Filipino Student Teachers' Environmental Competencies: Basis for Development of a Training Module

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Abstract- *Teachers serve as the main element in achieving environmentally literate populace which the country needs. Hence, this study reported a comprehensive account on the level of competency on Environmental Education Content (EEC) of 21 Bachelor of Elementary Education (BEEd) pre-service teachers in one state university in the Philippines during the Academic Year 2015-2016. By employing the survey type of descriptive research with an adapted questionnaire, the study found out that the respondents are least competent on ecological foundations while they agreed that they are competent on conceptual awareness, investigation and evaluation and environmental action skills. Further, this study also revealed that the training module developed based on the findings of the study was highly valid, acceptable, and functional. With these, uplifting the environment instruction in the Teacher Education Institutions is highly recommended in this study.*

Keywords- *Elementary Education, Environmental Education Content, Environmental Competency, Teacher Education, Natural Science*

INTRODUCTION

Living in the 21st century, an environmentally literate populace is more indispensible than ever. This requirement is normally perceived to be of enormous importance due to continuous environmental crises and issues mainly because it is being abused beyond its capacity by human beings. The United Nations Development Programme (UNDP) said that the Philippine environment has been under attack from a fast-growing population and practices that have degraded the country's air, land, and water. In effect, the country had experienced tremendous rate of flood, landslides, water contamination and an alarming climate change [1]. Despite the national measures passed and implemented to advance the international community's agenda pertaining to environmental preservation, environmental degradation still increases and poses threat and unhealthy living conditions to the Filipino citizens.

In this regard, Environmental Education (EE) is essential so that people will become responsive and take active part in guarding the earth's environment by making informed decisions and taking environmentally friendly actions. EE refers to organized efforts to teach about how natural environments function and, particularly, how human beings can manage their behavior and ecosystems in order to live sustainably. The goals of environmental education efforts around the world are similar-to maintain and improve environmental quality and to prevent future environmental problems. In part, environmental education according to Singh [2] is information education, increasing student knowledge about the environment. In point of fact, this stewardship role of wonderful creations was specified in the 1987 Constitution which stipulates that, "The State shall protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature" [3]. This implicates that the government -the public- is expected to express adherence to the principles of sustainable development and environmental preservation. This calling had been reiterated by United Nation (UN) many years ago.

The concept of environmental education emerged from the Stockholm Conference organized by the UN in 1972. Recommendations of the conference emphasized organization of 'formal' and 'mass' environmental education programs. In response to

this, United Nations Educational Scientific and Cultural Organization (UNESCO) and United Nations Environment Programme (UNEP) launched the International Environmental Education Program (IEEP) in 1975 whose objective was to promote exchange of information, experience, research, curricula and international cooperation in the area of environmental education. Following this an international workshop was held in Belgrade in 1975, which emphasized that environment education should be lifelong, interdisciplinary, involve active global participation and foster values of local national and international cooperation [4].

The overall goal of IEEP is to educate the people at large about environment and its components would develop critical thinking analytical and problem solving skills in them. It would develop knowledge and insights to improve quality of human life on earth [5]. For this reason, all Teacher Education Institutions (TEIs) must take into account all the elements that could possibly bring successful environmental education. It is on their hands lie the formation of next generation environmentally-conscious educators that could equip Filipino students with wide range of knowledge and skills in order to make sound and effective decisions in a range of environmental contexts.

Further, it is essential that pre-service teachers should be properly trained on environmental concepts and skill to impart training to learners. They should be well-equipped with the knowledge and skills of methods/approaches in teaching environmental concepts, material to inculcate the right understanding of and attitude towards environment in the learners. Hence, these teachers must be environmentally competent [6]. In fact, Fien et.al. [7] documented different results and findings brought by researches on the role of teacher education in promoting environmental education. Careful reviews and analyses led them in drawing a competency- based framework for teacher education in environmental education. This model program has been adapted and extended for use in a variety of teacher education situations and now includes a comprehensive set of competencies for the environmentally educated teacher which can be translated into objectives for environmental education curriculum development in teacher education.

As patterned to the works of Wilke [8], the competencies in Environmental Education Content (EEC) have been used in different universities and colleges in Asia and the Pacific aiming to promote sustainable environment. This ECC competency includes four levels such as ecological foundations, conceptual awareness, investigation and evaluation, and environmental action skills. Ecological foundations level focuses on the ability of the teacher to discuss major concepts and ecology and the importance of interaction of humans to the environment for survival. Level II, the conceptual awareness revolves on the capability of the teachers in selecting, developing, and implementing curricular materials that could make the learners aware of environmental issues and concerns. Levels III and IV which are the investigation and evaluation, and environmental action skills concentrates on the competency of the teacher to investigate environmental issues and evaluate alternative solutions and to develop, select and/or implement curricular materials and strategies and knowledgeable enough to take positive environmental action which will develop similar competencies in learners.

The above cited four levels competencies have been set out in detail to provide an effective planning framework for curriculum developers and administrators in teacher education. They serve as a basis for the development of environmental education provision in teacher education – and as a checklist against which experienced teachers may examine their needs for on-going professional development. In this matter, one of the earliest notable recognition by Commission on Higher Education (CHED) of the importance of sustainable development taking into consideration the environment was set out in the CHED Memorandum Order (CMO) No. 20, series of 2013, Revised General Education Curriculum [9]. The curriculum includes Natural Science (NS) courses specifically, Earth and Environmental Science. This course was mandated to be included in teacher education curriculum and it aims to open the mind of future teachers concerning the issues affecting the environment and various activities that may be undertaken to address these. Further, the course National Service Training Program (NSTP) I and II were also included on the curriculum. These courses were designed to produce civic-minded citizenry that can be an agent of change in the next generation.

The undeniable role of TEIs in producing competent environmentally educated teachers made Batangas State University (BatStateU) to regularly monitor and review the curriculum to promise adherence to this matter. In fact, the Bachelor of Elementary Education (BEEd) curriculum includes a three-unit course, SCI 202, descriptively known as Ecology. This course will equip future elementary teachers with knowledge on scientific analysis and study of interactions among organisms and their environment. Courses relative to teaching strategies, approaches and teaching principles were also included to ensure that education students have deep background and skills on the teaching-learning process. Furthermore, all courses offered at BatStateU are based on the seamless integration of science, technology and humanities. The university aims to produce students who are not only technologically–skilled but are also well grounded on good moral values. Moreover, the program's educational objectives (PEO) include commitment on producing environmentally literate future elementary educator.

Through this initiative, it is expected that elementary teacher graduates are capable of molding future group of environmentalists. With the recognized significance of having an environmentally literate citizenry that are crucial for sustainability and preservation as discussed previously that this study was conceptualized. The desire to create competent environmentally educated teachers motivated the researcher to determine the competency of the future elementary teachers of environmental education content with an end view of using the quantitative perspective as inputs in formulating a training module for the enrichment of environmental education instruction and to further establish an environment responsive Teacher Education program.

As a Science educator handling environmental-related courses and active faculty-extensionist, the conduct of this study that focused on environmental competency of pre-service teachers is essential as this can reinforce obligation and commitment among faculty members in preparing BEEd students to be a good deliverer of environmental education. Further, educators will be able to better identify and appreciate their role in the educative process, thereby, become more efficient and effective molders of the youth and more competent and capable educators particularly in the instruction they employ.

Theoretical Framework

The world is changing and so are the concept and system of education. According to Rosenberg [10], this implies that teachers must be flexible to meet the demands of the ever-changing education. At present, the need of the hour is to have environmentally conscious citizens, who are concern for saving the environment from disasters. This means change in the attitude and behavior of the public. The Stockholm Conference on Human Environment in 1972 emphasized that education has always played a role in the society because it disseminates knowledge, provides necessary skills and helps in forming the right attitude. Hence, environmental education is not a new discipline but a new dimension in the educational system [11].

In the light of this trend, teachers must be competent in teaching environmental education. Basically, good teaching is defined as practices that help students learn better. The best way to begin was to use the environmental education framework of Wilke [8] which revealed four levels of EEC competency. This framework and competency levels may be used as self-assessment tool and a guide to teachers to think critically of their present accomplishment. Self-assessment can help teachers plan for their professional development in the short and long terms. This may aid them to capitalize their strengths and work on a particular weakness for improvement

OBJECTIVES OF THE STUDY

This paper aimed to determine the level of competency on Environmental Education Content (EEC) of the elementary pre-service teachers from the Batangas State University, Malvar, Batangas, Philippines during the academic year 2015-2016.

Specifically, it aimed to: determine the perception of the respondents on the level of competency on EEC along ecological foundation, conceptual awareness, investigation and evaluation, and environmental action skills; and identify which among the areas of the level of competency on Environmental Education Content need improvement. Further, this study aimed to develop a training module for environmental education and determined its level of validity, acceptability, and functionality.

METHODS

Research Design

The researcher used the survey type of descriptive research. Due to the nature and scope of this study, 21 Senior BEEd pre-service teachers from Batangas State University, Malvar, Batangas, Philippines during the academic year 2015-2016 served as the respondents. The researcher utilized the whole population; hence, purposive sampling was used. It is a sampling technique in which the researcher relies on her own judgment when choosing members and numbers of population to participate in the study. Believing that elementary teachers' role is very crucial in instilling and reinforcing foundational knowledge to students, the researcher decided to choose future elementary teachers. The main task of the pre-service elementary teachers was to personally assess the level of their competency on ECC. The researcher anchored this procedure to Reflective Thinking Method which allows an individual to critically and personally reflect on one's own learning.

Planning, data gathering, and analysis are the three phases this study has executed. The researcher was able to formulate the research problem through examining a number of resources and existing studies on environmental education. Her long years of experience handling environmental-related courses inspired and empowered her to conceptualize this study and using the adopted questionnaire as the main instrument pertinent data in the study were gathered.

Instrumentation

In order to elicit the needed information for this study, the researcher made use of an adopted questionnaire made by Wilke [8]. The dream of having sustainable county as reiterated by UNESCO inspired Wilke in coming up with level of competency on Environmental Education Content (ECC) framework and questionnaire. The first part of the questionnaire establishes the ecological foundation composed of 4 items. The second part determines the conceptual awareness composed of 7 items. The third and the fourth part establish the investigation and evaluation and action skills with 6 and 2 items respectively. Moreover, the adopted instrument has also undergone content validation to ensure that this is appropriate to the context and background of the target respondents. Cronbach's Alpha was used to measure the reliability of the questionnaire. Through the help of the statistician, the instrument was found to be reliable. Proper citation was made to acknowledge the owner of the said questionnaire for his enormous contribution on this paper.

To facilitate the interpretation of the computed mean for the level of environmental competency, the following mean ranges with their corresponding interpretations were used: 3.51-4.00: Strongly Agree/ Highly Competent; 2.51-3.50: Agree/Competent; 1.51-2.50: Slightly Agree/Least Competent; 1.00-1.50: Disagree/Poorly Competent

Further, the researcher prepared a self-constructed questionnaire and was used in determining the level of content and face validity, acceptability and functionality of the developed training module. This has also undergone validation to ensure it is appropriate to be used for its purpose. To facilitate the interpretation of the computed mean, the following mean ranges with their corresponding interpretations were used: 3.51-4.00: Strongly Agree/ Highly Valid/ Highly Acceptable/ High Functional; 2.51-3.50: Agree/ Valid/ Acceptable/ Functional; 1.51-2.50: Slightly Agree/Least Valid/ Least Acceptable/ Least Functional; 1.00-1.50: Disagree/ Not Valid/ Not Acceptable/ Not Functional

Data Collection Procedure

Seeking approval through formal communication letter from the authorities concerned to float the questionnaire started the data gathering stage. Upon informed consent, the researcher ensured proper consultation for the schedule of the administration of the questionnaire. Distribution and retrieval were personally executed by the researcher. As agreed upon by the concerned authorities and the researcher, data gathered was properly kept to ensure its confidentially and were strictly used for research purposes only.

The elicited quantitative data had undergone checking, scoring, analysis and interpretation with the help of the statistician. Every item in the questionnaire was analyzed and interpreted. The researchers utilized Weighted Mean in order to analyze and interpret the data that provided answer to the specific problems posed in this study. Through this procedure, the perceptions on the level of competency of the pre-service elementary teachers on Environmental Education Content were obtained.

This study is only limited to the responses made by the respondents in the administered adapted questionnaire. Moreover, it did not determine their personal profile or their academic performance in environmental-related courses.

RESULTS AND DISCUSSION

This paper aimed to reveal the level of competency on Environmental Education Content of the pre-service elementary teachers along ecological foundation, conceptual awareness, investigation and evaluation, and environmental action skills. The succeeding tables reflect the information from the analyzed questionnaire which was examined critically and inferences were made on the basis of the evidence of the findings and summary of knowledge acquired.

Table 1. Respondents' Perception on the Level of Competency on Ecological Foundations

Indicator	WM	VI
As future elementary teacher, I can be able to…		
1. apply a knowledge of ecological foundations to the analysis of environmental issues and identify key ecological principles involved.	2.52	Agree
2. apply knowledge of ecological foundations to predict the ecological consequences of alternative solutions to environmental problems.	1.80	Slightly agree
3. sufficiently literate in ecology to identify, select, and interpret appropriate sources of scientific information in a continuing effort to investigate, evaluate and find solutions for environmental problems.	1.83	Slightly agree
4. Communicate and apply in an educational context, the major concepts in ecology.	3.15	Agree
Composite Mean	**2.33**	**Least Competent**

Table 1 shows the assessment of the respondents on level of competency on Environmental Education Content in terms of Ecological Foundations.

It can be gleaned from the table that the respondents agreed that they can integrate ecology concepts in an educational context. This was manifested by the obtained weighted mean of 3.15. This was the highest rated item. This is a clear indication that they perceive themselves capable of teaching major concepts of ecology. This result was a proof of compliance to the calling of UNESCO concerning the role of Teacher Education Institutions in instilling environmental skills and knowledge among pre-service teachers. In fact, the overall mission of the universities according to Kurapka and Vaitkus [6] is to prepare individuals for life as active citizens in a democratic society; civic-minded and to contribute to personal growth; and to maintain and develop an advanced knowledge base.

Further, the least ranked item was applying knowledge of ecological foundations to predict the ecological consequences of alternative solutions to environmental problems. This garnered a weighted mean of 1.80, verbally interpreted as slightly agree. This result implies that the respondents' need little improvement on how they can make the learners understand the value of applying learned concepts to practical situations or problems. This is parallel to the notions of Bobbit-Nolen [12] which calls attention to the focus memorization of facts and procedures and believes that might mislead students into thinking of the subject as dry. It is the task of the teacher to bring about understanding of facts and its application, not memorization.

Moreover, the pre-service teachers' perception on level of competency on ecological foundations was least competent. It obtained a composite mean of 2.33. Despite the analysis on the highest rated item, this result implicates that the respondents are not fully equip of the knowledge and skills in teaching applying major ecology concepts in teaching. This discovery served as a call to all TEIs in the country to review and develop a curriculum that may produce environmentally educated teacher-graduates.

This finding was supported by the notions of Tilbury [13] concerning the inclusion of environmental education in teacher education. She discusses the role of pre-service teacher education in the care and improvement of the environment and the growing recognition among international organizations of the need to make environmental education at this level a priority.

Table 2 shows the perception of the respondents on level of competency on Environmental Education Content in terms conceptual awareness.

Table 2. Respondents' Perception on the Level of Competency on Conceptual Awareness

Indicator	WM	VI
As future teacher, I should be able to select, develop and/or implement curricular materials which will effectively make learners aware of...	3.26	Strongly agree
1. how man's cultural activities (e.g., religious, economic, political, social, etc.) influence the environment from an ecological perspective.		
2. how individual behaviors impact on the environment from an ecological perspective.	3.24	Agree
3. a wide variety of local, regional, national and international environmental issues and the ecological and cultural implications of these issues.	3.21	Agree
4. the viable alternative solutions available for remediating discrete environmental issues and the ecological and cultural implications of these alternative solutions.	2.41	Slightly agree
5. the need for environmental issue investigation and evaluation as a prerequisite to sound decision making.	3.20	Agree
6.the roles played by differing human values in environmental issues and the need for personal values clarification as an integral part of environmental decision making.	2.31	Slightly agree
7 the need for responsible citizenship action (e.g., persuasion, consumerism, legal action, political action, eco-management) in the remediation of environmental issues.	2.35	Slightly agree
Composite Mean	**2.85**	**Competent**

The least rated item was the assessment of the respondents on creating curricular materials that can make the learners aware that human values in environmental issues and the need for personal values clarification is an integral part of environmental decision making. This obtained a weighted mean of 2.31, verbally interpreted as slightly agree. This result brought reflections among the pre-service teachers to further commit themselves in strengthening their skills on developing instructional materials that may give the learners a more meaningful experience. According to Reynolds [14], using appropriate representation methods and instructional materials to introduce content knowledge to a group of students is one among the seven kinds of knowledge that teachers need to have in teaching.

Moreover, the pre-service teachers strongly agreed that they can make learners aware of the cultural activities that may have profound impact on the environment using developed curricular materials and strategies. It garnered a weighted mean of 3.26 and was the highest rated item. This result implies that the respondents are capable of building a sense of consciousness among the learners concerning the impact of human activities on the environment.

Mehan [15] pointed out that consciousness about the environmental matters and concerns with an attitude of protection of natural resources should be inculcated in the minds of children, who will eventually become the future citizens of a nation. Also, advent of environmental education as a compulsory subject at school levels should be implemented.

Further, the table reflected that the respondents perceived that they were competent on ECC in terms of conceptual awareness. This finding was based on the obtained composite mean which is 2.85. This means that they are equipped with the skills in utilizing curricular materials that could make the learners aware of environmental issues and concerns. This finding suggests that the curricular experience of the pre-service teachers made them intimate with the environmental knowledge, issues, and concerns. This is important to take account because the cause and effect relationship between human activities and the environment must often be learned through educational processes. The ideas presented by Wilke [8] have a bearing on the aforementioned observation. He presents that all science, social studies, and agriculture teachers must achieve specific competencies in environmental education before they can achieve a license to teach.

Table 3 reveals the assessment of the respondents on level of competency on Environmental Education Content in terms of investigation and evaluation. The table shows that the highest rated item garnered a weighted mean of 3.25.

Table 3. Respondents' Perception on the Level of Competency on Investigation and Evaluation

Indicator	WM	VI
As future teacher, I should be competent to investigate environmental issues and evaluate alternative solutions and to develop, select and/or implement curricular materials and strategies which will develop:	3.25	Strongly agree
1. the knowledge and skills needed to identify and investigate issues (using both primary and secondary sources of information and to synthesize the data gathered.)		
2. the ability to analyze environmental issues and the associated value perspectives with respect to their ecological and cultural implications.	3.22	Agree
3. the ability to identify alternative solutions for discrete issues and the value perspectives associated with these solutions.	3.20	Agree
4.the ability to autonomously evaluate alternative solutions and associated value perspectives for discrete environmental issues with respect to their cultural and ecological implications.	2.40	Slightly agree
5.the ability to identify and clarify their own value positions related to discrete environmental issues and their associated solutions.	3.21	Agree
6.the ability to evaluate, clarify, and change their own value positions in light of new information.	2.32	Slightly agree
Composite Mean	**2.93**	**Competent**

The respondents strongly agreed that they are competent to investigate environmental issues and evaluate alternative solutions and to develop, select and/or implement curricular materials and strategies which will develop the knowledge and skills needed to identify and investigate issues. This means that they see themselves capable of developing investigative skills among the learners. This finding was paralleled to the results of the study of Buctot et. al. [16] which revealed that integrating topics like pollution, global warming, and other ecological problems and making the students investigate and analyze its effect is a good practice. Teachers can mold analytical-thinkers who can possibly become active participants in nation building and responsive to environmental challenges.

On the other hand, the least rated item was the ability to evaluate, clarify, and change own value positions in light of new information. It obtained a weighted mean value of 2.32, interpreted as slightly agree. This implies that the respondents recognize that they lack ability to train students to make value judgments objectively.

Aquino [17] noted that one of the effective strategies that enhance student achievement is generating and testing hypotheses to make careful decisions.

Furthermore, the computed composite mean of 2.93 reveals that pre-service teachers' perception on level of competency on investigation and evaluation is competent. This finding implies that the respondents received training and exposure on investigating environmental issues, evaluating alternative solutions and developing, selecting and/or implementing curricular materials and strategies to make the learners aware of environmental concerns. On the other hand, it may be worthy to note that outdoor activities may further help the future elementary teachers to develop competency on this matter. This initiative was reinforced by the research of Moseley et.al. [18] which revealed positive effect of participation in a three-day outdoor environmental education program on pre-service teachers' attitudes toward self-efficacy—which is a teacher's belief that he or she can teach environmental education (EE) effectively—and on outcome expectancy—which is a teacher's estimation of his or her influence on student learning.

Respondents' Perception on the Level of Competency on Environmental Action Skills

Table 4 presents the assessment of the respondents on level of competency on Environmental Education Content in terms of action skills.

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Table 4. Competency on Environmental Action Skills

Indicator	Mean	Interpretation
The effective E.E. teacher should be…		
1.competent to take positive environmental action for the purpose of achieving and/or maintaining a dynamic equilibrium between quality of life and the quality of environment	2.90	Slightly agree
2.able to develop, select, and/or implement curricular materials and strategies to develop similar competencies in receivers to take individual or group action when appropriate (i.e., persuasion, consumerism, political action, legal action, eco-management, or combinations of these action categories).	3.22	Agree
Composite Mean	**3.06**	**Competent**

The table shows that the obtained composite mean was 3.06. This means that the pre-service teachers perceived that they are competent on ECC in terms of environmental action skills. This result reveals that the respondents have knowledge and skills in teaching the pupils on how to be responsive earth-saver, who take participation and actions in protecting the environment. However, pre-service teachers will best appreciate developing this competency if they have positive attitudes towards this concern. It is worthy to note that initiatives and participation is rather subjective. Parallel to this analysis was Brown [19] notions that while more teacher education programs are requiring pre-service teachers to take environmental science courses; it is still unclear what effect these courses have on students' attitudes and future teaching practices.

Further, he argues that for students and teachers to truly become environmentally conscious they must take social action of their own beliefs involving the environment. An inquiry-oriented course may be practiced for his study reveals positive effect on developing environmentally educated future teachers.

Table 5 shows the level of content validity respectively of the developed training module.

According to Calmorin [20], there are various considerations to take account in developing a training module such as specific objectives, available sources, target learning experience, and evaluation. The selection of teaching aids should be made on the basis of the unique contribution each can make in the teaching-learning process. De Castro [21] stated that in the design of instructional materials progression in difficulty, relation of contents in all areas, and worthy exercises must be considered.

Table 5. Level of Content Validity

Indicator	WM	VI
The developed training module…		
1. has specific, attainable and time-bound objectives.	3.55	Strongly Agree
2. is suitable for the instructors and students because the content of each topic is comprehensively and appropriately planned.	3.45	Agree
3. provides enough application-based activities in the different levels of environmental education which are arranged accordingly.	3.51	Strongly Agree
4. meets the purpose of its construction to provide meaningful learning experience to the students.	3.55	Strongly Agree
5. provides proper evaluation activities in lined with the set objectives.	3.57	Strongly Agree
Composite Mean	**3.53**	**Highly Valid**

The developed Training Module for Environmental Education has eight parts such as: (a) Introduction, which includes discussion of the description of the training module as to its nature target users and also the brief topics included; (b) Scope and Objectives- introduces the topics of the module and its respective objectives.; (c) Basis and Overview- this focuses on the history and philosophy of environmental education. (d) Foundation on Ecological Foundations- it provides an explanation to man-environment interrelationships covering different aspects of natural and socio-cultural environments. This will strengthen students' knowledge of environment; (e) Environmental Degradation Situationer- discusses the problems of the environment and means and ways to their solutions; (f) Teaching Methodologies and activities- this comprises different approaches that be used in

teaching environmental concepts and Experiments and activities to facilitate the learning and teaching about the environment; (g) Evaluation in environmental education- this includes study guide sheets on determining local and current situations in different areas; (h) Bibliography- the reference materials used by the researcher in constructing the training module.

The level of validity as to content and face and acceptability, and functionality of the training module were evaluated by five expert evaluators in the field. Lardizabal [22] said that a learning material must be evaluated to ensure it is acceptable and suitable to the context of the students to achieve the desired output.

As seen in Table 5, the highest rated item was the assessment on the inclusion of evaluation activities suited to the target objectives. It obtained a mean of 3.57, verbally interpreted as strongly agree. This implies that the training module adheres to the assessment of learning principles. Further, the expert evaluators agreed that the content of each topic is comprehensively and appropriately planned. It was the least rated item, with a mean of 3.45. Lastly, the table reflects that the developed training module was highly valid as manifested by its composite mean of 3.53. The results of content validation of the training module supports Fraenkel and Wallen's [23] notion that the content must be consistent with the definition of the variable and sample subjects to be measured.

Table 6. Level of Face Validity

Indicator	WM	VI
The developed training module…		
1. is neat and clearly printed.	3.40	Agree
2. has proper lay-out for easy use (i.e. spacing, font size and text)	3.59	Strongly Agree
3. provides language that is gender fair and appropriate in terms of its technicality and vocabulary.	3.56	Strongly Agree
4. follows proper grammar/syntax.	3.58	Strongly Agree
5. has properly arranged contents and parts which provides clear understanding on the procedure to be done by the instructors.	3.55	Strongly Agree
Composite Mean	**3.54**	**Highly Valid**

Table 6 reflects the level of face validity of the training module. It can be gleaned from the table that the least rated item was the assessment on the neatness and clearness of the material. It obtained a mean of 3.40, interpreted as agree. Further, the highest weighted item was the assessment on the lay-out of the module. The evaluators strongly agreed that the module is easy to use. This denotes in general that the face validity of the training module for environmental education was high as revealed by the composite mean of 3.54. This was supported by the study of Guiner [24] which also revealed high level of face validity of his training module for Technology and Livelihood Education (TLE) teachers.

Table 7 shows the level of acceptability of the developed training module as assessed by the expert evaluators.

Table 7. Level of Acceptability

Indicator	Mean	Interpretation
The developed training module is acceptable because…		
1. it addresses the needed knowledge and skills for environmental education.	3.56	Strongly Agree
2. it clearly spells-out its objectives/goals in producing an environmentally competent elementary teacher.	3.67	Strongly Agree
3. it utilizes clear, familiar, and concrete language.	3.58	Strongly Agree
4. it includes activities that can be performed and within the range of students' capabilities.	3.59	Strongly Agree
5. it provides questions/problems and activities anchored in a positive motivating models.	3.45	Agree
Composite Mean	**3.57**	**Highly Acceptable**

Table 7 implies that the expert evaluators strongly agreed that the developed training module was highly acceptable. This was revealed by the composite mean of 3.57. It can be deduced from the data that the module is acceptable with its content and design. This very high acceptability result further implies that the appropriateness and validation of the module. De los Santos[25] research has a bearing on this result

because the output of her study was also found to be acceptable.

Table 8 shows the level of functionality of the developed training module as assessed by the expert evaluators.

Table 8. Level of Functionality

Indicator	WM	VI
The developed training module…		
1. enables the student teachers to think critically.	3.56	Strongly agree
2. provides challenging and interesting activities.	3.58	Strongly agree
3. includes activities that can develop environmental action and skills among students.	3.45	Agree
4. addresses students' various needs and talents.	3.56	Strongly agree
5. has activities that are presented in proper outline.	3.56	Strongly agree
Composite Mean	**3.54**	**Highly Functional**

It can be gleaned from the table that the composite mean of 3.54 implies that the developed training module was highly functional. This result means that the training module meets the suitability of activity for teaching environmental education. It indicates training module characteristics such as plain, capable of being put into use, appropriateness, sensible and suitable for students. It was paralleled to the results of the study of Guiner [24] which also reveals that his training module for Industrial Arts was highly functional.

CONCLUSION AND RECOMMENDATION

A positive environmental instruction doesn't just lie on the analysis of the learning needs of the students and state-of the-art facilities, but this also lies on the competency of the teacher in delivering such kind of instruction. In this regard, pre-service teachers should be appropriately knowledgeable and skilled on environmental concepts, methods/approaches in teaching environmental concepts, and appropriate material to instill the right understanding of and attitude towards environment among the students. It is in this premise that this study was conceptualized. This study determined the level of competency of pre-service elementary teachers along with ecological foundations, conceptual awareness, investigation and evaluation and environmental action skills. The assessments made by the respondents served as basis in developing a training module for the purpose of strengthening respondents' competency on teaching environmental education. After careful analyses and interpretations of data, it was found out that the respondents are least competent on ECC in terms of ecological foundations while competent on conceptual awareness, investigation and evaluation and environmental action skills. The findings imply that the pre-service teachers need more relevant trainings to further enhance their environmental competency particularly on ecological foundation. Analysis of the research findings indicates inadequate preparation for environmental education in pre-service teacher education, especially at the elementary program. Hence, these quantitative data may be utilized by public and private Teacher Education Institutions (TEIs) as framework for their design, plan, and development of environmental education provisions in teacher education programs.

In consonance with the above-cited results and implications to the intended community, a council of curriculum developers and administrators may be initiated to conduct curriculum review and development in different TEIs in the country. Adding environment-related courses in the curriculum may be considered to better instill ecological concepts among the students. Faculty members are also encouraged to reflect on their practices and methods/approaches in incorporating environmental concepts in teaching to further strengthen pre-service teachers' environmental competencies. Pre-service teachers will further develop strong environmental knowledge, awareness and capacity for positive environmental change when it contextualized or taught using real examples, problem solving, bringing nature inside the classroom, field-trip, find impromptu teachable moments and with active student participation. The developed training module based on the findings of this study may be utilized by science teachers to strengthen environmental education instruction. Further, the BEEd pre-service teachers, as respondents, may use the result of this investigation as basis for their personal reflection as this would encourage and motivate them to improve their present accomplishment. It is hoped that the findings will motivate them to become more environment-minded and critical thinkers through attending

seminars/trainings relevant to environmental concepts, volunteerism to be exposed to environmental issues, and conducting personal researches relevant to environmental issues and concerns.

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