

# The Implementation of Environmental Education in Higher Education through Management of 3r Pattern Waste

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## Abstract

**Background:** Learning environmental education is a starting point in growing a sense to change the mindset, attitudes and behavior of students in environmental care through waste management in the 3R pattern. The purpose of this paper is to describe the use of environmental learning methods carried out by the practice of 3R pattern waste management. The expected outcome of this research is the development of a environmental education learning model is more focused on changing the attitudes and behavior of students towards waste management.

**Materials and Methods:** The type of the data used in this paper consists of primary data and secondary data. Primary data were obtained through interviews with lecturers and students who had participated in a number of activities related to 3R pattern waste management at Syiah Kuala University. In addition, a number of observations and documentation about 3R pattern waste management were used as supporting data to supplement primary data. The primary data collected was related to the perceptions, experiences and evaluations of the actors towards the implementation of the 3R Waste Management activities. While secondary data was obtained through the review of a number of documents and reports of Students Activity Units, community service and courses related to environmental management and waste management. The secondary data collected was related to the experiences, processes and results of 3R waste management activities in the student environment. All primary and secondary data were compiled and grouped according to the aspects of environmental education development and then it was presented in a descriptive qualitative way.

**Results:** Environmental learning model is an environment-based learning that was developed so that students can gain more experience related to the surrounding environment. The environmental learning (EL) model described in this article is implemented through the management of 3R patterns. The initial ability of a student is an ability that is possessed by a student before following the learning model that will be given.

**Conclusion:** Tertiary education is an education which has several general goals that knowledge is created, used continuously and a place to gain knowledge, solving various problems, a place to criticize the works produced, or as a place for the formation and development of student character.

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## I. INTRODUCTION

The deterioration of environmental conditions has been in the international spotlight for the past few decades. Environmental issues such as the extinction of various types of biodiversity, deforestation, environmental pollution, ozone depletion and global climate change, have encouraged various parties to make efforts to improve. Education is a means to prepare the quality of human resources who will manage their environment. Law No. 20 of 2003 concerning the National Education System outlines that education is a conscious and planned effort to create a learning atmosphere so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, morals, and the skills needed by themselves, the community, nation and state.

Environmental education is an effort to change the behavior and attitudes carried out by various parties or elements of society that aim to increase community knowledge, skills and awareness about environmental values and environmental issues. Education is the most appropriate place in providing knowledge, skills, and attitudes about environmental care to humans.

Environmental education was developed as an effort to overcome various environmental problems by preparing human resources (HR) who have the ability and motivation to manage the environment properly. The

development of environmental education began to be encouraged since the United Nations conference on human environment in Stockholm, Sweden, which recommended the establishment of an international environmental education program (Brauss and Wood, 1994). An international workshop was held in 1975 in Belgrade, Yugoslavia to formulate the environmental education definition and objectives as outlined in the Belgrade Charter (Brauss and Wood, 1994; Ministry of the Environment, 2004).

Environmental education must be able to educate individuals who are responsive to the pace of technological development, understand the problems in the biosphere, and have skills that are productive and productive to protect and preserve nature. Afandi, R (2013) states that through learning about environmental education, it is expected it can form awareness and sensitivity to environmental problems.

Environmental education has been defined as effort' to promote learning, to foster understanding and recognition of the relationship between human beings and the environment and to allow the taking of action with responsibility'. This concept is basically different from traditional education subjects such as science and social studies, which merely aims at recognizing of natural and social aspects. Conservation education is experiential education for nature as the basis of environmental education. The system of conservation education is formulated for the people, from infancy to the elderly, to develop a sense of aesthetics for features as well as to gain knowledge of natural science and its techniques by intentional guidance through conservation activities, connecting with nature and nature experiences that form the basis of human thought and action.

3R pattern waste management (Reduce, Reuse and Recycle) is an alternative in order to reduce the mounting piles of garbage, the spread of disease, floods and so on which are threats in supporting the occurrence of disasters. Appropriate waste management through the 3R pattern is one form of Disaster Risk Reduction (DRR) currently being promoted by the Indonesian Ministry of Environment and Forestry.

The world of education, both Elementary, Secondary education and in higher education is responsible for growing habit patterns in waste management. Students as the spearhead of the succession of the younger generation should be given a strong foundation and provision in the framework of caring and maintaining the integrity of His creation, to internalize the values in the form of systematic changes in the form of embedded values, if the values are not carried out, it looks strange (Amanah, 2015: 30.)

## **II. MATERIALS AND METHODS**

The type of the data used in this paper consists of primary data and secondary data. Primary data were obtained through interviews with lecturers and students who had participated in a number of activities related to 3R pattern waste management at Syiah Kuala University. In addition, a number of observations and documentation about 3R pattern waste management were used as supporting data to supplement primary data. The primary data collected was related to the perceptions, experiences and evaluations of the actors towards the implementation of the 3R Waste Management activities. While secondary data was obtained through the review of a number of documents and reports of Students Activity Units, community service and courses related to environmental management and waste management. The secondary data collected was related to the experiences, processes and results of 3R waste management activities in the student environment. All primary and secondary data were compiled and grouped according to the aspects of environmental education development and then it was presented in a descriptive qualitative way.

## **III. RESULTS**

One of the paths of environmental education is through formal education, namely education that is held in schools. The main component in the effort to develop abilities, skills, knowledge, attitudes and improve student learning outcomes (students) is the supervisor. Lecturers have strategic roles in building students' behavior, both in terms of knowledge, attitudes, and actions of students' skills. Changes in knowledge, attitudes, and actions can be done mainly through examples, role models, real activities that can be tried, experienced, and endeavored by students that will benefit the lives of students themselves as well as the environment.

Lecturers have broad opportunities and significant roles in the development of caring behavior towards quality and environmental sustainability. This is considering, the quantity and quality of interaction between lecturers and students is becoming more intense. Some important requirements for lecturers to be able to carry out their duties properly in the process of environmental education are: (a). Mastering material that supports Environmental Education; (b). Able to make a Semester Program Plan as a form of integration of student-centered Environmental Education material (student centered learning); (c) Understand and be able to apply methods/ways of learning that can encourage changes in environmentally conscious and caring behavior in an interesting, effective, and appropriate manner in terms of material and target characteristics, and (d) Understand and be able to apply student-centered learning processes in the environmental education, so students can develop themselves and possess knowledge, attitudes and behaviors that are aware of and care for the environment.

The changes to better education can be done with a variety of efforts, including by creating a good and ideal place to obtain all the knowledge and various norms and ethics that can be the basis of humans towards the creation of welfare and towards the ideals of sustainable development. Generating good campus atmosphere as a place for learning and making students aware are great effort to do so that later they can take responsibility in protecting the environment and support the development of environment.

Learning environmental education is increasingly widespread in universities not to employ students as workers in the campus environment, but to build a spirit of caring the environment and it is hoped that the next generation will be a generation that is cultured in the environment and become a habit for all the academic community. For this purpose, campus and all stakeholders and environmentalists perform a holistic consistency to education consumers about the role of the environment on the sustainability of life on earth, threats to life and solutions to save life on earth, and explain the portion of campus attention in this case students on the surrounding environmental ecosystems.

To be able to solve environmental problems, in principle there are three main steps that can be taken, namely: First, aware of the problem. Actually everyone already knows that there are environmental problems around them, local, regional, national and even international, but all are confused what should be done. Second, is the analysis of problems to identify the root causes (root causes) of the emergence of the problem. The root causes of all environmental problems are: population explosion (overpopulation), excessive consumption (overconsumption), inefficiencies, and the principle of linearity, dependence on fuel oil, and the mentality to maintain habits. Third, develop strategies to correct existing problems and prevent them from happening again in the future.

In an effort to improve the quality of student learning processes and outcomes, learning experts suggest the use of constructivist learning paradigms for learning activities in theory and practice. Learning is always prioritized for students. Learning activities are designed in such a way as to involve more students, encourage students to be more creative and learn independently through innovative models, approaches, strategies and learning methods.

Based on the learning conditions mentioned above, the learning model that is expected to improve the knowledge and attitudes of students in environmental education courses is to use an environmental learning model that is called environment-based learning model.

Environmental learning is the learning that utilizes the natural environment as a source of learning. The surrounding environment is a means for students, where students can move, create, innovate, including develop thoughts so as to form new attitudes in their activities. Thus the environment as a place for exploring, experimenting and expressing themselves to get new concepts and information as a manifestation of learning outcomes (Kadir, 2016)

Environmental learning model is an environment-based learning that was developed so that students can gain more experience related to the surrounding environment. Khoiriyah, L.F., (2015) states that the environmental learning model is a learning model that emphasizes student experience in relation to the natural environment, so students can easily understand the contents of the material presented. It means that the learning model of environmental learning aims to make students care about the environment.

The environmental learning (EL) model described in this article is implemented through the management of 3R patterns. Learning materials presented to students are prepared by involving the surrounding environment. This means that learning can be done not only in the classroom, but also outside the classroom with the objective that students are more comfortable and active in the learning process. Every student has different learning abilities.

The initial ability of a student is an ability that is possessed by a student before following the learning model that will be given. This initial ability (entry behavior) illustrates the readiness of students to receive courses that will be delivered by the lecturer.

The initial ability of students can affect a learning process in the classroom, for example the level of intelligence, creativity, motivation to learn, stages of development, language skills, attitudes towards assignments, habits in learning, speed of learning and physical conditions.

#### **IV. DISCUSSION**

So that the initial abilities possessed by students become the basis for further developing their knowledge, so it needs to be considered in the learning process because it affects the ability of students to follow the next learning process. This article will describe the outdoor learning methods that are applied in the learning environment.

##### **1. Student Cognition**

The University of Syiah Kuala students' cognitive development activities on waste are carried out through a small portion of the teaching and learning process material in class activities during the environmental

education course. The summary of interviews with environmental education caregivers of the method used through lecture and discussion activities that discuss issues in ecology, including regarding waste. Knowledge aspects of waste include the limits of waste, the type and character of rubbish, the danger of rubbish, the benefits of rubbish and ways of handling and managing waste. Besides through the lecture method delivered by the lecturer, the students were given the opportunity to discuss the topic of waste in groups and then present the results of their respective group discussions. In addition, there are a number of assignments in the form of data collection on environmental learning in schools and homework assignments so that understanding of waste material is increasing. The material presented related to knowledge about waste includes the definition of waste, the type and character of waste, the danger of waste, the correct way of processing waste and the benefits of waste, the role and regulation of waste policy, the role of institutions in handling waste.

In addition to lecture and discussion methods in the classroom and assignments to students, increasing knowledge about waste is also carried out through group discussion activities when practicing skills and mentoring student behavior habituation. The use of this method was facilitated by a number of sources from experienced practitioners such as NGO activists, agricultural extension workers and other environmental awareness volunteers. The development of knowledge in this way is carried out in conjunction with improving the skills and behavior of students in waste processing. Students' reflections in group discussion activities after experiencing and practicing waste management directly are expected to increase their knowledge of waste.

## **2. Sharpen Student Skills**

The skills development that is conducted is focused on efforts to describe ways to handle waste properly and correctly. This activity is carried out by training students to make a number of handicrafts from inorganic waste. Some of the skills of inorganic waste that have been used include making plastic bags and mineral water glasses, making red bricks from paper, making various creations from inorganic waste materials. The skills provided to students in organic waste management include fertilizer manufacturing.

In developing students' skills in waste management, this is one of the right ways to manage waste in the 3R pattern, specifically recycle and reuse. Normally, the waste that has not been used has only been disposed of.

This activity was carried out during the graduation moment, students were involved to collect post-graduation waste and sort organic and inorganic waste. The meaning behind this activity is to provide understanding to students in treating waste properly.

## **3. Student attitude**

The development of students' attitudes and concerns towards 3R pattern waste management is conducted by involving students in the collection and sorting of waste both produced by students themselves in the campus environment and domestic waste produced by several community groups. The activity of developing an attitude of caring for the environment through the activities of collecting and sorting waste has been carried out, namely the collection and sorting of garbage at graduation in University of Syiah Kuala campus site.

Students are in groups to carry out the activities; sorting by type of waste namely plastic waste, paper waste, glass waste and several other types. Sorting is also done according to the color and type of material. For example, clear plastic, thick plastic and plastic mica are sorted according to their color and type. Likewise for paper also sorted according to color and type of basic material. In addition to collection, sorting, students are also taught to pack and record account data for garbage bank customers.

This real activity is expected to develop the attitude that properly processed waste will have high economic value and increase the income. Students are also equipped with internalization of environmental care through the habit of reducing waste, recycling and reusing the product that has become garbage. This will foster attitudes and behavior in handling waste properly, in addition to increasing aesthetic value and economic value, it also has fostered a culture of attitudes and behaviors that care about the environment.

## **V. CONCLUSION**

Environmental education learning is learning that is carried out in an integrated manner which is not only effectively done in the classroom using learning methods that emphasize more on theories and concepts but are also carried out practically in the field such as waste management with a 3R pattern. This is based on the problem of waste as an environmental problem that currently requires serious attention from every level of society. Learning through field practice, students are able to improve their skills in waste management appropriately using reduce, recycle and reuse patterns.

So it can be concluded that tertiary education is an education at the tertiary level which has several general goals / principles where knowledge is created, used continuously and a place to gain knowledge, solving various problems, a place to criticize the works produced, or as a place for the formation and development of student character in order to create students with high reasoning power, sharp and broad analysis especially in a

developed environment based learning so that students gain more experience related to the surrounding environment.

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