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Research paper



The Influence of Interpretation, Commitment and Nature Conservation Knowledge on Pro-Conservation Behavior Among Malaysian Students

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Abstract

Human behavior has caused negative impact on our environment. The exploration, exploitation and destruction of our planet occurred merely to satisfy the desires of human being. Thus, to sustain a better future particularly in terms of healthy lifestyles and maintain environmental sustainability, the human behavior towards conservation must be changed. Therefore, this quantitative research involved secondary students in order to identify and explore the level and influence of students' interpretation, commitment, knowledge and pro-conservation behavior. The respondent consists of 500 students from selected urban secondary schools in Sabah, Malaysia. Questionnaire adapted from previous researches was the instrument used to collect the data. Descriptive and inferential statistics were used to analyze the data. The results revealed that there was significance influence of student's knowledge and commitment on pro-conservation behavior. The research findings revealed that the students' interpretation, commitment, nature conservation knowledge and their behavior were important and needed more attention from various parties in order to develop their lifelong attitude towards environment and biodiversity conservation. Hence, the environmental organizations need to design and organize a lot of conservation programmes in schools in order to promote conservation and build positive impact on the students' behavior towards environment and biodiversity conservation.

Keywords: *Conservation, Interpretation, Commitment, Nature conservation knowledge, Pro-conservation behavior*

1. Introduction

Malaysia is one of the developing countries and like other developing countries Malaysia also faced with environmental problems. In Malaysia, a research conducted by Aini *et al*. (2003) stated that the environmental conditions become worst every single day due to the result of human activities and behavior towards the environment and the result of industrial production and consumption pattern. It all happens because of the needs to satisfy the human being lifestyles. Past researches and studies show that people are generally very concerned about the environment. However, in order to maintain environmental sustainability, it is their commitment, perception and their behavior and lifelong attitude towards conservation of the environment that are important markers for a long term social change rather than being concerned and not doing anything to save and protect the environment.

There are a lot of educational programmes about conservation organized in Malaysian schools. In Sabah, one of the programmes is known as *Program Sekolah Rakan Alam Sekitar* (SERASI). It is a programme aimed at creating environmental awareness among students through efforts related on environmental management, environmental activities, cleanliness and beautification of the school ground, environmental innovation and clean toilets. This program promotes conservation among students, builds positive impact on the students' behavior towards conservation and most importantly encourages students to be innovative about their ways to conserve and preserve the environment. Besides SERASI, there are other environmental programmes that are very useful at creating environmental awareness among students. It is important for the students to protect and conserve the environment because it will help to protect the environment from being damaged and destroyed and at the same time maintain the environmental sustainability.

Environment has influenced and shaped our lives since the time immemorial. Through the environment we get all the necessities of today's life. From the environment, we get our food to eat, water to drink and air to breath. Through the steps of natural selection and elimination it is environment only which has caused the evolution of biological spectrum, the biosphere as it exists today. But nowadays, environment has become the concern of all; the academicians, intellectuals, scientists, policymakers and government across the continents (Kant and Sharma, 2013).

We are facing with one of the most horrible ecological crisis, such as the climate change. Climate change is one of the environmental crises that we faced nowadays and it brings the most dramatic threat to the earth's environment. The increased of carbon dioxide, carbon monoxide and other gas byproducts harm our environment and affecting the balance of our ecosystem. Greenhouse effect and a slowly warming planet is the result of global warming. According to The World Health Organization (2002), global warming is responsible for 154,000 deaths worldwide by creating conditions more favorable for the spread of diseases such as malaria, dengue fever and diarrhea. Man's ignorance, greed and lack of respect for the environment has caused trouble to the environment and biodiversity; and thus threatening us with environmental crises such as climate change, global warming, water pollution, and land pollution.

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2. Research objectives

To identify the level of the students' interpretation, students' commitment, students' nature conservation knowledge and students' lifelong attitude of pro-conservation behavior.
To identify and explore the correlation between students' interpretation, students' commitment, and students' nature conservation knowledge with pro-conservation behavior.
To identify and explore the influence of students' interpretation, students' commitment, and students' nature conservation knowledge on pro-conservation behavior.

3. Research hyphoteses

H_0^1 There is no significance correlation between students' interpretation with pro-conservation behavior.
H_0^2 There is no significance correlation between students' commitment with pro-conservation behavior.
H_0^3 There is no significance correlation between students' nature conservation knowledge with pro-conservation behavior.
H_0^4 There is no significance influence of influence of students' interpretation, students' commitment, and students' nature conservation knowledge on pro-conservation behavior.

4. Literature review

Interpretation is an explanation or understanding of something. Nolan (2005) defined interpretation as conveying understanding. In relation to this research, where it focused on the environment conservation, students' interpretation was all about the students' understanding about what's going on to the environment and their knowledge about protecting the environment from any damages caused by human activities. In this research, the researcher wanted to identify and explore the students' interpretation towards the environment and whether the students have the ability to apply their understanding about conservation in order to determine their lifelong attitude of pro-conservation behavior based on their understanding about environment and biodiversity conservation.
Commitment is defined as being prepared to give a lot of one's time and attention to something because one believed you believed it is right or important. Allen and Meyer (1990) stated that affective commitment is the most important form of commitment as it has the most potential benefits. In this study, the researcher wanted to identify the students' commitment towards conservation because the researcher would like to examine whether the students have self-interest and high efforts to conserve the environment. Being committed to the environment means you take the responsibility and obligations to protect and improve the environment. In this research particularly, in order to identify whether students' responsibility towards the environment and biodiversity conservation could develop a lifelong attitude of their pro-conservation behavior or vice-versa, the students' commitment towards the environment were measured.
According to Davenport and Prusak (1998), "Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information". It basically means that knowledge is the understanding and skills that an individual has gained through learning or experience. Ducker (1993: 191) stresses that "knowledge is not impersonal like money. Knowledge does not reside in a book, a data bank, a software program. They contain only information." Knowledge is learned by an individual. In this study, students' knowledge is about the students' experiences and their basic understanding of the environment and its problem. Students' knowledge were being measured in order to examine whether the information about the environment, biodiversity and conservation that the students' acquired through formal and informal learning were being applied when it comes to the environment and biodiversity conservation in order to identify whether their knowledge have a long impact on their pro-conservation behavior.
In this research, students' behavior emphasized on the students' concern, values and motivations towards the participation of environmental improvement and protection. Positive behavior is important when it comes to conservation because it will help to develop a lifelong attitude of pro-conservation behavior. Meanwhile, negative attitude will bring negative impact to the environment due to the man's ignorance and greed. That is why behavior depends on the individual itself whether they want to perform the behavior or not. This research will identify whether the students' behavior contributed in the development of the students' lifelong attitude of pro-conservation behavior or vice versa.
In a research conducted by Oguz *et al.* (2010) on a study about the environmental awareness revealed that the students were not able to give explanation and definition about the basic term of environment, fully and correctly. The students' rather perceive the environment as a physical setting; ignoring biological, chemical, social and economic aspects. The findings of this study concluded that the awareness, knowledge and behavior are not always influential on each other. Moreover Uitto *et al.* (2011) found that the relationship between students' interest in environmental problems or issues, their attitude towards environmental responsibility in the care and bio-centric values in science education in schools revealed that there was significant correlation between students' attitude and environmental concerns.
Aminrad *et al.* (2013) on their studies about the relationship between awareness, knowledge and attitudes towards environmental education among secondary school students in Malaysia found that there is a significant correlation but weak relationship between awareness and knowledge on environmental issues while there was high relationship observed between awareness and attitudes among respondents. Kumud Ghosh (2014) on a research study about the environmental awareness among secondary school students and their attitude towards environmental education revealed that the relationship between environmental awareness and attitudes towards environmental education among the students was found strong and positive. Rabiu Ali *et al.,* (2015) in a study about the environmental awareness level amongst secondary school students in Terengganu, Malaysia found that the level of environmental awareness among students is low. The study also revealed that there was a low positive relationship exists between environmental awareness and environmental attitude. Result of the correlation suggests that the higher environmental awareness scores are less associated with higher environmental attitudes scores. From the correlation results it can be summarized that there is an existing relationship between environmental awareness and environmental attitude among secondary school students though it is low correlation.

5. Methodology

This research is a non-experimental design using quantitative approach based on the research objectives which is to study the relationship and influence between the phenomenons (variables). In addition, survey method was applied because it has systematic procedures and sufficient to achieve research objectives. Apart from that, cluster and random sampling techniques were chosen for data collection from the population because this study involved a large area and a huge number of respondents (Mohd. Majid, 1990; Chua, 2011). Table 1 shows the selected schools and the number of samples involved.

Table 1: List of Schools and Number of Sample

Schools		Districts	No. of Sample
Sanzac School	Secondary	Kota Kinabalu, Sabah	150

All Saints Secondary School	Kota Kinabalu, Sabah	150
Maktab Sabah Secondary School	Kota Kinabalu, Sabah	200
Total Number		**500**

Questionnaire was used in order to measure the research variables in this study. The questionnaire employed Likert scale from 1 until 5 with 1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree and 5 for strongly agree to measure the variables. In this research the questionnaires were adapted from previous researches by Zuraidah *et al.* (2012), Shahariah *et al.* (2012) and Monisha Nag (2012). Pilot study had been carried out to test the validity and reliability of the instruments prior to the actual research. The validity test using exploratory factor analysis showed that all items carried at least 0.40 of factor loading value. Mean while, the reliability test using Cronbach Alpha showed all the variables carried minimum value of 0.70. Descriptive and inferential analysis (Pearson correlation and multiple regression) will be employed to test the hypotheses.

6. Results

Table 2 shows the mean score for each variables studied in this research based on the data collected from the selected schools in Sabah, Malaysia. Referring to the table below, the interpretation variable had a mean score of 4.25. The mean score for commitment variable was 4.24 while the knowledge variable had a mean score of 4.29. As shown in the Table 2, the mean score for behavior variable was 4.27.

Table 2: Descriptive Analysis

Variables	N	Min	Max	M	SD
Interpretation	500	3.47	5.00	4.25	.264
Commitment	500	3.20	5.00	4.24	.265
Knowledge	500	3.47	5.00	4.29	.273
Behavior	500	3.20	5.00	4.27	.272

Meanwhile, the result from the statistical method through skewness and kurtosis tests for all the variables in this research which are the students' interpretation, students' commitment, students' nature conservation knowledge and students' pro-conservation behavior showed normal distributions. Bhasah (2007) stated that the distribution of data is normal when the value of skewness and kurtosis is between -3.00 until +3.00 while Sheridan (2013) is in between -1.00 until +1.00. Therefore, inferential statistics can be carried out to test the hypotheses. In this research, the level of significance value is $p < .05$ (95%).Table 3 shows the normality analysis by looking at the skewness and kurtosis for all the variables.

Table 3: Normality Analysis

Variables	Skewness	Kurtosis
Interpretation	-.049	.093
Commitment	-.011	.695
Knowledge	-.246	-.334
Behavior	.007	.254

Correlation Analysis on Students' Interpretation, Students' Commitment, and Students' Nature Conservation Knowledge with Lifelong Attitude of Pro-Conservation Behavior Result

Table 4 shows the correlation analysis between variables. Based on the table, it showed that there was a significance positive correlation between students' interpretation, students' commitment and students' nature conservation knowledge with pro-conservation behavior *($p < .05$)*. The results from the analysis as shown in the table 4 stated that there was a significance positive and weak correlation between students' interpretation (r= .317, p= .000) with lifelong attitude of pro-conservation behavior. In addition, students' commitment showed a significance positive and weak correlation (r= .488, p= .000) with lifelong attitude of pro-conservation behavior. Students' nature conservation knowledge also showed that there was a significance positive and weak correlation (r= .455, p= .000) with the students' pro-conservation behavior. Therefore, the all null hypotheses (H_0^1, H_0^2 & H_0^3) were rejected since there were significance correlations between students' interpretation, students' commitment and students' nature conservation knowledge with pro-conservation behavior.

Table 4: Correlations between Students' Interpretation, Students' Commitment and Students' Nature Conservation Knowledge with Lifelong Attitude of Pro-Conservation Behavior

Variables	Pro-Conservation Behavior	
Students' Interpretation		
Pearson Correlation	.317**	
Sig. (2-tailed)		.001
Students' Commitment		
Pearson Correlation	.488**	
Sig. (2-tailed)		.001
Students' Nature Conservation Knowledge		
Pearson Correlation	.455**	
Sig. (2-tailed)		.001

*** p < .01*

The Multiple Regressions Analysis of Students' Interpretation, Students' Commitment and Students' Knowledge on Lifelong Attitude of Pro-Conservation Behavior Result (Urban Data)

The result of the multiple regressions (stepwise) in Table 5 below showed that the predictor variable which was the students' knowledge (β=0.278, $p < .05$) and student's commitment (β=0.488, $p < .05$) were the contributors that significantly influenced students' behavior towards a lifelong attitude of pro-conservation while the students' interpretation (β=0.063, $p < .05$) was not a contributor that influenced the students' behavior towards a lifelong attitude of pro-conservation. This result indicated that the students' commitment variable was the main predictor to the students' lifelong attitude of pro-conservation. Significantly, the students' commitment variable contributed 23.6 percent (R^2=0.236, r=0.238) to the students' lifelong attitude of pro-conservation. Meanwhile, the students' knowledge variable [β=0.278, t=6.329, p=.000] was the other predictor to the students' lifelong attitude of pro-conservation. The data analysis significantly showed that this predictor variables contributed 5.4 percent (R^2=0.054, r=0.057) variance changes into students' behavior of pro-conservation.

Table 5: Multiple Regression Analysis (*Stepwise*) of Students' Interpretation, Students' Commitment and Students' Knowledge on Lifelong Attitude of Pro-Conservation Behavior (Urban Schools Data)

Variables	*β*	*p*
Students' Interpretation	0.063 0.152	1.434
Students' Commitment	0.488 0.000	12.464
Students' Nature Conservation Knowledge	0.278 0.000	6.329

Info:

Students' Commitment	Students' Nature Conservation Knowledge
R = 0.238	R = 0.057

R^2= 0.236	R^2 = 0.054
F= 155.354	F= 103.797

Based on the analysis of the multiple regressions (stepwise), it showed that the students' knowledge and commitment had a significance influence on the students' behavior towards conservation. In that case, the hypothesis H_o^4 is rejected. On the other hand, the students' interpretation did not have a significance influence on the students' lifelong attitude of pro-conservation behavior.

7. Discussion

The initial findings revealed that all the variables showed high mean scores. In this research context where it focused on the environment and biodiversity conservation, students' interpretation emphasized on the students' understanding about what's going on to the environment and their ability to protect the environment from any damages caused by human activities. Therefore, students' personality, environmental awareness and responsibility are important in order for the students to perform pro-conservation or pro-environmentally behavior. The findings of this research also supported one of the widely used theories in research studies of environmental behavior which is the Values-Beliefs-Norms (VBN) (Stern *et al.,* 1999; Stern, 2000). The theory suggests that personal norm is the utmost predictor of behavior and it depends on the individuals' awareness of the outcome or repercussion and the ascription of responsibility. By looking at this research context, the students' will be able to develop a lifelong attitude of pro-conservation behavior when they are responsible towards their understanding and awareness about the environment issues and problems.

In this research context, commitment means the students' need to be prepared to give a lot of their time and attention to the environment and biodiversity because they are concerned about the environmental problems and believed that it is right and important to protect, conserve and improve the environment. This result therefore supported the findings by Atiqul Haq *et al., (*2010) who believed that individuals who are concerned with the environmental conditions will do something to protect and conserve the environment by making adjustment in their life style, behavior and attitudes towards the environment. In the Values-Beliefs-Norms (VBN) by (Stern, 2000; Stern *et al.,* 1999), there are three types of values. Those are the egoistic value, altruistic value and biospheric value. In this research, the students' high level of conservation behavior are more likely to fall under the altruistic value and biospheric value, where both values concerned about other people well-being, other living and non-living organisms including human being, plants and animals and they are environmentally responsible where they are able to practice and perform pro-environmental actions for the benefits of their own self, other people and future generation.

Furthermore, in this research, students' knowledge refers to the students' experiences and their basic understanding of the environment and its problem. Previous research studies suggest that the concern for the environmental problems is high (Mainieri *et al.,* 1997). It is all depends to the students' whether they want to apply the knowledge that they had in order to protect, conserve and improve the environment in order to develop a lifelong attitude of pro-conservation behavior. The result on the level of the students' knowledge is supported by a research study conducted by Hsu and Roth's (1998) about the environmentally responsible behavior in secondary school teachers in Taiwan which revealed that knowledge and skill in using environmental action strategies were powerful predictors of responsible environmental behavior. Hsu and Roth's (1998) also proposed that knowledge and skill should get major prominence at the secondary and post-secondary levels. If the students' apply the knowledge that they have in environment and biodiversity conservation, they will most likely to develop a lifelong attitude of pro-conservation behavior.

Apart from that, the results of the research revealed that the students' behavior towards conservation was also at a high level. Behavior is a process and it cannot easily be held for observation. There is positive and negative behavior. In this research context the students' behavior towards conservation is positive and at a high level. Positive behavior is important when it comes to conservation because it will help to develop a lifelong attitude of pro-conservation behavior. Meanwhile, negative attitude will bring negative impact to the environment due to the man's ignorance and greed. This result is supported by Folke (2003) who stated that "directing human behavior towards improved environmental performance and sustainability is not just a simple matter of providing information and policy prescriptions but a complex socio-cultural process. It will require understanding of the contexts that form, shape and reshape habits of thought and action." Basically, it means that a joint effort and positive attitudes by students' is important in order to maintain sustainability and develop pro-conservation behavior.

In term of correlation analysis, the results revealed that there was significance positive correlation between students' interpretation with lifelong attitude of pro-conservation behavior. This finding showed that students' with positive interpretation and understanding about the environment and biodiversity are aware about the environmental conditions and issues. Being aware and concern about the current state of the environment enable the students' to develop a lifelong attitude of pro-conservation behavior. Thus, the results further supported the previous research findings by Aminrad *et al.,* (2013) on their studies about the relationship between awareness, knowledge and attitudes towards environmental education among secondary school students in Malaysia which found that there is a significant correlation but weak relationship between awareness and knowledge on environmental issues while there was high relationship observed between awareness and attitudes among respondents.

The findings of the correlation on the students' commitment with lifelong attitude of pro-conservation behavior revealed that there was significance positive correlation with lifelong attitude of pro-conservation behavior. The findings showed that the students' had a positive commitment towards the environment and biodiversity conservation even though there was a weak correlation on their ability to develop a lifelong attitude of pro-conservation behavior. These results on the students' commitment variable further supported the previous research findings by Schmidt (2007) on her research about the role of environmental awareness on college students focusing on intentions to actions which revealed that there was a positive correlation between attitudes and behaviors at the end of the course. The results also supported the findings by Rabiu Ali *et al.,* (2015).

The findings also revealed that there was a significance positive correlation between students' knowledge with lifelong attitude of pro-conservation behavior. The results showed that the students had the information and understanding related to the environment and biodiversity with a weak ability to develop a lifelong attitude of pro-conservation behavior. The students' understanding of the environment conservation will encourage them to perform positive attitudes and behavior towards protecting the ecosystem. These results further supported the previous research findings by Bun lee (2008) and Kuhlemeier *et al.,* (1999). However, the findings of the research did not support the research findings by Negev *et al.,* (2008) who found that there is no significant correlation between knowledge and behavior. The results also did not favor the findings by Oguz *et al.,* (2010) which revealed that students are not able to explain the basic term of the environment fully and correctly. Oguz *et al.,* (2010) also stated that knowledge, awareness and responsible behavior are not always correlated to each other.

Further more, two predictor variables which are the students' knowledge and commitment were the contributors that influenced the students' behavior towards a lifelong attitude of pro-conservation behavior This result showed that the students' knowledge play an important role in the urban students' attitude

towards conservation. Knowledge is important in conservation in order to effectively protect the ecosystem and maintain environmental sustainability. Therefore, environmental education is important in order to enhance the students' knowledge towards conservation and build positive impact on the students' behavior and attitudes towards the environment protection and improvement. This result is supported by Haryono *et al.*, (2014) on a study about the learning attitude and awareness against students in cultured environmental success in Probolinggo, Indonesia who found that environmental education in the school has a positive and significant effect with students' knowledge. It basically means that environmental education in school variables significantly influences students' knowledge variables.

This result showed that commitment, attitude and understanding are important in order to make changes. In the terms of environment conservation, the students' commitment and attitude towards conservation is influenced by their understanding of the conservation contents. Commitment needs the respondents to acquire the knowledge and information that they had in order for them to protect, conserve, preserves and improve the environment from human bad activities. The result of this research is supported by Harun, R., *et al.*, (2011) in a research study about the environmental knowledge and attitude among students in Sabah who found that the students' attitudes are influenced by the level of knowledge that they have concerning the environment.

8. Conclusion

To conclude, based on the research findings, it showed that more attention need to be paid to all the research variables in order to improve and increase the students' development of their lifelong attitude of pro-conservation behavior. The conservation cautiousness must begin from the early stage of human progress and development. We don't have other planet similar to earth to live on it. Therefore, all the measures must take into consideration in order to preserve our beloved planet from being destroyed by insane people.

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