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Environmental Literacy of College Students in Philippine Christian University towards the Development of a Collaborative Outcomes- based Curriculum Model on Environmental Education

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The study dealt with developing a Collaborative Outcomes-based Curriculum Model on Environmental Education in Philippine Christian University (PCU). This research utilized an Explanatory Sequential Design to reveal the awareness, attitudes and practices towards the environment among the students. Data for the quantitative phase were collected from the instrument administered to the student respondents to determine the Environmental literacy of the students in terms of Awareness, Attitudes and Practices. Focused Group Discussions was conducted to selected participants for the qualitative phase, using a semi-structured questions.

The results found that the students of Philippine Christian University had high level of Environmental awareness, attitudes and practices. Environmental literacy among the students based on sex and discipline had no difference. However, in terms of year level it was found out that the higher year had high literacy as compared to the first year.

After the Focused Group Discussion with the selected respondents, the researcher was able to prove the need to enhanced the practices of the students. Thus, Environmental Education in PCU should focus on practices to form more consistent behavior in protecting the environment.

In response to the findings of the study, the researcher was able to develop a Collaborative Outcomes-based Curriculum Model on Environmental Education in Philippine Christian University.

Keywords: Environmental literacy, Environmental Education, Collaborative Outcomes-based Curriculum

Introduction. The world is facing the most serious long- term threat because of the danger from human actions that produces irreversible and harmful changes to the environment. According to Stuart Oskamp, if this problem will not be addressed, there may be no viable world for the next generation to inhabit. The threat the world is facing is caused by human population growth, overconsumptions and lack of resource conservation, Education have a vital role in helping our world escape ecological disaster and approach a sustainable level of impact on the environment.

According to Nelson Mandela, the late former president of South Africa, “Education is the most powerful weapon that you can use to change the world”. Environmental Education brings hope and change. It is a strategy by which people can make proactive, informed decisions that honor ecological, economic, and social integrity-the foundations of sustainability. Environmental Education emphasizes on instilling these values to guide our individual and communal actions, and allows everyone to work toward a better quality of life (Environmental Grant makers Association).

The goal of Environmental Education is to develop a world that is aware of and concerned about the environment and its associated problems and who has the knowledge, skills, attitudes, motivation and commitment to work individually and collectively towards solution of current environmental problems and prevention of new ones. School system provides the largest organized base for Environmental Education and action.

According to Jena (2012), Environmental Education is important to trigger proactive participation of the masses in addressing, debating, and protesting on significant environmental issues.

Environmental Education plays a vital role in creating interest in the environment. If we want to generate the values in our children, we have to know the responsibility towards the environment and also we have to show our behavior as a like eco-friendly. Environmental awareness should be an integral part of any environmental curriculum encouraging children to take an active role in the protection to their environment in one way by which the critical balance between man and environment may be preserved.

In a Chinese proverbs saying, "If you plan a week ahead, sow seed, if you plan a year ahead, plant a tree, if you plan a hundred of years, educate the people." So there is an urgent need to educate humankind on conservation and sustainable uses of natural resources through environmental education has been accepted global necessity environment and development.

The ill-effect of environmental destruction is evident and its future potentialities are immense. Environmental awareness through education, particularly the youth who bear the future responsibility for the stewardship of the environment and pass on their knowledge to future generations is a concern according to Pardo 2012. The youth will become tomorrow's leaders- it is our responsibility to provide them the educational experiences, for them to make knowledgeable decisions regarding the environment. Many people believe that environmental education is one of the most important factors for preventing Environmental problems. (Ozden 2008).

Hagos and Dejarme (2008), conducted a research entitled "Enhancing Curriculum in the Philippine Schools in Response to Global Community Challenges". According to them the schools of today should participate with the tempo of educational and social evolution. Thus, the curriculum in the Philippine schools has to be geared to the rapid societal changes and the new responsibilities for the breed of Filipinos. A school `s curriculum should be enhanced. It should be pragmatic to the to the needs of society and should conform to the actualities of the community. A school`s curriculum should be re-structured with a likely shift towards a more meaningful course of study. Several colleges and universities are beginning to shape curriculum for the future in an attempt to address the realities and changes in the global community in the 21st century. They have initially envisioned the future curriculum to be computer-based, technology-enriched, Value-laden, research-oriented, community-involved, industry-based, and **environment-focused**. The continuing degradation of the environment has captured the attention of concerned citizens around the globe. Integration of environmental education in selected curricular programs is very important especially for a developing country like the Philippines.

Even our lawmakers are concerned with these threat to our environment. A lot of bills in the senate and in the lower house were signed in connection to environmental protection. In fact, they agreed to. in integrating environmental awareness and education in the school curriculum. As stated in Republic Act 9512: Environmental Awareness and Education Act of 2008. It`s an act to promote environmental awareness through Environmental Education and covers the integration of EE in the school curricula at all levels, be it public or private, including day care, preschool, non-formal, technical, vocational, indigenous learning and out-of-school youth courses or programs. In section 3, EE should encompass environmental concepts and principles, environmental laws, the state of international and local government, local environmental best practices, the threats of environmental degradation and its impact on human well-being, the responsibility of the citizenry to the environment and the value of conservation, protection and rehabilitation of natural resources and the environment in the context of sustainable development. The law also suggests the inclusion of Environmental education and awareness programs and activities in the National Service Training Program under Republic Act No. 9163, as part of the Civic Welfare Training Service component required for all baccalaureate degree courses.

During the 46th Foundation Thanksgiving Celebration of Philippine Christian University held in Dasmariñas, Cavite on October 4, 1992, the PCU Faculty, Staff and administrators adopted and signed the Declaration on Ecology, which speaks, of their support in protecting and guarding the environment (appendix). One of the cornerstones of PCU's mission is, "Become responsible stewards of God's creation and resources". (see appendix).

With all the news of the current global and local environmental degradation despite numerous environmental laws to safeguard and protect the environment. The researcher dreamed of enhancing the curriculum for environmental education in Philippine Christian University. This is also in response to PCU`s commitment on environmental stewardship and its declaration on ecology to Protect and safeguard the environment.

This study determined the Environmental Literacy of college students in terms of environmental awareness; Environmental attitudes and Environmental practices of both Manila and Dasmariñas campus towards developing a Collaborative Outcomes-based Curriculum Model on Environmental Education

Materials and Methods.

The study used quantitative research method. As Patton suggested "…qualitative data can put flesh on the bones of qualitative results, and bringing results to life through in-depth case elaboration". The researcher sequences the two types of methods quantitative as explanatory followed by qualitative as exploratory. In other words, Explanatory Sequential Design will be used.

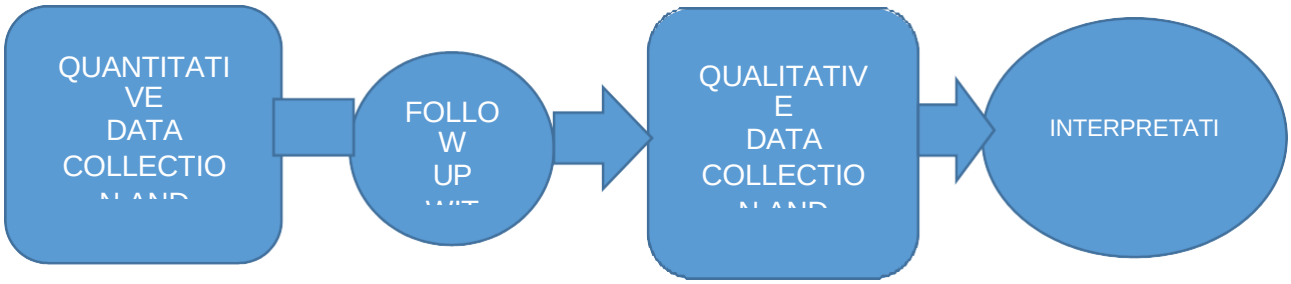

Figure 2. Diagram of Explanatory Sequential Design

Closed-ended questionnaire was used to determine the Environmental Literacy of the students in terms of the following: Environmental awareness Environmental attitude and Environmental practices. The main goal of FGD is to provide an opportunity for the participants to talk to one another about a specific area of study. The facilitator is there to guide questions. The main purpose of FGD is to provide direction and support for the development of collaborative model for environmental education at PCU- Taft, Manila. Systematic approach was used to select participants for the second data collection. An open-ended questionnaire was developed base from the results of the first data collection that needs confirmation and explanation.

The subjects of the study were the students of Philippine Christian University Manila and Dasmariñas campus at the tertiary level during the academic year 2017-2018, their environmental literacy were determined in terms of awareness, attitudes and practices. Stratified Random Sampling, was used to determine the student respondents. Stratified Sampling involves the use of "Stratum" or a subject of the target population wherein the member possesses one or common attribute. This technique was used in the selection of students to determine their level of environmental awareness, attitudes and practices. Participants will be informed of the possibility of the second data collection. For the qualitative part, the researcher purposefully selected respondents who are representative of different groups with extremes scores and those who differed in their scores on significant predictors.

Table 1

Environmental Literacy of Respondents in Philippine Christian University

Variables	Weighted Mean	Verbal Interpretation
Environmental Awareness	3.55	**High**
Environmental Attitudes	3.2	**High**
Environmental Practices	2.9	**High**
Environmental Literacy	**3.22**	**High**

Table 3 showed that the students of Philippine Christian University had high level of Environmental awareness, attitudes and practices towards environment. Since one of the cornerstone of PCU's vision-mission has to do with stewardship of God's creation and resources. Subjects relating to the environment were also included in the curriculum. However, Environmental practice is somewhat low as compared to awareness and attitudes, there is a need to improve the respondents' practices towards the environment.

During the FGD, the participants were asked to rate their Environmental literacy in terms of Environmental awareness, attitudes and practices using the scale 4,3,2,1 four being the highest. Only 3 participants opted to answer and explained their side.

Student A "2 for me to rate myself 4 I should be doing something in my surroundings and I must influence others to care for the environment 3 I must have conscious effort not to destroy the environment"

Student B "*3 because we are well informed in school."2 because I lack on stewardship, I Throw garbage 2 the same reason I am not doing by heart though I knew it . Because my awareness is not reinforce to enact."*

Student C "*Because ma'am for me as a student who is not a science major We have very few science related subjects and I think it's not totally incorporated, but if that will be taught in every subject that will instill in my mind ah this is what should be done So that it will be part of my daily routine. If in every subjects environment will be incorporated caring and protecting it will be part of his/her life, not only in mind but also by heart.*

In depth interview with the participants revealed that majority of them had high environmental literacy. However, one student said that her level of attitudes and practices is low. She explained that in order to have high attitudes and practices she must also be able to influence other and do effort in protecting and safeguarding the environment. The participants all agreed in integrating Environmental Education even in non-science subject. In one of the questions during the interview, they said that human being is the reason of the environmental problem and human is also the solution to this problem.

According to Ozgurler and Cansaran (2014), teaching the people about the environment is the most important in finding solution to environmental problem. This suggests that Environmental Education is needed in order to create an environmentally literate citizen. An environmentally literate citizen is an individual who is, most importantly, informed about environmental issues and problems and possesses the attitudes and skills for solving them. The environmentally literate individual has a well-developed set of environmental values or morals. The individual also takes action in terms of changing his or her own behavior in order to remediate or prevent further environmental problems.

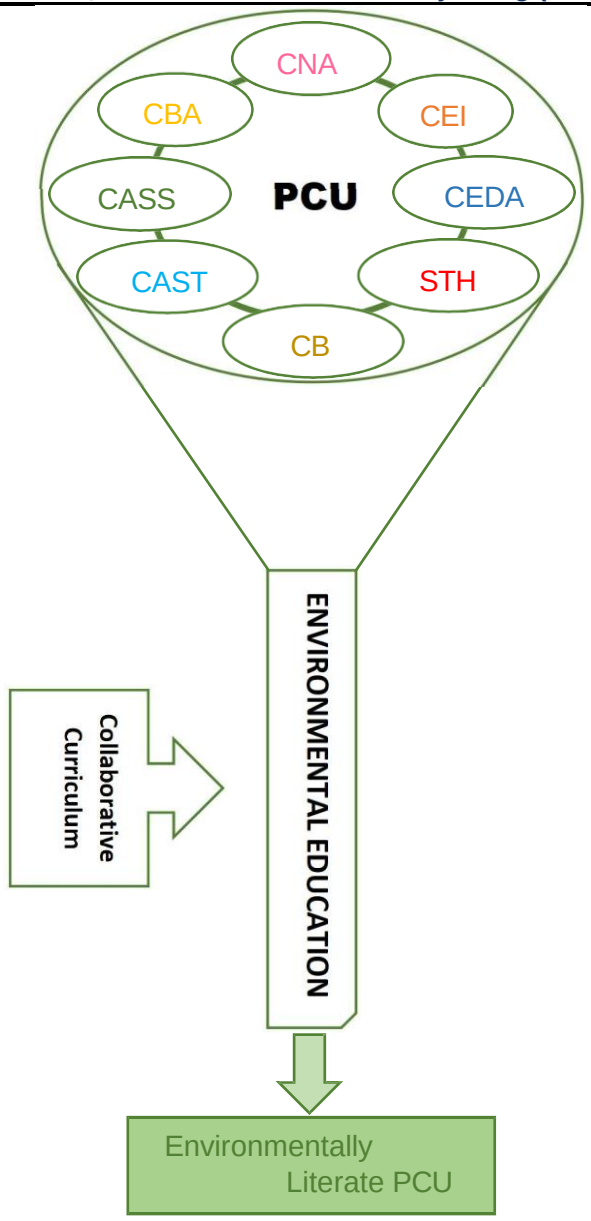

Figure 3. Funnel model for Environmental Education in Philippine Christian University.

Figure 3 presents the different colleges from the two campuses where Environmental Education can be integrated. Though they are from different campuses and disciplines, as they pass the narrow tube, they'll be together working as one community in upholding the vision-mission of the University.

The Collaborative Outcomes-based Curriculum Model on Environmental Education developed by the researcher resembles a funnel. The Funnel concept was conceived by the researcher to empower the students, inform them and help them understand that the resources on earth are their own. For the students, our future leaders for them to flourish and become truly empowered, Philippine Christian University must teach them first to love the earth before we ask them to save it.

Since Environmental, education is both interdisciplinary and multidisciplinary. It includes looking at the biological, physical, social, economic and the cultural or historical aspects of an issue. By building critical thinking skills, students are able to evaluate and anticipate environmental problems, thus leading to increased environmental literacy.

When asked about their opinion that Environmental education should only be thought in Science subject, they all answered No, that Environmental education should not only be taught in Science subject only. One student answered, "*Because ma'am for me as a student who is not a science major. We have very few science related subjects and I think it's not totally incorporated, but if that will be taught in every subject that will instill in my mind ah this is what should be done So that it will be part of my daily routine. If in every subjects environment will be incorporated caring and protecting it will be part of his/her life, not only in mind but also by heart. " No, because Environment is part of our Everyday life. so If that will be taught only in science subject people will not understand and remember what to do and what not to do with regards to the environment"*

Environmental education can be taught in Values Education, Sociology, History, and NSTP. As stipulated in Republic Act 9512: Environmental Awareness and Education Act of 2008. It`s an act to promote environmental awareness through Environmental Education (EE) and covers the integration of EE in the school curricula at all levels, be it public or private, including day care, preschool, non-formal, technical, vocational, indigenous learning and out-of-school youth courses or programs.

In section three, EE should encompass environmental concepts and principles, environmental laws, the state of international and local government, local environmental best practices, the threats of environmental degradation and its impact on human well- being, the responsibility of the citizenry to the environment and the value of conservation, protection and rehabilitation of natural resources and the environment in the context of sustainable development.

The law also suggests the inclusion of Environmental education and awareness programs and activities in the National Service Training Program under Republic Act No. 9163, as part of the Civic Welfare Training Service component required for all baccalaureate degree courses. The advent of the new general education curriculum, the researcher suggested that all disciplines in Philippine Christian University should include Environmental Science as elective. And the integration of EE in other subjects since EE encompasses all discipline.

RECOMMENDATIONS

Based on the conclusion drawn, the following recommendations were forwarded:

1. All students in PCU-Manila and PCU-Dasmariñas environmental education be enhanced through the developed collaborative outcomes-based curriculum model.
2. Upgrade the environmental education of the PCU students utilizing the developed collaborative model in environmental education.
3. Send curriculum developers and faculty to seminars/training/conferences for them to be trained to make them aware of the current and emergent environmental education issues and how they could integrate them in each disciplines for each year level.
4. The developed collaborative curriculum model be used to enhance PCU students' environmental literacy.
5. Utilize the developed curriculum model and evaluate its extent of enhancing the environmental literacy of the PCU-Manila and PCU-Dasmariñas students.
6. Incorporate in the PCU curriculum the application of environmental education to ensure the consistency of environmental practices among students.
7. As stipulated in Republic Act 9512: Environmental Awareness and Education Act of 2008, EE can be integrated in National Service and Training Program, a module may be developed to serve as a guide to both faculty and students in addressing the need to be proactive in the decision making regarding environmental problems.

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Conflict of Interest

The author have no conflicts of interest to disclose.

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