

College Students' Awareness and Understanding of the Environmental Education Concepts and Principles and Their Environment-Related Actions

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Abstract

Environmental Education is paramount at the onset of climate change to develop proactive approach in the mitigation of the climate change's persistent and life-long deadly threats to communities. To increase awareness in the educational front in this aspect, understanding of the Environmental Education (EE) concepts and principles must be established. This study determined the awareness and understanding of the college students of BukSU in terms of EE concepts and principles and ascertained their responsible environment-related actions. The findings reveal that the sampled college students who responded to the questionnaire know and understand the EE concepts very well. It revealed further that the responsible environment-related actions and behaviors that the students consciously practice regularly are limited only to proper waste disposal, garbage segregation, and recycling of waste materials. It can be deduced that the students' awareness and understanding of the concepts are not appropriately translated into actions that could develop a sense of social and moral responsibility in students towards environmental protection. It is recommended that role of education and training in raising environmental consciousness among the students in BukSU may be strengthened.

Key words: Environmental Education Concepts, Environmental Education Principles, environment-related actions, EE awareness and understanding

Introduction

For the past decade, people around the globe become witnesses of the deadly effects of climate change in the Philippines. The climate change phenomenon brought to the country extreme weather disturbances such as super typhoons and flooding that have never been experienced in the history of mankind. Typhoon Yolanda for example that hit Philippines in November 2013 has been recorded to be the strongest tropical cyclone to make landfall in the

record history. It was so strong that it has approached the maximum intensity for any storm, anywhere (Dimacali, 2013). This effect of climate change creates life-long and persistent threats not only to communities in the country but also to other countries worldwide.

These effects can be mitigated through an environmental education (EE) program (*International Institute for Educational Planning*, 2006) with the goal of changing the behavior of the learners and translating the acquired knowledge into action to preserve or minimize the detrimental effects of climate change. Environmental education strives to attain certain level of competence and citizenship in all students that will enable them to contribute to the attainment of sustainable societies (UNESCO, 2006). Through EE, students acquire knowledge, skills and attitudes to enable them to form judgements about sustainable lifestyles and to participate in environmental decision-making.

Environmental education is not new. In fact, substantial amount of work had already been done in the 90's and significant achievements have already been attained in this particular area. However, challenges in environmental education still remain. Constraints and barriers to the widespread adoption and practices of EE in formal education sector include large class size, teachers' lack of resource and experience in interactive teaching strategy, and competitive academic curricula which prioritizes end-of-course examinations that somehow discourages the development of relevant personal skills among others (Education, Information, and Awareness). Meanwhile, outside the formal education sector, EE is often weakly organized and resourced, and there is lack of clear integration of environmental education objectives and programs with national education and environmental policies. Moreover, the priority of the governments worldwide on environmental concerns may have been overlooked or swapped for more immediate benefits and survival needs of the wider population as countries around the world suffer social, economic, and cultural barriers brought by poverty and underdevelopment.

As a result, environmental education may not have been reinforced and given emphasis both in educational reforms and nationwide policies. Hence, it is hypothesized that the lesser attention given to EE by the players in education and social sectors, the higher the risks for students of not being able to translate the knowledge and understanding of EE concepts into pro-environmental behaviors for sustainable development. The pursuit of sustainable development and environmental conservation policies, objectives and targets requires the public to be sufficiently sensitized about the multiple dimensions of environment and development. Therefore, awareness and understanding of environmental issues are paramount because these provide the basis and rationale for commitment and meaningful action towards environmentally sound and sustainable development.

The main objective of EE is not only to spread awareness but to develop among the wider population their knowledge and understanding of environmental concepts and foster relevant skills, and then in the long run alter their attitude into positive outlook towards environmental conservation and thereby translating all these into actions (Sterling and Copper, 1992). This study embarked on the students' awareness and understanding of the concepts and principles of environmental education as well as their environment-related behaviors and actions.

This study has the following objectives:

- a. To ascertain the current level of awareness and understanding of college students on environmental education concepts and principles; and
- b. To determine the environment-related behavior and actions practiced by college students of BukSU.

Review of Related Studies and Literature

Environmental education is now being seen as an instrument and a process that enables participation and learning by people of all ages, based on two-way communication rather than the old paradigm of a one-way flow of information, from teachers to pupils. The content and substance of environmental education is also undergoing review and change. Reorienting education as a whole towards sustainability involves the various levels of formal, non-formal and informal education at all levels of society.

According to Wagner (2011) environmental education is sometimes integrated into school curricula as an interdisciplinary goal of formal education. It is also part of informal education, and a part of daily life during leisure time activities, as well as a substitute for or extension to the formal education sector. Environmental education is about experiencing, sharing, creativity, pleasure and sensitivity: environmental education activities can be informing the population, discovery activities (guided visits, games, outings), but can also consists of the active participation of the public (workshops, volunteering, excursions, role play, field trips or holidays).

Environmental education uses a range of strategies and teaching techniques, which can be used separately but ideally build one upon the other (Environmental Grantmakers Association, 1965). Education researchers Scott and Gough (2003)⁷ describe this continuum including: Information activities, which aim to increase awareness and understanding and are defined as “informal” education; communication activities, delivered in both formal and informal settings, which aim to establish a dialogue between audiences and environmental organizations or agencies for the mutual sharing of experiences, priorities, and planning; education activities, also delivered in both formal and informal settings, which aim to promote knowledge, understanding, an attitude of concern, and the motivation and capacity to work with others in achieving goals; capacity building activities, delivered primarily in informal settings, which aim to increase the capacity of civil society to support and work for environmental preservation.

Tertiary level education has responded to the increasing demand for environmental managers and experts in the 1990s. Key trends have been observed across the region in relation to environmental education at tertiary level these include: basic environmental concepts and elements added to existing courses at undergraduate and postgraduate levels, for all students irrespective of their courses; new environmental units or modules introduced into a large number of courses at undergraduate and postgraduate levels, thus increasing the depth and detail of environmental study; new non-degree programmes and courses (at foundation, certificate or diploma levels) introduced by tertiary education institutions to cater to the demand for in-service training and upgrading of knowledge and understanding on environmental issues and practices; an increase in the publication of relevant textbooks and audio-visual material; greater emphasis

on training the trainers, and in strengthening the tertiary education system and research capabilities.

This study embarked on these key trends, to be particular, the integration of EE concepts to different Professional Studies subjects in Teacher Education Curriculum.

Materials and Method

This study utilized the qualitative descriptive-evaluative method of research. For this study, the Bicol University Pre-Test results during the Mainstreaming of EE lessons in the various Professional Studies Subjects in BukSU conducted sometime in 2017 were utilized. The Bicol University questionnaire used to gather the data consists of at least four different parts. Of these four parts, only the result of Part II and Part IV were utilized. Part II of the test determined the awareness and understanding of the college students of the EE concepts and principles while Part IV determined the environment-related actions of the college students. There are fifteen statements of environmental education principles and concepts in part II where the students had to determine their self-assessment of their awareness and understanding of the EE concepts by answering 4 to 1 where 4 means the student *knows and understands the concept very well* up to 1 which means the student *does not know the concept yet*. Part IV is an essay question that requires students to discuss briefly the responsible environment-related actions and behaviors that they consciously practice regularly.

The participants of this study were the 120 students from the College of Education of Bukidnon State University who were enrolled during the first semester of the SY 2017-2018. Many of the participants of the study are children of farmers and housekeepers who come from the neighboring municipalities of Malaybalay. In terms of their exposure to seminars and trainings in relation to environment, very few of the participants were able to attend such.

Bukidnon State University, one of the two higher education institutions in Bukidnon, is strengthening its commitment to support the country's goal towards sustainable environment conservation. As a matter of fact, the institution has included in its major final output (MFO) certain environmental-related targets that would contribute to the nationwide strategic development goal on sustainable development. Hence, this study is a timely investigation of the contribution of students to the University's FMO by determining their awareness and understanding of environmental principles and concepts and how they transform such knowledge to pro-environmental behaviors and actions.

Results and Discussion

College Students' Awareness and Understanding of the Environmental Education Concepts and Principles

The college students' awareness and understanding of the environmental concepts is found in Table 1. There are fifteen (15) statements related to the seven (7) environmental principles. These principles include *Nature knows best; all forms of life are important;*

everything is connected to everything else; everything changes; everything must go somewhere; ours is a finite earth; and nature is beautiful and we are stewards of God's creations.

Clearly, the college students *know and understand very well* all the statements related to environmental principles. This implies that these concepts and principles may have been successfully mainstreamed in the Philippine educational system. The mean scores of the students' awareness and understanding indicating most of them as closer to 4.0 which can be qualitatively described as *knowing and understanding of the EE concepts very well* is an indication of the successful integration of the environmental-related views and philosophies into the various curriculum in the Philippines.

Interestingly, two statements in Table 1 that fall under the same environmental principle which is *nature is beautiful and we are stewards of God's creations* got the highest mean values. The participants of the study absolutely know that *human beings are gifted with reasons and free will to use God's creation responsibly to their advantage* as well as they know that *humans cannot live without nature so they need to take care of nature*.

Meanwhile, the item that got the lowest mean value that almost fall under a way lower level of knowledge and understanding of EE concepts is in the statement related to the EE principle number three *-everything is connected to everything else*. The statement *Although renewable resources can be replenished, the rate of consumption or exploitation should be balanced to the rate of replenishment* got the lowest mean even though categorically, the students understanding and awareness over this is still noteworthy.

Table 1.

College Students' Awareness and Understanding of the Environmental Education Concepts and Principles

Statements Related to the 7 Environmental Principles	Mean	StDev	Qualitative Description
1. Living organisms and environment change with the seasons.	3.63	0.67	<i>I know and understand this very well</i>
2. Although renewable resources can be replenished, the rate of consumption or exploitation should be balanced to the rate of replenishment.	3.28	0.66	<i>I know and understand this very well</i>
3. Human as being gifted with reason and free will have dominion over all creatures and are capable of using these creations responsibly to their advantage.	3.62	0.60	<i>I know and understand this very well</i>
4. Organisms are linked to another through a	3.45	0.61	<i>I know and understand this</i>

feeding series, to the environment and the environment is also affected by the organisms living in it including the humans through their actions and practices			<i>very well</i>
5. Population growth, polluting technologies and consumerist's lifestyle contribute to the depletion of the earth's limited resources.	3.53	0.61	<i>I know and understand this very well</i>
6. Wastes which are thrown away and disappear from sight does not cease to exists, they dispersed in the atmosphere or remain in the ecosystem in another form whether in useful or hazardous form.	3.34	0.71	<i>I know and understand this very well</i>
7. Chemicals like pesticides include insect mutations which goes against the natural checks and balances.	3.32	0.77	<i>I know and understand this very well</i>
8. Practices such as the use of chemical pesticides, use of crude oil and burning of wastes go against the natural processes and lead to ecological backlash	3.36	0.70	<i>I know and understand this very well</i>
9. Nature has its own mechanism to maintain balance such as in the conduciveness of environment for growth and reproduction and feeding relationship between and among organisms.	3.46	0.79	<i>I know and understand this very well</i>
10. Both big and small creatures have invaluable roles in the ecosystem, and therefore to human life.	3.56	0.73	<i>I know and understand this very well</i>
11. Unlovely, wriggly and troublesome creatures such as earthworms, snakes, spiders and others are necessary part of nature.	3.53	0.64	<i>I know and understand this very well</i>
12. All faiths, whether religious or tribal beliefs, teach that everyone should respect all life and the order of nature and reject those that degrade the environment and human condition.	3.56	0.74	<i>I know and understand this very well</i>
13. Deforestation in the mountains may adversely affect the lowlands through erosions, floods and drought because all	3.56	0.71	<i>I know and understand this very well</i>

components of the ecosystem are linked to each other.

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| 14. Classification of waste facilitates their proper disposal and minimizes the entry of toxic substances in the ecosystem but does not eliminate wastes from the ecosystem. | 3.39 | 0.70 | <i>I know and understand this very well</i> |
| 15. Humans cannot live without nature so they should not destroy or ravage it, but rather take care of it. | 3.63 | 0.65 | <i>I know and understand this very well</i> |

Legend: 1.00-1.74- <i>I do not know this yet;</i> 1.75-2.49 - <i>I know this partly;</i> <i>understand this very well</i>	2.50-3.24- <i>I know this well</i> 3.25-4.00- <i>I know and</i>
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Environment-related Actions and Behavior Consciously Practice Regularly by College Students

Based from the responses of the participants to the essay question from the BU questionnaire on the environment-related actions and behavior that they consciously practice regularly, only three practices emerged to have been repeatedly mentioned from among the 120 participants. These practices include *proper garbage disposal*, *garbage segregation*, and *recycling* although the latter did not emerge as often as the two former practices as indicated by the frequency of statements mentioned in the responses.

From the participants' statements, practicing *proper garbage disposal* includes practices such as *not burning of waste materials especially plastics*; and *throwing of garbage in the proper disposal bins*. Many of them mentioned that in their own communities, they do not burn their garbage especially cellophanes and plastics. Moreover, most of them declared that they throw their garbage in the proper waste/garbage bins or containers. Plainly, these practices are basic environmental responsibilities of every individual. Basic as they are, these practices are indications of knowledge transfer among the students having high levels of understanding and awareness of the EE concepts.

In terms of *garbage segregation*, some practices related to this as mentioned in the students' responses include *posting of "bio-degradable", "non-biodegradable", and "recyclable" placards in the garbage containers*, and *separating garbage according to whether they are biodegradable and non-biodegradable*. Again, just like the first mentioned environment-relation action, this practices also form part of every citizen's responsibility. These practices may have been influenced by many city and municipal ordinances on waste segregation which are enacted in various communities in the province of Bukidnon. Additionally, these are the fundamental environmental concepts introduced as early as pre-school in most schools in the country. The same concepts that are repeatedly introduced up to the higher education level. These two environment-related actions form part of waste management behaviors of informed citizens.

Another environment-related action noted from the participants' responses is *recycling of waste product*. However, this action has not been mentioned as often as the first two practices. Also, it is noteworthy to discuss that the students may have confusions over the meaning of the term recycle. To quote directly one of the statements of the student:

"I recycle the water I use in washing the dishes to water the plant"

In this statement, the student may have confused the term "recycle" and "reuse" because clearly, in the context of the way the word *recycle* is used in the sentence, it could have been *reuse*. Although this finding could not generalize the sampled students in this study, it can be an interesting research topic of other future environmental-related research endeavors that other researchers can embark on.

In the review of literature conducted by Rickinson (2001), one of the revelations of findings from several studies conducted in relation to Environmental Education is the large amount of evidence relating to young people's understanding/misunderstanding of the science of environmental issues and terms. For Example, an area of confusion with distinctions is noted in Kortland's (1997) small-scale study of Dutch secondary school students' perceptions of waste issues. This investigation reported that students had conceptual problems with the distinction between: renewable and non-renewable raw materials, recyclable and non-recyclable materials, and reusing and recycling (for which there is only one word in Dutch). Similarly, Membiela et al. (1993) reported that Spanish students 'confused the term reuse and recycling'. With this evidence, it is noteworthy to investigate the students' understanding and awareness of the EE concepts and principles at this level in the future EE researches.

Discussion

A number of Presidential Acts that inform environmental education in the Philippines has been enacted to provide guidance in framing educational awareness in schools to incorporate in curricula and syllabi at the primary, secondary, and tertiary level educational institutions in the country. This is in recognition of the fact that the school system is a vital part of the basic learning systems and a powerful vehicle for change. The substantial findings of this study in terms of the high level of students' awareness and understanding of EE concepts is a manifestation that the school system is an essential driver of significant change in environmental awareness and understanding.

Environmental Education is already introduced as early as in elementary curriculum in the Philippines. In fact, the Department of Education (DepEd) inculcates in the students the virtues of being *Makatao*, *MakaDiyos*, *Makabayan*, and *Makakalikasan*. While some countries move on to offer EE as a separate subject, EE is not separated from school lessons in the country (The National Environmental Education Action Plan, 2010). For instance, soil, water, and air pollution; disposal of waste materials; coral reefs; components of ecosystem, and the like are integrated in the Philippine Basic Education subjects such as *Science and Health*, *Sibika at Kultura*, *Hekasi*, *Edukasyong Pagpapakatao*, and *Edukasyong Pantahanan at Pangkabuhayan*.

This present set-up of EE in the Philippines may have been a factor that influenced the high level of awareness and understanding of EE concepts among the BukSU students. In terms of the environment-related actions of students from this university however, the finding of this study is paradoxical. The students' behaviors and actions which are only limited to their basic environmental responsibilities related only to ecological waste management is somehow incoherent to their level of understanding and awareness. But of course, these limited environment-related actions cannot also be underestimated because bigger and sustainable change can sometimes come from small beginnings.

Various factors could explain these results. First, the integration of EE concepts and principles in the curriculum may be restricted only to introduction of these concepts and that the curriculum may have not been properly designed to include mechanisms to open opportunities in allowing the bigger student-population to translate their EE knowledge into community-based actions. The National Service Training Program (NSTP) is supposed to be an avenue where the students' EE background knowledge is translated into actions. However, in BukSU's current set up, and perhaps, so with other HEIs, the NSTP community-based programs and activities are now being conducted inside the campus instead of going out to the communities as CHED issued a moratorium on field trips, and other out-of-campus activities sometime in 2015. At the very least, this has restricted the students to transfer their learning to people and communities outside the university.

Second, there can be several contextual factors that may significantly affect the students' environment-related actions. One example is the lack of school-based policies for students to become accountable of their environmental responsibility. Also, BukSU's students' services included only one student organization that addresses environmental concerns. There is currently an existing Natural Science Society in the University but its operation is limited to the university only.

A third justification especially in terms of the very few counts of "recycling" as an environment-related actions done by the students is the absence of school-based even a local government projects related to recycling. It is possible that the population being studied lacks the sufficient knowledge of what recycling is due to the absence of recycling facilities in the area including in the university. According to Bronfman, C.; Cisternas, P.; López-Vázquez, E.; de la Maza, C.; and Oyanedel, J. (2015) recycling activities entail significant changes to people's habits and routines, which in turn imply a conscious effort on their part to give up old customs and develop new habits. This could constitute barrier to adopting a pro-environmental behavior if there is a lack of sufficient motivation to break those habits.

Conclusions and Recommendations

The students' awareness and understanding of the environmental education concepts and principles is no question, commendable. The environment-related actions and behavior is however inadequate. The environment-related actions regularly practiced by the student-population under investigation is by far inadequate for one to say that the high level of awareness and understanding of the EE concepts and principles among the students have been transferred to a large-scale pro-environmental actions and behavior that could contribute to the sustainable development. There is a possibility that BukSU may have overlooked the monitoring and

evaluation of the integration of EE concepts and principles in the curriculum such that the impact of this integration, has not been evaluated and monitored. The findings of this study especially on students' limited practices on environment-related actions are a cause of concern although these findings cannot be deemed to be representative of the entire student population of the university.

As a result, it is recommended for BukSU to reinforce the integration of EE concepts and principles in the various programs offered in the university during curriculum development, review and monitoring such that the integration of EE concepts and principles will be strengthened. This activity should not only end in the integration activity rather, it has to be evaluated and monitored so that its impact to sustainable development will be identified as well. It is further recommended that the role of education and training in raising environmental consciousness among the students in BukSU may be strengthened.

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