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Environmental awareness and pro-environmental behavior: A case of university students in Malang city

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ABSTRACT

University students exhibit low commitment towards pro-environmental behavior despite the facts that they know a lot about environmental issues. The objective of this study was (1) to know the level of environmental awareness and pro-environmental behavior and (2) to find relationship between environmental awareness and pro-environmental behavior among university students in Malang city. This study used descriptive quantitative research design using survey method. Data were collected using questionnaire instrument using a 3-point modified from Liker response scale. The results revealed that majority of the students possessed higher environmental awareness and exhibited high environmentally friendly behavior. Likewise, there existed significant relationship between environmental awareness and pro-environmental behavior amongst university students in Malang city.

Mahasiswa menunjukkan komitmen yang rendah terhadap perilaku pro-lingkungan meskipun mereka tahu banyak tentang masalah lingkungan. Tujuan dari penelitian ini adalah (1) untuk mengetahui tingkat kesadaran lingkungan dan perilaku pro-lingkungan dan (2) untuk menemukan hubungan antara kesadaran lingkungan dan perilaku pro-lingkungan di kalangan mahasiswa di Kota Malang. Penelitian ini menggunakan desain penelitian kuantitatif deskriptif dengan menggunakan metode survei. Data dikumpulkan dengan menggunakan instrumen kuesioner menggunakan 3 poin yang dimodifikasi dari skala respons Liker. Hasil penelitian menunjukkan bahwa mayoritas siswa memiliki kesadaran lingkungan yang lebih tinggi dan menunjukkan perilaku ramah lingkungan yang tinggi.

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INTRODUCTION

Currently we are witnessing a growing interest and concern about environmental management among governments, environmentalist, scholars and scientists from around. The higher global environmental concerned is a result of the increased world environmental destruction that poses a threat to all of us such as compromised public

health. Human-environment interaction is not just about meeting the global population's food needs and natural resource needs but it also refers to how human population affects the environment.

Universities play a key role in environmental awareness and pro-environmental behavior among university students. Universities form and shape the future leaders, who will be creating new legislation in environmental matters and will also be orienting the public policies. This is because universities as higher education institutions for teaching, learning and for conducting crosscutting research edge needs to provide solutions to solve society's socio-economic and environmental problems. Therefore, university graduates of any discipline have to possess well understanding of sustainability. Hence, the role of the universities especially for environmental awareness is very important as environment excludes no one among all human population. Universities have to equip students with new sufficient sustainable development knowledge and skills needed for an individual to solve the setbacks of sustainable human development with in a community. Furthermore, universities need to help in raising public environmental awareness and providing guidance for individual's informed choice, decision-making, environmentally favorable behavior and rational consumer choice.

Educated individuals possess a higher level of understanding about environmental issues to be motivated to act and conserve the environment from destruction through practicing environmentally responsible behavior. Individual's environmental concern and environmentally friendly behavior is directly related to their level of education. But university students exhibit low commitment towards pro-environmental behaviour despite the facts that they know a lot about environmental problems. Enger and Smith (2013) consider environmental awareness as knowledge that helps an individual to acquire the values, skills, and knowledge required to live sustainably. Environmental awareness concern plays a great role in developing community that is well informed about environment issues to become responsible citizens in caring the environment. Environmental awareness is to understand the environmental issues and measures to be taken to bring about good practices towards environmental conservation. Hanisch *et al* (2014) argue that environmental awareness is very essential in environmental management and protection of living organisms. According to Carmi (2013) environmental awareness is translated in term of environmentally conscious behaviour such as pro-environmental behavior. Environmental awareness could bring about more impact if it is applied in real life setting. Agarwal (2018) suggest that environmental sustainability needs the integration of human environmental awareness from scientists, engineers and everyone in a community.

Generally, there are two reasons why people become concerned and which in turn takes actions towards environmental conservation. First reason is human-cantered view that individual as a rational being need to have love with nature. According to human-cantered point of view individuals have a tendency of developing the natural feeling and love with nature (Carmi, 2013). Hence, some individuals feel they have a sole role to protect the environment. The secondary is human-nature relation. In this scenario human believes that the environment should be protect and kept safe as it is the main canter for human existence. Environmental awareness is translated in term of environmentally conscious behavior such as pro-environmental behavior. Huang *at al* (2019) adds more that the environmental awareness could bring about more impact if it is applied in real life setting. The reasons why youth are supposed to be the champions for caring the environment is that youth are the new generation with energy and willing power to keep

the environment safe for the next coming generation. Environmental sustainability needs the integration of human environmental awareness of the people from all walks of life.

Pro-environmental behavior sometimes referred as environmentally friendly behaviour is individuals' behaviour that favours the environment. Pro-environmental behavior is an individuals' behaviour that is taken intentionally to reduce one's environmental destruction and to conserve the environment. According to Borchers *et al*. (2014) pro-environmental behavior refers to behaviour that promotes the environmental protection regardless of whether the behaviour is taken intentionally or non-intentionally to protection the environment. Clayton and Myers (2015) suggest that once people are aware of the adverse environmental brought by their behaviour in most cases, they will change their behaviour and practice environmentally friendly behavior to serve the environment. Lynn (2014) defines pro-environmental behavior as individuals' behavior that has less negative impact to the environment with more advantages in protecting environment from destruction. Indicators of pro-environmental behavior are intent, necessity and possibility. Intent refers to an anticipated outcome that is intended or that guides your planned actions. Necessity is the greater sense of personal responsibility. Meanwhile, responsibility refers to the responsibility to improve the world but also the responsibility for the environmental impact caused by one's behaviour. Kirkels (2012) holds that individuals with high necessity regarding certain behavior are often able to acquire that particular behavior.

Environmental awareness is the main driving factor towards individual's pro-environmental behavior. Studies in psychological factors of pro-environmental behaviour have found the existence of causal relationship between individuals' environmental awareness with pro-environmental behavior. Behavioral change theory assumes that individuals with strong environmental values know the impacts of their behavior to the environment. To justify how environmental awareness leads to pro-environmental behavior, the theory of behavioral change is used. The theory of behavioral change holds the notion that when people are well informed about the environmental issues, they become more aware of the human induced environmental problems which in turn motivated them to live a sustainable life. Knowledge builds attitudes, beliefs and eventually the desired behavior.

University students exhibit low commitment towards pro-environmental behavior despite the facts that they well informed about environmental issues. Therefore, it is highly important as it is necessary to know the level of environmental awareness and pro -environmental behavior among these future professionals and agents of changes in their personal behavior, as well as of the policies of their future working places, in relation to the environment. Therefore, the objective of this study was to know the level of environmental awareness, pro-environmental behaviour and the relationship between environmental awareness and pro-environmental behavior among university students in Malang city.

METHOD

Quantitative research design using survey method was used in this study. Quantitative research method is used to quantify research problem into numerical data that can be transformed into usable statistics for descriptive and statistical analysis. Survey method provides in-depth understanding of the subject under the study among population from different groups with different characteristics. Therefore, survey method was the most appropriate for the kind of study being carried out in this study.

This study was conducted in three state university in Malang, East Java Indonesia. First, State University of Malang (UM) a higher educational institution for teacher's education and educational science. Second, The University of Brawijaya (UB), a higher educational institution for vocational and science courses and third, State Islamic University of Maulana Malik Ibrahim (UIN) a higher educational institution offering programs related Islamic religion education.

The population of this study consisted of 400 undergraduate students from three different universities, faculties and departments studying courses related to environmental management in Malang city. The first group consisted of undergraduate regular geography education students in State University of Malang (UM) 2017/2018 intake with total of 160 students. The second group consisted of undergraduate environmental engineering students at Brawijaya University (UB) 2017/2018 intake with total of 90 students and the third group consisted of undergraduate students studying undergraduate social science education students at Maulana Malik Ibrahim Islamic University Malang (UIN) 2017/2018 intake with total of 150 students.

The total sample population of this study consisted of 152 undergraduate students. 61respondents were geography education students from faculty of social science in State University of Malang (UM), 34 respondents were environmental engineering students from faculty of agricultural technology studying in University of Brawijaya (UB) and 57 respondents were social science education students from faculty of Islamic knowledge studying in Maulana Malik Ibrahim Islamic University Malang (UIN).

For the purpose of collecting desire data in this study the evaluation tool consisted of statements on environmental awareness and pro-environmental behavior from new ecological paradigm, new environmental paradigm and the ecological knowledge questionnaire modified by research to suit the study at hand. The above instruments were selected with regards to their significant characteristics towards environmental studies, their recent content and their reported reliability in measuring environmental awareness and pro-environmental behavior.

In this study data were collected using questionnaire survey in form of checklist using scores modified by the researcher to reflect today's most pressing local and global environmental problems. Questionnaire is the data collection tool that is quickly and efficiently for collection of data from large a population used in social science studies. To validate the instrument, the researcher asked the expert in the fields of geography and environmental management to examine the instrument's items, to eliminate the ambiguity and redundancy so as to capture the underlying concepts under the study. The researcher accommodated the experts' judgment and feedback to develop appropriate items for the research instrument. The questionnaire survey comprised of four printed pages. The time required to fill in the questionnaire survey was about 5 to 10 minutes. After the corresponding university board authorities granted permission, data were collected during annual semester of the 2019/2020 university school term in Malang city. First the researcher asked students' full participation by informing them that the questionnaire was not intended to measure their learning and academic achievement but rather for the benefit of scientific research and development. The questionnaires survey was distributed among the sample of this study to the respective three universities and faculties in Malang City. The three major environmental awareness and pro-environmental behavior instruments were used to classify the responses in order to analyze the results of the returned questionnaire and distribute them into special distribution tables. This was done to (1) evaluate the respondents' responses and opinions

regarding the environmental awareness and pro-environmental behavior prompts and (2) to find the relationship between respondents' environmental concern and their self-reposted environmental responsible behavior. To overcome potential problems with self-reporting bias and clarity of responses, all statements are close-ended, hence respondents had to select from a range of provided answers to reduce the richness of responses and reduces the scope of research findings to the questions asked and responses given.

Data were analyzed both descriptively and statistically using Microsoft Excel and SPSS version 16 software. Microsoft Excel. Data analysis involved tabulation of frequency tables and calculation of valid percentage, standard deviation and mean. Data analysis process included scoring respondent's statement of environmental awareness using three-point scales, setting the maximum score and minimum score obtained by respondent, determining the total score of respondents, determining the participants' level of environmental awareness, determining the criteria for rating environmental awareness and environmentally friendly behavior by comparing environmental awareness and pro-environmental behavior, determining the criteria for environmental responsible behavior by comparing the total scores obtained by each student with the range of environmental awareness scores and student behavior and lastly testing the strength of relationship between respondents' environmental awareness level and pro-environmental behavior.

RESULT AND DISCUSSION

Respondent characteristics observed in this study included respondent's gender, age and study programs. The descriptive analysis on the respondents' gender indicated that, the gender ratio (female: male ratio) among the overall respondents of this study was 100 females: 52 male respondents (Table 1). Therefore, the large number of the respondents in this study was female respondents.

The descriptive analysis of the characteristics of respondent's age showed the age ranges of the overall 152 respondents of this study were between 18 – 23 years old. In particular 96 respondents (63.2%) were aged between 18 – 20 years old, 56 respondents (36.8%) were aged between 21 - 23 years old. However, the highest count of the respondents' age group in this study falls in the category of 18- 20 years old (Table 2).

Environmental awareness level in this study was categorized into three groups namely high, medium and low. The respondents' responses on the environmental awareness in this study indicated that the majority of respondents had generally higher level of environmental awareness and knowledge about environmental issues. The respondents' mean percentage for environmental awareness was higher among all the respondents from the three study groups. The descriptive analysis of respondents' environmental awareness showed that a total of 109 (71.7%) had higher level category of environmental awareness. Furthermore, 41(27%) had medium level category of environmental awareness. In contrary, only 2 (1.3%) had low level of environmental awareness among the three categories of environmental awareness that is high level, medium level and low-level category of environmental awareness (Table 3).

The overall environmental awareness level among the majority of the respondents studied in this study was between 81 – 100 score interval. This indicates that the environmental awareness means scores among the majority of the respondents from all three study programs studied in this study falls under "very good" category which is significantly very good. Therefore, this implies that the overall environmental awareness level of the majority of respondents participated in this study was higher.

Table 1. Characteristics of Respondents by Gender

Gender	Frequency	Percentage (%)
Male	52	34.2
Female	100	65.8
Total	152	100.0

Source: Primary Data 2019

Table 2. Characteristics of Respondents by Age

Age	Frequency	Percentage (%)
18 - 20	96	63.2
21 - 23	56	36.8
Total	152	100.0

Source: Primary Data 2019

Table 3. Descriptive Analysis of Respondent's Environmental Awareness

Category	Score Interval	Frequency	Percentage (%)
High	X≥22,25	109	71.7
Medium	18,21≤X≥22,25	41	27
Low	X<14,17	2	1.3
	Total	152	100.0

Source: Primary Data 2019

Table 4. Difference in means scores for environmental awareness according to the respondents' study programs

Statistical Description	Environmental Engineering Students	Social Science Education Students	Geography Education Students
Mean	91.1	88.3	93
Minimum	66.7	58.3	75
Max	100	100	100
Std. Dev.	10.4	8	6.7
Variance	109.1	64.1	44.4

Source: Primary Data 2019

The reason for higher level of environmental awareness amongst the majority of university students in Malang city with special reference to geography education, environmental engineering and social science education students is increasing access to more diversified and different types of media which favors the access to environmental issues content and information. Mass media has a very huge influence in millennial. Most of the current university students or millennial are born in the world of internet of things means the world characterized by advanced technologies and information, many have been harnessing this opportunity in sharing information about environmental awareness sustainable environmental solutions.

Likewise, there existed significant difference in mean scores for environmental awareness according to respondents' study programs. The mean score for environmental awareness among geography education students was the highest (93) followed by environmental engineering students (91) and mean score for environmental awareness for social science education students was 88 (Table 4).

Table 5. Descriptive Analysis of the Overall Respondent' Pro-Environmental Behavior

Category	Score Interval	Frequency	Percentage (%)
High	X≥20,24	77	50.7
Medium	16,17≤X≥20,24	68	44.7
Low	X<12,15	7	4.6
	Total	152	100.0

Source: Primary Data 2019

Table 6. Pro-environmental Behavior level according to Respondents' Study programs

Statistical Description	Environmental Engineering Students	Social Science Education Students	Geography Education Students
Mean	86.4	77.2	81.6
Min	75	50	58.3
Max	100	91.7	100
St. Div.	7.3	8.8	8.6
Variance	52.9	78.2	73.7

Source: Primary Data 2019

Table 7. Correlation Analysis between Environmental Awareness and Pro-environmental Behavior

		Environmental Awareness	Pro-environmental Behavior
Environmental Awareness	Pearson Correlation	1	.167*
	Sig. (2-tailed)		.041
	N	151	151
Pro-environmental Behavior	Pearson Correlation	.167*	1
	Sig. (2-tailed)	.041	
	N	151	151

*Correlation is significant at the 0.05 Level (2-tailed)

The pro-environmental behavior result of this study was categorized into three levels namely high level, medium level and low level of practicing pro-environmental behavior (Table 5).

The results on pro-environmental behavior revealed that the majority of the respondents among all of three study groups participated in this study demonstrated to practice more environmentally friendly behavior toward environmental protection and conservation. In general, a total of 77 out of 152 respondents which is equivalent to 50.7% of the total respondents demonstrated higher level in practicing pro-environmental behavior. Likewise, a total of 68 out of 152 respondents which is equal to 44.7% of the total respondents exhibited medium level of practicing pro-environmental behavior. Meanwhile 7 out of 152 respondents amounting to 4.6% of the total respondents were found to practice pro-environmental behavior in low level category.

This implies that the overall respondents of this study exhibited higher pro-environmental behavior level. Furthermore, this indicates that the majority of the respondents among all of the study groups participated in this study was well informed and possessed higher environmental awareness level. This is supported by Ramdas and Mohamed (2014) that individuals with higher environmental awareness level are able to engage in environmentally friendly behavior that benefits the environment. Kaffashi *et al*., (2015) points out that student with higher environmental awareness exhibit more environmental caring behavior. As indicated previously, specific environmental

awareness may lead to better predictability of environmental responsible behavior if specific pro-environmental behavior is assessed.

However, there existed significant difference in the mean scores for pro-environmental behavior according to the respondents' study program. The respondents' mean score for pro-environmental behavior was 86.4 for environmental engineering students, 81.6 for geography education and 77.2 for social science education students (Table 6).

From the cross-tabulation between students` environmental awareness and pro-environmental behavior reveals that, the respondents with higher levels of environmental awareness demonstrated to practice more environmentally friendly behavior. Similarly, the respondents with low level of environmental awareness exhibited low environmentally friendly behavior.

A Pearson's product moment correlation coefficient (r) was run to determine the relationship between environmental awareness and pro-environmental behavior. The main analysis was performed with environmental awareness as the independent variable (X) and pro-environmental behavior as dependent variable (Y) (Table 7).

The result of the Spearman's correlation coefficient (r) show that the Pearson's correlation coefficient r =.167 with N of 151 is statistically significant at 0.05 level (p.0.041), which of course is also significant at 0.05. Thus, the alternative hypothesis that "There exists a strong correlation between level of environmental awareness and level of environmentally friendly behavior" accepted.

Hence, the result indicated the presence of significant relationship between environmental awareness and pro-environmental behavior amongst university students in Malang city with special reference to geography education, environmental engineering and social science education students. Environmental concern plays a very great role in instilling the environmental conservation values which consist of the positive perception, knowledge, attitude and skills needed toward environmental stewardship.

Taking the above logic into consideration, the result indicated that there was perfectly strong positive relationship between environmental awareness and pro-environmental behavior variables. The above results suggest that the respondents were well informed about environmental issues and maintain significant positive behavior toward environmental conservation. That means, increasing environmental awareness will finally results into a positive behavioral change towards pro-environmental behavior. It was found that the respondents had fairly strong environmental awareness and practiced pro-environmental behavior. Likewise, Joanne and Erminia (2015) found the existence of significant positive correlation between students' environmental knowledge and their environmental value. According to Kang and Moon (2014) it is important to establishing students' positive environmental values in education institutions as it would help solve environmental problems and enhance environmental quality among students. This will help to create a knowledgeable community in environmental issues which successively will play a great role in conserving the environment and become the champions for caring and conserving the environment.

CONCLUSION

The level of environmental awareness and pro environmental behavior among the university students participated in this study in Malang city was higher. Large proportion of the students participated in this study demonstrated to practice environmentally friendly behavior in high level. That is approved by having majority of respondents with higher environmental concern and pro-environmental behavior mean scores. Positive

correlation between environmental awareness and environmentally friendly behavior is evidence from students' responses to separate environmental awareness and pro-environmental behavior statements and from their overall responses of the questionnaire. Therefore, environmental literacy has led to significant positive changes towards environmentally responsible behavior to protect the environment among university students in Malang city.

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