Students’ view of environmental awareness and energy conservation activities in campus

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Abstract. This study was conducted to describe students’ opinion of energy conservation and environmental issues during campus activities. It was a descriptive quantitative research using survey method. The subjects were 26 students of the first, second, and third-year students of Natural Science Department of Unesa. These students are pre-service teachers for senior high school level. The result shows that 43.75% students throw trash in different bins based on the material, 25% students take trash that is not thrown properly in campus area, and only 6.25% students clean their classroom after the class is over. This showed that their awareness of environmental condition is still low. Nevertheless, some students participated in weekly eco-campus activities. However, most of them join it involuntarily. The results also showed that they conserve the energy by turning-on lamp and air conditioner when it is needed only. It means that they know that they have to conserve although only some of students who doing that activities. In conclusion, some students are already aware about their environment and how to conserve the energy. So, they need more activities to enhance their awareness of environmental issues during campus activities, both in academic activities and non-academic activities.

1. Introduction

In recent years, environmental issues have become an important concern in the world. These environmental problems are global warming, garbage, and energy needs that encourage the exploitation of natural resources. These problems are caused by human activities [1]. A report published by the Intergovernmental Panel on Climate Change (IPCC) showed there was a significant increase of carbon emissions from 1970-2010 [2]. This indicates that human activities pollute the environment.

According to the Law of the Republic of Indonesia Number 18 of 2008 on waste management, garbage is the rest of the daily activities of humans or natural processes in the form of solid. Sources of waste can be vary, including from households, markets, shops, offices, public buildings, industries and roads. A waste producer that can not be ignored is an active community and a developing society. The community conducts various activities to meet the needs of its life by producing food, drink and other goods from natural resources.

Various efforts in many fields of science have been conducted to address these environmental issues. Education is a part of those fields too. It is important to give people knowledge about the environment because it can enhance their awareness of environmental issues. Some research showed
that environmental education provides positive effects for students to be more concerned with their environment [3,4,5,6].

Facing the era of globalization, many people's lives are influenced by the development of science and technology [7]. Looking at the phenomenon of this era of industrial revolution 4.0, it is predicted that this era will disrupt the variety of human activities, including science and technology (science and technology) [8].

Thus, preparing students for work, being a good citizen and able to face life in the 21st century is a struggle [9]. The willingness to do some research is very important for contemporary science education [10]. Therefore, [11] affirms that Investigation is the primary goal of science education reform worldwide. According to this explanation, [12] said an appeal on the importance of future science education research. Research skills potentially involve a wide range of abilities that scientists use to investigate the natural world [13].

Support and the role of higher education are expected to improve the competitiveness of the Indonesian nation in the midst of global competition the rapid development of information technology [14]. Research activities have been studied extensively to improve the quality of learning, especially in higher education [15].

The modern future live frequently called as 21st century live is, amongst else marked by the emergence of more and more complex problems [16]. In environmental health sciences, practical applications of lessons aimed at understanding human environmental impact are included in courses [17].

Universitas Negeri Surabaya (Unesa) as one of the Education institutions that provide teachers in primary schools that have an important role in environmental education. Unesa graduate students are expected to have good characters as a teacher. One of those characters is awareness, including environmental awareness.

On the other hand, the effort to realize this environmental awareness is not an easy thing to do. Character building is a task that must be done on an ongoing basis [18]. Thus, it needs to make some plans to help prospective teachers enhance this character. These plans are not only for academic activities, but also non-academic activities. This is because non-academic activities are proven to increase environmental awareness among students in the school environment [19].

Waste management requires a certain amount of energy, depending on how hard of the problem. In addition to the responsibility of the janitor, the campus residents must also participate in handling the waste problem. Participation is a spontaneous involvement with responsibility and awareness for the interest of the group in achieving the common interest that involves the local community actively in decision making of its implementation. Students are one of the campus's permanent users who have a lot of activity even on holiday in the campus environment. It makes the students as one of the producers of waste in the campus environment. So, students are responsible to participate in maintaining environment and waste management in the campus environment.

Many studies discussed about the effort to solve environmental problems in Unesa. However, research that discusses environmental education in Mathematics and Natural Science Faculty, especially the science majors, still rare. Education for teachers is important because teachers with environmental awareness will pass that character on to their students at school. As a first step, we conduct research to describe the views of prospective science teachers on environmental awareness. In addition, we also search information about their knowledge of energy conservation. This research is a preliminary research that needs to be done before the preparation of activities that can be done in the campus to improve the awareness of student environment.

The healthy and clean campus environment is every student's dream. Thus, it is necessary to have synergy between campus leaders and students in order to lead the success of eco-campus program. Students as an intellectual must be able to be an example and role model in supporting Indonesia Sehat Program (Healthy Indonesia Program). The application of ecocampus has not been maximized due to lack of awareness and awareness of healthy environment so that the student behavior is still passive towards healthy environment movement.
2. Method
This research is a descriptive quantitative research using survey method in order to study the environmental awareness and energy conservation activities of students. The subjects are 26 students of first-, second-, and third-year students of Natural Science Department of Unesa. These students are selected randomly. In this study, the questionnaire contains some questions about environmental knowledge, i.e. garbage issues and conservation knowledge. Then, the data will be describe students’ view about environmental issues.

3. Results and discussion
After giving questionnaires to selected students, there are some results. These results are categorized into two groups. The first group is their opinion about garbage issues and the second group is about energy conservation.

The first question of the questionnaire is talk about throwing the garbage into the right categorizes of bin. There are three categorized trash bin in Natural Science Department, i.e. Plastic group, paper and tissue group, and food scraps group. The results showed that all students throw their trash to the bin. However, less than half of students that always throw their trash into trash bin based on categorize. This result means that they already know about three categorizes of trash bin in Natural Science Department, but they are not used to throw trash in the right bin.

The second question of the questionnaire asks whether they clean the class after class session or not. There’s only a few of students who clean the class after the class session. Most of them are rarely clean the class, even there are some students who are never clean the class. They do not clean the class because they think it is a janitor task. In addition, there is no rule says that students must clean the class after the class session is over.

The third question talk about whether they will take the scattered trash if they found it. The result is not different from the second question. In this part, only a quarter of students collect the scattered trash. Most of them rarely collect the scattered trash and even some of them never do this.

The fourth question talk about their participation in Eco-Campus Activities in Mathematics and Natural Science Department of Unesa. Recently, this Eco-Campus Activities is a must for first-year student. There is also a formal group for Eco-Campus Activities. Students can join the group by registering their self to the club. However, they can join the activities without joining the club.

The results for this part showed that half of them always join the activities. They join because they are the first-year students. Some of them rarely join the activities. More than 30% students never join the activities. All of the students that never joined the activities are the third-year students. The results of garbage issues questionnaire showed in figure 1.

Those four questions give some information that just some of students showed awareness of environmental problems. It does not mean that they do not know about environmental issues. It is just not their habit to do something related to environment conservation. It is in line with [20] that said environmental issues are one of the crucial and actual problems these days and need serious attention, including from education view; this issue also have become a global issues that must be solved by all people [21].
Figure 1. The results of garbage issues questionnaire.

1. Throwing garbage based on their categorize
2. Clean the class after class session
3. Take scattered trash into trash bin
4. Join Eco-Campus Activities

Some conservation biologists aware that this era are troubling times [22]. Although environment provides human with natural resources to sustain their life, this nature which is created by God consist of human and environment in balance and harmony [23]. Thus, human needs to protect the nature, for example with some legal policies. Some cooperation between legal scholars and policy scientists is fundamental [24] to make environmental policies.

On the other hand, economy has growth rapidly to increase national income and consuming capacity. The increased of living conditions make people tend to purchase materials and necessities with package and discharge it after use [25]. This condition makes environmental issues more challenging. People need to be scientifically and environmentally literate. Environmental education program are immersed in students’ learning [26].

The second part of the questionnaire talks about energy conservation. In this study, the energy conservation is to conserve energy by switch on the air conditioner (AC) and lamp only when it is needed. We choose this topic because lamp and AC is always used in campus.

It is important for student to use energy effective and efficiently. The energy management of school can reduce the energy cost, which is benefit for school itself, and will reduce greenhouse gas emissions and carbon emission [27].

The first question of second part of the questionnaire talks about switch on the lamp when it is needed and the second question talks about the AC. For the first question, the results for both question showed that more than half students switch on of the lamp and AC only whey it is needed (figure 2). There is no students that is not switch on the lamp when they are not need it. However, some of students still switch on the AC more than what they need. These results showed that they already try to
conserve the energy. However, they do not know much about the important about energy conservation for life. They are doing these because the lecturers always say so. So, it became their habit in campus.

Figure 2. The results of energy conservation issues questionnaire.

The results showed students’ awareness toward environment in campus area is still average, even in some point it is still low. However, it is possible to enhance their awareness during activities in campus. Some research showed that including environmental education can enhance students awareness toward education [3,4,5,6].

It is known that the need of renewable and non-fossil fuel is recognised by nations throughout the world. So, it is needed to be understood both in school and in everyday life about alternative energy. Energy conservation issues not only talks about how to conserve the energy, but also give students some knowledge about alternative energy. This education program can be done by immersed the program within students’ activities.

4. Conclusion
In conclusion, students’ environmental awareness is still average. It is also known that more than half of students conserve the energy by switch on the AC and lamp when it is needed only. Thus, most of students’ already have a good attitude toward their environment. However, their awareness needs to be improved before they graduate from the university. Some suggestions to enhance their attitude are by integrating environmental education in the class activities and doing non-academic activities that related to environmental conservation.

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