper (n=113) and radio (n=128) also provide the respondents initial information about climate change. They were also

made aware of climate change through movies (n=77). Only few reported that they were informed through printed materials like magazines (n=39) and flyers/brochures (n=24).

Table 5. Sources of initial information about climate change.

Material/medium	Number of responses
Flyers/brochures	24
Movies	77
Internet	245
Peers	100
Relatives	77
Radio	128
Magazine	39
Newspapers	113
Television	253
Books	110
School	204

Table 6. Sources of additional information about climate change.

Material/medium	Number of responses
Flyers/brochures	10
Movies	35
Internet	245
Peers	78
Relatives	67
Radio	75
Magazine	34
Newspapers	101
Television	199
Books	136

Sources of additional information about climate change is presented on Table 6. Senior high school students reported newspaper (n=101), books (n=136), television (n=199), and the internet (n=245) as their top sources of additional information about climate change. Students also reported that peers (n=78) and relatives (67) also contribute to their prior knowledge of climate change. However, senior high school students reported flyers/brochure (n=10), movies (n=35), and magazines (n=34) as least sources of information about climate change.

The result of the study agrees with the study of Westerman, Spence, and Van Der Haideet [31] that social media is the first information source used by students when it comes to climate change. Through the use of internet, online technologies offer new ways for knowledge sharing and allows public to engage with climate-change discourse [32]. Kakade, Hiremath, and

Raut [33] reported that television is the most popular media among Indians to know about climate change. Television as well as other media like films, newspapers, and magazines contribute to information about climate change for students [34].

These findings suggest that information about climate change is accessible through various platform and can be shared to others. Akin to mobility, raising awareness and promoting positive attitude towards climate change is now easier and broader.

CONCLUSION AND RECOMMENDATION

The study revealed that respondents have moderate to extreme awareness on issues about climate change. Respondents show extreme awareness on statements like “climate is dynamic and is always changing through time”, “damage to the ozone layer causes climate change”, “climate change can cause more floods and drought”, and “people can help stop climate change by using more renewable resources of energy”. Further, students showed moderate to high positive attitudes about climate change. Respondents strongly agree on statements like “climate change is a very big problem”, “believe climate change is true”, and “immediate actions should be done on climate change”. The positive awareness and attitude of selected senior high school towards climate change is a good indication that in the future they will seek action to combat this global issue.

Students hear news and information about climate change through peers, newspaper, radio, internet, television and other sources. They seek further information about climate change from school and through books, television and internet. Internet was reported as an integral tool in information gathering and sharing. Information about climate change is important as it influence awareness and attitude. The more informed the senior high school students about climate change the better they can make pro-environmental decisions. Moreover, awareness level and attitude of the respondents did not differ in terms of gender and age, thus these two were not of significant factors in affecting one’s attitude and awareness towards climate change.

Results of the study gives a glance of hope that in the future, the respondents are willing to take immediate actions towards climate change. It is important that the public especially the future generation be educated of climate change. Environmental education should be an integral part of the education system in the Philippines. As climate

change is integrated in school curriculum, climate literacy will improve. Government should take into consideration that outside school activities, public information drive, and research can increase awareness and promote positive attitude towards climate change. On this note, the research offers an initial step through an assessment of awareness and attitude of senior high school students as a tool in mitigating, adapting and addressing the issues of climate change.

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