

Sequential explanatory analysis of environmental awareness towards responsible environmental behavior (REB) of high school students in Depok City, West Java, Indonesia

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ABSTRACT

Objective of this study is to obtain information about the interrelationship between environmental awareness and the responsible environmental behavior of high school students. Research conducted toward students of the Masjid Terminal High School (SMA) at Depok City in December 2019 to July 2020 with samples of 111 respondents by proportional random sampling technique. A mix-method was employed in this study, which is a combination of quantitative and qualitative methods as sequential explanatory. Collection of quantitative data was conducted using a questionnaire with rating scale for X and Y variables. The validity test used Pearson's product moment and the reliability test used alpha Cronbach. The analysis of quantitative data with a prerequisite test in the form of a normality test employed the Kolmogorov-Smirnov test and a homogeneity test using a Levine statistic. Testing the data hypothesis was using the correlation test with Pearson product moment using SPSS 26. Qualitative research data was obtained from the interviews, and the data was analyzed by reducing data, presenting data and drawing conclusions. The results showed that there was a positive correlation between environmental awareness and responsible environmental behavior with the regression equation $\hat{Y} = 99.939 + 0.161x$ with a correlation coefficient of $r = 0.195$ and r^2 of 3.80%. The contribution of r^2 means that 3.80% of responsible environmental behavior is influenced by environmental awareness, while 96.20% is influenced by other factors. Based on above results, can be conclude that there are positive correlation between environmental awareness and responsible environmental behavior which influenced by the factors of family background, habits, information, as well as social environment.

ABSTRAK

Tujuan penelitian ini adalah untuk memperoleh informasi tentang hubungan antara kesadaran lingkungan dengan perilaku tanggung jawab lingkungan pada siswa SMA. Penelitian dilakukan terhadap siswa sekolah (SMA/High School) Masjid Terminal, Kota Depok, Jawa Barat, pada bulan Desember 2019 hingga Juli 2020 dengan jumlah sampel 111 responden dengan teknik proporsional random sampling. *Mix-method* digunakan dalam penelitian ini, yang merupakan kombinasi antara metode kuantitatif dan kualitatif sebagai *sequential explanatory*. Pengumpulan data kuantitatif dilakukan dengan menggunakan kuesioner dengan skala sikap (*rating scale*) untuk variabel X dan Y. Uji validitas menggunakan *Pearson's product moment* dan uji reliabilitas menggunakan *alpha Cronbach*. Analisis data kuantitatif dengan uji prasyarat berupa uji normalitas menggunakan uji *Kolmogorov-Smirnov* dan uji homogenitas menggunakan statistik *Levine*. Pengujian hipotesis data menggunakan uji korelasi dengan *Pearson's product moment* menggunakan SPSS 26. Data penelitian kualitatif diperoleh dari wawancara, dan data dianalisis dengan mereduksi data, menyajikan data dan menarik kesimpulan. Hasil penelitian menunjukkan bahwa terdapat hubungan positif antara kesadaran lingkungan dengan perilaku tanggung jawab lingkungan dengan persamaan regresi $\hat{Y} = 99,939 + 0,161x$ dengan koefisien korelasi $r = 0,195$ dan r^2 sebesar 3,80%. Kontribusi r^2 berarti 3,80% perilaku tanggung jawab lingkungan dipengaruhi oleh kesadaran lingkungan, sedangkan 96,20% dipengaruhi oleh faktor-faktor lain. Berdasarkan hasil di atas, dapat disimpulkan bahwa terdapat hubungan positif antara kesadaran lingkungan dengan perilaku tanggung jawab lingkungan yang dipengaruhi oleh faktor latar belakang keluarga, kebiasaan, informasi, serta lingkungan sosial.

Keywords: *Responsible environmental behavior (REB), environmental awareness, high school students.*

INTRODUCTION

The environment is a place where there is a living thing together with living and nonliving things. The environment is not only a place to live, but also it has a very important role in fulfilling human life. It is because in the environment there are interactions, and one of which is humans.

The interaction between humans and the environment occurs normally. Humans are living things that are very dependent on the environment. All human needs are also found in the environment by utilizing existing natural resources, therefore humans and the environment cannot be separated. The environment greatly affects human life, if there is environmental damage then human life will also be

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disturbed. The emergence of environmental problems is caused by human carelessness. Human behavior that causes environmental problems occurs due to a lack of responsibility for the environment and low environmental awareness.

A person's behavior towards the environment can be seen from the surrounding environment and the habits that are reflected in him. The low level of responsible environmental behavior in a person can cause environmental problems as well as damage to the environment. Responsible environmental behavior is also influenced by several factors. According to Krajhanzl (2010), responsible environmental behavior is influenced by three factors, namely: 1) condition factors/external factors, 2) personality factors and 3) relationship factors with nature.

The level of one's environmental awareness is not always high, this is influenced by several factors such as environmental knowledge, environmental values and one's environmental behavior. Environmental awareness also means helping social groups and individuals to gain awareness and sensitivity to the same problems they face with their environment (Kang & Grewak, 2015). Environmental awareness is needed to solve environmental problems and awareness needs to be brought through environmental education to individuals (Cruz & Tantengco, 2017). This is because one of the results of environmental education is creating environmental awareness. For this reason, environmental awareness will become a global phenomenon in the near future (Badoni, 2017).

Education plays an important role in preserving the environment. Student behavior towards a sense of responsibility in protecting the environment is minimal due to a lack of environmental awareness. This problem can be solved by the younger generation, through informal education. Formal education is an important external factor in the development of environmental love (Slavoljub et al., 2015). Responsible environmental behavior can be taught from an early age both in the school environment and in the home environment. Responsible behavior in protecting the environment will also have a positive impact on life. One's environmental awareness needs to be possessed to solve environmental problems that are increasing Kabadayi & Altinsoy (2019).

This is in line with the opinion of Akpofure (2018), which explains that one of the most fundamental characteristics of environmental awareness is action that produces better environmental outcomes, not just the accumulation of knowledge or skills. The lack of students' sense of responsibility towards the environment can have a negative impact.

Lack of environmental awareness of a person causes individuals to not respect the surrounding environment and even damage the beauty of the environment by destroying, destroying and scribbling. This happens a

lot to adolescents, which is even vandalism that by scribbling on public facilities such as school toilets, bridges, chairs, tables, and even destroying or slashing plant stems. Lack of responsible environmental behavior (REB) in teenagers currently, causes them to seem like they don't care about the environment around them. Vandalism is considered a type of social problem that is different from other social problems such as crime in terms of the type and age of the perpetrator, the target of the action, and the motive for the action (Mushtaha & Hamid, 2016).

Based on the description above, further study is needed through research on responsible environmental behavior in terms of the factors that are thought to have a relationship.

Objective of this study is to obtain information about the relationship between environmental awareness and responsible environmental behavior of students and other factors that influencing an responsible environmental behavior (REB) of students at the High School Masjid Terminal in Depok.

METHODS

This research was conducted in Depok. This research was conducted in the even semester of the 2019/2020 school year. The method used in this research is a combination of sequential explanations quantitative and qualitative.

There are two variables in this study. The first variable is the dependent variable (Y), responsible environmental behavior (REB). Independent variable (X), environmental awareness. The research design is shown in Figure 1.

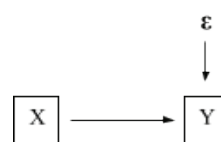


Figure 1. Research Design

Notes:

X: Environmental Awareness Y: Responsible Behavior

ε: Other factors that influence variable Y

The population used in this study are all 154 students of SMA Masjid Terminal in Depok, school year of 2019/2020. The sample was determined using the technique Proportional Random Sampling, based on the calculation, the number of samples in the study was 111 students. Determination of the number of samples using formula from Slovin as shown below:

$$n = \frac{N}{1+N.e^2} = n = \frac{154}{1+154.0,05^2} = n = \frac{154}{1,385} = 111,19$$

Notes:

n = Sample Size

N = Population Size

e = Error tolerance 5% (0.05)

Determination of the research data source was taken by using purposive sampling and snowball sampling. Purposive sampling is a technique in determining the source of data based on certain considerations. The data obtained in this study are the results of interviews through informants and field observations. Data collection techniques are the most important step in research, because the main purpose of research is to get data. The data collection technique was carried out by observation and interviews using purposive sampling technique. Qualitative data analysis was conducted by having data reduction, data presentation, on-site analysis, inter-site analysis and drawing conclusions.

Data analysis was carried out by combining the two similar data so that quantitative data can be expanded and deepened with qualitative data. The first step is analysis using quantitative methods using correlation technique Pearson Product Moment. Prior to data analysis, the prerequisite test of all data was carried out. To determine the hypothesis testing technique, first a descriptive statistical calculation is carried out in the form of calculating the average, mean, mode, and standard deviation of all the data obtained. Then performed quantitative data analysis with SPSS 26, prerequisite test in the form of normality test using the Kolmogorov-Smirnov test to prove the population is normally distributed and homogeneity test using Levine statistic to prove the data is homogeneous. Pearson product moment was used to test the data hypothesis using the correlation test to determine the magnitude of the relationship between responsible environmental behavior and environmental awareness.

Whereas qualitative data consists of data reduction, on-site analysis, inter-site analysis and drawing conclusions. This qualitative data collection is taken when it already has quantitative result data. After obtaining quantitative data, an interview was held to obtain qualitative data.

RESULTS

Based on the SPSS output table above, the constant value (a) is 99.939 and the constant value (b) is 0.161 so the regression equation $\hat{Y} = 99.939 + 0.161X$. Based on the SPSS output table, it was shown that the probability value (sig.) is 0.04 which is less than α 0.05 so that the results can be concluded that the regression equation $\hat{Y} = 99.939 + 0.161X$ is significant. Thus, the regression equation $\hat{Y} = 99.939 + 0.161X$ can be used to predict responsible environmental behavior based on environmental awareness.

Linear regression

Based on the SPSS output table that the value of deviation from linearity shows a significance of 0.351 greater than 0.05, which means that the deviation from the linear state is insignificant, so it can be concluded that the two variables with the regression equation $\hat{Y} = 99.939 + 0.161X$ is linear.

The next stage of the regression equation can be interpreted that before students have environmental awareness, they have environmentally responsible behavior with a constant of 99.939. Every increase of one unit of environmental awareness will cause an increase in the environmentally responsible behavior of students by 0.161.

Determining correlation coefficients and its significance

Based on the SPSS output table shows that the correlation coefficient between environmental awareness and responsible environmental behavior (r_y) is $0.195 > 0$, which means that there is a positive relationship between environmental awareness and responsible environmental behavior and the significance value is 0.040 less than 0.05, so it can be concluded that the correlation is significant.

Coefficient of determination (r^2) = $0.195 = 0.0380$, which means that 3.80% of environmental awareness contributes to responsible environmental behavior. The remaining 96.20% is a contribution from factors other than environmental awareness.

Qualitative

Results from qualitative study are the results of analysis of qualitative data obtained from interviews. Data analysis includes data reduction activities, data presentation and drawing conclusions. Each data that has been obtained is then given an informant code to make it easier to organize the data. Based on the results of quantitative research, the correlation coefficient value between environmental awareness (X) and responsible environmental behavior (Y) is 0.195.

The coefficient value shows that there is a low positive relationship, because the correlation coefficient obtained ranges from 0.00 to 0.199, so the sub-focus in this study will strengthen the reasons for lower relationship between environmental awareness and responsible environmental behavior (REB) and other factors that are thought to have a relationship with REB.

According to the results of interviews with informants, it was found that the low relationship between environmental awareness and REB of students at SMA Masjid Terminal Depok was due to the lack of environmental awareness that students had to be responsible at least with the surrounding environment.

Where students do not understand about natural conditions such as knowing the condition of the environment around both animals and plants, knowing the impact that will be caused if the environment is damaged, is not sensitive to natural conditions, and does not care about the environment.

Environmental awareness can be increased by implementing activities related to the environment in everyday life, because environmental awareness can be learned by a person, so that person understands the state of nature.

In addition, information about environmental knowledge through additional subjects or activities at school is needed to increase environmental awareness in students. This can be reflected in the habits and behavior to be responsible for the environment. As well as there are factors that influence responsible environmental behavior in addition to environmental awareness of the students of SMA Masjid Terminal Depok, such as family, habits, environment (circle of friends, school environment or neighborhood) as well as information.

DISCUSSION

Based on the results of the study, it was found that the degree of positive relationship was shown by statistical analysis of the SPSS output table resulting in a correlation coefficient (r) of 0.195 at the significance level α (0.05). This shows a low positive relationship between environmental awareness and responsible environmental behavior of students at SMA Masjid Terminal Depok.

This can be seen in the results of the regression equation which shows a linear relationship between responsible environmental behavior and environmental awareness. Where responsible environmental behavior occurs when a person has a high environmental awareness. Environmental awareness is one of the factors shaping a person's responsible environmental behavior, but not a variable that directly influences this behavior. The low relationship between environmental awareness and responsible environmental behavior is caused by other factors.

According to Ajzen (2005) theory of planned behavior, there are several factors that shape a person's behavior, namely Attitude towards the behavior (attitude), Subjective norm and perceived behavioral control. The value of the correlation coefficient of 0.195 is included in the low category, because the correlation coefficient value obtained ranges from 0.00 - 0.199. The coefficient of determination (r^2) is 3.80%, which means that the increase or decrease in the environmentally responsible behavior of students can be determined by environmental awareness of 3.80% while the remaining 96.20% is another factor that plays a role in increasing students' responsible environmental behavior.

Environmental awareness in a person can be increased by getting close to nature and learning to love the environment from an early age. A person who has environmental awareness will show his concern for nature so that person can know what to do with nature because he understands the impact if he takes bad actions towards nature. This is in accordance with research conducted by Rahman (2016), regarding internal knowledge and environmental factors on environmental care behavior, showing that 44% of the variance in behavior is predicted by social influence factors, information resources, environmental management facilities, knowledge, trust, attitude and personal responsibility, whereas 56% of the variant was attributed to other factors not investigated in the study. In addition, Nikerson & Raymond (2003) state that environmental awareness is the beginning of the formation of a person's concern in protecting the environment from various environmental damage. Environmental awareness also has an important role in creating balance, environmental sustainability and the formation of pro-environmental behavior with high environmental awareness, so it will be easier for someone to protect the environment from the threat of damage.

A person who has environmental awareness will have knowledgeable information about the environment which forms the belief that he must have good responsible environmental behavior. This can be a character that can be seen from the habits and behavior to be responsible for the environment. Ardianti et al. (2017), stating that the character will be formed through behavior that is done repeatedly. According to Darmawan (2010), environmental awareness is a form of one's concern for environmental quality.

Based on the results of quantitative research conducted in the field, it shows that there is a low relationship between environmental awareness and responsible environmental behavior of students at SMA Masjid Terminal Depok which is marked by a correlation coefficient (r) of 0.195. This is due to the lack of knowledge about the environment that students get and the low environmental awareness of students and there is no desire in themselves to care about the environment. There are still many students who do not really care about how important lessons about the environment are. These findings indicate that the lack of information that students get has not been able to apply properly about the environment they have in the form of behavior, environmental awareness should be reflected in a balanced manner in one's knowledge, skills, attitudes and behavior in activities.

The low relationship between environmental awareness and responsible environmental behavior is due to other factors that can influence the responsible environmental behavior, where environmental awareness is not the only determinant of a person's

responsible environmental behavior. According to research by Sengupta et al. (2010), students' environmental awareness is not only visible from their knowledge, but also from their attitudes, behaviors and skills in solving environmental problems.

Based on the results of qualitative research conducted at SMA Masjid Terminal Depok with 9 informants consisting of 4 teachers and 5 students, it can be concluded in the first sub-focus that there is a low relationship between environmental awareness and responsible environmental behavior because someone is said to have a responsible behavior. Environmental responsibility can not only be seen from environmental awareness but many other influencing factors. For example, someone who is aware of environmental cleanliness does not necessarily mean that someone has high responsible environmental behavior. This is because there are other factors that can influence a person to behave in an environmentally responsible manner. So, environmental awareness is not the only factor that can influence responsible environmental behavior. This is in accordance with Hungerford & Volk (1990), which states that there are several factors that influence environmentally responsible behavior, namely the desire to act, the previous knowledge factor about environmental problems and the desire to act, leading to actual actions on a person. A person's desire to act is influenced by a number of personality factors such as locus of control, attitudes towards the environment and taking action as well as situational factors such as age, gender and level of education.

Efforts can be made to improve students' responsible environmental behavior so that they have responsible environmental behavior and can apply it to everyday life, such as getting used to cleaning the classroom before the learning process takes place. Habit is a process of forming attitudes and behaviors that are indirect through repetitive activities. Therefore, getting used to positive things to students is expected to be able to increase the responsible environmental behavior.

Based on the results of qualitative research on the second sub-focus, the factors that are thought to have a strong relationship with responsible environmental behavior, the first is family, that the habits and parenting practices of parents will become an example for their children and from one's family can form a character of behavior certain as had been taught by the parents.

A person tends to spend more time in the family environment than other environments such as schools and playgrounds, so the behavior that is ingrained in a person is largely a factor of the family itself. According to Tria (2016), family parenting patterns are important in the formation of child behavior. Parental guidance is very important because parents are foundation builders and children's character (Surya et al., 2017). In line with previous opinions, Andi & Dewi (2018) stated that

parents play a role in teaching and disciplining children to form positive attitudes in children. According to Qurrotu (2017), the form of parenting patterns affects the formation of the child's personality as an adult because it has been ingrained since childhood. A person who is educated to be responsible for the environment from an early age, will be someone who has good responsible environmental behavior. Habits that are done continuously will be a natural thing to do, therefore it is very appropriate to educate children with positive things.

This is in line with Sugiyanto (2015)'s statement, which stated that parents play a role in nurturing, guiding, supervising and setting a good example to the child, so that it will have an impact on the formation of children's behavior. Positive behavior to the environment taught by the family is more meaningful, because the behavior has been instilled in a person since childhood so that if the family has a high environmentally responsible behavior, thus the responsible behavior of one's environment outside the family environment will also be high.

Therefore, family is a powerful enough factor to influence a person's REB. The second factor is the habit that a person has. Habits appear in a person because of doing something continuously so that it becomes a habit and becomes something that is natural for that person. Habits can affect a person's responsible environmental behavior because if a person is used to doing good things to the environment then it will be continuously done and become a habit. Moreover, the habit that has emerged since childhood, where the habit has been applied from a young age so that it becomes an experience. This is in accordance with the opinions expressed by Hines, Hungerford and Tomera in Pretty (2016), regarding responsible environmental behavior depending on various factors such as attitude, locus of control, ability to act, knowledge of strategies for action, knowledge of environmental issues, personality factors and situational factors that include new environmental paradigms, environmental sensitivity, economic factors or gender factors. Gifford & Nilsson (2014), states that awareness of need represents a feeling of one's obligation to act and knowing that others expect certain behaviors.

The third factor is environmental factors that include the scope of friendship or association and the school environment. Friendship or social factors have an influence on responsible environmental behavior because a person tends to spend time with friends. Thus, a person's behavior will tend to follow the habits of friends around him. The scope of a good friendship will be a reflection of someone and vice versa. This is in line with Surya et al. (2017) which states that friendship or association affects one's behavior. In the current era of friendship becoming a factor that can affect one's behavior, then this factor can influence the responsible

behavior of one's environment. This is in accordance with the stated by Septiyuni et al. (2015), that peer groups as a social environment for teenagers (students) have an important role for their personal development. In addition, peers have tremendous power to determine the direction of life of students, if students are in a social environment full of negative energy, then all forms of attitudes, behaviors, and goals of life of students become negative as well (Megita, 2017).

The next factor is the environmental factor of the school where the school can be said to be a second home for students. The school environment can also influence a person's responsible behavior. If the school environment is clean, beautiful and comfortable, then indirectly the students in the school have good environmental behavior. The behavior of teachers in schools can also be a reflection for their students because students will imitate what their teachers do. This is in line with the opinion of Blazar & Kraft (2017), that teachers can help students to develop student attitudes and behaviors. According to Pavelka et al. (2016), the close relationship between teachers and students has benefits such as developing positive behaviors in students. Teachers can also guide students to be environmentally responsible for making students environmentally responsible. Additional activities in schools or extracurricular activities such as youth scientific groups, nature lovers and scouts influence student behavior. These activities can train students to be environmentally responsible. Extracurricular activities such as nature lovers, direct students to conduct activities in the natural environment that can stimulate the formation of environmental care attitudes (Rifki & Listyaningsih, 2017). A person will be accustomed to doing things that are environmentally responsible if they are always involved in doing such activities in their neighborhood. This is in accordance with the statement of Pauw & Petegem (2013) which states that children involved in environmental programs, the value of the environment will increase. Learning experience obtained by students directly from the environment can improve the behavior of students' environmental responsibilities and have a positive effect (Ardianti et al., 2017).

The fourth factor is information. Information can be obtained from any source such as through lessons in school such as Biology lessons, or from family, friends and through social media even obtained from the surrounding environment. Teachers can teach students through school lessons so that students have knowledge of the environment and how important it is to have an responsible environmental behavior. This is in line with the opinion of Ardianti et al. (2017) which states that a teacher should be able to instill good behavior that will be the character of the student. According to Prihatini et al. (2018) education will affect the ability to digest the information received and consider the information as

the basis for further behavior. In the opinion of Robert Gifford & Nilsson (2014), a high knowledge of environmental issues influences one's useful decision making.

CONCLUSION

Based on the results of the study, it can be concluded that there is a low positive relationship between environmental awareness and responsible environmental behavior of high school students of SMA Masjid Terminal Depok. The positive relationship can be described by the regression equation $\hat{Y} = 99.939 + 0.161x$ with r of 0.195 and the coefficient of determination (r^2) of 0.0380 (3.80%) which means that the contribution of environmental awareness to responsible environmental behavior by 3.80% indicates a low interpretation value and there are other factors of 96.20%. Based on the results of qualitative research obtained several other factors that affect responsible environmental behavior, namely family, habits, environment (friendship environment, school environment or surrounding environment) and information.

Based on the findings of qualitative data, there is a low relationship between environmental awareness and responsible environmental behavior. This can be due to other factors that affect a person's responsible environmental behavior; some of these factors are family, habits and environment (friendship environment, school environment or surrounding environment) and information. Therefore, there are several things that need to be considered in order to shape the responsible environmental behavior of students, including: a) Further research is needed on the relationship of these factors to responsible environmental behavior. b) The family is expected to habituate the child to instill responsible environmental behavior and guide the child to get used to doing things that are responsible for the environment, ranging from simple things, such as dumping garbage in its place, tidying the room, caring for plants, saving energy, and others. c) Schools are expected to hold science or biology subjects as well as other school programs on the environment so as to improve students' responsible environmental behavior such as hygiene or environmental sustainability. In addition, the school always provides trash cans in every classroom. d) Teachers should give students an understanding of the environment through learning and motivate students on the importance of behaving environmentally responsibly, such as getting used to cleaning the classroom before the learning process takes place, and e) For students are expected to get used to behaving environmentally responsible early, so that periodically such behavior can improve.

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