A Learning Model of Environmental Education to Enhance Environmental Ethics Behavior for Undergraduate Students in a University

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Abstract: the purpose of this research was to develop a learning model of environmental education to enhance the environmental ethics behavior of undergraduate students in a university. A qualitative research design was employed 3 steps; firstly, the documentary review was used for investigating the theoretical definition of environmental ethics behavior. Then, an in-depth interview was used to keep a practical definition. Lastly, a focus group discussion was employed to confirm the component of a learning model. Data were collected by 20 experts for interviewing and 8 experts for focus group discussions, using a semi-structured interview, discussion recording form, and were analyzed together by content analysis and analytic induction later. The research findings revealed that 1) the environmental ethics behavior comprised of 4 characteristics. Those were: (1) Right conception as a basic understanding of the environmental issues or nature of reality (2) Right consumption was claimed to use the natural resources as long as needed and efficient use of resources (3) Right conservation was referred to the appropriate preservation, protection, and management of the environment and natural resources. (4) Right conduction was expanded the three previous characteristics for our sufficiency economy living and well-being. 2) A learning model of environmental education to enhance environmental ethics behavior of the undergraduate students in a university was a process model namely SWU-E. Those were (1) Starting (S), it is the openness of mind for receiving new situation and preparing for learning. (2) World viewing (W), as the evaluation of the value of the environment to create realistic opinions and a new perspective of their own. (3) Utilizing (U), applies a new perspective to create a balance of life with the environment. (4) Evaluating (E), assessing the value which is generated by their practice with the environment from a new perspective and keep improving. Interestingly, SWU-E model was proposed for cultivating the environmental ethics behavior of undergraduate students who are the next generation people to save our planet

Index Terms: Learning Model, Environmental Ethics,/ Environmental Education

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1. Introduction

There is a consensus within the research community regarding the problems of natural resources and the environment as a result of human beings used not the resources carefully and leads to environmental pollution, natural disasters, extinction of species, resources depletion, climate change, global warming, waste, and other problems which affect human life and well-being [1]. Population growth brings to more demand and supply of natural resources whereas consumerism drives excessive consumption together. Human beings are both the creator and the destroyer of natural resources and the environment at the same time. Therefore, scholars and professionals have sought solutions especially focused on human consumption behaviors [2].

Over several decades, various approaches are applied to solve them such as scientific, economic, sustainable development, and psychological approaches. Even if the different solution methods are applied continuously; the environmental problems persisted and escalated. In the late twenty century, UNESCO has mentioned Environmental Education (EE) which should be a new alternative to solving environmental problems as well because it was suggested for solving environmental problems by changing human behavior from human insight [3]. In contemporary, it continues to be recognized and discussed in the concept of Sustainable Development Goals: SDGs, as follows "*...Education as a driver of sustainable changes...*" [4]. According to EE, it focuses on raising environmental awareness and concerning first and then constructs environmental knowledge and understanding for participatory environmental problem-solving. However, EE does not concern with the issue of ethics which should affect environmental ethical behavior; that will contribute to the right solving and sustainable managing of the environmental problems [5]. The Environmental Ethics Behavior (EEB) is a key to environmental conservation and management because the right action in facing the challenges of the 21st century aspire the seamless integration of science and ethics [6]. EEB means moral norms that control the human behavior to the environment. In practically, there are 3 types of EEB: 1) Technocentrism is a concept that focuses on logic, technology and disregards the value of environment, 2) Anthropocentrism as a concept of subjectivity; humans are only one aspect of the greater ecosystem, one species among many. 3) Ecocentrism agrees that human beings are part of nature and living by interdependence. Academically, ecocentrism concept has been considered to apply the environmental problems

solving nowadays because it is consistent with the guidelines of UNESCO [7]. In summary, EEB still be essential behavior of people especially the new generational students who are ready to live with the changes in the modern era.

In psychologically, Kohlberg's theory of moral development was identified that young people aged between 18-20 years will develop morals and ethics with their judgment before sticking to it as a practice [8]. Most undergraduate students who are active and pursues their own should treat the environment based on their ethical behavior for saving our planet. Moreover, there were some research results revealed that young students have more environmental knowledge and collaboration in environmental conservation than adults as well as they can apply the new technology for effective learning and transferring their knowledge to other people [9]. Certainly, environmental ethics should be developed with youth especially undergraduate students for changing their behavior as a preliminary to create a seed for conserving the environment to be extended.

As mentioned above, EE is an educational process promoted by UNESCO in solving environmental problems because it focuses on human behavioral change. However, it also ignores the importance of ethics to be integrated into behavioral control. Absolutely, we need to incorporate ethics into the teaching and learning process of EE to enable students to change behavior in a positive environmental worldview. In the same way, we should consider and promote the learning of the undergraduate students in the first group due to corresponding to their age and competency. Therefore, researchers have realized the importance of EEB to cultivate it into undergraduate students and the development process of activities. According to a model, environmental awareness, knowledge, understanding, and environmental ethics will be absorbed in the students lead to EEB and the right participatory environmental problem-solving.

Researchers believe that people who practice EEB will affect to change their environmental behavior and bring to living in harmony with the environment and wellbeing. As the reason, researchers are therefore interested in studying "a learning model of environmental education to enhance environmental ethics behavior for undergraduate students in a university."

2. Research Objectives

The objective of this research article was to develop a learning model of environmental education to enhance the environmental ethics behavior of undergraduate students in a university

3. Research Methods

A. Research Design

A qualitative research design was employed [10] and research tools were semi-structured interview form and focus group discussion form. Data were collected from the in-depth interview which will provide deep information and relevant to the point [11] and focus group discussion which will provide the collective perspective and synthesis in the validation of ideas and concepts. Qualitative data from 20 key informants for an in-depth interview and 8 participants in focus group discussion was analyzed by using content analysis and analytic induction. The process of conduction consisted of 1) documentary study from secondary sources include textbook, research articles, and other related documents for investigating of characteristics of EEB, 2) define a theoretical definition of EEB, 3) design the power questions of semi-structured interview form by analyzing a theoretical definition, 4) in-depth interview 20 experts; the conservationist, professor in environmental education, professor in environmental management, and the monk who has experience in preservation, 5) define an operational definition of EEB by analyzed both theoretical definition and the information from in-depth interview 6) current situation analysis for the design of a learning model includes learner characteristics, prior knowledge, skills, and learning tasks from operational definition of EEB, 7) design a learning model of environmental education to enhance EEB for undergraduate students, 8) confirm a learning model by focus group discussion.

B. Research Process

The research process of this research has developed into 3 steps consisted of investigating theoretical definition, analyzing practical definition, and designing a learning model. Steps were shown in Fig. 1.
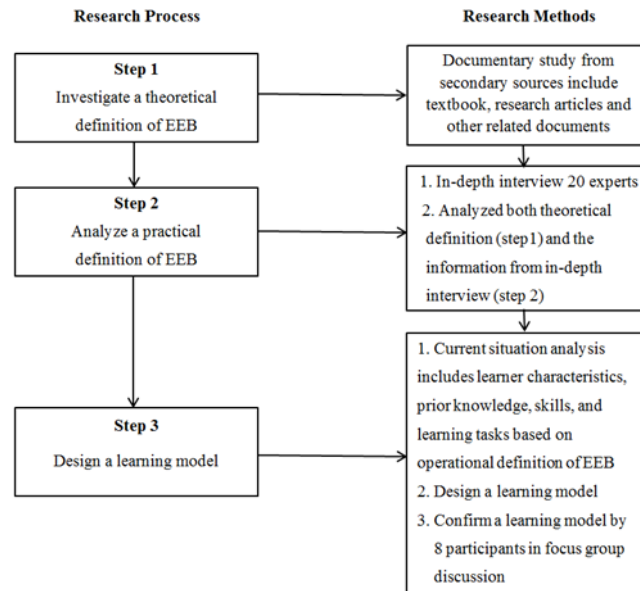
Fig.1 Research process for the development of a learning model of environmental education to enhance EEB for undergraduate students

4. Results

Results indicated that 1) EEB comprised of 4 behaviors. Those were: (1) *Right conception* as a basic understanding of the environmental issues or nature of reality for using and caring the environment, interrelationship analyzing, and environmental evaluating. It can be cultivated through moral critical thinking, system thinking, and self-reflection, (2) *Right consumption* was claimed to use the natural resources and environment as long as needed and efficient use of resources, and to waste management, based on right conception (3) *Right conservation* was referred to the appropriate preservation, protection, and management of the environment and natural resources with moderation ethics, (4) *Right conduction* was expanded the three previous behaviors for sufficiency economy living and well-being of oneself and society,

2) A learning model of environmental education to enhance environmental ethics behavior for the undergraduate students in a university was a process model namely *SWU-E.* as shown in Fig.2.
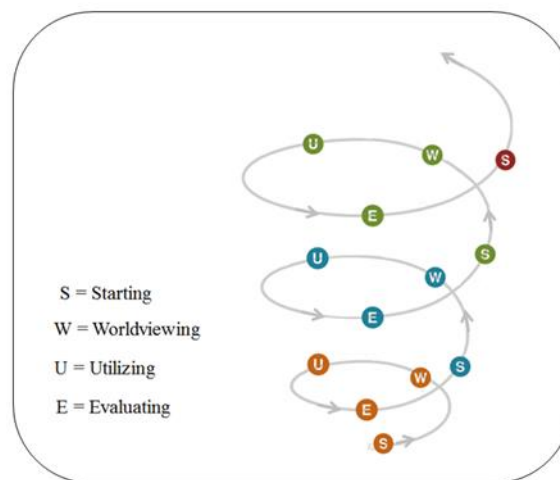

Fig.2 A spiral model of SWU-E to enhance EEB for undergraduate students

From Fig.2 can be explained to a spiral model of SWU-E to enhance EEB for undergraduate students that consisted of 4 steps. Those were (1) *Starting (S),* it is the openness of learners' mind for receiving new situation and preparing for learning, calmness and inspiration are motivated for their good prompting, (2) *Worldviewing (W),*

as the evaluation of the value of the environment to create realistic opinions and a new perspective of their own, this step is a basis to effort into next step, (3) *Utilizing (U),* applies a new perspective to create a balance of life with the environment based on right worldview. (4) *Evaluating (E),* assessing the value which is generated by their practice with the environmental concerning from a new perspective and keep improving. Consequently, this model is a process model (content-free) so it can be modified and integrated with the other subjects or curricula, especially; its process can be gradually learned moved as a spiral for growing up to wisdom.

5. Discussions

The findings of literature review in the conservation paradigm revealed that almost all approaches of environmental problem solving were developed from the conservation concept which was formulated for a long time. In the early period, specific disciplines were used and led to the other problems to follow, so UNESCO promoted Environmental Education which is a holistic and interdisciplinary approach that is the highlight. Environmental education can foster a way of creating awareness of sustainable environmental issues and enhancing knowledge and skills to work individually and collectively for the solution and prevention of environmental problems. Whereas, Aldo Leopold who is the father of conservationists stressed that the principles of conservation are appropriate consumption, attention to preserve and restore at the same time, and obtaining ethics as the baseline [12]. Therefore, environmental education and ethics were integrated by researchers to be a new method for environmental problem-solving. The objectives of environmental education will be expanded to cover EEB. Through exposure to EEB in the classroom; students become aware that human activities have an impact on the environment, and other species can be affected by humans. They develop a disposition for ethics and will consequently apply ethical thinking when faced with environmental dilemmas. They can continue to think of the environment in ethical ways long after they learn ethics in the classroom. Similarly, Eubios Ethics Institute shared the idea of environmental ethics should be considered an essential component of environmental education [13].

Moreover, the result indicated that EEB was consisted of 4 behaviors; 1) right conception is cognitive behavior called wisdom that controls human actions, 2) right consumption is moderate utilization of natural resources and environment, 3) right conservation is the intelligence environmental management, protection, and preservation for sustainability, and 4) right conduction refer to create a sufficiency economy along with conservation. This result meets the concept of ethical behavior in the psychological field that consists of 3 behaviors; cognitive behavior with knowledge and reasoning thinking, sensitive behavior with attitudes, and physical behavior with action. It is clear that behavior does not refer only to physical activity, but rather represents a complex intermingling of affective and cognitive processes that guide decisions in the short- and long term. To fully understand the mechanisms behind behaviors, to more effectively move people toward EEB, it is critical to explore the interplay among the cognitive and affective components, which are nearly inseparable [14]. In the same way, Buddhist ethics was mentioned in the middle way concept which consists of right view, right thought, right speech, right action, right livelihood, right effort, right mindfulness, and right concentration; some of these can be analyzed to seamless EEB such as right view and right though match right conception, right speech and right action match right consumption and right conservation, and right livelihood matches right conduction [15]. In the point of right conduction, this corresponds to King Rama IX, the great have presented his royal speech "...promoting the development of self-reliance needs graduality and it starts with the ability to earn a living first, then other demands..." [16]. Likewise, the results of the in-depth interview are stated that "…if the people are starving, the conservation will not conduct, but if the people are well-being, the conservation will happen spontaneously...". Consequently, the element of EEB has to keep the right conduction for expanding to earn a living.

As a result of a learning model synthesis known as SWU-E, there are some points to be discussed. In contemporary, the concept and approach of student-centered, outcome-based, interdisciplinary, self-knowledge construct, projected-based, problem-based, activity-based, and place-based are used in instructional design. Those lead to be self-constructed of cognitive, affective, and skill processes,[17] as same as SWU-E model is promoted for self- development of attitudes and values that motivate students to archive the environmental consciousness and EEB, then become involved in environmental problem-solving. The EEB is the main outcome of SWU-E model so it is necessary to follow up the constructivist learning theory, based on the idea that students actively construct their knowledge, and that reality is determined by their prior knowledge and experiences, according to learning approaches such as problem-based, and project-based are applied in SWU-E process too.

Insight SWU-E process, it starts with opening the mind up to new experience, and then use that to create the right environmental conception for moderate utilizing the natural resource and environment, lastly, evaluate the EEB for continuous improvement. In the classroom, SWU-E process will be repeated over and over again as spiral movement. This is consistent with Kolb's learning model based on experiential learning theory [18] suggested that this process is a learning circle or spiral where the student touches all the bases; experiencing, reflecting, thinking, and acting in a recursive process that is responsive to the learning situation and what is being learned. Concrete

experiences are the basis for observation and reflection. These reflections are assimilated and distilled into the abstract concept from which new implications for action can be drawn. These implications can be actively tested and serve as guides in creating new experiences. In summary, the comparison between SWU-E and Kolb's experiential learning model as follows; Starting (S) as experiencing, Worldviewing (W) as reflecting, Utilizing (U) as thinking, and Evaluating (E) as acting (active testing). Besides, SWU-E and Kolb's experiential learning model process were designed to resemble brain processes, that is, concrete experience come through the sensory cortex, reflection involves the integrative cortex at the back, creative new abstract concept occurs in the frontal integrative cortex, and active testing involves the motor brain [19]. In this way, SWU-E is the brain's natural greasy learning process so it is easy and effective to apply in the classroom.

The correspondence of the SWU-E model to the religious human development model can be explained; by adhering to the Buddhapochana (Buddha's Teaching) that:

" Buddhist monks, these 4 things are indeed for the prosperity of wisdom, those are, the dialogue of a sublime person, the Buddha' Teachings listening, systematic attention and analytical thinking (yonisomanasikāra), and Dharma practice " [20]

The Buddha's Teaching shown that the process of human development was consisted 3 steps as follows; 1) Perception is the beginning of the learning process that be obtained from the dialogue and listening to the truth (good and right thing), perception from external factors, including information, knowledge, and internal factors, namely the ability to perceive, 2) Thinking *(yonisomanasikāra)* is the application to analyze, organize, and further enhance the wisdom, and 3) Practices include Dhamma, which is considered a main part of the learning process. The three phases of perception, thinking and practices are cyclical. Because when practicing correctly that brings to think correctly and the right practice leads to creating the right worldview (wisdom); this process focuses on practice. As mentioned above, the learning process in a SWU-E model is consistent with the learning process in Buddhism; Starting (S) corresponded to Perception, Worldviewing (W) is matched in Thinking *(yonisomanasikāra),* and Utilizing (U) and Evaluating (E) is the same direction as Practices, Both models are the cyclical and spiral movement. In summary, SWU-E model is therefore reliable to be used in learning to effectively effective EEB.

6. Recommendations

A. Recommendations for Practices

1. An individual with a different style in construct knowledge and cultivate wisdom. Such as student with learning diverging style has broad interest, need to gather information, prefer to work-group whereas a student with assimilating style is more interested in ideas and abstract concept. For this reason, a teacher should carefully instructional design; activities, technologies, classrooms, motivations, and evaluating methods. Personal-based learning may be applied in SWU-E model for great beneficial learning outcomes.

2. Because the goal of SWU-E is ethics, learning and teaching strategies are key points for effective EEB. The ethical development theories and models always are considered to learning strategic planning before implementation, and the maintaining of EEB should not be ignored. Activities that are practicable and tangible results should be an effort to motivate their challenge learning more than academic knowledge.

3. Learning spaces are essential for learning constructed of student in the digital age who prefer to learn with modern technologies, a self-paced approach, and social group more than learning in the classroom. To construct EEB, should be practiced in the real world for perceiving the various environmental issues and design thinking in effective outcomes. In the classroom and university have to set the space for EEB learning such as environmental seminar, ethical conference, and public spaces for practice, those are essential.

B. Recommendations for Further Research

1. In the variable point, EEB is affected by various psychological variables such as self-efficacy, self- control, and ethical reasoning. Therefore, further research should be identified these variables to study for comparing the results with this research and expanding the body of knowledge in environmental ethics issues.

2. Methodologically, the research reliability depends on the appropriate research design; population and sampling group, research process, and research methods. In this research, the qualitative design is deployed only for deep studying corresponded with the desired point. However, the credibility of some points may be enhanced by quantitative methods, according to further research should be applied the structural equation model (SEM) method examine the theoretical factors and confirm a model.

3. In this paper, theories and concepts are related to environmental education concept, ethics, behavioral sciences, and constructivist learning theory; those are a guideline to instructional design of SWU-E model. For theoretical

comparison and confirmation we would like to suggest the other one such as transformative learning theory or connectivism learning theory to be deployed next studies.

7. Conclusion

The article showed that a practical SWU-E model focuses on transformative potential EEB for students. A "SWU-E" model is the content-free approach so that it can be integrated with the other subjects or curricula appropriately. The key of this article is the EEB change: right conception, right consumption, right conservation, and right conduction in the students and in their ability to influence others. Moreover, EEB should be considered an essential component of environmental education which is found in both formal and non-formal education and is critical to integrated ethics for implementing in the Sustainable Development Goals (SDGs)

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