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Students' Intention to Act toward the Environment as a Mediator between Knowledge about Ecosystem and their Pro-Environmental Behavior (PEB)

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Abstract

The main problem faced by every country in the world is environmental problems which are assumed to be brought about by human activities as mentioned by IPCC reports since 1995. That was why this research has been conducted to get information scientifically on whether human behavior, in this case, students' pro-environmental behavior (PEB) might be affected by their knowledge of ecosystem (KE) and mediated by their intention to act toward the environmental issues (ITA). Therefore, a causal survey was carried out involving 200 senior high school students around Bekasi, Indonesia, as a sample. There were three instruments developed which measured students' PEB, KE, and ITA. Data were analyzed by path analysis.

The research results showed that students' KE and ITA were found directly and significantly affected their PEB, however, students' KE did not prove that its effect on ITA was significant. So, it could be concluded that ITA, in this case, was not a good and significant mediator between KE and students' PEB. Based on these findings, it could be implied that in trying to minimize students' PEB variation, therefore, factors such as students' knowledge about the ecosystem and intention to act toward the environment, should be considered to be empowered among students throughout school system policies.

Keywords

Intention to Act, Pro-environmental Behavior, Path Analysis.

INTRODUCTION

Environmental problems are still unresolved problem. The emergence of ecological disasters such as declining biodiversity, land conversion, illegal logging, holes in the ozone layer, extreme climate change, and accumulation of pollutants in various natural resources, periodically these ecological disasters threaten the existence of living things on earth. Therefore, every level of society including the government, environmental activists, and educational institutions is aware that an action is needed as a solution to the ecological disaster that occurs. Ecological behavior is an action that contributes to the preservation and conservation of the environment (Axelrod & Lehman, 1993; Kaiser et al., 1999). It is not surprising that many studies have focused on ecological behavior because an individual's behavior towards the environment will affect other individuals (Priadi et al., 2020). The theory of planned behavior suggests that to explore ecological behavior, we need to pay attention to predictors that can influence and support ecological behavior such as knowledge and the desire to act.

Knowledge of ecosystems is important to understand because it is a form of knowledge management to encourage the dynamic evolution of ecosystem-based decision-making and innovation which ultimately refers to ecological behavior carried out in every human activity. Knowledge of ecosystems will lead to changes in human attitudes and ultimately direct their behavior, but largely depends on how humans view the world comprehensively (Putrawan, 2015). Most studies reveal the relationship between knowledge and ecological behavior (Dillon & Gayford, 1997; Priadi et al., 2020), but knowledge of ecosystems is not a sufficient component for ecological behavior (Chao, 2012; Kollmuss & Agyeman, 2002). Knowledge requires a mediator and a supporting factor in its influence on ecological behavior, namely the desire to act.

Ecological or environmental behavior is influenced by intention and desire to act. The desire to act is simply defined as a conscious or planned desire and motivation to commit and take an action (Hasyim, 2013). The desire to act is influenced by subjective norms, predicted behavioral control, and attitude (Ajzen et al., 2011) in which attitude includes knowledge about the ecosystem. In the Theory of Planned Behavior (TPB), the intention is a cognitive representation of a person's readiness to perform certain actions, and this intention can be used to measure a person's actions (Priadi et al., 2020). That is, a person's actions will be realized if there is an intention to behave.

RESEARCH METHOD

The objective of this research was aimed at finding out whether students' pro-environmental behavior was affected directly or indirectly by their knowledge about the ecosystem and intention to act toward the environment (ITA). That was why a causal survey was used involving around 200 students of public senior high schools in Bekasi, West Java, Indonesia

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which were selected randomly. Three instruments were developed for measuring students' knowledge, ITA, and students' pro-environment behavior. Data were analyzed by path analysis after verified about data normality and homogeneity, then their path coefficients.

RESULTS AND DISCUSSION

This study aims to determine the causal study of the factors that influence ecological behavior such as knowledge of the ecosystem and the desire to act. The results of the validation of the ecological behavior instrument there are 18 valid items out of 25 items with a reliability of 0.78, the validation of the knowledge about ecosystems instrument has 15 valid items from a total of 25 items with a reliability of 0.75, and the validation of the intention to act instrument has 20 valid items out of the total. 30 items with a reliability of 0.80. The data obtained from 200 respondents were analyzed with the help of SPSS software. The description of the data is presented to show the results of the research based on the instruments that have been filled in by the respondents. The data presented include the lowest score, highest score, mean, median, mode, standard deviation, variance

Based on the data from the calculation of the regression equation model of knowledge about ecosystems (X1) on ecological behavior (X3), the regression constant a = 47.626 and the regression coefficient b = 0.097. So the regression equation model is X3 = 47.626 + 0.097 X1. a significance test was conducted before the regression equation model was analyzed. Regression significance testing uses regression ANOVA for each variable being measured. Its path coefficient found was 0.097 and significant only at 0.15. Based on the data from the calculation of the regression equation model of knowledge about the ecosystem (X1) on the desire to act (X2), the regression constant a = 63,385 and the regression coefficient b = 0.008. So the regression equation model is $\hat{X}2 = 63.385 + 0.008$ X1. a significance test was conducted before the regression equation model was analyzed. Regression significance testing uses regression ANOVA for each variable being measured. This produced a path coefficient was not significant, its value only 0.08 (see figure below)

Continuing the data from the calculation of the regression equation model of the desire to act (X2) on ecological behavior (X3), the regression constant a = 43.322 and the regression coefficient b = 0.143. So the regression equation model is $\hat{X}3 = 43.322 + 0.143$ X2. a significance test was conducted before the regression equation model was analyzed. Regression significance testing uses regression ANOVA for each variable being measured. The results of the significant regression test of the desire to act variable (X2) on ecological behavior (X3) obtained the results of F count = 4.138, the F table value was searched based on the distribution table F table (0.05:198) = 3.889 F table (0.01:198) = 6.765 , so that F count > F table which means the $\hat{X}3 = 43.322 + 0.143$X2 model is significant. The research was continued with the linearity test of the desire to act (X2) on ecological behavior (X3), the calculated F value = 0.780, while the F table value was searched based on the F distribution table with a significant level of 0.05 = 3.042, because F count < F table, it can be concluded regression model $\hat{X}3 = 43.322 + 0.143$ X2 was linear.

From the results of path analysis calculations (path analysis) X2 over X3, the results obtained are Phi32 = 0.143 with t count (2.034), while t table (0.05.198 = 1.972, t table (0.01, 198) = 2.601. because t count > t Table 0.05 means that there is a direct influence between knowledge about ecosystems and significant ecological behavior. The indirect effect of knowledge about ecosystems (X1) on ecological behavior (X3) through the desire to act (X2) can be calculated using the following formula: Phi31.2 = (Phi21) (Phi32). Based on the calculation results obtained tcount = 0.0016 this indicates tcount = 0.0016 < ttable (0.05 ; 198) = 1.972 This result indicates that there is no indirect effect between ecosystem knowledge through the desire to act on ecological behavior. Based on these results, it can be concluded that the desire to act is not a good mediating variable between knowledge about ecosystems and ecological behavior. The overall results of hypothesis testing show that knowledge about ecosystems does not directly affect ecological behavior or the desire to act, and the desire to act can directly affect ecological behavior but cannot be a mediating variable between ecosystem knowledge and ecological behavior. Based on the results of testing the hypothesis, the empirical model from the results of this study can be described as following figure below.

The results of this study indicate that knowledge about ecosystems does not directly affect ecological behavior or the desire to act, and the desire to act can directly affect ecological behavior but is not able to be a good mediator variable between ecosystem knowledge and ecological behavior. There are differences in the results between the knowledge hypothesis testing on behavior in this study and previous studies. Knowledge has a direct effect on ecological behavior because it is a precondition of behavior (Fibula Purnama et al., 2020; Hasyim, 2013) but this was not found in this study. Knowledge cannot have a direct effect on ecological behavior because its influence is weakened by attitude and intention (Kaiser & Wilson, 2000). The strong relationship between knowledge and ecological behavior can occur because the knowledge in question is knowledge about how to behave ecologically, not knowledge about facts and concepts in ecology (Levenson, 2000).

There are several factors that cause the weak influence of knowledge on ecological behavior such as the lack of students' ability to understand and interpret the concept of ecosystem material in daily behavior, as well as ecosystem material that is not directed to ecological behavior. To support ecological behavior, various forms of knowledge about ecosystems must be united in a convergent manner to support ecological behavior and the need for associations between ecosystem knowledge and other implicit factors in realizing ecological behavior (Kaiser & Fuhrer, 2003).

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Knowledge of ecosystems also cannot have a direct effect on the desire to act. This happens because knowledge is one of the indirect experiences so that it is less able to encourage students' desire to act, especially in ecological behavior. In contrast to the results of previous studies which suggested that knowledge can affect the desire to act (Ajzen et al., 2011; Fielding & Head, 2012; Hasyim, 2013; Iman et al., 2019). The desire to act is the basic reason for a behavior. The desire to act individually and socially. Individually, the intention or desire to act occurs because of a positive or negative evaluation of the individual in performing a behavior. Socially, the intention or desire to act is the influence of the community's view that the individual needs to take action in this case, namely ecological behavior. This is in line with several studies which state a strong relationship between the desire to act and ecological behavior (Bamberg & Möser, 2007; Fibula Purnama et al., 2020; Iman et al., 2019).

The desire to act can have a direct effect on ecological behavior, but the desire to act is not able to be a mediator variable for ecosystem knowledge on ecological behavior. Knowledge of ecosystems is less able to motivate students to behave ecologically, knowledge is also a form of indirect experience so that it is less able to influence ecological desires or behavior (Kollmuss & Agyeman, 2002).

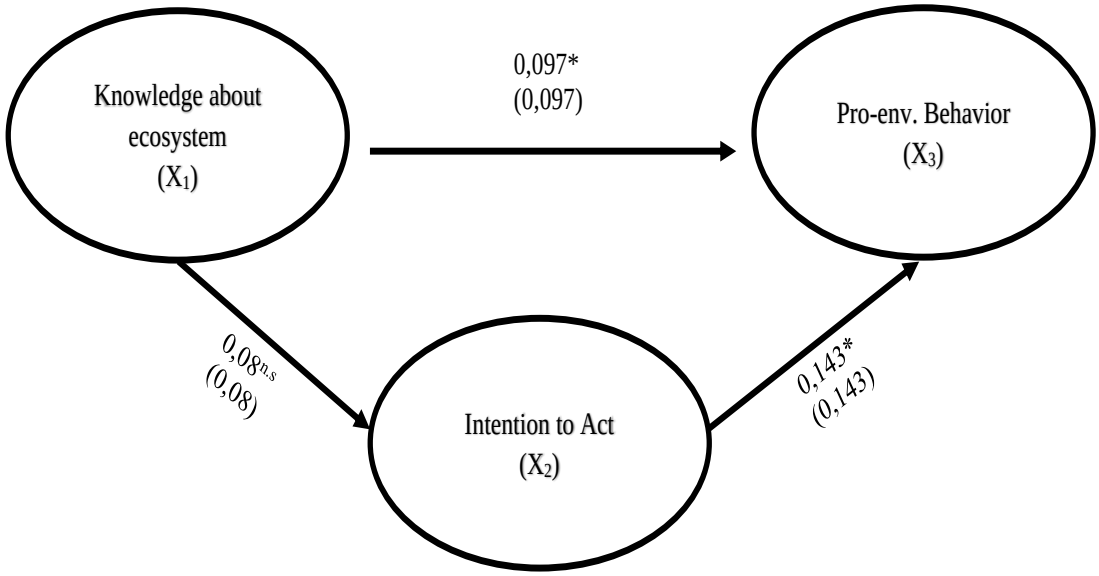

Figure 1. Empirical Path Model
*P < 0.05; n.s: non-significant

CONCLUSION

Based on those findings, it could be concluded that students' intention to act was not a good mediator as indicated by Hines, et.al. (1986) model (see Putrawan, 2015). However its direct effect on students' pro-environmental behavior, by considering the role of students' knowledge, it would be great if school policies directed to the improvement of students' skills in adapting their culture to live in habitual life for saving our the only one planet that human being habituated.

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