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by Asih Kuswardinah

The Influence of Students' Understanding in Conservation Characteristics and Scientific Attitude towards Environmental Care in Universitas Negeri Semarang

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Abstract-The long-term goal of this research is to allow students ready to become the next generation who are healthy, superior, and competitive. Specific objectives of the research are: (1) to describe the level of understanding of the students' conservation characteristic values, (2) to describe the level of students' scientific attitude, (3) to describe the level of students' environmental care, (4) to analyze the influence of understanding the conservation characteristics value and scientific attitude toward environmental care for students of Faculty of Engineering of Universitas Negeri Semarang (UNNES). This research is descriptive and correlational research. The research was conducted at the Engineering Faculty of UNNES. The population was students who have taken Conservation Education course in 2016-2017. The data collection method used documentation and questionnaires, and data analysis used descriptive percentage and multiple regression. The results showed that: the level of understanding of conservation character value of UNNES students on average was more than good; i.e., very good is 30.7%; more than good is 44.3%; good is 25%. The average level of students' scientific attitudes is categorized as good; i.e., good 72.73%; fair 27.27%. The level of student's environmental care is good, i.e., very good is 11.5%, good is 79.5% fair is 9%. The understanding of conservation character value and scientific attitude of UNNES students together have a significant effect of 15.1% on environmental care. Suggestions for all LPTK, in particular,s Faculty of Engineering of UNNES is to always improve understanding and inculcate related scientific attitudes through conservation as an effort to increase students' awareness of the environment.

Keywords—conservation characteristics; scientific attitude; environmental care

I. INTRODUCTION

Along with the vision of Universitas Negeri Semarang (UNNES) to become an international conservation university, building character developed by UNNES is implemented through conservation-based character education, which then packed in the name of general course (MKU). The name of conservation becomes attached to UNNES higher education. (Pengembangan Kurikulum UNNES, 2014-2017) Conservation education as a choice of general course name

which characterizes UNNES as a conservation university, must be pursued by all UNNES students. Conservation course aims to build and develop 11 character values, namely: religious, honest, intelligent, fair, responsible, caring, tolerant, democratic, love the motherland, tough, polite. The eleven values of the characters are expected to be inherent in UNNES students, with the intention that students are ready to become the next generation who are healthy, superior, and competitive (Puji Hardati ,2015)

Regarding the vision of UNNES, one of them is to create students into healthy, superior and competitive next generation. Thus, with an understanding of 11 conservation character values, it is expected that all UNNES students have a scientific attitude and high awareness to the environment (Handoyo & Tijan. 2011). According to Abdul Aziz, 2015, scientific attitude is an attitude that accepts the opinions of others well and correctly, who are not familiar with despair, and with perseverance and also open minded; a scientific attitude is an attitude that must be attached to a student when faced with scientific issues, with characteristics such as: curiosity, accuracy, honesty, perseverance, objective, open to accept true and critical opinions. While regarding the concern for the environment, Nenggala, 2007 argues that indicators of someone who cares about the environment are: always take care of the surrounding environment; not taking, cutting or removing the plants along the way; no doodling, not incised writing on the trees, stones, roads or walls; always throw the garbage in its place; not burning garbage around houses; carry out environmental cleansing activities; hoarding used goods; cleaning up the garbage that clogs the drains.

Based on the results of End of Semester Test (Ujian Akhir Semester/UAS) of conservation education course for classes that I taught in the academic year of 2015/2016 and of 2016/2017, the average grade is more than good (A_B); students' scientific attitude also falls into well category. The problem is, related to UAS results, will it have a significant effect on environmental awareness for students? Referring to the purpose of Conservation Education course and also one of UNNES's strategic plan, it is to change the behavior and

attitude of the academic community or community element aiming to increase the knowledge, skill and awareness of students and society about environmental values and issues of environmental issues which ultimately can move campus community and society in general to take an active role in the effort of preservation and environmental safety for the benefit of present and future generations. This research has a close relationship with Renstra Universitas Negeri Semarang, where one of them is "improvement of nation character building". Related to the above description, the issues developed in this research are (1) How is the level of understanding of the conservation character value of Engineering Faculty's students of UNNES?; (2) What is the level of scientific attitude of Engineering Faculty's students of UNNES?; (3) What is the level of environmental awareness of Engineering Faculty's students of UNNES? ; (4) Is there any influence on the level of conservation character value understanding and scientific attitude toward environmental awareness for Engineering Faculty's students of UNNES?

A.   Understanding the Value of Conservation Characteristics

Understanding the conservation character value for students is obtained through conservation education materials which generally build and develop 11 character values, namely: religious, honest, intelligent, fair, responsible, caring, tolerant, democratic, love the motherland, tough, polite; and to develop students' scientific attitude. The eleven character values and the building scientific attitude are expected to be inherent in UNNES students, with the intention that students are ready to become the healthy, superior, and competitive next generation. The eleventh values of character and scientific attitudes are as follows:

Religious means, being convinced of the truth of religion or belief in The One Almighty God; implementing the religion according to their beliefs; respecting the difference of religion or belief to God Almighty; having a mandated soul in receiving and performing duties with all its consequences; performing work seriously along with prayer and surrender the results to the Almighty God. Honest is, behaving in accordance with the values and norms of truth in all aspects of life; being dare to defend the truth objectively in accordance with human value and dignity; being dare to say the truth and the uncommon; performing consistent and consequent appointments; being dare to denounce lies and cheats. Intelligent is: thinking logically in accordance with the concept of science; finding the truth logically and methodologically; solving the problems correctly and accurately based on empirical data; being creative in developing new models or ways; finding solutions quickly based on logical thinking. Fair is: behaving according to human value and dignity; behave fairly, harmoniously and consistently in human and environmental relationships; Not being arbitrary and discriminative against others; not discriminating the rights of one person to another; being objective and having good proportional in solving problems. Responsible is: working in accordance with their rights and obligations; working sincerely and genuinely; can bear the trust of others; recognizing his own mistakes or shortcomings; recognizing the strengths of others. Caring is: being sensitive

to other people's difficulties; being sensitive to the physical damage of the environment; being sensitive of various abnormal behavior; being sensitive to the needs and demands of a dynamic society; being sensitive to social life patterns. Tolerant is: recognizing the difference of religion and belief to the God Almighty; recognizing racial, ethnic, gender, social, and cultural differences; putting the interests and rights of others first; considering the feelings of others; helping or providing a hand for other people's difficulties. Democratic is: acknowledging equality of rights; being able to maintain a balance between rights and obligations; prioritizing deliberation for consensus; appreciating differences or diversity; obeying the rules of the game. Love the motherland: being dare to defend the interests of the nation and state; being patriotic and loving the national culture; being dare for the sake of dignity of nation and state; loving the domestic products; maintaining the environment.

Tough: being abstinence in facing difficulties; having a good spirit to achieve optimal work results; not easily being provoked by inaccurate issues; believing in yourself; able to conquer the challenges faced. Polite is: being humble in interpersonal relationships; speaking in good and appropriate language; behaving in accordance with moral values; prioritizing harmony in associating with others; behaving in accordance with the customs of civilized society.

B.   Scientific Attitude

According (Baharudin, 1982), it has been a tendency of individuals to act or behave systematically by solving a problem through scientific measures. The students 'scientific attitude is the level of the students' attitude toward the learning process. The characteristics of scientific attitudes that should be owned by all academicians, particularly students, are: curiosity, being meticulous, honesty, persistence, objectivity, open to accept correct input, being critical [1]. Curiosity is the beginning or a basis for doing research in order to get something new. By getting accurate data, then the conclusion is also more accurate. Meticulous means to act carefully, and not careless. By being careful in conducting research, it will reduce the errors so as to produce good data. Honesty means, in doing research, a scientist must be honest, which means always accept the reality of the results of his research and not making it up and should not change the data results of his research. Perseverance means not easy to give up. They should not easy to give up when conducting research on a problem. In proving a problem, a research must be repeated to get accurate data. Objective means being in accordance with the existing facts. It means, the research results should not be influenced by personal feelings. Everything that is put forward should be based on the facts obtained. An objective attitude supported by an open attitude means accepting true opinions from others. Open to correct input means that we must not claim ourselves to be the most righteous or the greatest. If there are other opinions that are more right / correct, we must accept it. Critically, it means not directly accepting the conclusion without strong evidence, getting used to using the evidence when drawing conclusions. It is done by searching for as much information as possible, either asking people who are expected to know the problem or by reading before deciding what to

write. For example: When a scientist observes and finds that a bird has a long, pointed beak, then he does not immediately state that all birds has long and pointed beaks before the data adequately support that conclusion. That is the scientific attitude that must be possessed by students, as the healthy, superior, competitive next generation.

C. Environmental Awareness

Environment is everything that is around human that influences the development of human life both directly and indirectly. Community is an element that gets in touch directly with environmental conditions. Then, it is hoped that there is concern for the environment, which operationally includes: throwing garbage in its place, cleaning the house from dirt and dust, cleaning the house regularly, cleaning the gutters regularly, burning the piled up garbage, doing 3 M (closing the water storage, cleaning up the tub routinely, burying unused goods), applying 3B (dispose of garbage in place, clean up all dirty places, get used to clean living).

Environmental concerns can be expressed with supportive or impartial attitudes toward the environment, which can be manifested in a willingness to state actions that can enhance and maintain the quality of the environment in any environment-related behavior. From this sense, it can also be that a person's environmental concern is low if someone is not supportive or impartial to the environment, and a person has high environmental awareness if someone supports or side with the environment. So, it can be concluded that environmental awareness is the degree of focusing attention to a place in which a living grows, which includes essential elements such as land, water and air, which have significance in the life of every living being, in which humans exist and influence the survival as well as human welfare and other living organisms, covering the natural environment, the built or artificial living environment, and the cultural or social living environment.

D. College Students

Student is a term for a person who is studying at a college, which consists of a high school, an academy, and the most common is a university. The students referred in this study are students of Universitas Negeri Semarang (UNNES), both male and female, education year of 2016/2017, who are currently in the second semester; and have taken a course in conservation education.

II. METHOD

Based on the method, this research is a correlational research aiming to develop the most effective working methods (Sugiyono, 2005) [4]. The development gained in this research is expected to develop conservation-based character value education for UNNES students who are expected to contribute in realizing the concept of "students must have 11 conservation character values". According to the level of the explanation, this research is descriptive research. Research location is at the campus of Engineering Faculty of Universitas Negeri Semarang.

The population of this study are all students of Engineering Faculty year of 2016/2017 who have taken course of Conservation Education which is in 14 courses that have 750 students. The 14 programs are: Family Welfare Vocational Education, Culinary Education, Fashion Design Education, Beauty Education, Mechanical Engineering, Automotive, Electrical Engineering, Architecture, Building Engineering, and Chemical Engineering. For more details, the distribution of the population in each study program can be seen in the table below. Research sample is taken randomly and proportional. There are two stages of sampling technique, the first stage determines the sample of the program, of which 50% of 14 Study Program is taken (7 Study Program) with random sampling technique. The second stage determines the sample of students from study sample, each by 20%, with proportional random sampling technique. Determination of research subject is in accordance with the ones allowed by each study program. For more details, sample research can be seen in table 1 below.

TABLE I.   RESEARCH SAMPLE IN EACH PROGRAM

No	Program	Number of Students	Number of Sample (20%)
1	Culinary Education	55	11
2	Beauty Education	40	8
3	Mechanical Engineering	43	9
4	Mechanical Engineering Education	84	16
5	Information Technology	89	18
6	Architecture Engineering	40	8
7	Chemical Engineering	89	18
	Total	**440**	**88**

A. Research Variable

1. The level of conservation character value understanding of the students of Engineering Faculty of UNNES.
2. The level of scientific attitude of students of Engineering Faculty of UNNES.
3. The level of environmental awareness of students of Engineering Faculty of UNNES.

B. Data Collection Technique

This reserach used documents evaluation to measure conservation characters value understanding; questionnaire to measure the level of scientific attitude, and the level of environmental awareness of students of Engineering Faculty of UNNES.

C. Data Analysis Technique

The percentage of descriptive analysis is used to reveal: the level of conservation character value understanding; the level of scientific attitude; and the level of environmental awareness attitude of students of Engineering Faculty of UNNES; Simple regression analysis is used to reveal the influence of conservation character value understanding and scientific attitude toward environmental awareness of students Engineering Faculty of UNNES.

III. RESULTS AND DISCUSSION

A. *The Level of Conservation Characteristics Value Understanding*

The data on the understanding level of the conservation characteristics value of the students is obtained from the archived documentation of the score of Conservation Education Course that has been taken by students in each Study Program. Based on the collected data, the score of Conservation Education Course from each study program can be seen in the following table 2.

TABLE II. DESCRIPTION OF SCORE OF CONSERVATION COURSE

No	Score	Number	%
1	86 – 100 (Very Good)	27	30.7
2	81 – 85 (More than Good)	39	44.3
3	71 – 80 (Good)	22	25
	TOTAL	88	100

Based on the data in Table 2, it shows that the level of understanding of students' conservation character value is good. To give a clearer picture of the table above, please see the Fig.1.

Fig. 1. Description of Score of Conservation Course

B. *The Level of Scientific Attitude of Student's Conservation Character*

The data of Scientific Attitude of Student's Conservation Character was obtained through a 14-point questionnaire, with 5 alternative answers showing students' scientific attitudes. Based on the answers from the questionnaire, data is obtained as shown in table 3 below.

TABLE III. DESCRIPTION OF LEVEL OF SCIENTIFIC ATTITUDE OF STUDENT'S CONSERVATION CHARACTER

No	Interval	Criteria	Score	%
1	14 – 24	Very Low	0	0
2	25 – 35	Low	0	0
3	36 - 46	Fair	24	27.27
4	47 – 57	Good	64	72.73
5	58 – 70	Very Good	0	0
	TOTAL		88	100

The data in the table above shows that there is 72.73% students' scientific character belong to good category, and 27.27% belong to fair category. In average, scientific attitude of students of Engineering Faculty of UNNES is categorized as good. Here is the pie chart presentation in Fig.2.
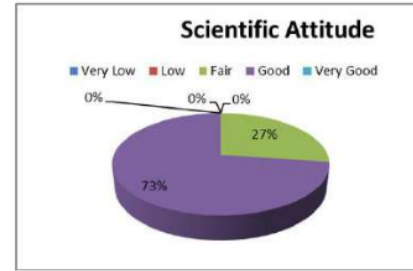

Fig. 2. Level of Scientific Attitude of Student's Conservation Character

C. *The Level of Students' Environmental Awareness*

The data of Students' Environmental Awareness level was obtained through 14-points questionnaire with 5 alternative answers to know the level of student's awareness to the surrounding environment. Based on students 'answers about students' environmental awareness attitudes, the data is shown in the following table 4.

TABLE IV. DESCRIPTION OF LEVEL OF STUDENTS' ENVIRONMENTAL AWARENESS

No	Interval	Criteria	Score	%
1	14 – 24	Very Low	0	0
2	25 – 35	Low	0	0
3	36 – 46	Fair	8	9
4	47 – 57	Good	70	79.5
5	58 – 70	Very Good	10	11.5
	TOTAL		88	100

The above table shows that the level of students' awareness of surrounding environment is good by 79.5%, and very good by 11.5%, and fair by 9%. The average level of environmental awareness of Faculty of Engineering -UNNES students is good. It is described in Fig.3 below, in the form of a pie chart.
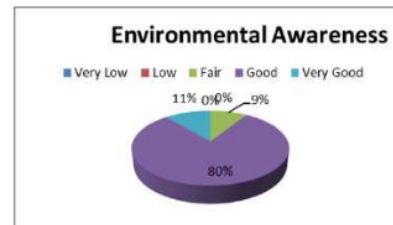

Fig. 3. Level of Students' Environmental Awareness

D. *The Influence of Students' Understanding in Conservation Characteristics and Scientific Attitude towards Environmental Care in Universitas Negeri Semarang.*

To know the influence of conservation character value understanding and scientific attitude toward the students' environmental awareness, this research used multiple regression analysis with the help of SPSS program. The following result shows the influence of conservation character

value understanding and scientific attitude toward environmental awareness for UNNES students.

1) Multiple Regression Test (Scientific Understanding and Attitude toward Environmental Awareness)

TABLE V.   VARIABLES ENTERED/REMOVED

Model	Variables Entered	Variables Removed	Method
1.	Sikap Pemahaman		Enter

a) Dependent Variable : Peduli

b) All requested variables entered

Independent Variable: Understanding and Attitude Dependent Variable: Awareness.

TABLE VI.   MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of The Estimate
1.	389	151	131	3.81958

Determination Coefficient: score R square obtained is 0.151 which means that the influence of variable understanding and attitude toward variable awareness simultaneously is 15.1%.

TABLE VII.   COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	15.310	9.878	271	1550	1.25
Pemahaman	301	114	271	2645	0.10
Sikap	259	118	225	2192	0.31

The variable of Understanding has significance score 0.01 < 0.05 thus there is influence toward variable awareness.

The variable of Attitude has significance score 0.031 < 0.05 thus there is influence toward variable awareness.

TABLE VIII.   ANNOVA

Model	Sum Of Squares	Df	Mean Square	F	Sig.
Regression	220.999	2	110.499	7.574	0.01
Residual	1240.081	85	14.589		
Total	1461.080	87			

Conclusion: Variable Understanding of conservation character value and Attitude (independent) both has significance score 0.001 < 0.05 thus there is influence toward variable Environmental Awareness (dependent).

Based on the table of multiple regression analysis above, it shows that the determination coefficient of the obtained R score value is 0.151. This implies that the influence of variable conservation character value understanding and scientific

attitudes to variable student's environmental care simultaneously is 15.1%.

E. Discussion of Research Result

The findings of this study indicate that the understanding of Conservation Character Value of Faculty of Engineering students in average is very good. This can be seen from the value obtained by the students when attending Conservation education course that on average is more than good (A/B). This condition is very encouraging for the Faculty of Engineering program in particular and Universitas Negeri Semarang in general. The value of Conservation Education Course of Faculty of Engineering students in average is very good. It is predicted because: (1) the lecturers of the course are experienced. Lecturers who teach Conservation Education course in general are permanent lecturers in the sense they continuously teach education courses every year. (2) Every student taking the Conservation Education course gets a smart book along with tasks for one semester, which must be done by them, (3) During lecturing, most students make paper on matters related to conservation, (4) Lectures have more discussion than speech, (5) In every semester, lectures are expected to have 16 times meetings. With these lecture conditions, it make it easier for students to understand the subject matter of Conservation Education.

The results of this study found that the Scientific Attitude of Faculty of Engineering students in average was good. A person's scientific attitude on something (conservation), is generally strongly influenced by the person's understanding of conservation issues. If students' understanding of conservation is well, their Scientific Attitudes towards conservation is expected to also be good. In this study, it was found that in average, the score of Student's Conservation Education is considered more than good. It might have very big influence on the students' scientific attitude, which means that if the score of Conservation Education is more than good, the students' understanding on conservation is also good, which finally means that the students' scientific attitude about conservation is also good. In addition, it is found that the scientific attitude of Faculty of Engineering students is good, which it is assumed that students' activities conducted by majors, faculties and universities are always associated with conservation. This will add students' understanding of conservation. With the increasing of students' understanding about conservation, it will improve the scientific attitude towards conservation on campus. Therefore, it is natural that in this research, scientific attitude of students about conservation is considered good.

In this study, it was also found that the students' awareness of the environment is good. This condition is very prideful for the Faculty of Engineering program in particular and UNNES in general, because it means students have a good level of environmental awareness. The results of data analysis using Multiple Regression showed that the level of students' environmental awareness is influenced by both the level of conservation character value understanding and student's scientific attitude. The influence of these two variables, which are the Level of Conservation Character Value Understanding

and Students' Scientific Attitudes, is 15.1% and the influence is significant. If noticed, the effect of these two variables is relatively small, which is only 15.1%, while the 84.9% is determined by other un-examined factors. However, the students' level of awareness is good, this may be due to UNNES program activities that are always associated with environmental awareness programs. Students, since they enrolled in UNNES, have been introduced to what is conservation. For example, they have to carry and plant trees, which the program is known as SUSU (Sak Uwong Sak Uwit) or One Man One Tree, socialization about riding bicycle on campus, paperless policy, energy-efficient, rule on not allowed to burn garbage, etc, which all covered in the Seven Conservation Guard of UNNES. With the existence of such activities and invitations that are environmentally sustainable, it is logical if students have a good level of environmental awareness.

IV. CONCLUSION

1. The level of conservation character value understanding of students of Faculty of Engineering of UNNES is very good by 30.7%, more than good by 49.3% and Good by 25%.

2. The level of Scientific Attitude of students of Faculty of Engineering of UNNES is categorized as Good by 72.73%, and Fair by 27.27%.

3. The level of Environmental Awareness of students of Faculty of Engineering of UNNES shows that the level of environmental awareness is very good by 11.5%, Good by 79.5% and Fair by 9 %.

4. There is a simultaneous significant influence between the conservation character value understanding and scientific attitudes towards the students' environmental care, which is 15.1%.

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GENERAL COMMENTS

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