

The Effectiveness of Young Environmental Scientist Program among Secondary School Students in Terengganu, Malaysia

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Abstract: *The purpose of this research was to investigate the environmental awareness level, attitude of students towards environment and their interest in learning science. The sample used for this research comprises both boys and girls students of Form Four. A total of one hundred (100) students were randomly selected. The data was collected using the Environmental Awareness Scale prepared by the researcher. It was then analyzed using descriptive statistics, t-test and Karl Pearson's coefficient of correlation. The result revealed that, the level of environmental awareness of students is high but moderate interest in learning science. The researcher concluded that Young Environmental Scientist (YES) Program should be adopted by all secondary schools in Terengganu, Malaysia and should be infused in the curriculum.*

Key words: *Environmental education, environmental awareness, environmental attitude, pollution, Young Environmental Scientist program.*

I. Introduction

In this modern world, environment is of global concern because of the massive increase in environmental pollution all over the world. Environmental education is a process of recognizing values and classifying concepts in order to develop skills and added tools necessary to understand and appreciate the interrelationship among man, his culture and his bio-physical surrounding (Sengupta et al., 2010). It is through the environmental education that people will be aware of the needs for improving the environment. Environmental awareness on the other hand is "to understand the fragility of our environment and the importance of its protection" (The Pachamama, 2014). Environmental awareness is all about being conscious of the environment around us. It also defined as the initial steps ultimately leading to the ability to carry on responsible citizenship behavior (Sengupta et al., 2010).

Education is important in bringing about increase of environmental awareness, and as such it cannot be denied in performing its role. Sham (1993a) stated that with regards to the nature and extent of environmental degradation that existed at that time, a high and sophisticated awareness level is required to ensure the future of our environment. Generally the study found that the respondents' on environmental knowledge was high. The main sources of this knowledge were identified such as newspapers, television and the radio. Lower levels of education were reflected in the level of environmental knowledge. Participation in environmental activities had a positive influence on knowledge. The study also found that knowledge correlated positively with environmental attitudes, behaviors and participation. Sharifah et al (2005) have given an account about the current state of affairs concerning environmental awareness in Malaysian households. Their study on environmental knowledge, attitude, behavior and participation also investigated.

A descriptive study by Sharifah et al. (2005); agree that the students and teachers generally their knowledge about the environment were high and that the main sources of environmental knowledge is the television and newspapers. However, their understanding of environmental issues and recognition of environmental problems was only at the basic level. The findings also indicated that the awareness and sensitivity towards environmental issues were low. Furthermore, when it came to action, the respondents preferred conservation practices, which required little effort such as switching off fans, but did not commit to action like taking along their own shopping bags. Overall Lim's study revealed that the students' environmental awareness level was low and the teachers' environmental awareness level was only moderate. In the same study, it was found that environmental management of noise levels and waste management in the schools was not satisfactory.

With all the efforts been made by researchers to overcome environmental issues, seriousness is lacking towards environmental awareness, attitude towards environment and interest in learning science especially in

Terengganu District. Through this research work, it is being tried to investigate the environmental awareness level, attitude towards environment and interest in learning science between male and female of secondary school students in form 4 of SBP Integrasi Batu Rakit who attended an environmental awareness program named Young Environmental scientist (YES) Program conducted by the department of East Coast Environmental Research Institute, Universiti Sultan Zainal Abidin, Malaysia.

Research Objectives

1. To study the level of environmental awareness and interest in learning science among students.
2. To compare the environmental awareness level and environmental attitude between male and female students.
3. To find the relationship between environmental awareness level and environmental attitude, environmental awareness and interest in learning science, and environmental attitude and interest in learning science among the secondary school students of SBP Intergrasi Batu Rakit.

Hypothesis of the Study

- Ho1 The environmental awareness level among students is low.
Ho2 There is no significant difference between environmental awareness tests means score between male and female.
Ho3 There is no significant difference in the environmental attitudes of male and female students.
Ho4 There is no interest in learning science among secondary school students.
Ho5 There is no relationship between environmental awareness and environmental attitude of students.
Ho6 There is no relationship between environmental awareness level and interest in learning science among students.
Ho7 There is no relationship between environmental attitude and interest in learning science among students.

II. Methodology

The sample was drawn from Form Four students in SBP Intergrasi Batu Rakit and consist of only students who were undergone Young Environmental Scientist Program organized by East Coast Environmental Research Institute, Universiti Sultan Zainal Abidin, Malaysia. Simple random sampling technique was employed and a total of one hundred and twenty respondents were drawn. A five point Likert environmental awareness scale prepared by the researcher was used in the collection of data. The tool consist of four sections; respondents profile; environmental awareness scale which was found to have a reliability of 0.759; attitudes towards environment scale with reliability of 0.757; and interest in learning science with 0.709 reliability. A total of 72 questionnaires were returned for analysis. Descriptive statistics, independent sample t-test, and Karl Pearson's coefficient of correlation ('r') were the tools used in analyzing the data.

III. Result Analysis

A descriptive statistics, independent sample t-test and Karl Pearson's coefficient of correlation were used for the analysis and interpretation of data and testing of hypotheses. Mean and standard deviation were also calculated.

Environmental Awareness Level among Students

There were 10 items to survey students' environmental awareness level after and before YES Program and students' perception towards environment related issues. Table 1 shows the means and total percentages (A+SA) of students for each item. The level of environmental awareness among the students was found to be high (4.07) after a descriptive analysis of means. Therefore, the null hypothesis one is rejected.

Table 1: Environmental awareness mean scores and total percentages "agree (A)" and "strongly agree (SA)" of boys and girls

Item	Statement	Mean	Total (%) A+SA
1	After YES Program, I would give some of my own money to clean up the river and implement program for domestic waste management.	3.26	31.90
2	After YES Program, I would spend time after school to fix river pollution, air pollution and environmental problems	3.33	33.30
3	Before YES Program, I realize the importance of keeping river and environment clean.	4.50	97.20
4	Before YES Program, I like to spend time near the river and enjoy the view of the environment.	4.10	79.10
5	After YES Program, I feel sad seeing the rivers and environment being polluted by domestic wastes and air pollution.	4.61	97.20
6	After YES Program, I like to learn about environment.	4.25	90.30

7	After YES Program, I would help to clean up rivers and green areas in my neighborhood.	3.11	36.10
8	After YES Program, I realize my environment is easily harmed by humans	4.68	97.20
9	After YES Program, I realize my life would change if there is no proper environment.	4.74	97.20
10	YES Program cultivates my interest to join any voluntary program to protect environment.	4.11	75.00
Overall (level of awareness and YES Program)		4.07	

*Level indicators: Means: 1.00-2.99 low; 3.00-3.49 medium; 3.50-5.00 high

Comparison of Environmental Awareness Mean Scores between Male and Female

As shown in Table 2, the 't' value 2.138 is significant at five percent level of confidence. This gives a clear indication that there exists statistically significant difference in the mean environmental awareness score between male and female secondary school students. Further in-depth investigation led to conclude that female secondary school students with mean value, M₂=4.1188 are more aware of environmental issues than their male counterpart with mean value, M₁=3.838. Hence, the null hypothesis two is hereby rejected.

Table 2: Environmental awareness of male secondary school students and male secondary school students

Variables	Students	N	Mean	SD	t	P-value	CI	
							Lower	Upper
Environmental awareness	Male	13	3.8385	.5621	2.138	.036	-.5418	-.0189
	Female	59	4.1188	.3944				

*significant at 5 percent level

Environmental Attitude between Male and Female

From Table 3 below, it was shown that there is statistically significant difference in the level of environmental attitude of male and female secondary school students with 't' value=2.138 which is significant at five percent level of significance. Female secondary school students were also found to have more attitudes towards environment with mean value M₂=4.493 which is greater than male students environmental attitude mean value M₁=3.8385. Therefore, null hypothesis three is rejected.

Table 3: Environmental attitude of male and female secondary school students

Variables	Students	N	Mean	SD	t	P-value	CI	
							Lower	Upper
Environmental attitude	Male	13	4.1769	.5776	2.273	.026	-.5301	-.0753
	Female	59	4.493	.3597				

*significant at 5 percent level

Students Interest in Learning Science

As shown in Table 4 below, the students have moderate interest towards learning science with a total mean value=3.58. It can be concluded that both students have moderate interest in learning science. Hence, null hypothesis four is rejected.

Table 4: Students' interest in learning science mean scores and total percentage "agree (A)" and "strongly agree (SA)" of boys and girls

Item	Statement	Mean	Total (%) A+SA
1	YES Program help me a lot to learn interesting things about environment in science lessons	4.57	94.4
2	YES Program makes me look forward to my science lessons.	4.26	86.2
3	In my opinion, YES Program makes me feel science lessons are exciting.	4.42	93.1
4	After YES Program, I would like to do more science at school.	4.15	77.8
5	YES Program enhance me to like science better than most other subjects at school	3.72	59.7
6	In my opinion, YES Program shows me that science is boring.	1.78	9.70
7	After YES Program, I find science is difficult.	2.04	11.2
8	After YES Program, I get good marks in science.	3.54	43.1
9	After YES Program, I understand everything about science.	3.79	63.8
10	After YES Program, science is one of my best subjects.	3.49	45.8
Overall (level of interest in learning science after and before YES Program)		3.58	

*Level indicators: Means: 1.00-2.99 low; 3.00-3.49 medium; 3.50-5.00 high

Relationship between Environmental Awareness, Environmental Attitude and Interest in Learning Science

From Table 5 below, a bivariate correlation was undertaken between students' environmental awareness mean scores and their environmental attitude mean scores. It was hypothesized that a strong positive

relationship would exist between these two variables. Result of the correlation indicates that higher environmental awareness scores are associated with higher environmental attitude scores ($r=0.659$, $p<0.01$). Thus, it can be concluded that if environmental awareness among the secondary school students rise it will result in further positive attitude towards environment. Hence, the null hypothesis five is rejected.

It was also observed from Table 5 that, the value of correlation between environmental awareness and interest in learning science among secondary school students of SBP Intergrasi Batu Rakit was found to be 0.506 which signifies a strong positive correlation between the two variables. It can be concluded that if environmental awareness increases it will lead to the increase in the interest in learning science among secondary school students. Therefore, the null hypothesis six is rejected.

It was also indicated from the Table 5 below, that the value of correlation between environmental attitude and interest in learning science of students has come out 0.492. The value of 'r' signifies the relation between environmental attitude and interest in learning science of secondary school students. It can be concluded that if students' interest in learning science increases it will lead to the positive increase in their attitude towards environment. Hence, the null hypothesis seven is rejected.

Table 5: Relation between environmental awareness environmental attitude and interest in learning science

Sample	Relation between	Confidence of correlation ('r')	Degree of freedom, df	p-value	Significance
All students (72)	Environmental awareness and environmental attitude	.659	70	$P<0.01$	Strong positive relation
-do-	Environmental awareness and interest in learning science	.506	-do-	$P<0.01$	Strong positive correlation
-do-	Environmental attitude and interest in learning science	.492	-do-	$P<0.01$	Strong positive relationship

IV. Findings And Discussion

After analysis and discussion of the result, the following findings were obtained.

1. The level of environmental awareness of students is high.
2. There is significant gender difference in environmental awareness level among students.
3. There is significant gender difference in environmental attitude of students.
4. The students have moderate interest in learning science.
5. There is positive relationship in environmental awareness, environmental attitude, and interest in learning science among secondary school students.

This study showed that the level of environmental awareness of secondary school students was 'high' after they have undergone training under Young Environmental Scientist program despite the fact that 97.20% of the students realized the importance of keeping the river and environment clean. After YES program, 31.90% agreed to give some their money for domestic waste management, 33.30% would spend time after school hours to fix environmental related issues like river and air pollution. The result is consisted with the study of Kathryn et al. (1992) and Arba'at et al. (2010) that the level of environmental awareness in the concept of sustainable development was high Majority of students (97.20%) they feel sad of seeing environment being polluted after the YES program exercise. These bring the notion that really they would take some measures to prevent the environment from pollution. The students (97.20%) also agreed that their environment can easily be harmed by human while 75% were motivated and develop interest to join any voluntary program to protect the environment. This result is contrary with the study of Shazli (2013) which revealed that senior secondary school students are not aware of the environment.

It was reported that there was a significant difference in environmental awareness and environmental attitude between male and female. Female students were found to have high level in the environmental awareness and environmental attitude. This result was supported by the study of Patel (1995) and Tripathi (2000) but contradicted with the study of Shobeiri (2007) and Falak (2014) which revealed that there is no significant difference in the environmental awareness between boys and girls in their level of environmental awareness. The difference between the gender in the level of environmental awareness may be due to the fact that female students are more serious and give more corporation during the program and they are more conscious to keep the environment clean s they have been told by their mothers the importance of keeping the environment clean.

Analysis also showed that there was a strong positive relationship between environmental awareness and environmental attitude among the students. It is obvious that if environmental awareness of students increases it will lead to the increase in environmental attitude of students. This finding is consisted with the study of Zarrintaj (2013) that there was a high relationship between awareness and attitudes. Also, the relationship between environmental awareness and interest in learning science was also positive and strong. And

the relation between attitude and interest in learning science was also positive. This shows that when interest in learning science increases among the students; environmental awareness and environmental attitude will also increase. The students must be motivated and encourage to learn science subjects so as to increase their level of awareness and attitude because if interest in learning science increases it will lead to the increase in awareness and attitude of the students.

V. Conclusion

From the result and discussion, it was clearly indicated that the level of environmental awareness is high. This shows that really Young Environmental Scientist program instilled awareness in the mind of the students to be aware of their immediate environment. Now-a-days, there are many issues that are of global concern that pollute the environment. Being Malaysia as one of the developing countries, it is faced with many challenges and treats to the environment that is as a result of urbanization and development. The environmental attitude of the students was also high though female students show relatively higher performance in environmental awareness. The attitude of students towards environment was found to be high. This is obvious for a person to have high awareness and also have high level of environmental awareness, many studies have proved that. Both male and female students were found to have relatively moderate interest in learning science. This common, you may have high awareness level of environment and also high attitude towards environment due to the influence of the environment you are living or the influence of peer groups. All these may contribute in making you aware of the environment even if you don't have interest in learning science. The relationship between environmental awareness and environmental attitude was strong and positive, the relationship between awareness and interest in learning science was also found to be strongly positive. Also the relationship between environmental attitude and interest in learning science was also positive.

VI. Recommendations

It is recommended that Young Environmental Scientist Program should be included in the curriculum of education in Terengganu and Malaysia in general because it brings the students to understand their immediate environment and its related issues due to the rapid increase in greenhouse effect, depilation of ozone layer, environmental degradation and to also help students manage their behavior and ecosystems in order to live sustainably. It also help students fixed the water contaminants because during the program, the students were exposed to various treats to the environment especially those pollutants that pollute water bodies and air in one way or the other. Young Environmental Scientist program will surely if adopted motivate awareness among the secondary school students. The researcher suggests the program to be conducted by many researchers to cover the whole Malaysia.

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