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The Impact of Environmental Science Courses on Students' Concern about Environmental Sustainability

[1]Altelah Anisa Valmay, Disya Berliani Salsabila, Sabrina Salma, and Gigih Prihantono*

Abstract*. Environment is an aspect of life that has to be preserved. Nowadays, environmental management tends to be economy-oriented, where humans often carry out exploratory actions to fulfil their interests. Improper environmental management can cause long-term damage which might put all aspects of humans' life at risk. Humans are the main element of the environment who can greatly influence the continuity of environmental quality. The young generation, especially students, plays an important role in environmental sustainability. Students who are studying at the university are those who will bear great responsibility as a successor to later civilization. Students should be aware of their obligations, rights, and authority over the environment in order to be able to exploit environment's potential without destroying it, for the sake of humanity's survival.*

Keywords*: Environment, Education, Sustainability*

I. Introduction

Throughout Today's environmental problems are mostly caused by human activities. Humans and the environment are an inseparable entity. Humans can influence environmental conditions and vice versa. Humans' attitudes and lack of concerns on the importance of sustainable life triggers an unhealthy lifestyle for the environment. Management efforts done by the government are very diverse, but are not in correspondence by public's awareness and concern about the importance of environmental quality. Environmental quality keeps decreasing in time, which causes the earth to become increasingly uncomfortable to live in

Environmental problems caused by human behavior will increase the environmental damage, so building a character and caring attitude toward environment needs to be emphasized. For example, the lack of knowledge about environment can impact someone's conduct in sustaining the environment, which means it has negative impact on the environment. The inappropriate waste disposal results in pollution and this result is caused by the lack of knowledge in the dangerous impact of waste [1].

According to Undang-Undang Republik Indonesia No 23 Year 1997 about the living environment's management, everyone is obligated to maintain the environment's preservation functions while also prevent and cope with pollution and environmental damage. All elements of society, including government, non-governmental organizations, community organizations, and youth groups influencing the level of environmental sustainability, especially in this case it is the younger generation. Generation is very important in supporting environmental sustainability [2]. The young generation as agents of change has the potential to sustain and preserve the environment in a sustainable manner. The younger generation has the

[1]*Universitas Airlangga, Jl. Airlangga No. 4-6, Surabaya, 60286, Indonesia*
Email: gigih.pri@feb.unair.ac.id

mental attitude to create a change for the better, having skills and able to adapt in the community's social life to improve a better environmental development.

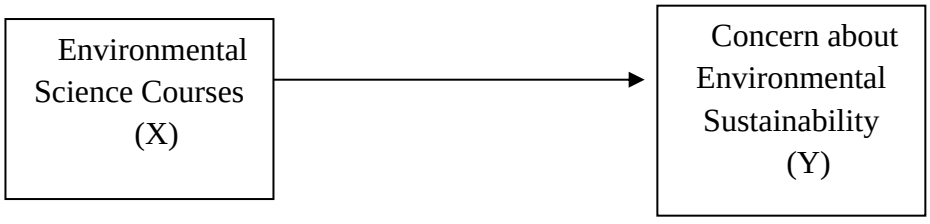
A decent welfare is determined by each individual's concern for the environmental condition and quality. Every individual must have an awareness about environmental conditions so that a suitable environment can be created. The increase of environmental awareness can be obtained through education. The goal of education is to create all elements of society with ethical and environmental awareness. Building attitudes and character about environmental concern can be done through education. Environmental concern is an effort to preserve, prevent and improve the natural environment. Implementation of building an environmental caring attitude can be included in the course. Courses on the environment can help us in understanding the environment with the aim of increasing the attitude of being responsible for environmental sustainability. based on this background, the problem can be formulated as (1) is there a connection between environmental science courses with students' awareness about environmental sustainability [3].

II. Research methodology

Kani The purpose of this study is to reveal the correlation between knowledge on environment with an students' concern towards environmental sustainability. The research method used is a survey method with data collected from a sample of a population to represent the entire population. The purpose of this survey method is to provide an overview of the general matter. Consistent with the objectives that need to be achieved in this study, which is identifying and analyzing the relationship of several predetermined variables, the type of research used is quantitative descriptive research. Quantitative descriptive research aims to describe, explain, or summarize various conditions, situations, phenomena according to events just like how research is made to test on hypotheses.

In this case, the object of research is active students from various departments and universities in Surabaya. The object of research includes examining the students' take on environmental science subjects on their concerns regarding environmental sustainability. Survey research is carried out directly or indirectly, using primary data. Using students as observation object, this study aims to find out the impact's magnitude of environmental science courses on concerns about environmental sustainability.

The following research model is related to the occurring phenomenon among the students:



Picture 1. Research Model

When described with a mathematical system, the relationship of these variables is as follows:

Wherein:

Y = Concern about Environmental Sustainability

X = Environmental Science Courses

F(x) = Function

Based on the above model it can be interpreted that the concern for environmental sustainability is influenced by environmental science courses. The independent variable of the function above is X or the environmental science courses and the dependent variable is Y or the students' concern about environmental sustainability [4].

Operational variables aim to correlate the two related variables. Related variables are variables that can cause other problems to occur and / or variables which situations and conditions depend on other variables. To measure the independent and bound variables, questionnaires were distributed to a number of students. Questionnaires are arranged with indicators that guide the results about students' concern. Both variables are described in two dimensions of indicators as written in table 1.

Table 1. Operationalization Independent Variable (X) Environmental Science Courses

Variable	Variable Concept	Dimension	Indicator	Scale
Environmental science courses (x)	Environmental science course Is a course that is received by students during the lecture period from the beginning of the semester and the end of the semester, covering courses that discuss causes and conditions that occur in the environment, environmental pollutants, and discussion of changes that occur in the environment.	1. General examination guidelines	a) The presence or absence of the course	Ordinal
			b) Respondence's year of study	Ordinal
			c) Major or study program taken by respondence	Ordinal
		2. Implementation guidelines	a) Preparing the best according to the survey's goal	Ordinal
			b) Data matching and observation	Ordinal
			c) Determining opinion and conclusion based on valid data	Ordinal

		3. Result report guidelines	a) Observation reports about the students' concern for environmental sustainability	Ordinal

Table 2. Operationalization Independent Variable (Y) Concern about Environmental Sustainability

Variable	Variable Concept	Dimension	Indicator	Scale
Students' concern about environmental sustainability	Students' concern about environmental sustainability is students' attitude, concern, and understanding about the importance of environmental sustainability compared to students who do not receive environmental science courses.	1. Care about the importance of environmental sustainability	a) Understanding the importance of environmental sustainability to human	Ordinal
			b) Doing actions to sustain the environment	Ordinal
		2. Care about environmental pollution.	a) Understanding the impact of pollution on environment	Ordinal
			b) Doing actions to prevent or contain environmental pollution	Ordinal

III. Results and Discussion

From the survey conducted, there were 54 respondents who acted as samples in this study. Respondents have answered questions based on environmental science courses and their concern for environmental sustainability.

Subject Variables in Environmental Sciences (X)

Based on whether or not the respondent has received an environmental science course, the data obtained is shown in the following table.

Table 1. The Level of Students' Presence Environmental Science Course

X	The Presence or Absence of Environmental Science Course		Total
	Absence	Presence	
Quantity	14	40	54
Percentage	26%	74%	100%

Based on the table above, it can be seen that of the 54 respondents enrolled, 40 of them have received courses related to environmental science, while the remaining 14 have never received it. The registered respondents consisted of 2 active students in the class of 2015, 2016 as many as 1 person, the 2017 class of 35 people and the 2018 class of 16 people. Respondents are consists of 25 students of Environmental Engineering Department, 3 students of Public Health Department, 2 students of Management Department, 2 students of Elementary School Teacher Education (PGSD) Department, 2 students of Regional and City Planning Department, 2 students of Nursing Department, 1 student of KSDP Department, 1 student of Information Technology Department, 1 student of Tax Department, 1 student of Commercial Administration Department, 1 student of Science Education Department, 1 student of Dentistry Department, 1 student of Business Administration Department, 1 student of Pharmacist Education Department, 1 student of Biology Department, 1 student of Agro eco technology Department, 1 student of Communication Science Department, 1 student of Chemistry Department, 1 student of Engineering Industry Department, 1 student of Architecture Department, 1 student of Ship Electricity Engineering Department, 1 student of Mathematics Department, 1 student of Statistics Department, and 1 student of Information System Department.

Variable Students' Concern about Environmental Sustainability (Y)

To determine the level of students' concern about environment, the Students' Concern about Environmental Sustainability (Y) variable is used, which consists of two dimensions, namely Student Concern Level on Environment (table 2) and Have or Haven't the Students Conduct Measures to Prevent or Overcome Environmental Pollution (table 3).

Table 2. The Level of Students' Concern about Environment

Y	The Importance of Sustainability				Total
	1 (not important)	2 (slightly important)	3 (important)	4 (very important)	
Quantity	0	0	0	54	54
Percentage	0%	0%	0%	100%	100%

Based on table 2 above, all respondents (total 54 people) agreed that environmental preservation is very important. However, this thought is not fully implemented in everyday life. This conclusion was obtained from data obtained from the survey. The data can be seen in table 3.

Tabel 3. Have or Haven't the Students Conduct Measures to Prevent or Overcome Environmental Pollution

Y	Have or Haven't the Students Conduct Measures to Prevent or Overcome Environmental Pollution		Total
	Have not	Have been	
Quantity	1	53	54
Percentage	2%	98%	100%

The data in table 3 shows that of 54 respondents, 53 of them already carried out activities to prevent or contain environmental pollution. The activities to prevent the environment from pollution are being carried out by respondents in various ways, like reducing the use of plastic waste, disposing of garbage in their proper places, recycling waste, doing community work, mangroves planting, conducting environmental related information, using bicycles to school, following environmental seminars, and others.

One in 54 registered respondents has never carried out activities to prevent or contain environmental pollution. Through the survey, the respondent wrote that, although he had never carried out activities to prevent or contain environmental pollution, at the University or Institution where he is studying, there are a research program about the processing of plastic waste from instant noodle packaging for oil.

Based on all data surveys obtained, only certain study programs have courses related to environmental science. Although there are still many students who do not get courses related to environmental science, it can be said that most Indonesian students care about environmental sustainability. This is reinforced by data that 98% of the samples have been carrying out activities to prevent and contain environmental pollution. The form of activities is carried out by students is a small thing that has an impact on environmental sustainability

IV. Conclusion

The level of students' concern about environment is observed with the Students' Concern about Environmental Sustainability variable. Based on all the data obtained, students receive only certain study programs courses related to environmental science. Although there are still many students who do not get courses related to environmental science, it can be said that most Indonesian students care about environmental sustainability. This is reinforced by data that 98% of the samples have been carrying out activities to prevent and contain environmental pollution. The form of activities is carried out by students is a small thing that has an impact on environmental sustainability.

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