Integration Of Climate Change Topics In Teaching Science-Related Subjects
At Eastern Samar State University – Borongan Campus

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Abstract: This paper is intended to establish a firm resolve on the question: Do the faculty of Eastern Samar State University – Borongan Campus integrate climate change topics in teaching science-related subjects? Descriptive research design and simple statistical tools were used to answer the queries stated from the self-structured survey questionnaire during the 2\textsuperscript{nd} Semester, School Year 2015-2016. Data from the research found out that most of the faculty that handle science-related subject came from the College of Arts and Sciences with a 40.9\% and mostly are female faculty. Also, 15 of the respondents have a masteral degree or 68\% and moreover, respondents have a minimum of 1.5 years of teaching science-related subjects to the maximum 31 years of teaching experience averaging a 12.84 years. Physics, Environmental Science and Chemistry subjects were the most common subject taught during 2\textsuperscript{nd} Semester SY 2015-2016. “Causes and Effects of Climate Change”, “Increasing Risk to Storms, Droughts and Floods” and “Climate Change Adaptation and Mitigation” topics are the most commonly discussed issues relating to climate change implying that most of the instructors of science-related subjects integrate these issues to give more knowledge and appropriate information regarding the causes and effects of climate change and how to counter its consequences through awareness, adaptation and mitigation. Further results revealed that the faculty-respondents are highly aware of climate change integration in teaching but of the total 22 respondents 3 do not integrate climate change lessons to their subject being taught evidenced by the statement that Climate Change is not directly involved in the subject being taught, for those who integrate climate change topics in teaching is because they want their students to be fully aware about climate change as a global issue. It is hereby recommended that more seminar or workshops for students about climate change awareness and global warming be taken in consideration; also, append more teaching materials that support climate change topics in teaching science subjects and, if possible, add a climate change lesson or subject with relation to climate change to every curriculum or BA/BS degrees catered by the university as stated in the CHED Memo No. 33, s. 2009 stating about the “Integration of Environmental Education in the Tertiary Education Curriculum”.

1. Introduction

Instilling climate change awareness to our society is one of the many ways we can somehow subdue and lessen the effects of our changing world. Climate change correlates to many science findings such as; melting of ice caps in the Antarctic’s, unwanted fish kills, El Niño and La Niña and many more.

According to Purkis and Klemes (2011), when we people are faced with this kind of predicaments, society must decide on how to prosper under unfamiliar climate regime. Adapt we must, because even if we were immediately to halt all releases of greenhouse gases, the emission we have already made in the last decades are deemed sufficient to alter the climate for many years into the future and continued emissions will serve to increase the pace and severity of climate change.

Climate change awareness is simple tool that can help us cope with the shifting climate and its increasing human impact, and for that, we need intervention. How do we make people aware especially our future? In that case, we need the help of our loyal teachers.

Science is a body of knowledge based on truths and facts of life. Since climate change is a fact, then climate change should be included in science. In this logic, we can say that science teachers should incorporate or deliver climate change awareness to
students whom they taught science. In this way, students which will be the stewards of our future will be conscious on what really is the impact of climate change to our daily lives and not just some familiar conspiracy theory.

According to Soriano (1995), schools and especially the teachers, the goals of environment education may be pursued by integrating environmental issues into the curriculum. This may be undertaken either as part of a coordinated effort covering several disciplines, or as a discipline-centered effort.

In such integration, environmental problems form the stage for acquiring skills and knowledge and building positive attitudes and behavior. Ideally, this integration should be based on a plan whereby the understanding of students of their role in the environmental becomes broader as they progress.

Eastern Samar State University is one of the many universities in the Philippines that give attention to climate change and disaster risk reduction management. In fact, almost all faculty of the university are very cognizant about this topic. But the question is; do they incorporate climate change to their subjects taught, especially to science-related subjects. For this reason, the researches take in the responsibility of evaluating science teachers of ESSU-Borongan Campus whether they integrate climate change topics in their science lessons, and provide college students a better understanding and responsiveness towards climate change.

2. Objectives of the Study

This study will determine the teachers who integrate climate change in teaching science.

Specifically, the study will try to:

1. Determine the profile of the respondents in terms of the following variables:
   a. Gender
   b. Highest Educational attainment
   c. Years of teaching science-related subjects
   d. Science-related subject taught in ESSU

2. Identify the specific climate change topics taught in science-related subjects.

3. Determine the level of awareness of teacher in science with regards to climate change.

4. Identify the factors that affect teachers why they integrate or disintegrate climate change in teaching science subjects.

5. Find out how many hours in a semester are devoted to science teaching in relation to climate change.

6. Verify what type of teaching strategy/ies a teacher uses in teaching climate change.

3. Review of Literature

Climate change is a variation of the average weather attributed directly or indirectly to human activities in addition to natural events that alter the composition of the atmosphere. By raising awareness and promoting knowledge and skills-development, education is an essential component and a catalyst for responding to global climate change. Its importance has been increasingly highlighted at the international level. Article 6.UN Framework Convention on Climate Change (UNFCCC, 2013).

For climate change education to be effectively implemented in schools, there is the need to find out the extent of its integration into school curricula so that any deficiencies can be addressed. Research into the extent of integration of climate change in school science curricula has been done in some countries (Dalelo, 2012; Republic of Kenya, 2012).

The teaching and learning activities should be improved upon to provide opportunities for students to acquire skills for adaptation and mitigation with respect to climate change as has been done in other places (Anderson, 2010). All these have implication for facilities and resources. Facilities and resources must be made available to engage the students in activities that will give the students’ knowledge about climate change. Teachers who are the implementers of the curriculum must be knowledgeable about climate change and be prepared to engage students in action-oriented activities. Pupils can be engaged in greening activities on their school compound.

Curriculum is the subject contents which learners and teachers must cover in order to achieve set goals and objectives (Brubacher, J.S., 1961). Curriculum is also referred to as series of activities intended to be completed in order to acquire desirable knowledge, skills, attitudes, and values of the society. Some authors conceived curriculum as the document used as instructional guide in formal institutions (Chakeredza, et al., 2009).

In order to understand this, curriculum leads students through a progression of understanding. It begins with students thinking about climate and weather, and the local impact of sea level rise due to climate change in the first lesson. This is to hook the students to the unit, getting them to think about their own connection to climate change. In order to understand how excess carbon dioxide is rapidly
changing the climate, students first learn about the Earth’s energy budget and then focus on greenhouse gases. Carbon dioxide and its ability to absorb and re-irradiate heat are keys to understanding climate change. Students look at sources and sinks of carbon dioxide, allowing them to understand that climate change is almost certainly caused mostly by humans. The changes in the climate are already causing significant harm to both physical and biological systems. Similarly, students look at datasets of biological systems and think about the adaptations that humans need to make to adjust to the changing climate. Student may still have doubts about the reality of climate change and the process of scientific consensus that makes us know that climate change is unequivocal and that there is overwhelming evidence that human activities are the main cause. A lesson provides an opportunity for students to step back from the data and think about the process of science and how we use language. Climate change requires global action and local solutions. The final lesson on climate change mitigation provides students an opportunity to examine and choose mitigation strategies to reduce carbon dioxide emissions (Stanford University, 2013).

In the view of curriculum, it is a deliberately and systematically planned attempt to change the behavior of young and inexperienced to enable them gain the insight that helps them solve problems for a better society. The author further explained curriculum as an instrument through which schools seek to translate the hopes of the society into concrete reality. Curriculum is therefore a deliberately and systematically planned body of knowledge, skills and attitudes grouped into subject topics taught to learners in schools. However, whether at the primary and/or secondary school level, what is generally regarded as the curriculum is the list of subject topics taught in the school which varies with level depending on societal needs (Offorma, G.C., 2002). Examples of such subjects includes English, Mathematics, Chemistry, Biology and Agricultural Science among others.

In the Philippines, climate change was included in the basic education curriculum to better educate not only the students but also the public (DO 52, s. 2011, Department of Education, 2012).

According to the Education Ministry of Guyana, South America, science education for primary and secondary schools will be reviewed to include interactive lessons that focus on climate change awareness. In a move to ensure students and teachers develop an appreciation for environmental protection through biodiversity management and its role in addressing climate change. Recently, a television series is being developed in collaboration with Conservation International (KNews, 2011).

Recently, science workshops and seminars were conducted in the regions focused on practical activities that can be done to abate the effects of climate change.

According to Hestness et al. (2014) with the new emphasis in K–12 science education, geoscience educators will likely play a central role in shaping a nation of citizens capable of understanding and making informed decisions about global climate change. In charting a path forward, it is timely to consider the ways in which geoscience educators can be effectively prepared and supported as climate change education leaders.

The study of Boakye (2015) found out the role that some selected science curricula of the pre-tertiary level of education in Ghana played with respect to climate change education. Content analysis was used to analyze four science curricula of the pre-tertiary levels of education in Ghana, namely, the curriculum for primary G1-3, integrated science curriculum of primary G4-6, integrated science curriculum of the Junior High School (JHS) and the integrated science curriculum of the Senior High School (SHS). It was found out from the result of the study that of the four curricula, it was only in the integrated science syllabuses of the SHS and that of the JHS that climate change as a topic for study had been stated categorically, but, even then, the teaching and learning methods needed to be improved on. It was practically non-existent in the natural science curriculum of Primary Grades 1 to 3. There were topics in some of the curricula such as “Ecosystems,” “Photosynthesis,” and “Energy” that can provide links to climate change education but were not linked to it. Some of the suggestions made to make these curricula play their roles in climate change education are that: (a) topics that lend themselves to climate change education in the various curricula could be linked to it in the teaching and learning situation to reinforce learning and (b) teaching and learning methods should be improved upon for effective attitudinal and behavioral changes to help mitigate climate change and its impact.

4. Methodology

4.1 Research Design

A descriptive research design will be used to assess the climate change integration of faculty of ESSU who teaches science-related subjects. This design is appropriate to determine the profile of respondents, their level of knowledge pertaining to climate change, what are their instructional materials or style of instruction when it comes to teaching climate change, and how many hours a week does a
faculty add time in explaining climate change to students enrolled in the subject.

### 4.2 Locale of the Study

This study will take place at Eastern Samar State University, Main Campus, Borongan City, Eastern Samar. The college wherein there is a faculty who teaches science-related subjects will be assessed. There are nine (9) colleges at present in Eastern Samar State University-Borongan Campus. These are the College of Education, College of Arts and Sciences, College of Agriculture and Natural Sciences, College of Business Management and Accountancy, College of Engineering, College of Computer Studies, School of Vocational Technology, College of Law and Criminal Justice and the College of Nursing.

### 4.3 Sampling Design

The respondents of this study will be the faculty from all the colleges of Eastern Samar State University, Main Campus who are engaged in teaching science-related subjects, especially, chemistry, physics, physical science, and biology and other fields of the broad aspect of Science. The respondents will be assessed in terms of their gender, years in teaching science-related subjects, highest educational attainment and science-related subject taught for the 2nd Semester of SY 2015-2016. Their level of awareness with relation to climate change will also be assessed.

### 4.4 Research Instrument

A self-structured survey questionnaire will be used in this study. The questionnaire will be composed of three parts; the first part will be composed of determining the respondents’ profile. The second part will be composed of several questions to determine the extent of the faculty’s level of awareness on climate change. And the last part will focus on the integration of climate change to their science subjects (number of hours devoted to teaching climate change topics, the kind of instructional material or style of teaching approach he/she uses and the factors that affect teachers to incorporate or not to incorporate climate change topics in teaching science). Dry run will be done to the survey questionnaire before the final development.

### 4.5 Data Collections Procedure

The following step-by-step procedure will be used to succeed in this study:

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#### 4.5.1 Questionnaire validation

The self-structured survey questionnaire will be validated by a science teacher or an expert in arranging survey questionnaire for edition. If the questionnaire is in good shape, the study will start as soon as possible. If not, it will be revised until there are no more lacking mechanisms in the structured questionnaire.

#### 4.5.2 Determination of Respondents

All the faculty of ESSU which handles science subject or those with science subject workloads will serve as respondents of this study. The number of faculty which will be respondents will be evaluated from the Office of the Vice-President for Academic Affairs of this University.

#### 4.5.3 Surveying

Upon determining the total respondents, surveying will start immediately, the faculty will be asked to fill up the given questionnaire to the best of their ability. Once done, the survey questionnaires will be collected and will be statistically treated for results.

#### 4.6 Data Analysis

Survey questionnaires will be statistically treated using the Mean, Average and Frequency or Percentage (%) computations. Other statistical test which will be appropriate in uplifting the result of this study will also be used.

### 5. Results and Discussion

After the gathering of data and surveying, the following information was comprehended:

#### 5.1 Respondents’ Profile

The following data were drawn from the collected information regarding the outline of the respondents:

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>8</td>
<td>36.4</td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>63.6</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>100</td>
</tr>
</tbody>
</table>

A total of 22 faculty from different colleges of the main campus of Eastern Samar State University
were considered respondents of this study. It can be seen from the table that most of the respondents were female comprising 63.6% of the total respondents. It implies that there is more female faculty that handles science-related subjects here in ESSU-Borongan than males.

Table 2. College representation of respondents

<table>
<thead>
<tr>
<th>College</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Arts and Sciences</td>
<td>9</td>
<td>40.9</td>
</tr>
<tr>
<td>College of Agriculture and Natural Sciences</td>
<td>5</td>
<td>22.7</td>
</tr>
<tr>
<td>College of Education</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>College of Nursing</td>
<td>2</td>
<td>9.2</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>100</td>
</tr>
</tbody>
</table>

Seeing from the table above, it can be implied that most of the faculty that handle science-related subject came from the College of Arts and Sciences with a 40.9% of the total 22 respondents. This can be attributed from the fact that most of the College of Arts and Sciences faculty teach general education subjects in the university. The least number of faculty who teaches science-related subject came from the College of Nursing.

Figure 1. Highest educational attainment of respondents

According to the chart above, it is seen that most of the respondents have a masteral degree or units garnering 15 or 68% of the total 22 respondents, while 18% or 4 of the respondents have doctorate degree or having doctoral units which further imply that most of the respondents have a broader knowledge on the area of education they are tasked to give to their audiences or students.

5.2 Number of Years in Teaching Science-related Subjects

Table 3. Years of teaching of faculty-respondents

| Number of Years in Teaching Science-related Subjects | 12, 26, 17, 6 31, 9, 12, 1.5, 8, 16, 10, 15, 17, 12, 15, 3, 20, 21, 15, |

From the result of the survey, it was found out that the respondents have experience in teaching science subjects. The respondents have a minimum of 1.5 years of teaching to the maximum 31 years of teaching experience averaging a 12.84 years of teaching which implies that most of the respondents have ample time in teaching science-related subjects.

5.3 Science-related Subjects Taught

Based on the data gathered by the researchers from the Vice-President for Academic Affairs Office and the subjects inculcated by respondents to the questionnaire revealed that for this semester, the following subjects were taught by the respondents: Genetics, Physics, General Chemistry, General Biology, Environmental Science, General Oceanography, Organic Chemistry, General Botany, Meteorology, Anatomy, Physiology, Biological Science, Microbiology, Biochemistry and Physical Science. It was also observed that the most common subject for 2nd Semester SY 2015-2016 was Physics, Environmental Science and Chemistry subjects wherein 12 respondents are handling one or more of the said subjects.

5.4 Specific Climate Change Topic/s Taught

Table 4. Climate change issues discussed

<table>
<thead>
<tr>
<th>No.</th>
<th>Specific Climate Change Issues</th>
<th>Number of Responses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Causes and Effects of Climate Change</td>
<td>19</td>
<td>86.4</td>
</tr>
<tr>
<td>2</td>
<td>Increasing Risk to Storms, Droughts and Floods</td>
<td>19</td>
<td>86.4</td>
</tr>
<tr>
<td>3</td>
<td>Climate Change Adaptation and Mitigation</td>
<td>19</td>
<td>86.4</td>
</tr>
<tr>
<td>4</td>
<td>Communities at Risk</td>
<td>17</td>
<td>77.3</td>
</tr>
<tr>
<td>5</td>
<td>Rising Ocean and Sea Levels</td>
<td>17</td>
<td>77.3</td>
</tr>
<tr>
<td>6</td>
<td>Changing Landscapes and Wildlife Habitat</td>
<td>15</td>
<td>68.2</td>
</tr>
<tr>
<td>7</td>
<td>Increasing Global Temperature</td>
<td>13</td>
<td>59.1</td>
</tr>
<tr>
<td>8</td>
<td>Global Economic Impact</td>
<td>9</td>
<td>40.9</td>
</tr>
</tbody>
</table>
It can be viewed from the table above that the “Causes and Effects of Climate Change”, “Increasing Risk to Storms, Droughts and Floods” and “Climate Change Adaptation and Mitigation” topics are the most commonly discussed issues relating to climate change and global warming having the same 86.4% reply from the respondents. This result implies that most of the instructors of science-related subjects integrate these issues to give more knowledge and appropriate information regarding the causes and effects of climate change and how to counter its consequences through awareness, adaptation and mitigation. Moreover, this can be attributed to the fact that Eastern Samar State University and more precisely Eastern Samar region was badly stricken by typhoons for the past 2 years, and that, to lessen more casualties if yet, another predicament is going to happen, students are more prepared, adapted and mitigated.

5.5 Level of Awareness with Regards to Climate Change

Table 5. Climate change awareness level of respondents

<table>
<thead>
<tr>
<th>Questions</th>
<th>Number of Highly Aware</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you aware that climate change primarily affects the human population?</td>
<td>19</td>
<td>86.3</td>
</tr>
<tr>
<td>Are you aware on the effects of climate change such as extreme weather conditions (La Nina, El Nino, Super Typhoons, etc.).</td>
<td>19</td>
<td>86.4</td>
</tr>
<tr>
<td>Are you aware that teachers should be knowledgeable about climate change?</td>
<td>17</td>
<td>77.3</td>
</tr>
<tr>
<td>Are you aware that science teachers should integrate climate change into their lessons?</td>
<td>16</td>
<td>72.7</td>
</tr>
<tr>
<td>Are you aware that integrating climate change topics in teaching would somehow raise the awareness of students regarding climate change?</td>
<td>16</td>
<td>72.7</td>
</tr>
<tr>
<td>Are you aware about climate change education?</td>
<td>15</td>
<td>68.2</td>
</tr>
<tr>
<td>Are you aware that Climate Change is a variation of the average weather attributed directly or indirectly to human activities in addition to natural events that alter the composition of the atmosphere (UNFCCC, 2013)?</td>
<td>14</td>
<td>63.6</td>
</tr>
</tbody>
</table>

It is viewed from the table from the previous page that most of the respondents are highly aware of climate change and its corresponding topics that accompany climate change; disaster risk reduction; mitigation and information drive against this issue. It is interesting to feature that 59.1% of the respondents are highly aware about the CHED Memorandum Order No. 33, Series of 2009 which is the Integration of Environmental Education in the Tertiary Education Curriculum, holding on to the actuality that teachers here in ESSU are aware of the said information and that they are living up to the memorandum. But, a little exception can be seen from the respondents wherein only 6 or 27.3% of the total respondents are highly aware about the DepEd Order 52, series of 2011. These varying results can be attributed to the fact that the university is under the direct office of the Commission on Higher
Education (CHED) and not from the Department of Education (DepEd).

Figure 2. Number of faculty who integrate climate change lessons

From the figure from the previous page, it is observed that almost all of the respondents integrate climate change topics in teaching science-related subjects. This result is evidenced by the common subjects being taught this second semester such as Chemistry, Environmental Science and Physical Science which have involvement as climate change lesson or topics.

5.6 Factors that Affect Decision to Integrate Climate Change Discussion

Table 6. Decision-making of respondents to integrate climate change in teaching

<table>
<thead>
<tr>
<th>Justification</th>
<th>Number of Responses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I want my students to be fully aware about climate change as a global issue.</td>
<td>18</td>
<td>81.8</td>
</tr>
<tr>
<td>I experienced the negative effect of Climate Change.</td>
<td>6</td>
<td>27.3</td>
</tr>
<tr>
<td>It is prescribed in the subject curriculum.</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>It is the current trend and issues in our society today.</td>
<td>6</td>
<td>27.3</td>
</tr>
</tbody>
</table>

From the table above, it is viewed that the justifying factor why they incorporate climate change in teaching is that they want their students to be fully aware about climate change as a global issue. This is supported by an 81.8% positive response. Other reasons were also observed stated as: “My commitment to government program towards climate change integration in science teaching”. “Make them part of the solution” against climate change. “I believe everybody’s obligation to discuss this topic”, and “To introduce a change in attitude resumed use and conservation.” “Students should share knowledge with parents and family, relatives, neighbors and friends.

5.7 Factors that Affect Decision to Disintegrate Climate Change Discussion

From the three (3) faculty respondents who responded that they do not integrate climate change topics when teaching science-related subjects, it was found out from their data that all of the three faculty respondents replied that Climate Change is not directly involved in the subject being taught. Also, two (2) of the respondents further replied that they lack sufficient knowledge and skills on climate change and that climate change topic is not on the course syllabus/course outline.

5.8 Number of Hours Allocated in Climate Change Teaching

It was observed from the data gathered that faculty who integrate climate change topics in teaching science subjects has an average number of 27.69 hours per semester. It was further observed that for the whole semester, one faculty respondent has a maximum of 154 hours used in teaching climate change topics, while another faculty respondent has replied with a minimum 1 hour per semester utilized for teaching climate change.

5.9 Type of Teaching Strategy/ies Used in Teaching Climate Change

Table 7. Teaching strategy/ies used on climate change topics

<table>
<thead>
<tr>
<th>Types of Teaching Strategy</th>
<th>Number of Responses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory (Explanatory)</td>
<td>9</td>
<td>40.9</td>
</tr>
<tr>
<td>Applied (Hands-on)</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Reporting</td>
<td>7</td>
<td>31.8</td>
</tr>
<tr>
<td>Audio-Visual Presentation</td>
<td>12</td>
<td>54.5</td>
</tr>
<tr>
<td>PowerPoint Presentation</td>
<td>14</td>
<td>63.6</td>
</tr>
<tr>
<td>Poster Presentation</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>Movie Presentation</td>
<td>11</td>
<td>50</td>
</tr>
<tr>
<td>Experimentation</td>
<td>4</td>
<td>18.2</td>
</tr>
<tr>
<td>Group Learning</td>
<td>6</td>
<td>27.3</td>
</tr>
<tr>
<td>Research (e.g. project, assignment, etc.)</td>
<td>7</td>
<td>31.8</td>
</tr>
<tr>
<td>Extension (e.g. community immersion to disaster-stricken municipality)</td>
<td>6</td>
<td>27.3</td>
</tr>
<tr>
<td>Permitting students to attend Workshops or Seminars related to Climate Change</td>
<td>8</td>
<td>36.4</td>
</tr>
</tbody>
</table>

Based on the above results, it was observed that the most common type of teaching strategy used by the respondents is PowerPoint presentation. This result is evidenced by the fact that most faculty here
in the university has laptop projectors or flat screen TV which are usually used for teaching different subjects, most commonly in general science and its branches wherein simple explanation and talking will give a very complex understanding to students. Audio-visual and movie presentations also have positive responses coming from the respondents. One respondent have a specification that his/her students are allowed to go to “Symposium during the science month celebration”.

6. Conclusions and Recommendations

6.1 Conclusions

Based on the results of the study, the following conclusions are drawn:

1. Faculty of ESSU – Borongan campus integrate climate change topics when teaching science-related subjects.

2. Most of the faculty who integrate climate change topics has master’s degree or has masteral units.

3. Faculty who teaches climate change in science subjects are highly aware about the Commission on Higher Education Memorandum Order No. 33, Series of 2009 but are not fully aware of the Department Order 52, series of 2011, ordered by the Department of Education.

4. The main reason why faculty-respondents integrate climate change topics in teaching is because they want their students to be fully aware about climate change as a global issue.

5. The most common types of strategy for teaching climate change to students are PowerPoint, audio-visual and movie presentations. The least used strategy is Applied or hands-on teaching.

6.2 Recommendations

The following recommendations are herein proposed to offer a window of improvement to the current research and to the whole society:

1. Put forward more seminar or workshops for students about climate change awareness and global warming.

2. Append more teaching materials that support climate change topics in teaching science subjects.

3. If possible, integrate climate change topics to non-science subjects.

4. Conduct a study assessing the awareness of students to climate change and global warming topics or issues.

5. If possible, add a climate change lesson or subject with relation to climate change to every curriculum or BA/BS degrees catered by the university as stated in the CHED Memo No. 33, s. 2009.

7. Acknowledgement

Sincerest thanks to Dr. Grace O. Manlapas, Director of R&D at ESSU, to Sir Neil Pinarok Department Head of the CAS Biology Program and Sir Delbert Dala, college Research Coordinator, for the utmost encouragement and support to finish this simple piece of work. Finally, to my family always supporting me.

8. References


